# Final Report

Unified Nogales Santa Cruz County Transportation Plan 2010

# ENTERING SANTA CRUZ COUNTY

Prepared for:
ADOT Multimodal Planning Division



City of Nogales



Santa Cruz County



April 30, 2010

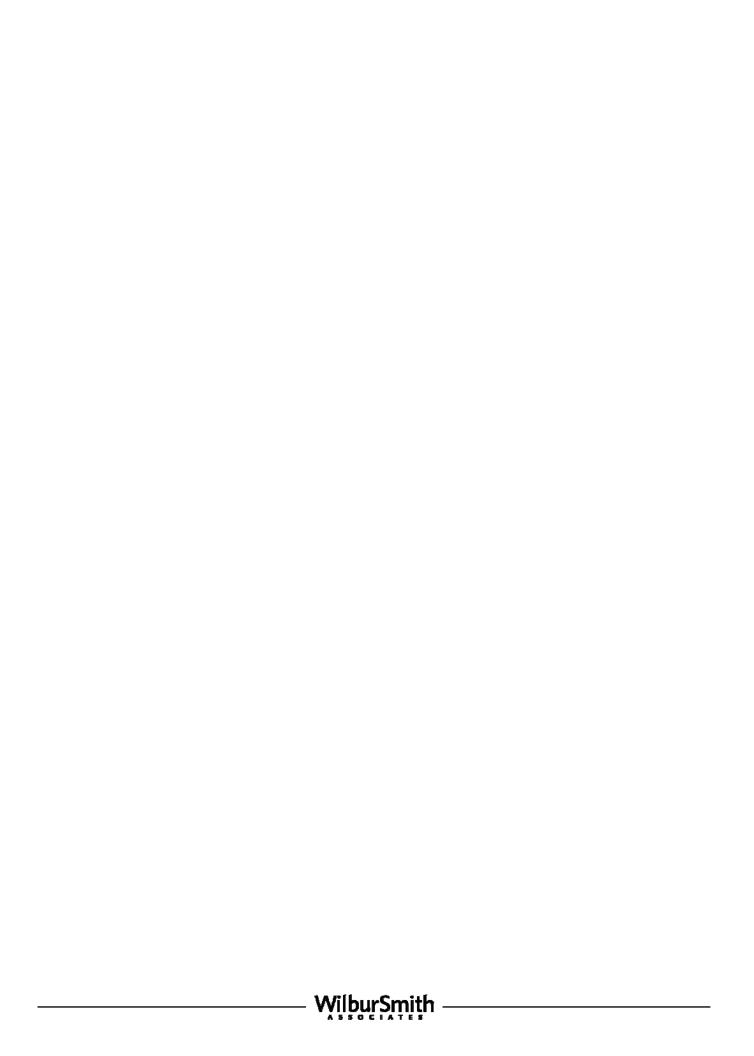
WilburSmith













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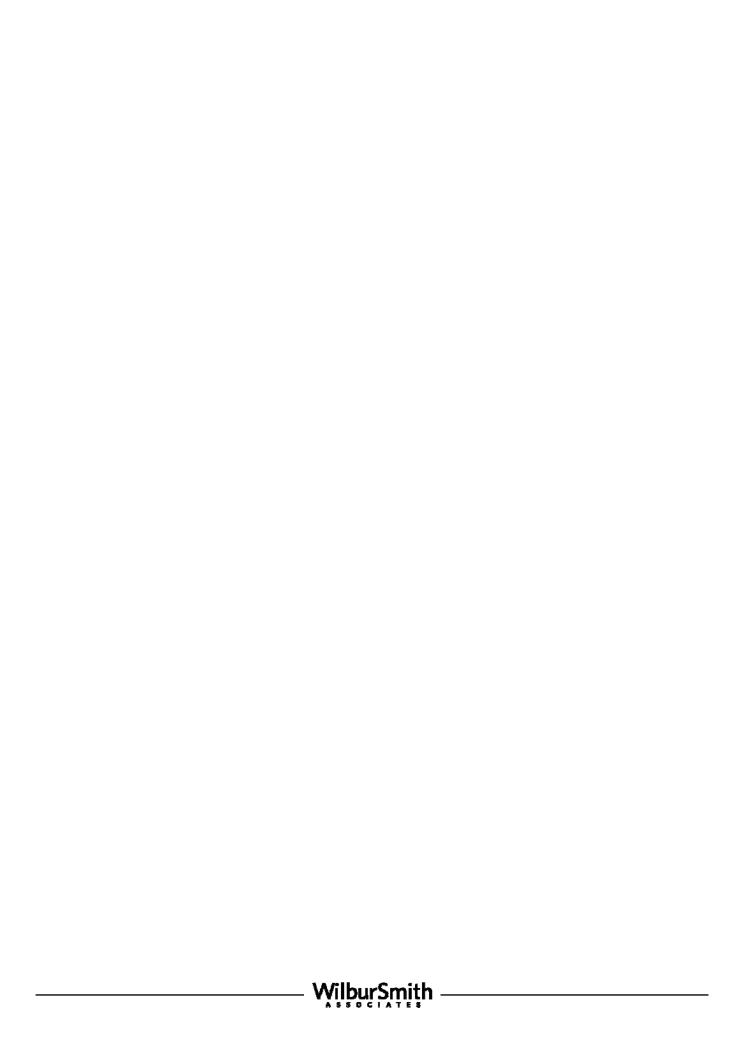




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#### 1. Introduction

#### 1.1 Background Information

The *Unified Nogales Santa Cruz County Transportation Plan 2010* was initiated by the Arizona Department of Transportation in cooperation with the City of Nogales and Santa Cruz County. This plan is funded through ADOT's Planning Assistance for Rural Areas program. ADOT, the City of Nogales, and Santa Cruz County have retained the consultant team of Wilbur Smith Associates to conduct the study under the direction of a Technical Advisory Committee (TAC) that includes members from the City of Nogales, Santa Cruz County, the Arizona Department of Transportation, the Federal Highway Administration, the Arizona Game and Fish Department, the Greater Nogales Santa Cruz County Port Authority, Fresh Produce Association, the SouthEastern Arizona Governments Organization (SEAGO), and the USFS Nogales Ranger District.

The Nogales/Santa Cruz County region is part of the Ambos Nogales urbanized area. This area is bi-national with most of the region located in Sonora, Mexico, and a small piece extending into Arizona in Nogales and Santa Cruz County. The entire area has a combined population of approximately 200,000 people. Nogales, Arizona, has experienced a steady increase in population growth and economic development due to its proximity to the international border, and therefore to international trade.

Nogales and Santa Cruz County are home to three ports of entry between the United States and Mexico. One is a pedestrian port known as the Morley Gate and is situated in downtown Nogales, the second is a non-commercial port known as the Dennis DeConcini Port of Entry and is also located in downtown Nogales, and the third is the Mariposa Port of Entry, a commercial cargo port several miles west of downtown Nogales on SR 189. The Mariposa Port of Entry is one of the ten busiest cargo ports along the entire US-Mexico border. The Mariposa Port of Entry has experienced dramatic growth in traffic volumes in all modes of transportation; commercial and non-commercial including pedestrian traffic. With the planning and construction of a new expanded facility underway at the Mariposa POE, it is important to account for the certain dramatic increase in traffic when the new port is projected to come online no later than 2013. Currently, the port acts as a throttle on the entire Nogales/Santa Cruz County traffic system.

Another mode of transportation that has a significant impact on the Nogales/Santa Cruz County area is the Union Pacific Railroad line. This rail line runs directly through downtown Nogales and bisects the town and the county along its north-south line. It generally follows the Nogales Wash and the Santa Cruz River through the city and the county respectively. This rail line handles international trade between Mexico and the US and links a major Ford manufacturing plant in Hermosillo, Sonora, to markets in the US. With long freight movement trains, local traffic on any roads in the vicinity of the railroad tracks are extremely congested since there is only one grade separated crossing at SR 82 north of the downtown area. This situation presents a major traffic circulation and public safety issue for the communities.



#### 1.2 Study Area Overview

The project study area encompasses the majority of Santa Cruz County and is more or less centered along I-19 for the full north-south length of the county. The study area can be generally described as:

- Bounded on the north by the Santa Cruz County/Pima County boundary line
- Bounded on the east by a line extending north and south from milepost 10 on SR 82, the Patagonia Highway
- Bounded on the south by the US-Mexico International Border
- Bounded on the west by a line extending north and south from milepost 10 on SR 289, Ruby Road

The study area is shown in Figure 1 - Study Area on the following page.

#### 1.3 Purpose and Need Statements

This study is to update the current plan entitled *Unified Nogales/Santa Cruz County Transportation 2000 Plan*. The local governments need a fresh look and new approach to developing their transportation plan.

**Purpose:** The purpose of this study is to create a useful, workable transportation system planning document that contains a realistic and achievable program for implementing transportation system improvements throughout the city and the county.

**Need:** There is a critical need for effective transportation planning to provide improved and safer traffic circulation throughout the City of Nogales and Santa Cruz County given limited resources that takes into account, not only the special cases of traffic movements through and around the US-Mexico border, but also the local development schemes and plans throughout the county, and the discontinuity situation created by the presence of the Nogales Wash/Santa Cruz River and the UP Railroad tracks.



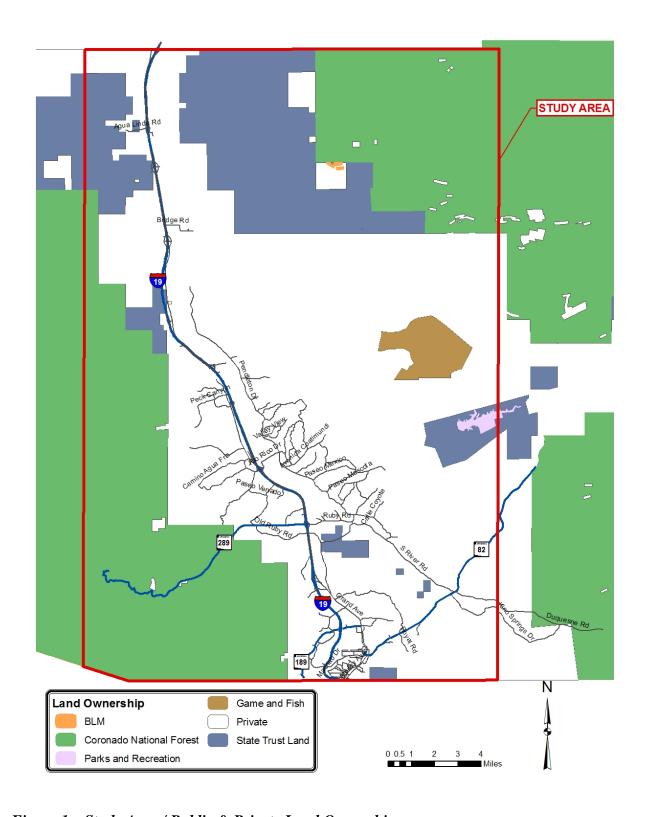


Figure 1 – Study Area / Public & Private Land Ownership



The transportation plan addresses current and future demands placed on the area's streets, highways, and multi-modal facilities. In addition to focusing on the existing conditions of traffic and roadways in Nogales and Santa Cruz County, this study also takes into account the current and needed multimodal facilities. This includes bus transit, bicycle, and pedestrian modes of transportation, in addition to vehicular modes of transportation. The study is driven by the anticipated growth in both population and traffic volumes throughout the study area. The need already exists for better traffic circulation and for special attention to freight movements in the area due to warehousing for international trade and to the influences of the railroad. The plan includes an implementation program that contains effective projects that address the identified needs and that can be accomplished in manageable phases.

#### 1.4 Previous Plans and Studies

The jurisdictions involved in the *Unified Nogales Santa Cruz Transportation Plan 2010* have prepared numerous previous transportation and related plans and studies. The Wilbur Smith study team employed several tactics in order to gather all of the available information. First, the local liaisons for the project were asked to submit all study reports and background information that they were aware of for the City of Nogales, Santa Cruz County, and ADOT. TAC members were also asked for their input on identifying any reports or studies done in the area. In a final effort to be sure that all studies were accounted for, stakeholders were asked during their interviews if they had any reports or studies. By including all local contacts in this process, the study team was able to compile a comprehensive library of project and study reports that have been done in the study area. This effort creates continuity between this report and previous studies and builds on the information already collected and planning efforts already completed to fully serve the residents of Nogales and Santa Cruz County. A full list of these studies and reports can be found in *Appendix A*.

#### 1.5 Community Involvement

The *Unified Nogales Santa Cruz Transportation Plan 2010* public involvement program will be conducted as a cooperative planning process involving project stakeholders that include public agency staff, elected officials, and interested members of the general public. Public participation is an integral part of any transportation planning study and study related information was presented to, and feedback solicited from, stakeholders throughout the study. ADOT's Communication and Community Partnerships Division (CCP) led the public involvement effort with the aid of their consultant firm URS. The following sections summarize key components of the public involvement program.

#### 1.5.1 Technical Advisory Committee

The Technical Advisory Committee (TAC) was formed at the onset of the study with key members participating in developing the project work program. TAC meetings are to be held upon the submittal of each working paper to review study results and provide guidance and input into the planning process. The TAC members can then keep their respective agency or groups



fully informed on the planning process and progress, and can bring appropriate issues that require attention and/or technical analysis to the attention of the project team.

Agency and Stakeholder Members of the TAC included:

- Charlene FitzGerald, initial Project Manager, ADOT Multimodal Planning Division (MPD)
- Mark Hoffman, final Project Manager, ADOT MPD
- Scott J. Altherr, Public Works Director/Local Liaison, Santa Cruz County
- Juan Guerra, City Engineer/Local Liaison, City of Nogales
- Reza Karimvand, Traffic Engineer, ADOT Tucson District Office
- Sharon R. Mitchell, Transportation Planner, South Eastern Arizona Governments Organization (SEAGO)
- Mary Dahl, Community Development Director, Santa Cruz County Planning and Zoning
- JB Manson, Chairman, Greater Nogales and Santa Cruz County Port Authority, Inc.
- Daniel Nelson, Project Evaluation Specialist, Arizona Game and Fish Dept.
- Allison Moore, Chairwoman, Fresh Produce Association of the Americas
- Rudy H. Perez, Jr., Arizona-Mexico Liaison, ADOT MPD
- Linda Ritter, Communications and Community Partnership Division, ADOT Tucson District Office
- Terry Shannon, Owner, Shannon Brokerage

Consultant Team Members of the TAC include:

- Katherine (Sunny) Bush, Public Involvement Coordinator, URS
- Dale Miller, Project Manager, Wilbur Smith Associates
- Tom Cooney, Transportation Planner and Travel Demand Modeler, Wilbur Smith Associates team member
- Kate Hedden, Transportation Planner and Engineer, Wilbur Smith Associates
- Randall Overmyer, Transportation Planner, Wilbur Smith Associates

#### 1.5.2 Public Open Houses

Public open houses were also scheduled after submittal of study working papers throughout the course of the study. These meetings were advertised in local newspapers in the area as well as through notification of the TAC members and local agency representatives. These meetings served as a way to communicate with the general public throughout the planning process to make sure that all of their concerns are being heard, addressed as appropriate, and to apprise them of the progress and findings of the study. These meetings were vital to the overall planning process as they helped account for any issues, concerns, or background information that might have otherwise been missed by the project team and the technical advisory committee.

#### 1.5.3 Stakeholder Meetings

Stakeholder meetings were predominately conducted from March 24 through March 26, 2009. These meetings were used to solicit and receive input from individuals, groups or entities that were not members of the TAC, but who were major stakeholders for the study. The study team conducted these interviews with the participants to learn about issues of concern to them, solicit



their input, and to answer any questions that they may have regarding the study. Each stakeholder was given a list of questions to think about before their meeting so that they had time to gather their thoughts on transportation issues and information that they wanted to discuss. The invitation sent to the stakeholders, and the summarized meeting notes from interviews can be found in *Appendix B*.

#### 2. Inventory of Current Conditions

#### 2.1 Land Use, Population, and Socioeconomics

#### **2.1.1** Land Use

An understanding of the current land use, zoning plans, and community priorities in the study area is important for understanding travel characteristics now and in the future. The 2005 Santa Cruz County Comprehensive Plan serves as the blueprint for development in the county through the year 2015. Historically, development in Santa Cruz County has been located along and near the Santa Cruz River and the I-19 corridor (after its construction). According to the Comprehensive Plan, over 90% of the population growth in Santa Cruz County has occurred along the I-19 corridor since 1990. Currently there is a substantial amount of privately owned and undeveloped land along both I-19 and SR 82. The areas of private and public lands are shown on *Figure 1 – Study Area / Public & Private Land Ownership* on page 3.

While existing zoning is adequate to provide for the projected population, there would be a significant affect on the natural resources and current infrastructure. Keeping the rural character of the majority of the county is a high priority of its citizenry. To protect these lands, land use densities and patterns included in Santa Cruz County's Comprehensive Plan are intended to reinforce those values. In addition, it is an objective of the county to discourage "wildcat" subdivisions; that is, those developments that circumvent the county's subdivision development process and procedures. A wildcat subdivision is a form of lot splitting in which there is an influx of new residential parcels that are exempt from subdivision regulation. The county plans on developing and adopting a zoning district classification consistent with the Ranch 40 land use designation that they already have to help discourage wildcat subdivisions. *Figure 2 – Santa Cruz County Land Use Map* on the following page shows the current land use designations for Santa Cruz County.



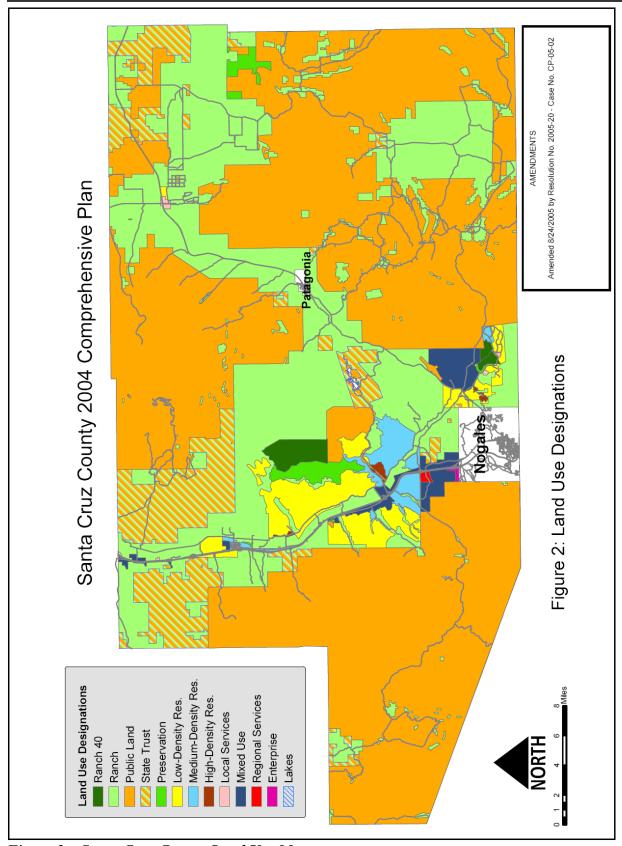


Figure 2 - Santa Cruz County Land Use Map (Source: Santa Cruz County Comprehensive Plan)



There are adequate opportunities for new development within Santa Cruz County, while conserving the open space characteristics that are essential to the identity of the area. This plan allows for urban style development in the Rio Rico area and in moderation around Tubac and Kino Springs.

The City of Nogales has grown significantly since its first charter adopted in April 1926. The city's boundaries include approximately16 square miles. With a significant amount of the land within the city still undeveloped, there is ample land area for future growth. Much of the undeveloped land is located in the central area and along the edges to the northeast and west of the city. Existing land uses comprise a mix of historic residential, older main street businesses, newer big box retail development, industrial/warehousing along the major transportation routes, newer residential developments toward the edges of the city and natural open spaces of hills and valleys where development would be more challenging.

The city currently does not have an approved comprehensive plan. There exists a draft plan entitled "City of Nogales General Plan Update 2020", but this plan was rejected by the voters during the general election of 2003. It has not been adopted and cannot be considered official. A new general plan update is in the works at this time, but it will not be completed or available for the purposes of this study. Therefore, the land use information contained in the unofficial, un-adopted general plan represents the best available information on future development trends for the community.

The Land Use element of the unadopted General Plan was developed to respect the current developments, preserve natural open spaces, and set forth the vision for future growth. The following objectives were identified for land use activities:

- Develop activity centers defining employment, regional commercial, institutional, and civic uses.
- Promote downtown Main Street as a major cultural, retail, and service area.
- Protect existing historic neighborhoods.
- Define neighborhood areas through opportunities for neighborhood commercial, circulation patterns, and designs.

The currently available, unofficial land use map for the City of Nogales can be found on the following page.

#### 2.1.2 Population

In 2000, the US Census Bureau recorded a total population of 38,381 persons for Santa Cruz County. Its largest city is the City of Nogales which is located on the southern edge of the county along the international border. Nogales had a population of 20,878 persons at the time of the 2000 US Census.



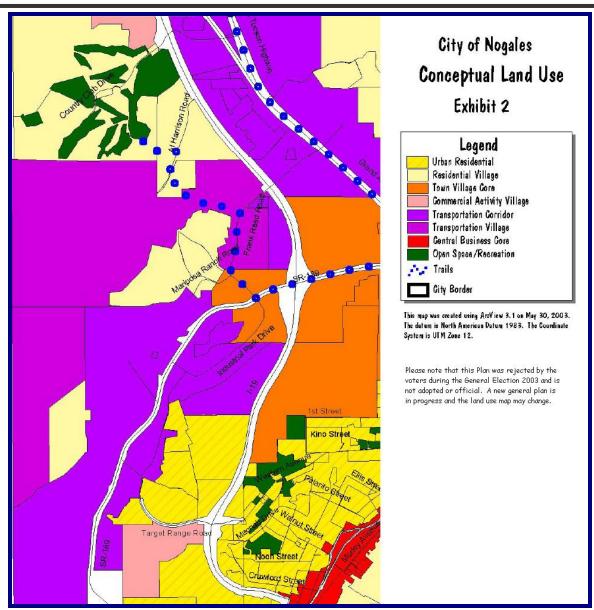


Figure 3 – Nogales Land Use Map

(Source: Unadopted City of Nogales General Plan Update 2020)

In 2007, the Santa Cruz County population had grown 22.2 percent to an estimated total population of 46, 907 people. The 2007 population estimate for Nogales was 21,746 and represents a population growth rate of 4.2% since the 2000 US Census.

The population of Santa Cruz County is projected to increase by 20 percent to 56,144 residents by the year 2015. The population of Nogales is expected to increase 10 percent over the same timeframe to 23,858 persons.

Notably, the Ambos Nogales area of Nogales Arizona and Nogales, Sonora comprise one of the largest international border in Arizona with a combined population of 177,732 inhabitants as of the 2000 US and Mexican censuses.



#### 2.1.3 Social Characteristics

Santa Cruz County has a notably higher Hispanic population than other areas of the state of Arizona due to its proximity to the US-Mexico border. According to the US Census Bureau, people of Hispanic or Latino origin constituted 80.5 percent of Santa Cruz County's population in the year 2005, compared to 28.5 percent for the state of Arizona, and 14.4 percent for the nation. In addition to the heightened number of Hispanic or Latino residents, Santa Cruz County also has a large foreign born population of 37.7 percent. This is significantly higher than both the state number at 12.8 percent, and the national number at 24.4 percent.

Santa Cruz County also has a notably younger population than the national average percentages. The following table shows this data.

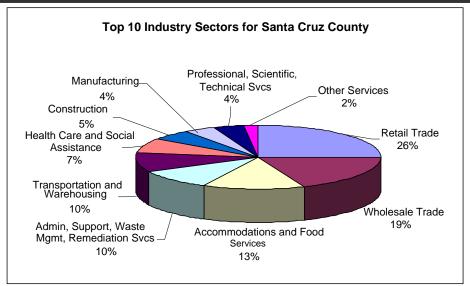
Age Statistics for 2006	Santa Cruz County	National Average
Less than 5 years old	9.4%	6.8%
Less than 18 years old	31.7%	24.6%
18 to 64 years old	56.4%	63.0%
65 years and older	11.9%	12.4%

Of the population that is 25 years or older, the 2000 Census collected data on educational achievement in Santa Cruz County. Based on this data, only 60.7 percent of the population was a high school graduate or higher, versus 81 percent in Arizona, and 80.4 percent nationwide. Bachelor's degrees or higher were 15.2% of the population for the county and were also significantly lower than the state and national average numbers of 23.5 percent for the state and 24.4 percent for the nation.

#### 2.1.4 Economic Characteristics

In 2000, the civilian labor force (population 16 years and older) in Santa Cruz County totaled 14,738, which is about 38.4 percent of the population. The average unemployment rate in Santa Cruz County in 2000 was 8.3 percent, more than double the state and national averages, both of which were 4.0 percent. According the Nogales–Santa Cruz County Chamber of Commerce, there are 10 major industry sectors that account for the jobs for the majority of the workforce in the county. These are based on numbers reported by private firms in Santa Cruz County. A graphic representation of the employment category distribution can be found in the following diagram.





Source: Information from Nogales Economic Development Department

According to the 2000 US Census data, workers in Santa Cruz County drove an average of 19.7 minutes to work. This is slightly lower than both the state and national commute times of 24.9 and 25.5 minutes, respectively. Because the roadway network carries the majority of the trips made in most communities in the Unites States, including Santa Cruz County, it is the backbone to the community. This network is made of:

- Interstate 19
- State routes including SR 19B (Grand Avenue), SR 82, SR 189, & SR 289
- Arterials, collectors, and local roads

These routes move people and commodities throughout and beyond the City of Nogales and Santa Cruz County. This street network comprises the primary surface transportation system and is discussed in more detail in the following sections.

#### 2.2 Roadway System Inventory and Traffic Analysis

This section describes and defines the existing critical street network for Nogales and Santa Cruz County. These are the significant routes that carry the majority of traffic circulating through and within the study, but do not include local streets and roads within neighborhoods. This section also discusses the existing traffic and traffic control on these routes.

#### 2.2.1 Roadway Network and Functional Classifications

Per the FHWA, functional classification is the process by which streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. Basic to this process is the recognition that individual roads and streets do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads. It becomes necessary then to determine how this travel can be channelized within the network in a logical and efficient manner. Functional classification defines the nature of this channelization process by defining the part that any particular road or street should play in



serving the flow of trips through a highway network. Functional classifications of roadways are used in transportation planning, roadway design, and to allocate federal roadway improvement funds.

Hierarchy of Functional Classification System						
Rural Areas	Urbanized Areas					
Principal Arterials	Principal Arterials					
Minor Arterial Roads	Minor Arterial Streets					
Collector Roads	Collector Streets					
Local Roads	Local Streets					

Urban and rural areas have fundamentally different characteristics as to density and types of land use, density of street and highway networks, nature of travel patterns, and the way in which all these elements are related in the definitions of highway function. Consequently, functional classifications provide for separate classification of urban and rural functional systems. Experience has shown that extensions of rural arterial and collector routes provide an adequate arterial street network in places of less than 5,000 population. Hence, urban classifications are considered in the context of areas of 5,000 population, or more.

These FHWA classifications are listed in descending (high to low) order of speed limit, vehicular capacity, and access restrictions. The functional classifications for the City of Nogales and Santa Cruz County are shown in Figures 4 and 5 shown on the following pages.

The FHWA recently approved a change in functional classification for a roadway of key concern to this study's stakeholders: Palo Parado Road from the southbound ramp of the I-19 Interchange to Pendleton Drive (a distance of 0.93 miles). The functional classification was changed from "rural local" road to "rural major collector" road.

#### 2.2.2 Roadway Characteristics

The majority of streets and roads in the Nogales and Santa Cruz County study area are 2-lane undivided facilities. Of course, some of the major traffic routes like I-19 and SR 189 have four lanes; two in each direction. The street and roadway laneage maps for the study area are shown in Figures 6, 7 and 8 following the functional classification system maps.



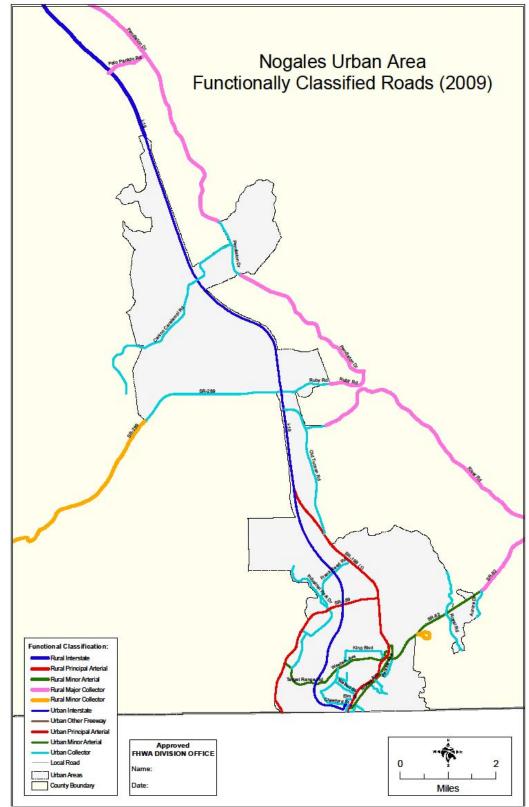


Figure 4 – Functional Classification of Streets for the Nogales Urban Area (Source: ADOT, Approved by FHWA in April 2009)



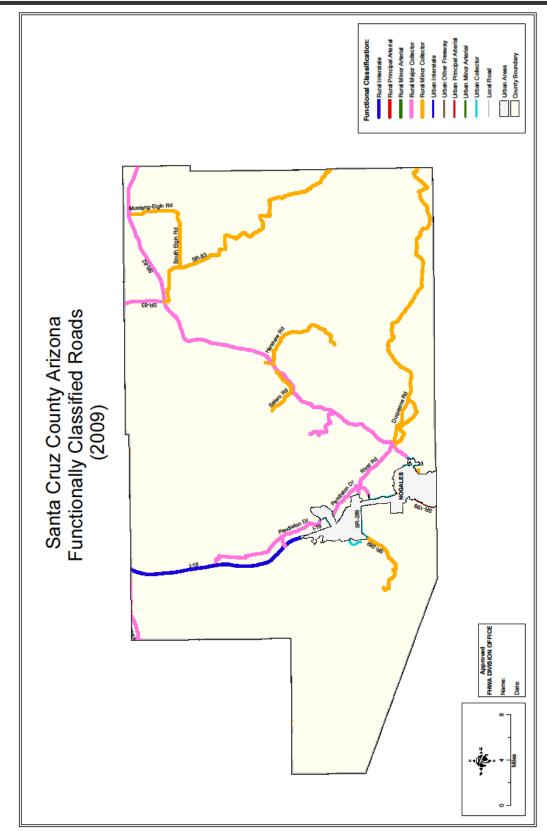


Figure 5 – Functional Classification of Roads for the Santa Cruz County Rural Area (Source: ADOT, Approved by FHWA in April 2009)



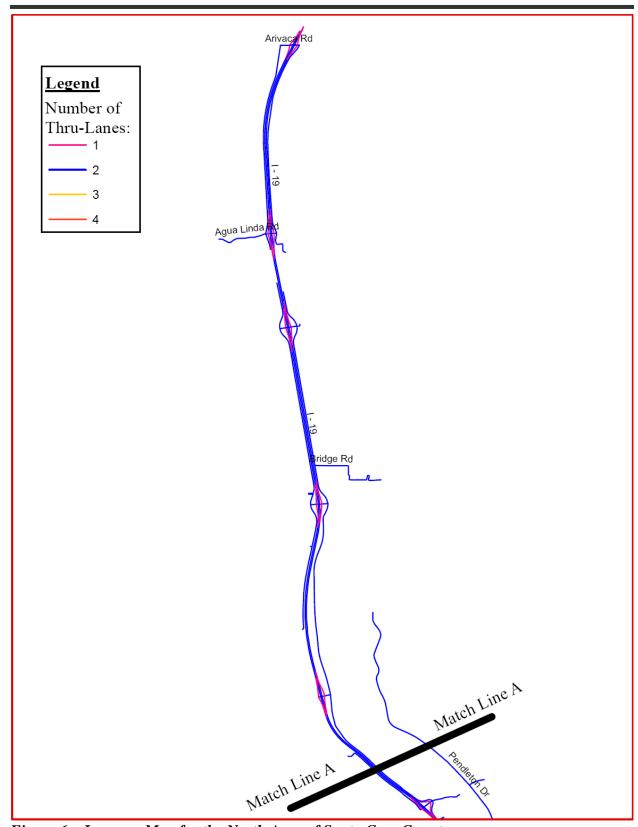


Figure 6 – Laneage Map for the North Area of Santa Cruz County



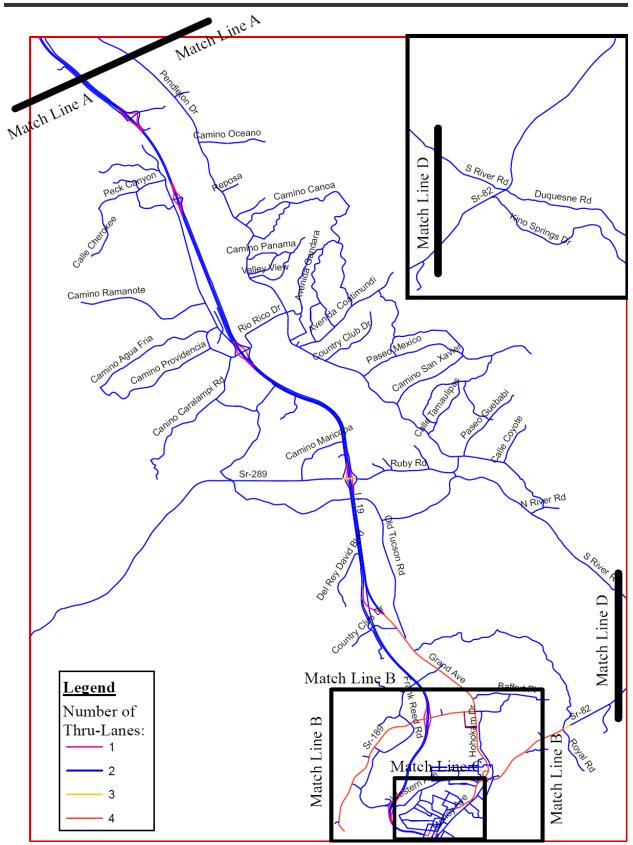


Figure 7 – Laneage Map for the South Area of Santa Cruz County



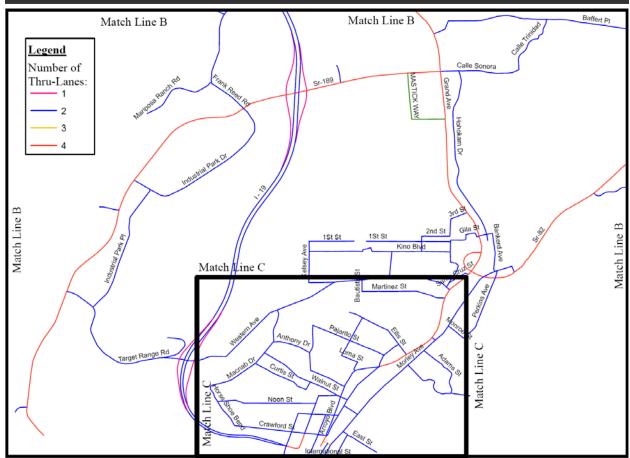


Figure 8 – Laneage Map for the Nogales Area

#### 2.2.3 Safety and Crash History

#### Overview

Crash data was obtained from the ADOT Traffic Records Section for the period 2003 through 2007. The number of crashes for each year during the 5-year history is shown in the following table along with the number of injury and fatal crashes.

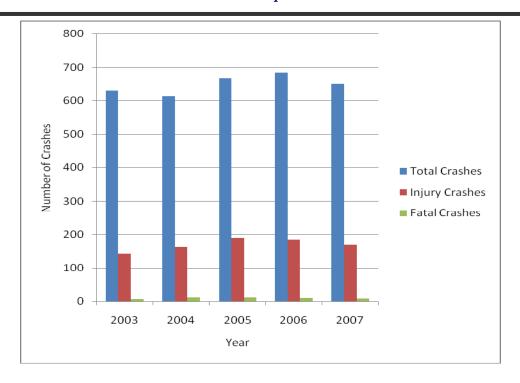
#### Santa Cruz County Crash Data Summary 2003-2007

Source: ADOT Traffic Road Section & US Census Bureau

	2003	2004	2005	2006	2007	Total	Average	Cra	ashes per	100,000	Populat	tion
	2003	2004	2003	2000	2007	Total	/year	2003	2004	2005	2006	2007
<b>Total Crashes</b>	630	612	668	683	650	3243	649	1592	1522	1623	1623	1517
Injury Crashes	143	162	189	184	170	848	170	361	403	459	437	397
<b>Fatal Crashes</b>	4	10	10	7	8	39	7.8	10.11	24.87	24.30	16.63	18.67

Santa Cruz County has grown by approximately 1.4% per year between 2003 through 2007. However, the number of crashes showed no substantial deviation in spite of the increasing population. The following exhibit illustrates the magnitude of crashes in bar-chart format.





#### Crash Severity

There were 39 fatal crashes on study area roads during the analysis period (2003 - 2007). Each of these fatal crashes (with the exception of one reported unknown location in December of 2004) is listed in the table on the following page. A total of 23 of the 39 fatalities, or 59 percent, occurred on I-19. Due to the lack of parallel alternative routes, I-19 serves as the principle north-south route in the county. Many local trips use I-19 as a result.

Graphical illustrations of the locations of the fatal crashes, along with incapacitating crashes on primary roadways, are shown in Figures 9 through 12, and are included on the pages following the crash fatality location table.



	Crash Fatalities on Santa Cruz Streets and Roads 2003 - 2007						
#	On Road	Cross Road	Date				
1	PENDLETON DR	Avenida De Las Nacio	3/13/2003				
2	SR 82	North of Duquesne Road	4/22/2003				
3	SR 189	North of Target Range Road	6/23/2003				
4*	CALLE TUBUTANA	Calle Cherokee	1/21/2003				
5	I-19	North of Ruby Road (008)	3/28/2004				
6	I-19	North of Ruby Road (008)	8/8/2004				
7	MORLEY AVE	Court Street	9/17/2004				
8	I-19	North of Rio Rico	8/31/2004				
9	I-19	North of Ruby Road (008)	9/2/2004				
10	I-19	North of Agua Linda Road	8/9/2004				
11*	CAMINO RAMANOTE	Near I-19	5/28/2004				
12	I-19	Near Peck Canyon Drive	10/26/2004				
13	SR 189	North of Industrial Park Drive	12/29/2004				
14	I-19	South of SR 189	1/16/2005				
15	I-19	South of Del Ray David Blvd (005)	1/31/2005				
16	AVENIDA PASTOR	Faro Ct	4/16/2005				
17	OLD TUCSON RD	Near Bravo Lane	6/16/2005				
18	MORLEY AVE	Near Wayside Drive	7/11/2005				
19*	I-19	North of SR 189	8/1/2005				
20	I-19	North of Target Range Road	7/27/2005				
21	I-19	North of Tumacacori Interchange (019)	10/15/2005				
22	PASEO GUEBABI	Near Tala Corte	8/25/2005				
23	I-19	North of Tumacacori Interchange (020)	12/19/2005				
24	I-19	North of Tumacacori Interchange (018)	3/4/2006				
25	CALLE MATAMOROS	Near Paseo Mexico	5/14/2006				
26	I-19	North of Tumacacori Interchange (018)	1/19/2006				
27	I-19	South of Frank Reed Road	7/4/2006				
28	I-19	At Ramp North of Ruby Road (K012H)	9/8/2006				
29	I-19	North of Palo Parado Road	10/20/2006				
30	I-19	North of Ruby Road (009)	9/10/2006				
31	I-19 (At S-189 SB Exit Ramp)	SR 189	1/17/2007				
32	I-19	Puerto Canyon Rd	2/8/2007				
33	SR 82	Mile Marker 44	6/5/2007				
34	I-19	North of Ruby Road (009)	9/26/2007				
35	I-19	North of Tumacacori Interchange (019)	11/23/07				
36*	FS 39 CORONADO	Near SR 289	11/22/2007				
37	CANELO PASS RD	Near SR 83	9/29/2007				
38	I-19	North of Country Club (006)	12/22/2007				
39*	Unknown location	Unknown location	n/a				

<sup>\*</sup> Crashes located off the primary road network



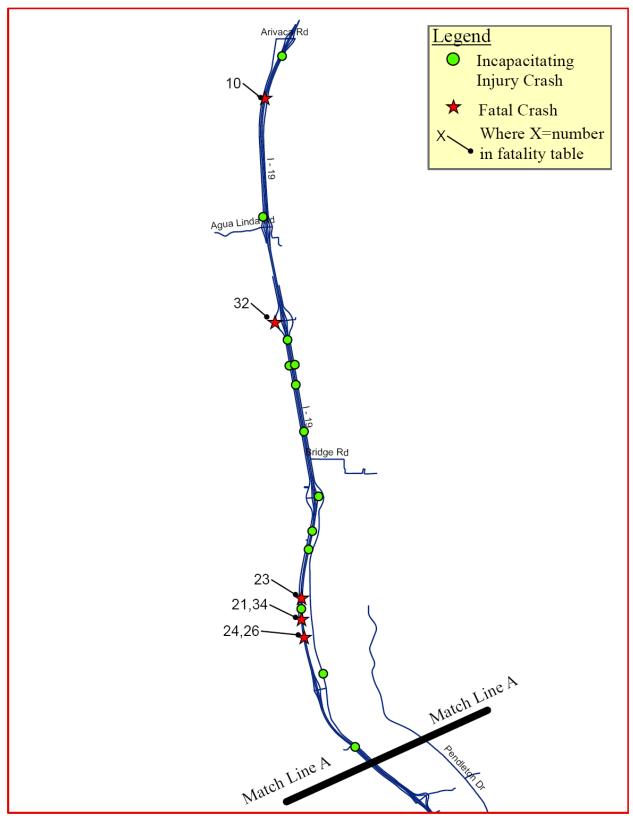


Figure 9 – Fatal and Incapacitating Crash Locations – Northern Santa Cruz County



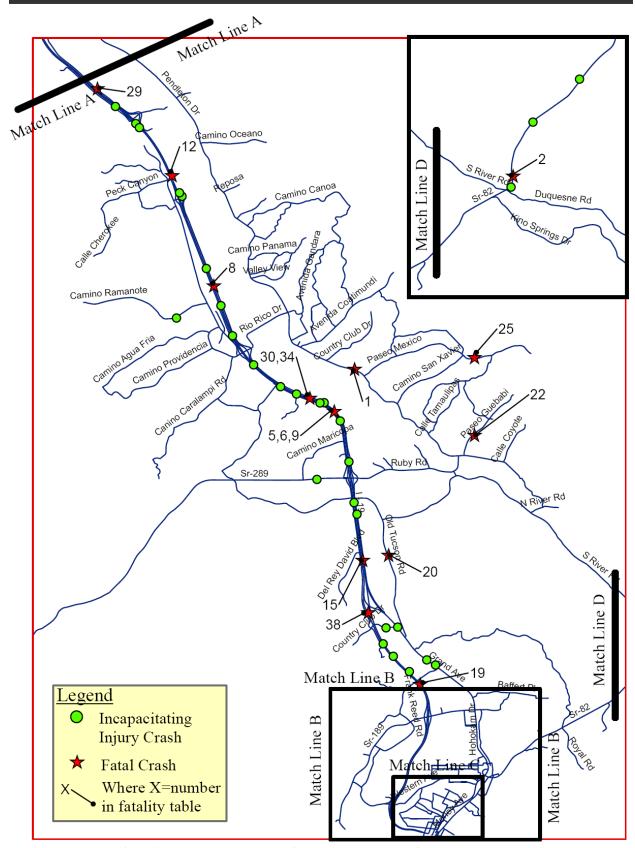


Figure 10 – Fatal and Incapacitating Crash Locations – Southern Santa Cruz County



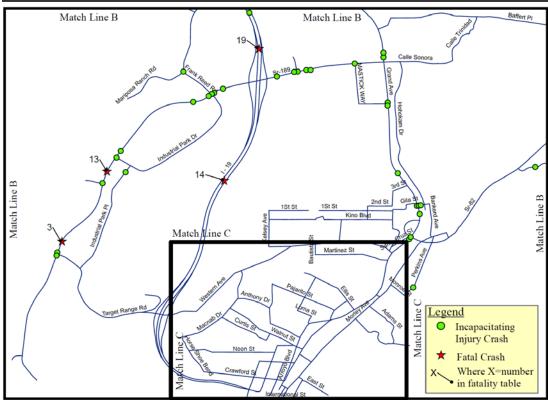


Figure 11 – Fatal and Incapacitating Crash Locations – Nogales Urban Area

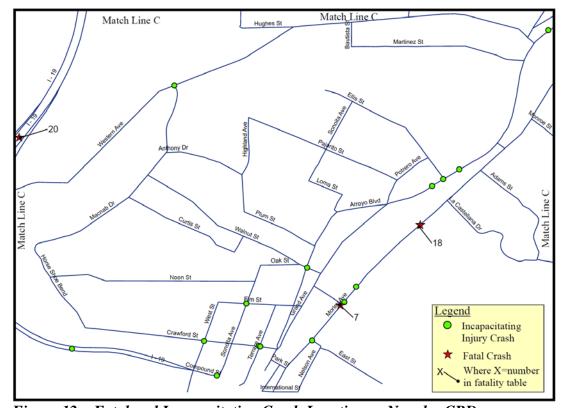


Figure 12 – Fatal and Incapacitating Crash Locations – Nogales CBD



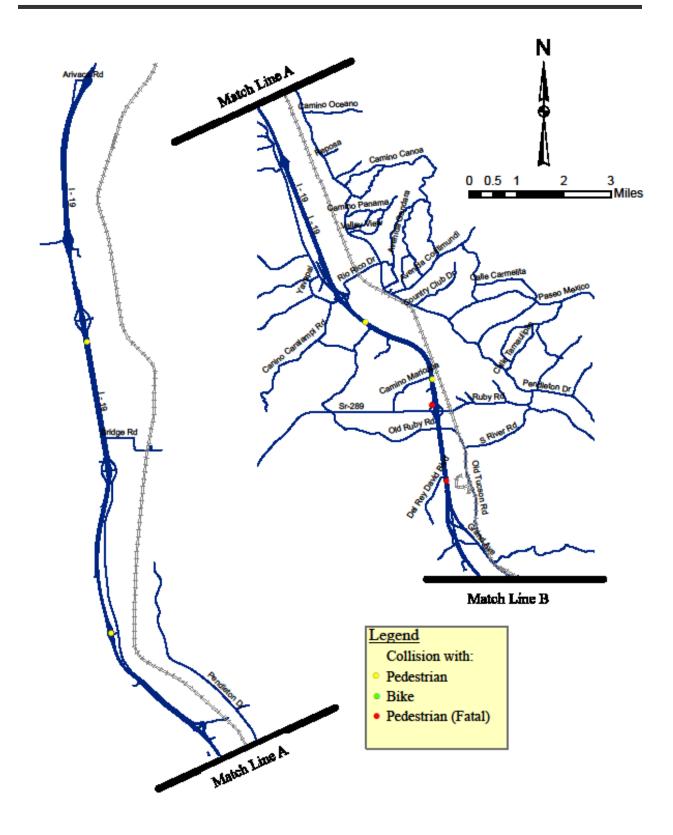


Figure 13 - Crashes Involving Pedestrians or Bicycles - Santa Cruz County



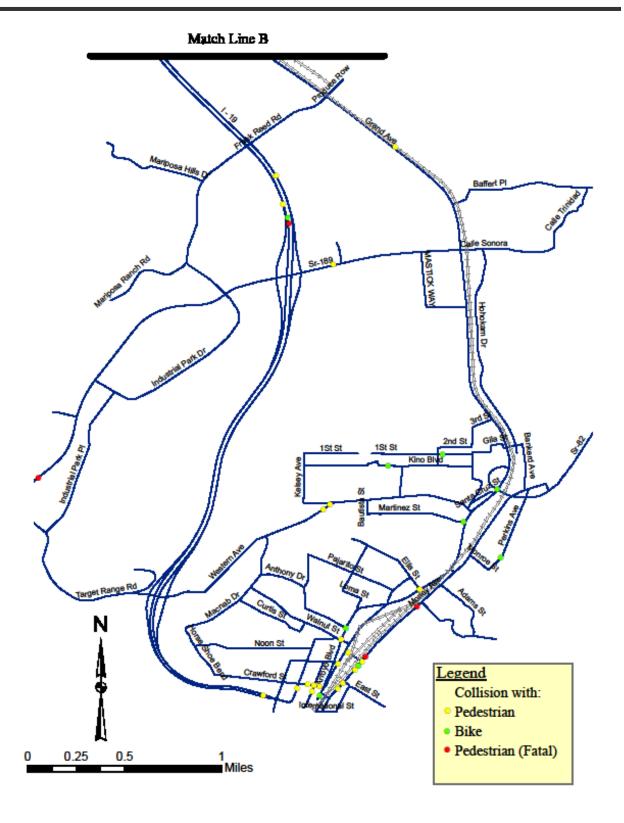


Figure 14 - Crashes Involving Pedestrians or Bicycles - Nogales Area



#### Intersection Crashes

The following table lists intersections that exceeded five crashes during the five year period from 2003 to 2007.

Intersections with 5 or More Crashes, 2003-2007							
Intersection Location	Number of Crashes	Predominate Crash Type(s)	Predominate Light Condition				
La Quinta Dr / SR 189	6	3 Sideswipe, 2 Rear-end	Daylight				
Industrial Park / SR 189 (N&S)	41	12 Left-turn, 9 Angle, 15 Rear-end	Daylight				
SR 189 / I-19	72	Approx 33% Rear-end, next highest is Single Vehicle	Daylight				
SR 189 / Mastick Way	30	7 Angle, 8 Left-turn, 12 Rear-end	Daylight				
Grand Ave / White Park	19	13 Rear-end	Daylight				
Grand Ave / Baffert Dr	35	20 Rear-end	Daylight				
Grand Ave / SR 189	40	24 Rear-end	Daylight				
Calle Sonora / Hohokam Dr	8	5 Angle	4 Night, 4 Day				
Grand Ave / Doe St	31	17-Rear-end	Daylight				
Grand Ave / Western Ave	11	Rear-end 6, Angle 3	Daylight				
Grand Ave / SR 82	36	Rear-end 11, Angle 10	Daylight				
Grand Ave / Ellis St	9	4 Angle	Daylight				
Grand Ave / Elm St	10	Left-turn 4, Angle 3	Daylight				
Grand Ave / Cardwell St	6	Angle 3, Rear-end 3	Daylight				
Grand Ave / Walnut St	16	8 Sideswipe, 4 Angle	Daylight				
Arroyo Blvd / Walnut St	10	Angle, Sideswipe, and Left-turn all = 2	Daylight				
Arroyo Blvd / Elm St	9	3 Angle, 2 Rear-end	Daylight				
Terrace Ave / Crawford St	11	6 Angle, 3 Left-turn	Daylight				
I-19 / Rio Rico Drive	16	14 Rear-end	Daylight				
I-19 / SR 289 (Ruby Rd)	45	20 Rear-end	Daylight				
Grand Ave / Country Club	22	8 Left-turn, 6 Rear-end	Daylight				
Grand Ave / Mesa Verde	11	4 Rear-end, 3 Angle	7 Day, 4 Night				
Grand Ave / Frank Reed Rd	14	8 Rear-end	Daylight				

The locations of intersections with a significant numbers of crashes, and the number of crashes at those intersections, for the 5-year period, are shown in Figures 15, 16, and 17 on the following pages.

Page 25



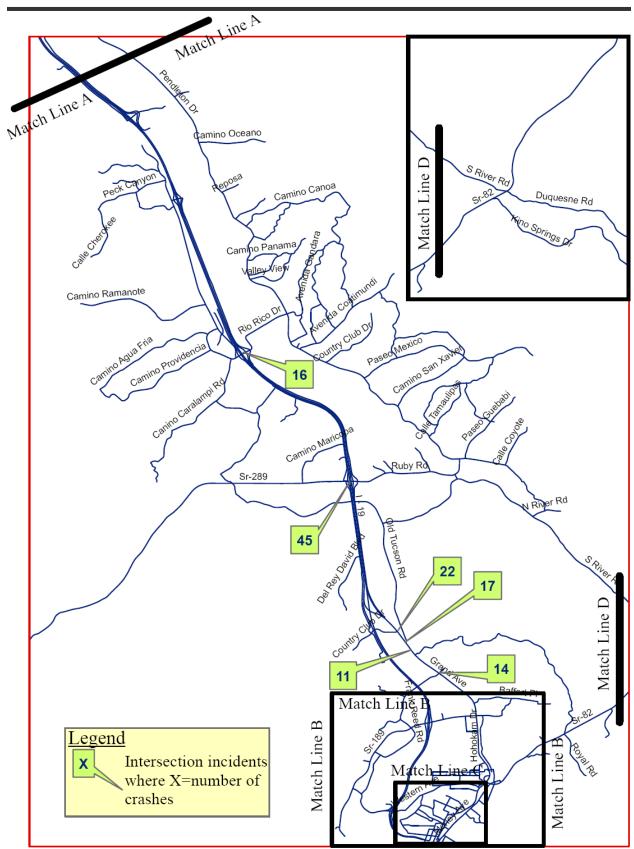


Figure 15 – Intersections with a Significant Number of Crashes – Northern County Area



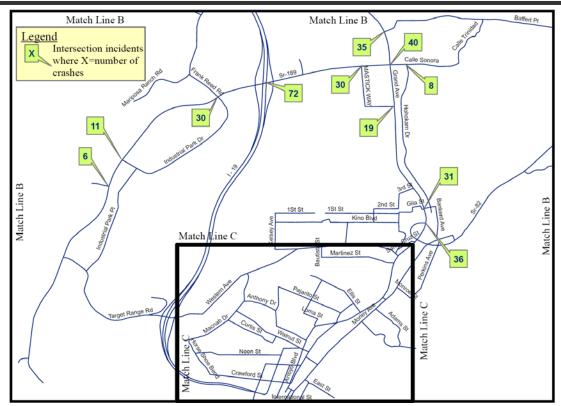


Figure 16 – Intersections with a Significant Number of Crashes – Nogales Area

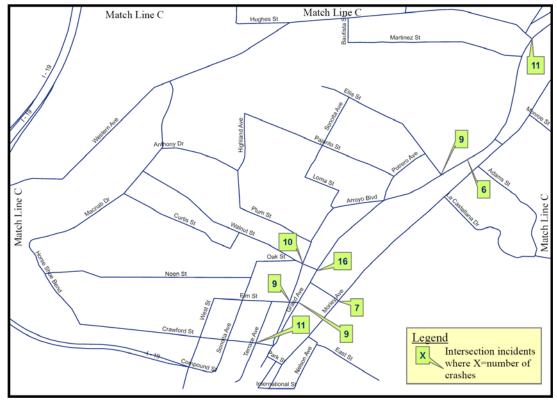


Figure 17 – Intersections with a Significant Number of Crashes – Nogales CBD



#### Road Segment Crashes

The following table lists road segments that have more than five crashes over a five-year period. Crashes on I-19 are not included in this analysis. Crash rates and/or segment lengths should be taken into account when evaluating road segment crashes, and, when taking this into account, some locations may warrant additional traffic safety analyses.

Road Segments with 5 or More Crashes 2003-2007							
Road Segment	Number of Crashes	Predominant Crash Types	Predominant Light Conditions				
SR 189, Target Range Rd to Industrial Park Dr	35	Rear end	Daylight				
SR 189, Frank Reed Rd to Industrial Park Drive	9	Sideswipe	Daylight				
Industrial Park Drive	12	2 Sideswipe, 2 Rear End, 2 Backing, 2 Single Vehicle	Daylight				
Frank Reed Road	15	11 Rear-End	Daylight				
SR 189, Frank Reed Rd to Grand Avenue	47	Sideswipe and Rear-end	Daylight				
Congress Drive	20	6 Sideswipe, 5 Single Vehicle, and 4 Angle	Daylight				
Mastick Way	10	4 Rear-end	Daylight				
Grand Avenue, Calle Sonora to Baffert Dr	18	13 Rear-end	Daylight				
Baffert Drive	23	11 Rear-end	Daylight				
Grand Avenue, 3 <sup>rd</sup> Street to SR 189	19	12 Rear-end	Daylight				
Grand Ave, 3 <sup>rd</sup> Street to Ellis	50	Rear-end & Sideswipe	Daylight				
SR 82	12	7 Single Vehicle	Daylight				
Western Avenue	12	6 Single Vehicle	Daylight				
Arroyo Boulevard	19	7 Rear-end, 4 Sideswipe	Daylight				
Grand Avenue, Ellis to Crawford	33	Rear End	Daylight				
Morley Avenue	19	Sideswipe & Single Vehicle	Daylight				
Terrace Avenue	12	4 Sideswipe, 4 Backing	Daylight				
Sonita Avenue	10	4 Rear-end, 3 Sideswipe	Daylight				
West Street	7	4 Single Vehicle	Daylight				
Crawford Street	8	4 Sideswipe	Daylight				
Rio Rico Drive	6	Single Vehicle	Darkness				
SR 289 (Ruby Rd)	9	Single Vehicle	Darkness				
Old Tucson Road	7	4 Single Vehicle, 3 Sideswipe	Daylight				
Grand Avenue, I-19 to Gold Hill Road	9	Rear-end	Daylight				
Grand Avenue, Gold Hill Rd to Frank Reed Rd	13	Rear-end	Daylight				
Grand Avenue: Frank Reed Road to Baffert	16	Rear-end	Daylight				
Country Club Drive	16	Rear-end	Daylight				

The number of crashes on road segments, and the segment locations, are shown graphically in the Figures 18, 19, and 20 on the following pages.



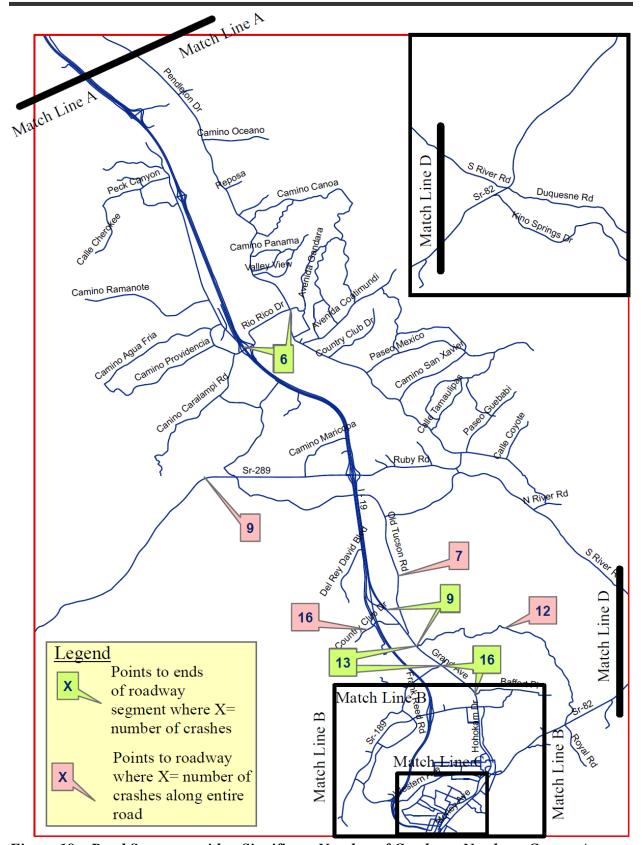


Figure 18 - Road Segments with a Significant Number of Crashes - Northern County Area



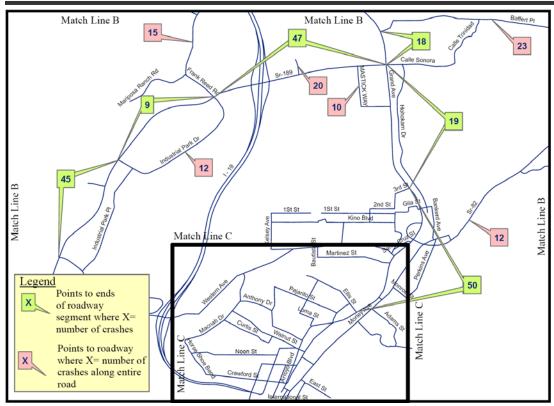


Figure 19 - Road Segments with a Significant Number of Crashes - Nogales Area

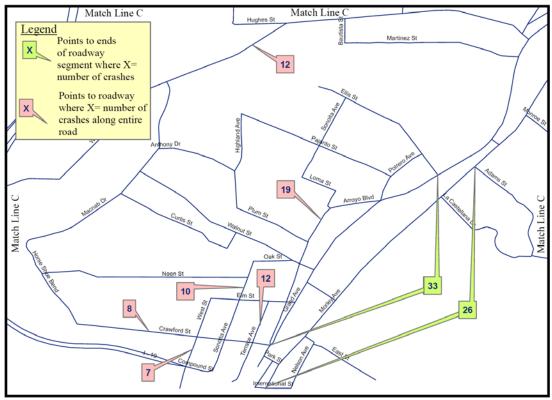


Figure 20 – Road Segments with a Significant Number of Crashes – Nogales CBD



### 2.2.4 Traffic Control

Intersections with traffic control signals are shown in Figures 21 and 22, below and on the following page. Road segment speed limits are also shown on the same figures along with the traffic control signal locations. Posted speed limits in the study area range from 25 mile per hour on some arterials and collectors up to 65 mph and 75 mph on I-19 within the county.

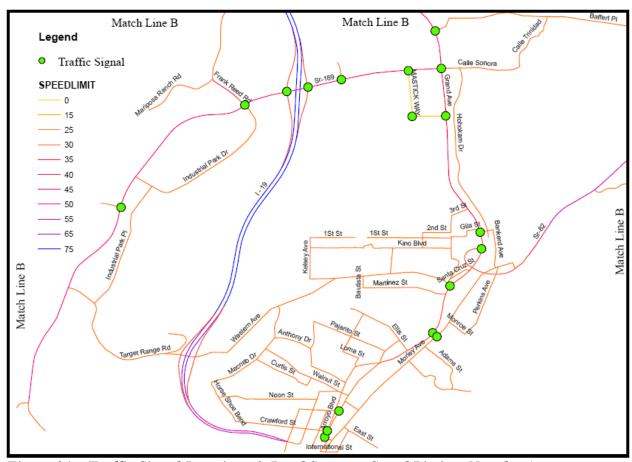


Figure 21 - Traffic Signal Locations & Road Segment Speed Limits - Nogales Area



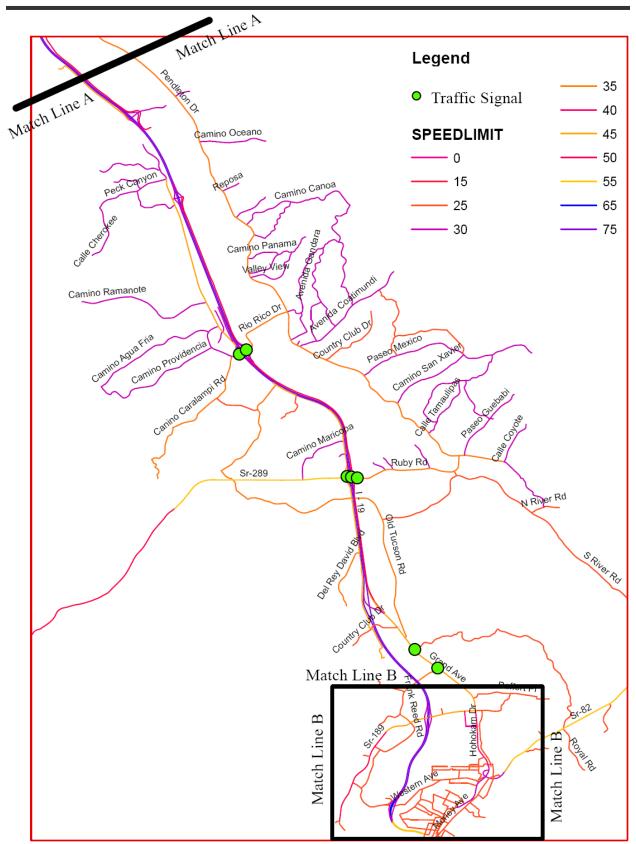


Figure 22 - Traffic Signal Locations & Road Segment Speed Limits - Northern County Area



#### 2.2.5 Current Traffic Volumes

#### Data Collection

Recent traffic data was available from a number of sources, including:

- The 2007 Highway Performance Monitoring System (HPMS), maintained by ADOT this database includes recent traffic counts for all state highways and many higher level local streets
- The Mariposa Port of Entry Bottleneck Study (2008) conducted by the University of Arizona (UA) for ADOT
- The I-19 Frontage Roads Study (2008) conducted by Kimley-Horn and Associates (KHA) for ADOT
- The Rio Rico Subregional Transportation Assessment (2008) prepared by Curtis Lueck & Associates (CLA) for Santa Cruz County
- The Santa Cruz County Crossings Analysis (2008) prepared by HDR for the Union Pacific Railroad (UPRR)

To supplement the data in these reports, additional traffic count data was collected specifically for this study by ADOT District 2, Santa Cruz County, and Wilbur Smith Associates.

The table on the following page presents 2007 mainline traffic counts for all state highways within the study area, including I-19, SR 19B (Grand Ave), SR 82 (Patagonia Hwy), SR 189 (Mariposa Rd) and SR 289 (Ruby Rd). I-19 between Exit 8 (Grand Ave) and Exit 12 (Ruby Rd) carried the most traffic in Santa Cruz County. However, many sections of Grand Avenue and Mariposa Road in Nogales also carried 20,000 to 30,000 vehicles per day.

The second table on the following page shows total and heavy truck volumes on the ramps to and from I-19. In terms of total traffic, the Mariposa Road interchange is almost 50% busier than the next busiest interchanges at Ruby Road and at Rio Rico Road. The Mariposa Road interchange also carries the most heavy truck traffic. However, it should be noted that these counts were taken in July, which is outside of the peak produce season and thus is a low month for heavy truck traffic.

The I-19 frontage roads currently, and will continue to, play an important role in the Santa Cruz County transportation system. The table at the top of page 35 presents all available traffic counts for the east and west frontage roads. The West Frontage Roads between Ruby Road and Peck Canyon are the busiest. For the East Frontage Roads, the section between Ruby Road and Rio Rico Road is the busiest, but it carries less than half what the busiest west side sections carry.



2007 State Highwa	y Mainline Traffic Counts (Sourc	e: ADOT MPD)	
Route	BMP From	EMP To	2007 AADT
l 19	0 SB 19 (1) - Nogales	1.18 Exit 1 Western Ave	14,700
I 19	1.18 Exit 1 Western Ave	2.95 Exit 4 SR 189 / Mariposa Rd	15,500
I 19	2.95 Exit 4 SR 189 / Mariposa Rd	5.31 Exit 8 SB 19 (1)	24,500
l 19	5.31 Exit 8 SB 19 (1)	7.72 Exit 12 SR 289 / Pena Blanca Rd	38,600
l 19	7.72 Exit 12 SR 289 / Pena Blanca Rd	10.88 Exit 17 Rio Rico Rd	29,700
I 19	10.88 Exit 17 Rio Rico Rd	13.96 Exit 22 Peck Canyon Rd	29,100
I 19	13.96 Exit 22 Peck Canyon Rd	15.63 Exit 25 Palo Parado Rd	28,400
l 19	15.63 Exit 25 Palo Parado Rd	18.13 Exit 29 Tumacacori Rd / Rock Corral Rd	27,100
l 19	18.13 Exit 29 Tumacacori Rd / Rock Corral Rd	21.62 Exit 34 Tubac Rd	24,400
l 19	21.62 Exit 34 Tubac Rd	24.82 Exit 40 Chavez Rd	21,800
l 19	24.82 Exit 40 Chavez Rd	26.54 Exit 42 Agua Linda Rd	20,400
l 19	26.54 Exit 42 Agua Linda Rd	29.98 Exit 48 Arivaca Rd	19,100
I 19	29.99 Exit 48 Arivaca Rd	34.88 Exit 56 Canoa Ranch Rd	21,400
SR 19B (GRAND AVE)	International Border and POE - Nogales	1.66 SR 82	22,200
SR 19B (GRAND AVE)	1.66 SR 82	2.78 SR 189 (Mariposa Rd)	27,000
SR 19B (GRAND AVE)	2.78 SR 189 (Mariposa Rd)	3.84 Frank Reed Rd	17,400
SR 19B (GRAND AVE)	3.84 Frank Reed Rd	4.58 Old Tucson Rd	20,100
SR 19B (GRAND AVE)	4.58 Old Tucson Rd	5.88 I-19 (Exit 8)	9,500
SR 82 (PATAGONIA HWY)	1.19 SB 19 - Nogales	1.72 Thelma St	8,500
SR 82 (PATAGONIA HWY)	1.72 Thelma St	3.06 Old Patagonia Rd	4,000
SR 82 (PATAGONIA HWY)	3.06 Old Patagonia Rd	5.83 South River Rd/Duquesne Rd.	3,200
SR 82 (PATAGONIA HWY)	5.83 South River Rd/Duquesne Rd.	12.15 Patagonia Lake Rd	2,300
SR 82 (PATAGONIA HWY)	12.15 Patagonia Lake Rd	19.47 3rd Ave	2,200
SR 82 (PATAGONIA HWY)	19.47 3rd Ave	32.38 SR 83 - Sonoita	2,300
SR 189 (MARIPOSA RD)	0 International Border and POE - Nogales	0.99 Target Range / Arbo National Pit Rd	13,100
SR 189 (MARIPOSA RD)	0.99 Target Range / Arbo National Pit Rd	1.77 Industrial Park Dr (South)	13,900
SR 189 (MARIPOSA RD)	1.77 Industrial Park Dr (South)	2.64 Industrial Park Dr (North)	16,000
SR 189 (MARIPOSA RD)	2.64 Industrial Park Dr (North)	2.95 I-19 (Exit 4) / Mariposa Rd	27,800
SR 189 (MARIPOSA RD)	2.95 I-19 (Exit 4) / Mariposa Rd	3.75 SB 19 - Nogales	31,100
SR 289 (RUBY RD)	0 I-19 (Exit 12)	10.83 Pena Blanca Dam	120

Ramp Total & Heavy Truck Counts (Source: ADOT MPD & District 2)									
	NB Off	-ramp	NB On-	-ramp	SB Off-	ramp	SB On-ramp		
Interchange	ADT	TRK	ADT	TRK	ADT	TRK	ADT	TRK	
Exit 1: Western Ave (July08)	621	2	1,258	4	1,207	10	496	2	
Exit 4: SR 189 / Mariposa Rd (July08)	1,664	6	3,206	187	3,286	196	1,343	5	
Exit 8 SB 19 (1) (July08)			2,142	105	1,846	112			
Exit 12: SR 289 / Ruby Rd (July08)	2,331	122	917	80	1,079	56	2,370	91	
Exit 17: Rio Rico Rd (July08)	2,585	13	768	17	713	14	2,871	13	
Exit 22: Peck Canyon Rd (Jan09)	993	142	848	3	724	30	1,375	13	
Exit 25: Palo Parado Rd (Jan09)	248	3	241	2	199	5	432	-	
Exit 29: Tumacacori Rd (Jan09)	293	1	70	-	111	2	209	1	
Exit 34: Tubac Rd (Jan09)	721	1	521	3	798	11	545	4	
Exit 40: Chavez Rd (Jan09)	64	-	992	5	1,002	12	68	1	
Exit 42: Agua Linda Rd (Jan09)	244	22	38	3	38	1	244	2	
Exit 48: Arivaca Rd (Jan09)	435	5	1,175	6	1,105	25	360	2	



I-19 F	rontage Road Traffi	ic Counts		
Route	From	To/At	E Frontage Rd	W Frontage Rd
(KHA Fro	ontage Road Study)			
l 19	Exit 8 Grand Ave	Exit 12 SR 289 / Ruby Rd	2,823	
I 19	Exit 12 SR 289 / Ruby Rd	Exit 17 Rio Rico Rd	3,198	5,845
l 19	Exit 17 Rio Rico Rd	Exit 22 Peck Canyon Rd		4,460
I 19	Exit 22 Peck Canyon Rd	Exit 25 Palo Parado Rd		4,389
l 19	Exit 25 Palo Parado Rd	Exit 29 Tumacacori Rd / Rock Corral Rd	960	
I 19	Exit 29 Tumacacori Rd	Exit 34 Tubac Rd	1,347	296
l 19	Exit 34 Tubac Rd	Exit 40 Chavez Rd	3,181	745
I 19	Exit 40 Chavez Rd	Exit 42 Agua Linda Rd	41	
l 19	Exit 42 Agua Linda Rd	Exit 48 Arivaca Rd	731	245
(Special	ADOT Counts, July 2008)			
I 19	Exit 8 Grand Ave (July, 2008)	S of Ruby Road	2,758	1,511
l 19	Exit 12 SR 289 / Ruby Rd	N of Ruby Road	3,243	3,067
(Santa C	ruz County Counts, Jan-Mar 20	09)		
I 19	Exit 17 Rio Rico Rd	S of Cam Ramanote		7,482
l 19	Exit 17 Rio Rico Rd	N of Cam Ramanote		6,017
I 19	Exit 22 Peck Canyon Rd	S of Peck Canyon		2,331
l 19	Exit 22 Peck Canyon Rd	N of Peck Canyon		1,221
(CLA Ric	Rico Subregional Study, 2008)			
I 19	Exit 12 SR 289 / Ruby Rd	N of Avenida Palomas		2,900
l 19	Exit 17 Rio Rico Rd	N of Rio Rico		5,850

In addition to the counts discussed and shown above, count data was available for more than 135 other locations. The table on the following page lists alphabetically the location, source, and traffic count for each of these locations. More than 50% of these locations are on relatively low volume roads (roads with less than 4,000 ADT).

The table on page 37 lists the locations carrying more than 4,000 ADT. Most of these high volume roads are in the southern part of Santa Cruz County; within or near the City of Nogales.

As shown in the two tables on top of page 38, the DeConcini and Mariposa Ports of Entry generate a significant amount of daily auto, truck and pedestrian traffic. The numbers shown in the tables reflect inbound traffic only. Outbound traffic is approximately equal to the inbound traffic. The heavy truck (18-wheeler) traffic to and from the Mariposa POE has a very significant impact on a number of roads within Santa Cruz County, particularly during the peak January through May produce season.





Other Count Locations		
Location	ADT	Source
Adams St, Via Corrales to La Castellana Dr	1,552	HPMS
Amado Montosa, Rail Crossing	450	HDR
Amado Montosa, Santa Cruz River	109	SCC
Anthony Dr, MacNab Dr to Highland Ave	1,589	HPMS
Arivaca Rd, I-19 Front nonCard to I-19 Front	1,813	HPMS
Arroyo SB, N of Crawford	8,943	WSA
Arroyo SB, N of Walnut/Oak	9,024	WSA HPMS
Aurora Dr, SR-82 -0.61 to SR-82 Avenida Coatimundi, E of Pendleton Dr	1,616 3,597	CLA
Avenida Coalimand, E of Fendelon Br	194	CLA
Baffert, E of Grand	9,227	UA
Bankerd Ave, Morley Ave to Doe St	7,712	HPMS
Banks Bridge, E of Grand	5,730	WSA
Bayze Ave, Bejarano St to Kino Blvd	1,618	HPMS
Bejarano St, Santa Cruz St +0.09 to Bayze Ave	1,812	HPMS
Blvd Del Rey David, W Frontage Rd approach	4,124	SCC
Bridge Rd, E Frontage Rd approach	1,143	SCC
Bridge Rd, Santa Cruz River	2,892	SCC
Calle Calabasas, Frontage Rd to Paseo Venado Calle Calabasas, W of Paseo Venado	1,789	CLA CLA
Calle Carmelitas, S to Paseo Mexico	614	CLA
Calle Remedios, S to Calle Carmelitas	138	CLA
Calle Sonora, E of Grand	6,993	UA
Calle Sonora, E of Hohokam	4,992	SCC
Calle Sonora, W of Hohokam	5,519	SCC
Calle Trinidad, Between Guadalupe and Caborca	2,668	SCC
Camino Caralampi, S to Paseo Venado	3,292	CLA
Camino Providencia, Yavapai Dr approach	905	SCC
Camino Ramanote, W Frontage Rd approach	2,085	SCC
Camino Vista Del Cielo, at Old Patagonia Rd	1,514	HPMS
Chavez Siding Rd, Santa Cruz River Compound St	106 14,673	SCC HPMS
Country Club, W of Grand	7,908	WSA
Court, E of Grand	4,668	WSA
Crawford, W of Grand	11,750	WSA
Doe Street, E of Grand	5,730	WSA
Duquesne Rd, SR-82 Approach	260	SCC
Duquesne Rd, SR-82 to SR-82 +0.34	409	HPMS
East St, Morley Ave to Santa Cruz CB	1,520	HPMS
Elm St, Sonoita Ave to Grand Ave	1,540	HPMS
Frank Reed, N of SR-189 Frank Reed, W of Grand	8,194	UA
Gold Hills, E of Grand	5,409 6,188	WSA WSA
Golf Course Entrance, E to Country Club Terrace Devel	164	CLA
Grand NB, N of Crawford	8,975	WSA
Grand NB, S of Court	11,438	WSA
Grand NB, S of Walnut/Oak	11,820	WSA
Grand SB, N of Western	23,531	WSA
Grand, N of Baffert	19,815	WSA
Grand, N of Country Club	16,168	WSA
Grand, N of Frank Reed	25,987	WSA
Grand, N of Gold Hills	23,540	UA
Grand, N of Morley Grand, N of POE	24,625 10,062	UA WSA
Grand, N of SR-189	22,594	WSA
Grand, S of Baffert	23,164	WSA
Grand, S of Country Club	22,807	WSA
Grand, S of Frank Reed	23,570	UA
Grand, S of Gold Hills	25,713	UA
Grand, S of Morley	23,711	WSA
Grand, S of SR-189	21,572	WSA
Grand, S of Western	23,129	WSA
Highland Ave, Anthony Dr to Pajarito St	1,560	HPMS
Hohokam Dr, Calle Sonora approach	3,095	SCC
Hughes St. Kelsey Ave to Western Ave	1,112	HPMS
Hughes St, Kelsey Ave to Western Ave	1,610	HPMS





### **High Count Locations**

High Count Locations	ADT	Comme
Location Grand, N of Frank Reed	ADT 25,987	Source WSA
Grand, S of Gold Hills	25,713	
SR-189, E of I-19	25,353	
Grand, N of Morley	24,625	
Grand, S of Morley	23,711	WSA
SR-189, W of I-19	23,585	UA
Grand, S of Frank Reed	23,570	UA
Grand, N of Gold Hills	23,540	
Grand, N of Western	23,531	
Grand, S of Baffert	23,164	
Grand, S of Western Grand, S of Country Club	23,129	
Grand, N of SR-189	22,594	
SR-189, E of Frank Reed	21,955	
Grand, S of SR-189	21,572	
Grand, N of Baffert	19,815	WSA
SR-189, W of Grand	19,800	UA
Grand, N of Country Club	16,168	WSA
SR-189, W of Frank Reed	15,829	
Compound St	14,673	
Sonoita Ave, Compound to Crawford	14,673	
SR-189, E of Industrial Park Dr W SR-189, W of Industrial Park Dr W	14,453	
SR-189, S of Target Range	13,750	
SR-189, N of Target Range	13,598	
Grand NB, S of Walnut/Oak	11,820	
Crawford, W of Grand	11,750	
Yavapai Dr, I-19 to Camino Caralampi	11,748	CLA
Grand NB, S of Court	11,438	WSA
Grand, N of POE	10,062	
Rio Rico Dr, E from Exit 17 to Pendleton Dr	9,950	
Rio Rico Dr, Rail Crossing	9,571	
Baffert, E of Grand	9,227	
SR-82, E of Morley Arroyo SB, N of Walnut/Oak	9,064 9,024	
Grand NB, N of Crawford	8,975	
Arroyo SB, N of Crawford	8,943	
Frank Reed, N of SR-189	8,194	
Country Club, W of Grand	7,908	WSA
Ruby Rd, Rail Crossing	7,793	
Bankerd Ave, Morley Ave to Doe St		HPMS
Santa Cruz St, Bejarano St to Grand Ave		HPMS
Ruby Rd, Potrero Creek	7,518	
Western, W of Mcnab Morley Ave, Park St to Park St +0.90	7,344	HPMS
Calle Sonora, E of Grand	6,993	
Western, E of Monab	6,957	
SR-82 W of Morley	6,671	
Perkins Ave, Monroe St +0.09 to SR-82	6,304	HPMS
Monroe St, Morley Ave to Perkins Ave	6,240	HPMS
Gold Hills, E of Grand	6,188	
Western, W of Grand	6,066	
Old Tucson Rd, Grand Ave to Nogales TB		HPMS
Banks Bridge, E of Grand Doe Street, E of Grand	5,730 5,730	
Calle Sonora, W of Hohokam	5,519	
Industrial Park Dr E, S of Frank Reed	5,512	
Frank Reed, W of Grand	5,409	
Pendleton Dr, S of Rio Rico Dr	5,317	
Calle Sonora, E of Hohokam	4,992	SCC
Old Tucson Rd, Nogales TB to I-19 Front	,	HPMS
Industrial Park Dr W, S of SR-189	4,706	
Court, E of Grand	4,668	
Walnut/Oak W of Arroyo	4,413	
Target Range, E of SR-189	4,253	
Ruby Rd, Santa Cruz River Walnut/Oak, W of Grand	4,214 4,179	
Blvd Del Rey David, W Frontage Rd approach	4,179	
Morley Ave, Park St +0.90 to Bankerd Ave		HPMS
Macnab, S of Western	4,115	
,	.,	



### FY 2008 Mariposa Port Of Entry Traffic

	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08	Sep 08	FY08 Total		Average Weekday		Peak Weekday
Trucks	20,560	25,306	25,349	32,310	32,760	32,380	31,279	34,048	25,451	18,202	15,526	15,746	308,917	25,743	981	34,048	1,310
Buses	770	799	788	771	712	788	765	718	709	759	704	663	8,946	746	25	799	27
POVs	98,083	91,717	90,210	86,548	73,264	75,129	75,532	75,721	75,346	77,141	76,505	72,863	968,059	80,672	2,652	98,083	3,269
Pedestrians	28,873	29,538	37,776	33,085	40,289	45,730	39,666	34,312	35,720	56,224	55,450	46,450	483,113	40,259	1,324	56,224	1,874
POV Passengers	264,825	247,635	243,567	233,679	197,813	202,848	203,936	204,447	203,434	208,281	206,564	196,731	2,613,760	217,813	7,161	264,825	8,828

### **FY2008 Deconcini Port Of Entry Traffic**

FY2008	Oct 07	Nov 07	Dec 07	Jan 08	Feb 08	Mar 08	Apr 08	May 08	Jun 08	Jul 08	Aug 08		FY08 Total		Average Weekday		Peak Weekday
	0	0	0	0	0	0	0	0	0	0	0	0	0				
Buses	293	267	289	247	214	244	231	229	231	232	224	216	2,917	243	8	293	10
POVs	170,674	168,551	197,221	178,888	155,867	170,327	172,498	206,567	179,710	180,108	181,128	176,743	2,138,282	178,190	5,858	206,567	6,886
Pedestrians	625,198	643,255	687,366	461,461	506,857	540,057	617,580	609,085	486,001	613,341	571,805	496,669	6,858,675	571,556	18,791	687,366	22,912
POV Passengers	460,820	455,087	532,497	482,998	420,840	459,882	465,745	557,731	485,218	486,292	489,045	477,206	5,773,361	481,113	15,817	557,731	18,591



The following table shows peak season heavy truck traffic as a percentage of total traffic on those roads most directly affected by POE-related truck traffic. Not surprisingly, SR 189 (Mariposa Rd.) is the most affected; but Grand Avenue, Industrial Park Drive, Calle Sonora, and Baffert Place also experience unusually high percentages of heavy truck traffic. Other roads that carry high levels of peak season heavy truck traffic include I-19 north of Mariposa Road, the Ruby Rd interchange, and the East Frontage Road north of Ruby Rd.

POE Related Heavy Truck	Traffic			
Location	ADT	18WHLR	PCT	SOURCE
SR-189, S of Target Range	13,750	2,464	18%	UA
SR-189, N of Target Range	13,598	2,432	18%	UA
SR-189, W of Industrial Park Dr W	14,323	3,051	21%	UA
SR-189, E of Industrial Park Dr W	14,453	2,832	20%	UA
SR-189, W of Frank Reed	15,829	2,609	16%	UA
SR-189, E of Frank Reed	21,955	2,954	13%	UA
SR-189, W of I-19	23,585	3,364	14%	UA
SR-189, E of I-19	25,353	1,899	7%	UA
SR-189, W of Grand	19,800	1,633	8%	UA
Grand, S of SR-189	21,572	393	2%	UA
Grand, N of SR-189	22,594	1,471	7%	UA
Grand, S of Baffert	23,164	1,534	7%	UA
Grand, N of Baffert	19,815	1,494	8%	UA
Industrial Park Dr W, S of SR-189	4,706	827	18%	UA
Industrial Park Dr E, South of Frank Reed	5,512	590	11%	UA
Calle Sonora, E of Grand	6,993	555	8%	UA
Baffert, E of Grand	9,227	634	7%	UA

The Santa Cruz River and UPRR are major physical barriers to east-west travel in Nogales and Santa Cruz County. The following table lists available traffic counts for the current river and rail crossings. Most of the river crossings north of Rio Rico Drive are unpaved. According to the Rail Crossings Study, seven trains use the UPRR line daily.



### River & UPRR Crossings

niver & OPHN Crossings		
Location	ADT	SOURCE
Amado Montosa, Rail Crossing	450	HDR
Amado Montosa, Santa Cruz River	109	SCC
Baffert, E of Grand	9,227	UA
Bridge Rd, Santa Cruz River	232	SCC
Calle Sonora, E of Grand	6,993	UA
Calle Sonora, W of Hohokam	5,519	SCC
Chavez Siding Rd, Santa Cruz River	106	SCC
Court, E of Grand	4,668	WSA
Doe Street, E of Grand	5,730	WSA
Gold Hills, E of Grand	6,188	WSA
Banks Bridge, E of Grand	5,730	WSA
Palo Parado, Rail Crossing	1,578	HDR
Park, E of Grand	3,388	WSA
Produce Way, E of Grand	3,004	WSA
Rio Rico Dr, E from I-19 to Pendleton Dr	9,950	CLA
Rio Rico Dr, Rail Crossing	9,571	HDR
Ruby Rd, Santa Cruz River	4,214	SCC
Ruby Road, Rail Crossing	7,793	HDR
S River Rd, Rail Crossing	860	HDR

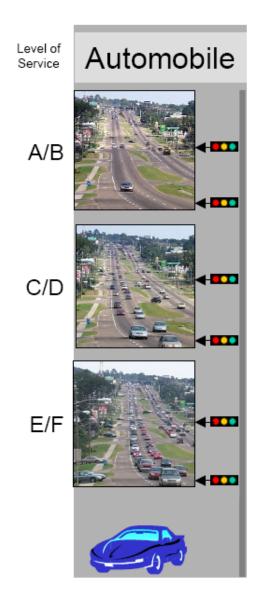


### 2.2.6 Capacity and Level of Service

Beginning in 1965, the Highway Capacity Manual (HCM) divided highway level of service (LOS) into six letter grades, "A" through "F," with "A" being the best and "F" being the worst. With the "A" through "F" LOS scheme, traffic engineers were much better able to explain to the general public and elected officials the operating and design concepts of highways. The LOS letter scheme caught on so well that it is now used throughout the United States in transportation.

However, the precise calculation of roadway capacity and level of service requires a great deal of very detailed data about roadway, traffic, and signalization characteristics, and involves very complex analytical procedures. For planning studies such as this one, regional planning agencies like the Metropolitan Associations of Governments and the Pima Association of Governments, and other transportation professionals make use of simplified procedures to estimate highway capacity and level of service. For this study, these simplified procedures are used as a screening device for initial problem identification, and for analyses of future years where roadway, traffic, and signalization characteristics are uncertain.

For this report, the following set of ADOT approved HCM-based planning-level service volumes are used estimate roadway capacity and level of service (LOS). Count locations that exceed the LOS C Service Volumes shown in the following table are potential problem areas.





Roadway Type	Max LOS C Service Volume	Max LOS D Service Volume	Max LOS E Service Volume
4-Lane Freeway	54,000	70,000	80,000
Small Urban			
2-Lane Collector (2 Signals/Mile, 30MPH)	5,100	11,200	12,400
2-Lane Arterial (2 Signals/Mile, 30MPH)	7,000	12,100	13,200
4-Lane Arterial (Undivided, 3 Signals/Mile, 35MPH)	13,600	26,300	27,800
6-Lane Arterial (Undivided, 3 Signals/Mile, 35MPH)	21,600	39,800	42,200
Suburban			
2-Lane Arterial (2 Signals/Mile, 40MPH)	11,900	13,400	14,100
4-Lane Arterial (Divided, 3 Signals/Mile, 45MPH)	23,700	30,100	31,800
6-Lane Arterial (Divided, 3 Signals/Mile, 45MPH)	37,100	45,500	48,100

As shown previously in the table on top of page 36, the ADT for all segments of I-19 are significantly less than 54,000 vehicles per day. That means that I-19 is operating at Level of Service C or better throughout Santa Cruz County and the City of Nogales. In addition, as shown previously in the table on page 37, only one section of the I-19 frontage road system has an ADT greater than 7,000 vehicles per day, the maximum ADT for LOS C on a 2 lane arterial. This means that the West Frontage Road north of Rio Rico Road is the only section of frontage road operating at LOS D to E. The remainder of the frontage road system is operating at LOS A to C.

The table on page 44 presents the ADT, roadway type, generalized planning capacity, and resultant level of service (A to C or D to F) for the remainder of the study area. The analysis indicates that 29 of the 134 count locations have traffic counts that exceed the capacity for LOC C. Most of Grand Avenue and significant portions of SR 189 (Mariposa Rd) are operating at LOS D to F.

The list also indicates that a significant number of 2 lane arterials, 2 lane collectors, and one local street are operating at LOS D to F. Most, but not all, of the potential problem areas are located in the City of Nogales. Those outside the city include Ruby Road, Rio Rico Drive, Yavapai Drive, and Palo Parado Road river crossing. The table also identifies another 11 segments that are below but very close their LOS C Service Volumes.



The roadway segments with capacity issues are shown graphically in red on the two exhibits contained in the pages following the Existing Level of Service table. The first exhibit is entitled "2007 LOS D-F, Capacity Issues, South Santa Cruz County" and the second exhibit is entitled "2007 LOS D-F, Capacity Issues, Nogales Area."

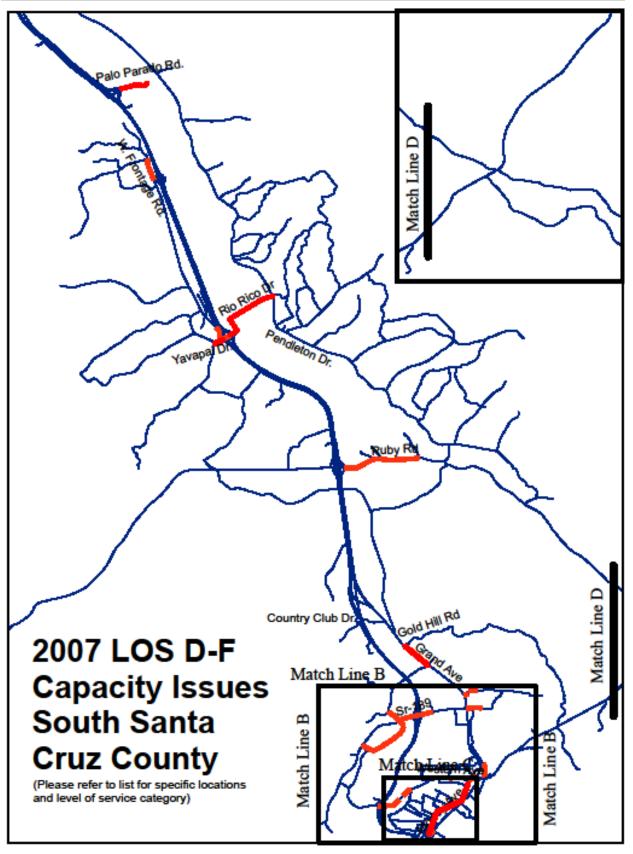
The generalized capacities and resultant levels of service presented in the table on the following page and the exhibits that follow do not reflect the impact of the POE-related heavy trucks. From an operational perspective, a single heavy truck is the equivalent of about 4 cars. Effectively, the 2,000 to 3,000 heavy trucks on Mariposa Road and Grand Avenue are the equivalent of an additional 6,000 to 9,000 ADT on these roads. Taking this into account would move additional segments of Grand Avenue and Mariposa Road (as well as other significant truck routes) from LOS A to C to LOS D to F. The generalized capacities and resultant levels of service presented in the table also do not reflect the impact of delays resulting from the at-grade UPRR and non-bridged Santa Cruz River crossings. The delays when trains are present are significant and the river crossings are not usable during periods of high water.



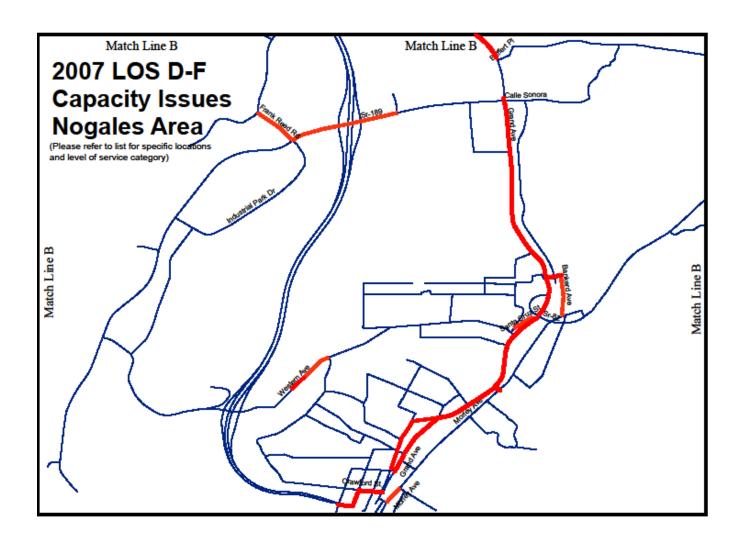
**Existing Level of Service** 

Location	Road Type	LOS C Capacity	Current ADT	LOS
Compound St	4Ln Urban Arterial	13,600	14,673	D-F
Grand, N of Morley	4Ln Urban Arterial	13,600	24,625	D-F
Grand, N of Western	4Ln Urban Arterial	13,600	23,531	D-F
Grand, S of Morley	4Ln Urban Arterial	13,600	23,711	D-F
Grand, S of Western	4Ln Urban Arterial	13,600	23,129	D-F
Sonoita Ave, Compound to Crawford	4Ln Urban Arterial	13,600	14,673	D-F
Arroyo SB, N of Crawford	2Ln 1Way Arterial	7,000	8,943	D-F
Arroyo SB, N of Walnut/Oak	2Ln 1Way Arterial	7,000	9,024	D-F
Grand NB, N of Crawford	2Ln 1Way Arterial	7,000	8,975	D-F
Grand NB, S of Court	2Ln 1Way Arterial	7,000	11,438	D-F
Grand NB, S of Walnut/Oak	2Ln 1Way Arterial	7,000	11,820	D-F
Grand, N of Frank Reed	4Ln Suburban Arterial	23,700	25,987	D-F
Grand, S of Gold Hills	4Ln Suburban Arterial	23,700	25,713	D-F
SR-189, E of I-19	4Ln Suburban Arterial	23,700	25,353	D-F
Bankerd Ave, Morley Ave to Doe St	2Ln Urban Arterial	7,000	7,712	D-F
Crawford, W of Grand	2Ln Urban Arterial	7,000	11,750	D-F
Frank Reed, N of SR-189	2Ln Urban Arterial	7,000	8,194	D-F
Morley Ave, Park St to Park St +0.90	2Ln Urban Arterial	7,000	7,199	D-F
Rio Rico Dr, E from Exit 17 to Pendleton Dr	2Ln Urban Arterial	7,000	9,950	D-F
Rio Rico Dr, Rail Crossing	2Ln Urban Arterial	7,000	9,571	D-F
Ruby Rd, Potrero Creek	2Ln Urban Arterial	7,000	7,518	D-F
Ruby Rd, Rail Crossing	2Ln Urban Arterial	7,000	7,793	D-F
Santa Cruz St, Bejarano St to Grand Ave	2Ln Urban Arterial	7,000	7,550	D-F
Western, W of Mcnab	2Ln Urban Arterial	7,000	7,344	D-F
Yavapai Dr, I-19 to Camino Caralampi	2Ln Urban Arterial	7,000	11,748	D-F
Baffert, E of Grand	2Ln Collector	5,100	9,227	D-F
Gold Hills, E of Grand	2Ln Collector	5,100	6,188	D-F
Industrial Park Dr E, S of Frank Reed	2Ln Collector	5,100	5,512	D-F
Palo Parado, Rail Crossing	2Ln Local	600	1,578	D-F
SR-189, W of I-19	4Ln Suburban Arterial	23,700	23,585	A-C
Grand, S of Frank Reed	4Ln Suburban Arterial	23,700	23,570	A-C
Grand, N of Gold Hills	4Ln Suburban Arterial	23,700	23,540	A-C
Grand, S of Baffert	4Ln Suburban Arterial	23,700	23,164	A-C
Grand, S of Country Club	4Ln Suburban Arterial	23,700	22,807	A-C
Grand, N of SR-189	4Ln Suburban Arterial	23,700	22,594	A-C
SR-189, E of Frank Reed	4Ln Suburban Arterial	23,700	21,955	A-C
Grand, S of SR-189	4Ln Suburban Arterial	23,700	21,572	A-C
Calle Sonora, E of Grand	2Ln Urban Arterial	7,000	6,993	A-C
Western, E of Mcnab	2Ln Urban Arterial	7,000	6,957	A-C
SR-82 W of Morley	2Ln Urban Arterial	7,000	6,671	A-C











### 2.3 Multi-Modal Transportation

### 2.3.1 Bicycle and Pedestrian Facility Plans and Policy Documents

Pedestrian and bicycle travel is considered to some extent in most planning and policy documents prepared for the study area. These documents were reviewed with the following findings.

Unified Nogales/Santa Cruz County Transportation 2000 Plan (December 2000)
This document identifies walking and bicycling as important elements of the transportation system. There is significant pedestrian traffic through and around the ports of entry in downtown Nogales (Morley Gate and DeConcini POE). Within the study area, pedestrian facilities are limited with only 40 percent of collector and arterial roadways reviewed in the City of Nogales having sidewalks. There are no designated bicycle facilities located on roadways in the study area. Promoting the use of alternate modes of transportation (bicycle, pedestrian, and transit) is included as a priority planning objective of the plan. Specific policies direct that roadway standards should include pedestrian and bicycle facilities as part of new and upgraded roadway projects. In addition, it was recommended that a pedestrian and bicycle advisory committee be established to identify needs and improvements within the area. This document includes a detailed street inventory including the location and condition of sidewalks, street pavements, and shoulders.

### Santa Cruz County Comprehensive Plan 2004

This plan encourages pedestrian and bicycle travel in the county with the recommendation for a countywide non-motorized trail plan linking recreational and cultural facilities and sites. In addition, the plan recommends a countywide bicycle plan that ensures facilities for bicycles and pedestrians along major and minor arterials, major collectors, and other appropriate corridors. It is further noted that bicycle and pedestrian circulation plans should be required as part of rezoning and development requests, and when transportation facilities are improved. It was also stipulated that the Santa Cruz County sections of the Anza National Historic Trail and the Arizona Trail should be completed.

City of Nogales General Plan Update 2020 (un-adopted and unapproved)
This plan was prepared in 2002 as an update to the 1992 General Plan, but was not adopted by the City. Many of the concerns, goals, and policies were found to be still applicable at the time the update was prepared. The lack of streetscape features (i.e., landscape, street lighting, etc.) and lack of pedestrian sidewalks and lack of connectivity of existing sidewalks were cited as key issues for the city.

Pedestrian and bicycle access were discussed in the circulation, land use, and open space/recreation elements of the plan. Goals and objectives in the plan call for:

- Development of roadway standards for the integration of pedestrian and bicycle facilities in all new and improved residential and commercial roadway projects
- Incorporation of "Pedestrian First" principles in roadway designs



- Extension of the existing pedestrian network and prioritization of the areas of the community with the greatest need and potential benefit
- Development of a bicycle circulation system
- Encouragement of walkable neighborhoods through development of mixed-use and neighborhood retail, commercial and employment opportunities linking these activities centers with a safe pedestrian pathway system
- Identification of opportunities for pedestrian and bicycle greenways to connect the city and regional attractions

Comprehensive Trails Master Plan, Santa Cruz County, Inventory Phase (2006)
This document addresses the importance of trail networks in providing the growing population with opportunities for recreation and non-motorized transportation. It is necessary to identify and set aside the easements for trails while the rights of way are created, maintained, and enhanced as new areas are developed. This first phase of the study was intended to provide an inventory of existing and planned trails in the context of the key natural, cultural, and historical attractions in the county. This information was provided as GIS layers to be added to the Santa Cruz County Planning Department's existing GIS library with the expectation that this information would be used in making future land use decisions.

Two significant regional trails bisect San Cruz County: the Arizona Trail and the Juan Bautista de Anza National Historic Trail. The Anza Trail is included in the Unified Nogales/Santa Cruz County Transportation Plan 2010 study area. Existing portions of this trail, as well as trails in the Rio Rico area, are described in the Bicycle-Existing Facilities section of this document.

#### *I-19 Frontage Roads Study* (2008)

This study looked at frontage roads on the east and west sides of Interstate 19 from the United States/Mexico border to the I-10 junction in Tucson. The purpose of the study was to document existing conditions along the corridor, identify deficiencies, develop policy recommendations to construct, maintain, and operate the frontage roads, and recommend a 10-year program of multimodal improvements.

The frontage roads in Santa Cruz County provide access to commercial and residential land uses, and in some cases, the only access available to these properties. However, they are discontinuous on both sides of the freeway; not allowing uninterrupted travel through the county without having to get on I-19. Bicyclists must use the frontage roads and/or the mainline I-19 shoulders for travel from Rio Rico north to the county line. Where no alternate route exists, bicyclists are allowed use of the controlled-access highway, i.e. I-19.

West-side frontage road gaps in Santa Cruz County include:

- South of Agua Linda Road to north of Chavez Siding Road 0.73 miles
- South of Tubac Road to north of Palo Parado Road 1.75 miles
- Rio Rico to north of Ruby Road (Yavapai to Calle Calabasas) 0.77 miles
- South of Country Club Road to the International Border 4.5 miles

East-side frontage road gaps in Santa Cruz County include:

• South of Agua Linda to north of Chavez Siding Road – 0.91 miles



- South of Palo Parado to Peck Canyon Road 1.42 miles
- South of Peck Canyon Road to north of Rio Rico Road 2.2 miles
- North of Country Club Road to the International Border the frontage road intersects Grand Avenue

With the exception of the segment between the border and Country Club Road on both the east and west sides of I-19, the gaps listed above were identified as the primary deficiencies in providing future continuity for all modes of transportation through Santa Cruz County.

Most of the frontage roads are two-way, two-lane roadways with limited paved shoulders. Useable paved shoulders (greater than one-foot of pavement) are found only on the following segments:

#### West Frontage Road Shoulders

- Approximately eight-foot shoulders on both sides south of Arivaca Road
- Approximately six to seven-foot shoulders on both sides north of Rio Rico Drive

#### East Frontage Road Shoulders

- Approximately eight-foot shoulders on both sides south of Arivaca Road
- Approximately eight-foot shoulders on both sides south of Tubac Road
- Approximately six-foot shoulder (northbound) and two-foot shoulder (southbound) north of Ruby Road
- Approximately six-foot shoulder (northbound) and two-foot shoulder (southbound) south of Ruby Road

ADOT guidelines state that two-way frontage roads should have a minimum of four-foot paved shoulders on both sides of the roadway. As reported by the Santa Cruz County Bicycle Advocate Committee, even when the width of shoulder is adequate, shoulders are often not useable by bicyclists because of rough, broken pavement and the collection of roadway and landscaping debris. Many bicyclists feel that the I-19 shoulders are safer for bicycle travel even with the greater speed differential between bicyclists and motor vehicles because of the better pavement and maintenance conditions. The Committee suggests that six-foot shoulders would better accommodate bicycle travel.

This study recommends a number of improvement projects including new frontage road segments, shoulder widening, shoulder resurfacing, interchange/intersection improvements, and special studies. A 10-year program of improvements for the frontage road system is suggested, including cost estimates for implementation.

Pedestrian and Vehicle Railroad Small Area Transportation Study in Nogales and Santa Cruz County Presentation (April 2007)

This report and presentation involving the City of Nogales, Santa Cruz County, and the Arizona Department of Transportation looked at the feasibility of new pedestrian and vehicle bridge locations in the City of Nogales and Santa Cruz County. Alternatives for a pedestrian bridge included four locations between Court and Park Streets. Criteria for selection of the preferred site included high pedestrian volumes, maximizing available right of way, minimizing



engineering conflicts, ability to provide adequate railroad clearance, and ability to meet ADA requirements. Recommendations from the evaluation were not reported in the document.

Making the Connection: Community Fitness and the Rio Rico Community School Greenway (2005)

Concerns for the health and well being of children and the community as a whole prompted this study to find ways to reverse the epidemic of childhood obesity. The report explores opportunities to affect the fitness and activity level of the community at a local level. The report includes a master plan for a community greenway to connect the population to the schools, parks, library, shopping, and other existing and future destinations in the community. This greenway would provide access to and between areas that are currently not walkable or bikeable. In addition, it would connect to the Anza Trail providing regional access from Nogales to Tubac. A significant portion of the proposed greenway runs adjacent to the West Frontage Road within an existing county unimproved right of way. The study considers designs for safe roadway crossings, access nodes, gateways, and outdoor educational opportunities.

Santa Cruz Valley Bicycle Advocate Committee Master Plan (updated 2008)

This document lists future bicycle projects needed in the Santa Cruz Valley to improve safety and support future growth of bicycling. Projects along the I-19 corridor in northern Santa Cruz County include frontage road improvements (repaving, shoulder widening, etc.) from Amado to Tumacacori. This list guides advocate activities of the committee in dealing with ADOT and other responsible agencies.

### Walkable Communities Workshop (2007)

This event was held in March 2007 to learn what Santa Cruz County communities can do to improve walkability. The workshop was facilitated by Mark Fenton, host of PBS series *America's Walking*. The workshop has been successful in rallying community support for walkability projects. Proponents continue to search out funds for building the Anza Trail, Rio Rico Greenway, and other notable projects.

#### 2.3.2 Existing Bicycle and Pedestrian Facilities

#### Pedestrian

Sidewalks are limited within the I-19 corridor with most located in the City of Nogales. There are significant pedestrian border crossings at the DeConcini and Morley Avenue ports of entry in downtown Nogales. According to the *Unified Nogales/Santa Cruz County Transportation 2000 Plan*, sidewalks were only found along approximately 40 percent of the arterials and collectors surveyed for that study. Sidewalks on major state routes were identified along segments of SR 189 (Mariposa Road) from SR B-19 (Grand Avenue) to west of I-19 and along portions of SR 82 (Patagonia Highway).

The village of Rio Rico recently developed an approximately one-mile section of paved pathway located on the west side of Pendleton Drive from Rio Rico Drive south to Avenida Coatimundi. The pathway crosses Pendleton Drive with an improved crossing to follow along the south side of Avenida Coatimundi past the Rio Rico fitness center, Rio Rico community center, and terminating at the Most Holy Nativity Catholic Church. Future plans call for an extension of this



pathway east on Avenida Coatimundi to connect with the Coatimundi Middle School and ultimately with the Sonoita Creek Trail.

#### *Bicycle*

No designated bicycle routes exist within Santa Cruz County. Bicycles are allowed on all roadways within the I-19 corridor including the limited-access freeway when alternative access is not available.

#### Anza Trail

The Juan Bautista de Anza National Historic Trail follows the 1200 mile route traveled by new settlers to Alta California from 1775 to 1776. The trail goes from Nogales, Arizona to San Francisco, California. There are two existing segments of the Anza Trail opened to pedestrian and equestrian traffic. Bicycles are allowed on the trail, but are not recommended due to soft, sandy trail material and an abundance of cactus and mesquite thorns which will flatten tires immediately. The two sections include:

- 5-mile section from Ruby Road to Palo Parado Road
- 3.5-miles from Tumacacori to Tubac

Detailed directions to trail heads and trail conditions can be found at http://www.nps.gov/juba/.

#### Education

School Resource Officers from the Nogales Police Department visit the schools on a yearly basis. They have a bicycle safety classes for the elementary students including a helmet donation program. For the high school students, they have a driving safety program that includes pedestrian and driving safety. Presentations are available to faith-based and community groups upon request.

The Border Patrol and Santa Cruz County Sheriff's Department conduct safety orientation and an annual Bike Rodeo for grades Kindergarten through 2<sup>nd</sup>.

### 2.3.3 Transit Plans and Policy Documents

Transit is an important service providing mobility for those that do not have a car, are not able to drive, or simply choose not to drive, and is especially important to the senior and disabled communities. While transit generally takes a 'back seat' to automobile travel, it is a valuable resource for a community. In addition to expanding transportation options for residents and visitors, transit can reduce overall automobile usage, thereby decreasing vehicular traffic, lowering noise and air pollution, and reducing dependence on oil.

Transit service is considered to some extent in most planning and policy documents prepared for the study area. These documents were reviewed with the following findings.

Unified Nogales/Santa Cruz County Transportation 2000 Plan (December 2000)
This document identifies public transportation as an important element of the area's transportation system. While limited private transit services are currently available in the study area, promoting the use of alternate modes of transportation (bicycle, pedestrian, and transit) is



included as a priority planning objective of the plan. Specific policies direct that alternate modes of travel be considered with new and upgraded roadway projects.

### Santa Cruz County Comprehensive Plan 2004

This plan encourages commuter-oriented transit bus service in the Rio Rico/Nogales corridor to support the increasing commercial and industrial land uses in this area. It is mentioned that this service could be expanded to accommodate tourist activity and travelers to other areas once it is successfully in place. In addition, the potential for passenger rail service is suggested to complement tourist activities in the county.

City of Nogales General Plan Update 2020(un-adopted and unapproved)

This plan was prepared in 2002 as an update to the 1992 General Plan, but was not adopted by the city. Many of the concerns, goals, and policies were found to be still applicable at the time the update was prepared. In this update, the importance of a public transportation system for the City of Nogales was noted with direction to test the feasibility of a system for the city.

Nogales Transit Feasibility Review and Implementation Plan (2006)

This study was prepared to determine the viability of publicly sponsored, fixed-route transit service within the City of Nogales. Phase 1 of the study determined the feasibility and need for transit service. In Phase 2, an implementation plan for the proposed transit service was outlined. The implementation plan included a system operating plan; system budget; marketing strategy; and implementation schedule.

Phase 1 included review of existing relevant documents, meetings with a technical advisory committee, interviews with stakeholders, and community workshops to determine what type of services would best benefit the community. To determine transit feasibility, a quantitative analysis looked at three key factors:

- Population density This study reported that fixed route bus service generally requires a population density of 4 to 7 housing units per acre. In Nogales, density is greatest along Grand Avenue and meets the required thresholds.
- Transit propensity This is a measure of the inclination of the population to use transit if it was provided, and is a function of the demographic makeup of the community.
- Location of employment sites Commuter trips offer a valuable market for transit as they represent generally five daily trips per week with fixed origins and destinations each day.

The recommendations of the Phase 1 transit study concluded that there is demand for transit service beyond what is currently provided by the adhoc transit services between the US/Mexico border and the commercial areas on and in the vicinity of Mariposa Road east of I-19. In fact, there were strong feelings within the community that this service is limited in coverage, unreliable, and potentially unsafe.

In the Phase 2 implementation plan, five total routes were recommended with three routes for the initial system (near-term) and two routes for later start-up. The near-term routes connect the locations most frequently utilized by the public as determined in Phase 1. These routes are:



- Purple Route: Wal-Mart to Border via Grand/Morley which would operate during the day at 30 minute intervals and at night every hour. It would also operate on Saturday and Sunday with the same frequencies.
- Green Route: Mariposa Hills and Wal-Mart to Border via Western Avenue and to the Hospital. This route would operate with hourly daytime and early evening service Monday through Saturday. The Green Route would not operate on Sunday.
- Red Route: Wal-Mart to Chula Vista via Monte Carlo and Valle Verde which would provide hourly daytime service Monday through Saturday.

These routes are shown in the exhibit on the following page entitled "Figure 23 Proposed Five-Route System."

The two additional future routes include the Blue Route from Wal-Mart to US/Mexico border via Industrial Park and the Yellow Route from Wal-Mart to Ruby Road between Mariposa Road and Ruby Road via I-19. These routes are recommended for implementation after the initial three routes are underway and local financial support is available.

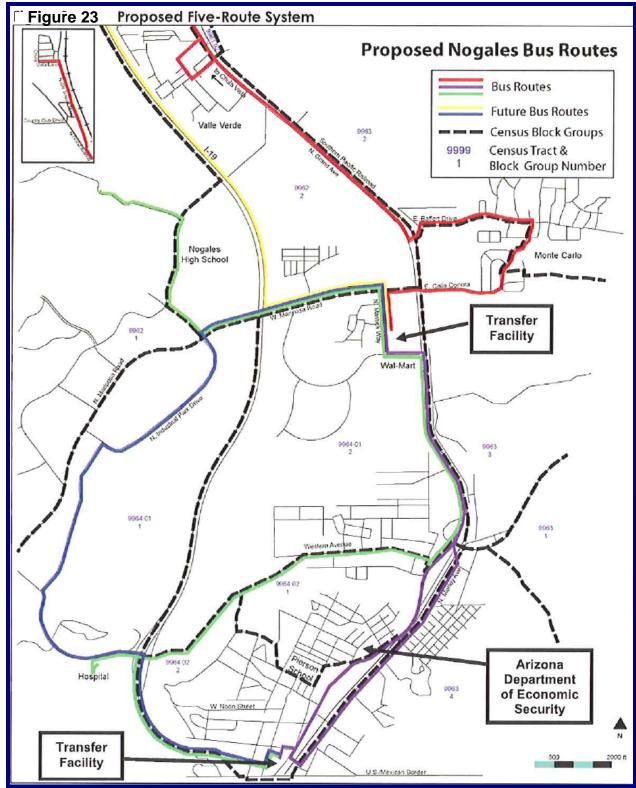
If the City of Nogales initiates fixed-route service, they will also be responsible for complimentary paratransit service which provides door-to-door transit using a reservation service for seniors, persons with disabilities, and/or human service agency clients. Paratransit operations must be provided where (within a 3/4 –mile corridor) and when (time of day and days per week) that fixed-route transit is provided.

The ridership analysis projected 307,000 riders per year for the three initial routes at an estimated cost to the City of Nogales between \$362,000 to \$455,000 for the first year of fixed route and paratransit operation. This estimate assumes that the City of Nogales would apply for and be awarded grants from the Federal Department of Transportation for a portion of capital costs, operating expenses, and administrative expenses. This study expected service to begin in May 2008; but that schedule has not been met.

#### Nogales Transit Study (Draft 12/31/08)

This study is being conducted to identify how the City of Nogales can transition to public transit service given changes that have taken place since the *Nogales Transit Feasibility Review and Implementation Plan* was prepared in 2006. These changes include the recent expansion in service for seniors, increases in fuel prices, and general downturn in the economy. This study is looking at how to transition the existing demand-responsive service to provide general public transit to areas where none is now available within current fiscal constraints.





Source: Nogales Transit Feasibility Review and Implementation Plan (Draft – October 2006)



This study agrees with the *Nogales Transit Feasibility Review* that Nogales has the potential for high ridership, and that the fixed-route system described in the previous report is an appropriate goal for the city. However, it concludes that this is a major undertaking and recommends that the city begin with the transition to general public transit service through a combination of call-and-ride and flexible-route services. It is felt that this will provide the city with the best opportunity to establish a cost-effective service that meets the needs of the community. Call-and-ride services often form the foundation of future fixed-route services. Rides are provided either through phone call reservations or through pick-up at key locations where riders can board the vehicle without prior reservation. Flexible routes have a set route, but may deviate from this route to pick-up or drop-off passengers, generally for seniors or person with disabilities.

Three alternatives were evaluated with combinations of call-and-ride, flexible route, and fixed-route services with a transfer point on North Mastick Way near Wal-Mart. The recommended alternative (Alternative B) would operate two vehicles for call-and-ride service to the general public, and a flexible route serving Morley and Grand Avenue. The study suggests service from 7 a.m. to 7 p.m./9 p.m., Monday through Saturday, with Sunday service starting at 9 a.m. Suggested fares range from \$1 to \$2 per ride for regular service, with a fare of \$2 to \$4 per ride for paratransit service. It was estimated that the recommended alternative would cost approximately \$493,000 for the first year of operation with the city's share at \$202,000.

### 2.3.4 Existing Transit Services

There is no fixed route public transit service within the study area at this time. Publicly funded demand-responsive transportation services for the elderly, disabled and those with special needs are available through the following groups:

- Nogales Rides: Provides dial-a-ride transit services for the senior and disabled community of Nogales
- Santa Cruz Council on Aging: Provides transportation to meals at the Senior Center in Nogales
- Santa Cruz Training Program: Transportation for clients with developmental disabilities to and from the program center
- Santa Cruz Family Guidance Center: Provides transportation to agency clients to and from home for outpatient services or other behavioral health services in Nogales and surrounding Santa Cruz County
- Horizon Human Services: Provides transportation services for clients with sever developmental disabilities to and from day treatment programs, field trips, doctor visits, and shopping trips.
- Blake Foundation CLS: Provides transportation for clients from residential programs to day programs, medical appointments, family homes, community events, scheduled meetings, and community activities

#### Nogales Rides

The Nogales Rides service operates with two vans, two drivers and a mobility coordinator. Rides are provided Monday through Friday between 8 a.m. and 5 p.m. to destinations within the



city limits. A reservation is required with at least 48-hours notice. The service is free, although a \$1 contribution is suggested.

Nogales Rides began full service in January 2008, although some limited service was available beginning in 2006 through the use of city vans and employees from the Public Works department. Nogales Rides provided more than 11,000 trips in 2008. Ridership for the first quarter of 2009 is showing an almost 50 percent increase in ridership over the previous year.

### Independent Bus Operators

Transit services are available between the US/Mexico border and the retail area on Mariposa Road east of I-19 by independent bus operators. These services are unregulated, operate without a fixed schedule, and have varying fares. The vehicles do not meet ADA requirements and are generally not air-conditioned. It is estimated that these private bus services carry from 200 to 1,100 passengers each way each day.<sup>2</sup>

### Sahuaro Roadrunner Shuttle

The Sahuaro Roadrunner Shuttle provides connections between Nogales (Arizona and Sonora, Mexico), Tucson, and Phoenix including to the US/Mexico border, with drop-off and pick-up within 100 feet of the border. They operate 23 air-conditioned vans with service every 30 minutes during the peak period (Monday and Friday) to every 60 minutes during slower periods (Tuesday through Thursday). Further information can be found at <a href="https://www.mexicandoctorsdir.com/sahuaro\_shuttle.htm">www.mexicandoctorsdir.com/sahuaro\_shuttle.htm</a>.

### 2.3.5 Rail

The Union Pacific Railroad has branch lines that service the Phelps-Dodge mine site in Santa Cruz County. The line commences in Tucson, north of the county, and continues through Nogales into Mexico. Most of the Nogales Subdivision line is located east of the Santa Cruz River and east of Interstate 19 passing through Amado, Tubac, Rio Rico, and Nogales, Arizona. There is a single mainline track with a few siding locations along this route. The current rail line causes significant back-up, particularly in the Nogales downtown area, for local streets that have 'at grade' crossings. See Figure 24 on the following page for an aerial view of the downtown Nogales area.

The Union Pacific Railroad conducted a study on railroad crossings in the county in 2008. This study identifies crossings that should potentially be closed. Most of the crossing closures recommended are private crossings on unnamed roads throughout the county.

Currently, the Union Pacific has chosen to permit a public crossing of its tracks and right of way where they intersect with Palo Parado Road. They also highlighted the fact that creating a new public crossing at this location was a unique and rare situation, especially given the 2004 Secretary of Transportation's Action Plan for Highway-Rail Crossing Safety and Trespass Prevention which identified closing crossings and limiting the creation of new crossings as an

<sup>&</sup>lt;sup>1</sup> City of Nogales, Nogales Rides, April 2009.

<sup>-</sup>

<sup>&</sup>lt;sup>2</sup> Nogales Transit Feasibility Review and Implementation Plan, Final Report, Nelson/Nygaard Consulting Associates, November 2006.



important national objective. Union Pacific highlights in their crossing study that there are 33 crossings in their database with an estimated 16 public and 16 private crossings and one international boundary crossing. The railroad does not propose to close the crossings within the City of Nogales in the study, but data was collected at these crossings for informational purposes.

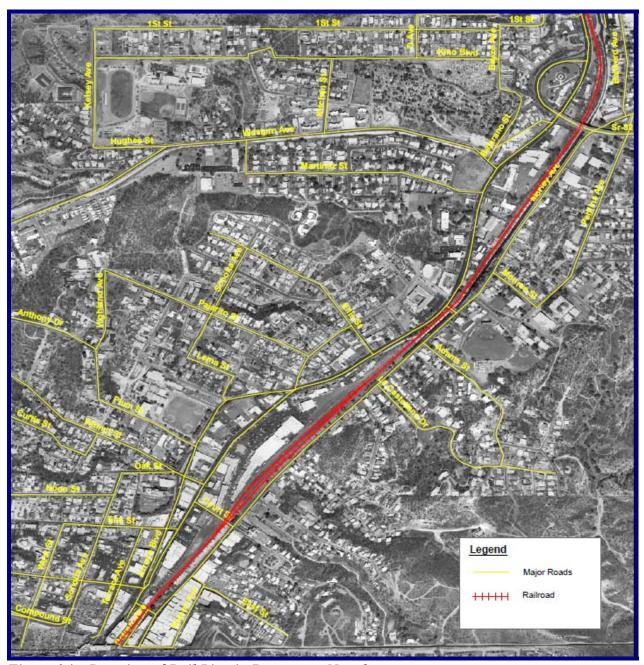


Figure 24 – Location of Rail Line in Downtown Nogales

It is a priority for Santa Cruz County to keep rail crossings in place and to construct additional crossings where warranted and needed; both at-grade and grade separated. There is currently only one grade separated crossing in the county located on SR 82 in Nogales. Both the city and



the county agree on the need for additional grade separated crossings to mitigate congestion when trains are operating (anywhere from 6 to 12 trains per day), to enhance public safety, and to improve traffic circulation saving fuel and time.

### 2.3.6 Freight

#### Exports to Mexico

In 2007, US exports valued at approximately \$6.93 billion destined for Mexico moved through Arizona's seven port of entry (POE) locations. This export value originated in all US states, not just in Arizona. Nogales handled the largest value of these exports with \$4.83 billion moved by truck and \$1.11 billion moved by rail, which is over 87% of the value of the exports passing through all Arizona POEs. The value of goods and freight exported through the Arizona POEs is expected to grow significantly over the next 20 years (2030). The top exported items include: electrical machinery and equipment, vehicles, plastics, paper products, iron ores, field crops, and furniture.

#### Imports from Mexico

In 2007, US imports from all Mexican States that moved through Arizona's POEs were valued at \$13.80 billion. This is roughly twice the value of goods exported to Mexico. Nogales handled the largest value of imports with \$8.42 billion moved by truck and \$3.72 billion moved by rail, which is over 88% of the value of the imports passing through all Arizona POEs. The value of goods and freight imported through the Arizona POEs is expected to grow significantly over the next 20 years (2030). The top imported items include: produce, vehicles, cement, engines, and non-ferrous smelter products.

Note that Nogales currently has the only rail crossing of the international border in Arizona.

#### 2.3.7 Airports

There are three airports within the study area in Santa Cruz County. The Nogales International Airport is the most significant of the three and is included in the Arizona State Airports System Plan that is due to be published in the latter half of 2009. The Nogales International Airport is located in the foothills of the Patagonia Mountains just south of the SR 82 about 7 miles east of Nogales. It has one paved runway with a full parallel taxiway. See Figure 25 on the next page for an aerial view of the airport. The airport has a non-precision approach, pilots lounge, hangars, and tie-down facilities. The Nogales International Airport is relatively small, but has international implications due to its proximity to the Arizona-Mexico border. The airport is equipped to accommodate domestic and international general aviation, corporate, cargo, and air taxi traffic. The US Military, National Guard, and Border Patrol utilize the airport. Nogales International Airport has Runway 3/21 that is 7,199 feet long and 90 feet wide with an asphalt surface.

Recommendations are being finalized for the Arizona State Airports System Plan. The primary needs identified for the Nogales International Airport include a 231 foot runway extension, a 10 foot runway widening, installation of runway end identifier lights (REILs) at both ends of the runway, and an addition of 7 hangar spaces. These are recommended projects to improve the



entire Arizona airport system, and are not necessarily the highest priority needs at the airport for its own purposes. For that reason, Master Plans are done for airports of this size. Nogales International Airport's most recent Master Plan update was done in 2002. It would be of benefit to the airport and the surrounding community to update this plan with current information.



Figure 25 – Nogales International Airport

The two other airports in the study area are much smaller and not used or used very sparsely.

North of the City of Nogales along I-19 is the Rio Rico Airstrip. This airstrip is located on the west side of I-19 just west of the West Frontage Road between Camino Agua Fria and Camino Ramanote. This landing strip appears to be an abandoned grass/dirt airstrip in the Aqua Fria Canyon. It is not a nationally registered airstrip and has no listed owners.

The second airport is the Tubac Ultralight Flightpark. This airpark was recently closed in spring of 2008. The owner sold a portion of the land for development and closed the airpark. The airpark was open as a private landing strip from 1986 to 2008, and was specifically used for



ultralight aircraft traffic. The Tubac Ultralight Flightpark currently remains as a 900 foot long dirt runway to be demolished as development ensues.

#### 2.4 Environmental Conditions

#### 2.4.1 Natural Environment

#### Terrain

Nogales and Santa Cruz County are located in the Sonoran Desert, which covers 120,000 square miles and has a minimum elevation of 2,500 feet. The mean elevation in the City of Nogales is 3,865 feet. The Sonoran Desert is generally characterized by north-south elongated valleys surrounded by mountain ranges. The city is located in such a valley created by the Nogales Wash, a tributary of the Santa Cruz River. The terrain in the study area is rugged with numerous washes and ridges generally aligned from the southwest to the northeast. These ridges and washes are shown on the aerial photo in Figure 26 at the top of the next page.

The study area encompasses a large majority of Santa Cruz County and straddles I-19. The area begins at the international border and extends north to the county border with Pima County. To the east, the study area is bounded by the Coronado National Forest, and to the west, the study area concludes approximately 10 miles east on SR 82 where a north-south line can be drawn to indicate the eastern edge of the study area. This includes several population centers (Nogales, Rio Rico and Tubac) as well as sparsely populated areas of rugged terrain that historically was provided little access in the early parts of the 20<sup>th</sup> century.

Much of the development in the area has occurred in the flatter sloped areas adjacent to major drainage ways and floodplains. The study area is outlined on the aerial photo map shown in Figure 26.

Most of the open space in the Nogales and Santa Cruz County study area is located within the boundaries of the Coronado National Forest. This forest borders the study area both to the west and to the east.



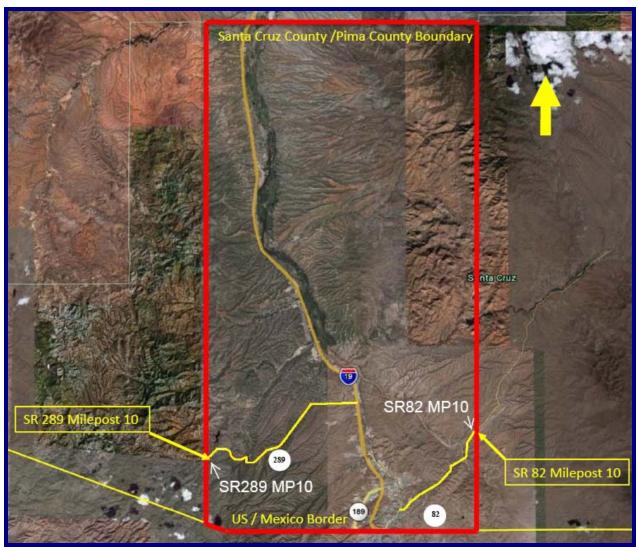


Figure 26 – Study Area Aerial Photograph

Santa Cruz County has three major soils categories that have been defined based on their position in the landscape. These are floodplains, uplands, and mountains. The study area would generally fall within the first two categories.

### Major Drainage Ways

The major drainage way in the County is the Santa Cruz River that flows generally from the south to the north along the east side of I-19 to the north of Nogales in the Rio Rico area. Within Nogales, the Nogales Wash is the main drainage way that flows from Nogales, Sonora, Mexico northerly through the heart of the city along the east side of Grand Avenue to its confluence with the Santa Cruz River.

From south to north, the major waterways on the west side of I-19 are:

- Ephraim Canyon
- Mariposa Canyon
- Potrero Canyon/Creek



- Alamo Canyon
- Pesqueira Canyon
- Bellotosa Canyon
- Calabasas Canyon
- Caralampi Canyon
- Agua Fria Canyon
- Toruno Canyon
- Peck Canyon
- Negro Canyon
- Tinaja Canyon
- Corral Canyon
- Aliso Canyon
- Tubac Creek
- Puerto Canyon
- Las Chivas Wash
- Diablo Wash
- Toros Wash
- Sopori Wash

From south to north, the major waterways on the east side I-19 are:

- Brickwood Canyon
- Yerba Buena Canyon
- Proto Canyon
- Cottonwood Canyon
- Burro Canyon
- Guevavi Canyon
- Sonoita Creek
- Josephine Canyon
- Mavis Wash
- Cottonwood Creek
- Sheehy Canyon
- Montosa Canyon
- Agua Caliente Canyon

These waterways are shown on the USGS topographic map shown in Figure 27 on the following page. The waterways are tributaries to the Santa Cruz River that flows in an alignment that generally parallels the I-19 corridor from the north side of Nogales to the north Santa Cruz County line. The river approaches the interstate after coming from the southeast and joins the I-19 corridor area in the northern section of the City of Nogales.

The floodplains for these streams within the study area are shown on the map contained in the following figure.



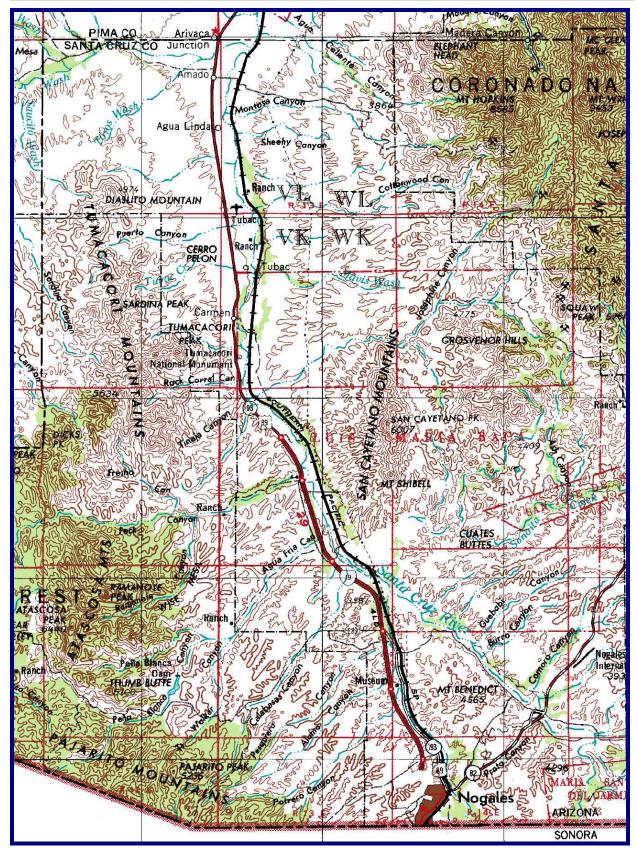


Figure 27 – Topographic Map of the Study Area



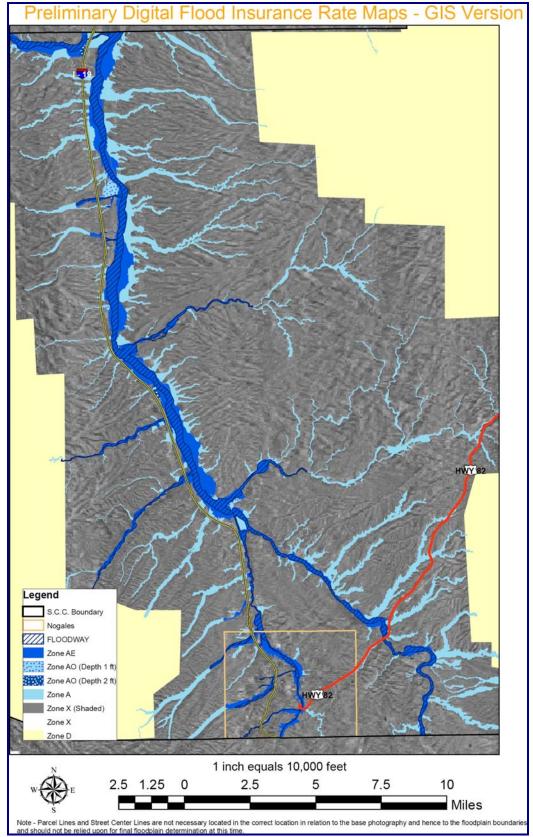


Figure 28 – Floodplain Map



The Environmental Protection Agency (EPA) and the United States Geological Survey (USGS) both have water monitoring sites throughout Santa Cruz County and the City of Nogales. These stations are used to collect physical, chemical, and biological monitoring data. The EPA has nearly 100 water monitoring stations within the study area, with approximately one-quarter of them being surface water monitoring stations and the rest being ground water monitoring stations. The USGS has nearly 500 stations with about 10 being surface water monitoring stations and the rest ground water monitoring stations. The USGS also has two stream gauges: one at Buena Vista Ranch approximately 100 yards from the international border and one at the bridge on Bridge Road in Tubac.

#### Vegetation and Wildlife

A significant portion of Santa Cruz County is part of the Coronado National Forest. Both the eastern and western edges of the study area are bordered by the National Forest Land. Many visitors, local and from afar, come to the area to see and enjoy the natural beauty of the Santa Cruz River Valley and its fringing uplands and mountains. In addition to the federally owned lands, residents and visitors alike seem to take special interest in recreational activities and in viewing and enjoying the natural vegetation and wildlife in the privately owned open spaces as well. With the rich biodiversity the area has to offer, there are many groups involved in its land and wildlife conservation including the Audubon Society of Arizona, the Nature Conservancy, the Sky Island Alliance, the Wild Lands Project, and the Sonoran Institute.

Endangered/threatened species that are of concern for projects in the area include: Pima Pineapple Cactus; Lesser Long-Nosed Bat; Ocelot; and Parry's Agave (food plant for the lesser long-nosed bat). There are also known sites for pronghorn antelope fawning areas and habitats in Santa Cruz County. Before any project developments are considered, an environmental assessment should be undertaken and all NEPA environmental regulatory agencies should be contacted to confirm that none of these species or habitats will be impacted by the proposed project.

One of the major habitats in Santa Cruz County is the riparian habitat and floodplain around the Santa Cruz River. It is vital to both indigenous species and the community's rural character that these areas be preserved. The Santa Cruz County Flood Control District and Floodplain Administration have put out numerous documents on preserving these natural resources. It is important to protect these areas for many reasons. Some of the most important reasons are: flood protection which safeguards residents and wildlife, wildlife habitat, water quality, recreational areas, and enhanced biological productivity.

Preservation efforts can be accomplished by developers and builders making an effort to avoid riparian habitats and floodplain open space wherever possible during the planning, design and implementation of their projects. In addition, developers can create dedicated open or natural areas along natural area in new developments and subdivisions. If it does become necessary to disturb these natural areas, the next best option is to mitigate the disturbance by replanting in adjacent areas or doing restoration projects to restore native vegetation to previously affected areas.



The Arizona Game and Fish Department would like to see greater emphasis on determining and avoiding or mitigating impacts on wildlife for transportation and development projects. They have wildlife friendly guidelines that can be followed. These guidelines include facilitating crossings for wildlife; mitigate development by providing for well designed wildlife corridors; provide wildlife connections to agricultural areas (for feeding); and avoid concurrent connectivity for humans in the same corridor (such as roads, trails, etc.).

Regarding this study, the most important issue that the Arizona Game and Fish Department would like to see addressed is that the major wildlife linkage corridors be considered when transportation improvement projects are planned, designed, and constructed. Within this study area, there is a major wildlife linkage corridor across the Santa Cruz River valley located between Tumacacori and the San Cayetano mountains. This linkage corridor connects major wildlife habitats on each side of the valley in and around the Coronado National Forest lands.

The Arizona Game and Fish Department currently has GIS modeling efforts underway for the "Fracture Zone" located between Tumacacori and the San Cayetano mountains. See Figure 29 on the next page showing the general location of the wildlife linkage fracture zone.

For additional information, refer to the document *Evaluation of Wildlife Crossings along the Proposed Expansion and Realignment of Camino de Manana, October 2006.* 

An additional priority for the Arizona Game and Fish Department is that they would like to see the county preserve existing access to state and federal lands by requiring the accesses be maintained, or alternately, mitigated with new legal access roads should existing access need to be removed. They report that they are losing access to public lands through development making it more difficult for the public to access these lands. Access to state lands is important to hunters, residents, visitors, and for public safety purposes. The Department would like to see opportunities to improve access corridors. Important access points to public lands are from Chavez Siding road and Peck Canyon road.



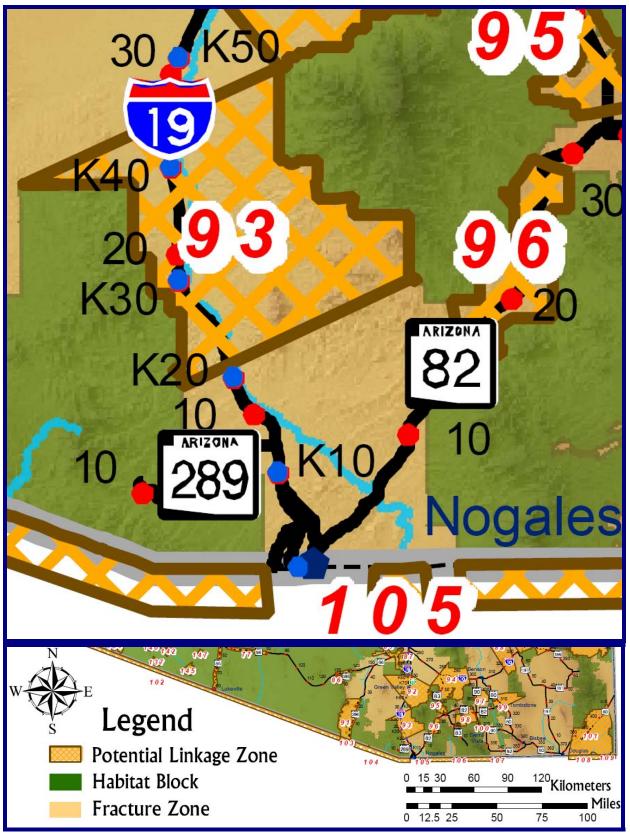


Figure 29 – Wildlife Linkage Corridor Area



#### Noise

Adherence to the *ADOT Noise Abatement Policy* dated December 05, 2005, and as amended on August 24, 2007, is advised for any new or improved roadway corridors. This policy is based on the currently accepted noise abatement policies and procedures outlined by both the United States and Arizona governing bodies. FHWA has specific noise abatement criteria that serve as an upper limit for projects in the State of Arizona.

### Air Quality

The Santa Cruz River Valley contains topographic features that can trap air pollutants. Air quality receptors consisting of residences, industries, businesses, motels, restaurants, and other developments are present within the study area. There is one air monitoring station along the I-19 corridor within the study area. Currently Santa Cruz County is in nonattainment for PM<sub>10</sub> (moderate classification) of the National Ambient Air Quality Standard (NAAQS) pollutants as recorded by the United States Environmental Protection Agency (USEPA). Additionally, according to Creative Methods (a scientific analysis agency recommended by the USEPA), Santa Cruz County receives a grade of 'F' on an A to F scale where 'F' is the "worst/dirtiest areas in the US." Obviously, air quality concerns will continue to increase with the projected increases in heavy truck, bus, and automobile traffic through the Mariposa and DeConcini Ports of Entry as well as within the Nogales and Rio Rico areas from continued population growth.

The Arizona Department of Environmental Quality stated in their 2008 report that the Nogales area of Santa Cruz County is a PM<sub>2.5</sub> and PM<sub>10</sub> Nonattainment Area. They had made the recommendation to the EPA in December of 2007 to designate Nogales a PM<sub>2.5</sub> Nonattainment Area based on the data that showed that only two years during the 1999 through 2006 monitoring record had 24-hour maximums less that the current EPA PM<sub>2.5</sub> standard. The Nogales PM<sub>10</sub> and PM<sub>2.5</sub> nonattainment area boundaries coincide.

A major contributor to  $PM_{10}$  pollution in the Santa Cruz County area is unpaved roads. Obviously, paving roads would be a great solution. However, the cost to pave all the unpaved roads would be considerable and, in many cases, prohibitive. There are many cases where a paved road isn't warranted, or even wanted by the residents. In these cases, sealing the roads with a binder coating is a good and relatively inexpensive option that significantly decreases the fugitive dust produced by a dirt road.

Another factor that significantly impacts the air quality in Nogales and Santa Cruz County is considerable heavy truck traffic. The Mariposa Port of Entry on the western side of Nogales is one the busiest ports in the state and the site of import for nearly half of the nation's fresh produce. That reason helps explain why Santa Cruz County has a very high level of air pollution in comparison to similar sized counties in terms of land area and population.

One of the major contributing factors with heavy truck traffic air pollution is that when the port of entry gets congested, all vehicles are forced to wait for extended periods of time, with their engines idling while waiting. With fresh produce as their shipment, this negatively affects the trucking companies since they cannot turn off the trucks due to refrigeration needs. In an effort to mitigate the pollution problem, the Greater Nogales and Santa Cruz County Port Authority and others are looking into an electrification program for trucks waiting at the border. This



would provide a staging area where trucks could plug in their vehicles to maintain refrigeration without keeping the truck engines turned on. This plan is still being developed and waiting funding, but it would serve to improve air quality in the region.

Another helpful improvement that could be made is coordinating and improving signal timing throughout the urbanized area of the City of Nogales. When signals are coordinated with each other, they can provide a smoother flow with fewer idling vehicles contributing to the pollution problem. In addition, this would also save considerable amounts of wasted fuel due to unnecessary waiting for signals.

#### Hazardous Materials

According to the USEPA, there are a number of regulated sites within Santa Cruz County and the study area. These sites are facilities regulated by the USEPA that either handle hazardous waste, or release toxic substances into the environment. Currently there are six toxic release sites in the study area that are regulated by the USEPA. More information about the individual sites can be found in the Toxins Release Inventory (TRI) database.

There are also 44 hazardous waste sites in the study area. Hazardous waste is considered to be any by-product of society that can pose a substantial or potential hazard to human health or the environment. All of these sites are monitored and regulated by the US Environmental Protection Agency. As with the toxic release sites, the hazardous waste sites are mostly concentrated in the Nogales/Rio Rico area with a few outliers further north in the study area.

### 2.4.2 Cultural Environment

The study area encompasses a number of cultural resources and parks in the City of Nogales and Santa Cruz County. According to the National Register and the State Historic Preservation Office (SHPO), there are 44 protected Historic places and/or buildings in the study area. Of these forty-four nearly three-quarters are in the Nogales Area. The majority of the sites are buildings with many of them being historic homes that were built in the late nineteenth and early twentieth centuries. Following is a list of the protected places in the study area:

- 10 Cottages on Short Street
- Arizona-Sonora Manufacturing Company Machine Shop
- Atascosa Lookout House
- Barrio de Tubac Archeological District
- Bowman Hotel
- W. G. Bowman House
- Burton Building
- Calabasas
- Frank F. Cranz House
- Crawford Hill Historic Residential District
- George Dunbar House
- Guevavi Mission Ruins
- Sen. James A. Harrison House



- Hotel Blanca
- House at 200 Walnut Street
- House at 334-338 Walnut Street
- House at 665 Morley Ave.
- Pete Kitchen Ranch
- S.H. Kress & Co. Building
- Las Dos Naciones Cigar Factory
- Marsh Heights Historic District
- George B. Marsh Building
- Mediterranean Style House -124 Walnut
- Mediterranean Style House 116 Walnut
- Hugo Miller House
- Mentezuma Hotel
- Nogales Electric Light, Ice & Water Company Power House
- Nogales High School
- Nogales Steam Laundry Building
- A.S. Noon Building
- Old Nogales City Hall and Fire Station
- Old Tubac Schoolhouse
- Pennington Rural Historic Landscape
- Jose Piscorski Building
- Santa Cruz Bridge No. 1
- Santa Cruz County Courthouse
- Three Mediterranean Cottages on Pajarito Street
- Tubac Presidio
- Tubac Townsite Historic District
- Tumacacori Museum
- Tumacacori National Monument
- US Custom House
- US Post Office and Immigration Station Nogales Main
- J.E. Wise Building



## 3. Programmed Improvements

### **3.1** Short Term Programmed Improvements

The 2009 SEAGO Transportation Improvement Program (TIP), Amendment #2, dated April 2009, includes the following projects within the study area:

Program Year	Project Name and Description	Sponsor	Total Cost
2009	Palo Parado Phase I – Paving, Drainage & Rail Crossing Improvements at UPRR Crossing	Santa Cruz County	\$350,000
2010	Palo Parado Road – Roadway/Bridge/Rail Crossing Improvements, Pendleton to I-19	Santa Cruz County	\$9,100,000
2011	None	n/a	n/a
2012	None	n/a	n/a
2013	None	n/a	n/a

### Santa Cruz County

The Santa Cruz County Public Works Director reports that the county does not maintain a current TIP due to lack of funding for any capital improvement projects. The county spends their available transportation funds on maintaining the current system. New road construction has been limited to infrastructure constructed by developers internal to their subdivision/development.

The county had drafted a TIP that was approved by the Board of Supervisors in 2003, but the TIP was never funded because the board turned down the "Impact Fee Ordinance" that would have funded the TIP projects. The only capital improvement projects completed in recent years have been funded through SEAGO or the State TIP. Few projects have been completed since the 2000 transportation plan was completed. The county does, however, maintain a critical needs list.

### Nogales

The city also does not have a current 5-year transportation improvement plan. Similar to the county, the city has been expending their available transportation funds on maintaining the existing street system.

### Unified Nogales/Santa Cruz County Transportation Plan 2000

The previous transportation plan, however, did set forth a short term transportation improvement program for the City of Nogales and Santa Cruz County. The following two pages contain the "2001 through 2005 Transportation Improvement Plan" from the 2000 study report.



	Project Location			
ID	Project Description	Jurisidiction	Cost (x \$1000)	Funded
	Grand Avenue/Western Avenue Intersection	City of Nogales		
1	Install traffic signal and intersection improvements.	ADOT	\$150	Yes
2	Downtown Nogales Nogales parking study update (October 2000) improvements.	City of Nogales	\$10,000	No
3	Bankard Street Bridge Crossing Design and reconstruct bridge structure.	City of Nogales	\$250	No
4	Target Range Road/Mariposa Road Intersection Conduct studies, design and construct intersection as warranted.	City of Nogales ADOT	\$150	No
5	Morley Avenue, to International Border  Design and construct streetscape and pedestrian improvements.	City of Nogales	\$200	Yes
6	Patagonia Highway (SR82)/Duquesne Road Intersection  Design and construct traffic intersection safety improvements as needed.	ADOT	\$300	No
7	South River Road, Via Frontera to SR82 Pave road.	Santa Cruz County	\$2,000	Pending
8	Patagonia Highway (SR82)/Kino Springs Drive Intersection Design and construct traffic intersection improvements as needed.	Santa Cruz County ADOT	\$500	No
9	North-South Interconnector, SR189 to I-19 Perform corridor study to establish roadway alignment, interchange locations, and connectivity. Preserve right-of-way.	City of Nogales Santa Cruz County ADOT	\$1,250	No
10	Grand Avenue/Doe Street to Baffert Drive Design and construct sidewalk, landscaping, and lighting improvements.	City of Nogales ADOT	\$750	Yes
11	East-West Interconnector, SR189 to SR82 Perform corridor study to establish roadway alignment, interchange locations, and connectivity. Preserve right-of-way.	City of Nogales Santa Cruz County ADOT	\$1,000	No
12	I-19 Frontage Road, Rio Rico to Western Avenue Perform corridor study to establish frontage road alignment and interchange configurations.	City of Nogales Santa Cruz County ADOT	\$1,000	No
13	Tubac Enhancement Project Improvement of historcial path.	Santa Cruz County	\$187	Pending
14	Main Street Enhancement Design and construct streetscape and pedestrian improvements.	City of Nogales	\$249	Pending
15	Old Tucson Highway  Design and reconstruct this 2-lane section.	Santa Cruz County	\$1,710	Pending
16	B-19, International Border to Doe Street Pavement preservation.	ADOT	\$1,165	Yes
17	East I-19 Frontage Road, Rio Rico to Ruby Road Design and construct frontage road.	ADOT	\$10,843	Yes
18	Peck Canyon Wash Bridges Scour retrofit.	ADOT	\$278	Yes

2001 through 2005 Transportation Improvement Plan (source: 2000 Transportation Plan)



	Project Location		Cost	
ID	Project Description	Jurisidiction	(x \$1000)	Funded
	Tubac State Park Roads	ADOT		
19	Design and construct park roadways.		\$950	Yes
	Mariposa Rd, US Customs - State Port	ADOT		
20	Right-of-way acquisition.		\$900	Yes
	Mariposa Rd, US Customs - State Port	ADOT		
21	Construct Annex.		\$4,500	Yes
	Mariposa Rd, US Customs - State Port	ADOT		
22	Design and construct access road.		\$275	Yes
	Nogales Wash Crossing to Gold Hill Road	City of Nogales		
23	Replace bridge structure.		\$300	No
	Downtown Land Use and Circulation Study	City of Nogales		
24	Maintenance of existing infrastructure		\$50	No
	Bike and Pedestrian Plan	City of Nogales		
25	Maintenance of existing infrastructure		\$20	No
	Country Club, West Frontage Road to Grand Avenue	Santa Cruz County		
26	Conduct studies, design, and construct improvments.	ADOT	\$1,000	No
	Planning Region	City of Nogales		
27	Maintenance and operations of existing infrastructure	Santa Cruz County ADOT	\$43,900	No
otal			\$83,877	

2001 through 2005 Transportation Improvement Plan continued (source: 2000 Transportation Plan)

Projects that have been implemented from this short term (2001-2005) transportation plan include the following:

2000 Plan	
ID No.	Project Location and Description
1.	Grand Avenue/Western Avenue Intersection Improvements
4.	Target Range Road/Mariposa Road Intersection Improvements
5.	Morley Avenue to International Border Streetscape Improvements
7.	South River Road, Via Frontera to SR 82, Paving Improvements
8.	Patagonia Hwy (SR 82)/Kino Springs Drive Intersection Improvements
10.	Grand Avenue, Doe Street to Baffert Drive Sidewalk & Lighting Project
14.	Main Street Enhancement Project, Streetscape & Pedestrian Improvements
15.	Old Tucson Highway, Reconstruction and Repaving Improvement Project



ID	Project Location Project Description	Jurisidiction	Cost (x \$1000)	Funded
1	Rio Rico Drive, I-19 to Pendleton Drive Reconstruct existing cross-section to a 4 lane-section. Reconstruct existing bridge across Santa Cruz River.	Santa Cruz County	\$2,400	No
2	SR289 Interconnector, Via Frontera to SR82  Perform corridor study to establish roadway alignment, interchange locations, and connectivity. Preserve right-of-way.  City of Nogales Santa Cruz County			No
3	North-South Interconnector. SR189 to I-19  Design, and aquire right-of-way, and construct a 4-lane divided Santa Cruz County highway. Reconstruct I-19 interchange.  ADOT		\$100,000	No
4	Country Club Drive, North-South Interconnector to Grand Avenue Design, acquire right-of-way, and construct 3-lane section.	City of Nogales	\$4,000	No
5	New Roadway, North-South Interconnector to Ruby Road Design, acquire right-of-way, and construct to a 3-lane section.	Santa Cruz County	\$4,000	No
6	Ruby Road, New Roadway to I-19 Design and construct to a 4-lane section.	Santa Cruz County ADOT	\$2,000	No
7	Planning Region  Maintenance and operations of existing infrastructure	City of Nogales Santa Cruz County ADOT	\$45,000	No
Γotal			\$158,400	

2006 through 2010 Transportation Improvement Plan (source: 2000 Transportation Plan)

### 3.2 Long Term Programmed Improvements

The long term planned improvements for the transportation systems for both the City of Nogales and for Santa Cruz County were set forth in the *Unified Nogales/Santa Cruz County Transportation 2000 Plan*. A copy of the "2006 through 2010 Transportation Improvement Plan" is shown on this page and the "2011 through 2020 Transportation Improvement Plan" is shown on the following page.

None of these programmed improvements have been implemented.

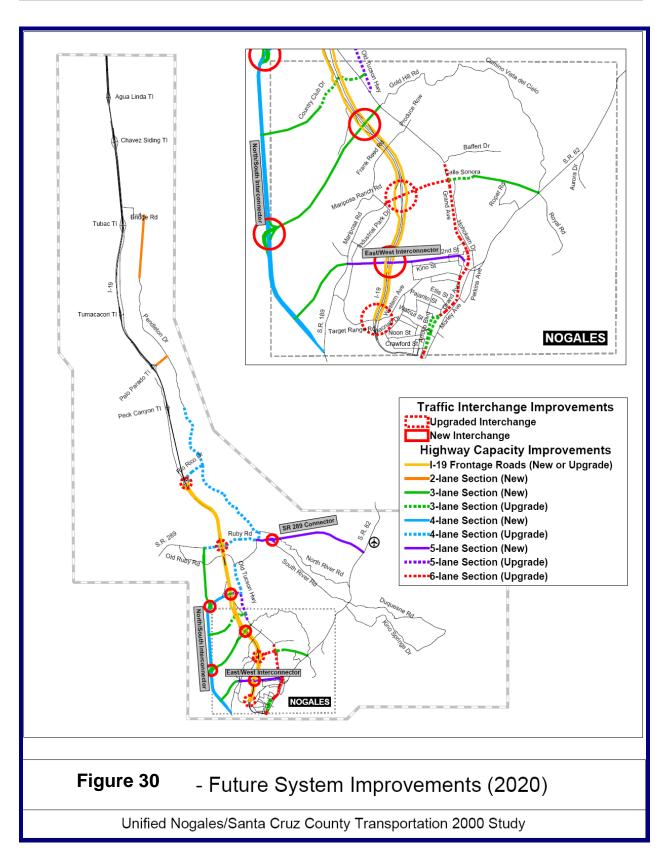
The map entitled "Figure 30 – Future System Improvements (2020)" from the Unified Nogales/Santa Cruz County Transportation 2000 Study report is shown on the page following the 2011 through 2020 table.



ID	Project Location Project Description	Jurisidiction	Cost	Funded
	, ,		(x \$1000)	
1	East-West Interconnector, SR189 to SR82  Design, acquire right-of-way, and construct a 5-lane section and three I-19 traffic interchanges.	City of Nogales Santa Cruz County ADOT	\$55,000	No
2	New Roadway, North-South Interconnector to Grand Avenue Design, acquire right-of-way, and construct to a 3-lane section. Construct I-19 interchange.	City of Nogales	\$14,000	No
3	Pendleton Drive, Via Frontera to North of Rio Rico Drive Design and reconstruct to a 4-lane section.	Santa Cruz County	\$7,000	No
4	Via Frontera, Pendleton Drive to South River Road  Design and reconstruct to a 4-lane section.	Santa Cruz County	\$500	No
5	Pendleton Drive, north terminus to Bridge Road  Design and construct to a 2-lane roadway.	Santa Cruz County	\$2,000	No
6	SR289 Interconnector, Via Frontera to SR82  Design, acquire right-of-way and construct to a 5-lane section.	City of Nogales Santa Cruz County ADOT	\$55,000	No
7	I-19 Frontage Road, Rio Rico to Western Avenue Design, acquire right-of-way, and construct frontage roads.	City of Nogales Santa Cruz County ADOT	\$20,000	No
8	Calle Sonora, Grand Avenue to SR82 Design and construct to a 3-lane section.	City of Nogales	\$4,000	No
9	Frontage Road, Ruby Road to Rio Rico Design and reconstruct frontage road.	City of Nogales ADOT	\$8,000	No
10	City of Nogales Sidewalk/Access Improvements  Design and conduct study, design and install 16,000 linear feet of sidewalk/handicap ramps.	City of Nogales	\$250	No
11	Mariposa Road, Grand Avenue to Frank Reed Road  Design and reconstruct to a 6-lane section.	City of Nogales ADOT	\$3,500	No
12	Grand Avenue, International Border to Baffert Drive Perform study of safety, traffic operations, parking, and access to improve capacity and throughput.	City of Nogales ADOT	\$250	No
13	Palo Parado, I-19 to Pendleton Drive  Design and construct to a 2-lane section. Construct new bridge across Santa Cruz River.	Santa Cruz County	\$900	No
14	Old Tucson Highway, Grand Avenue to Frontage Road Design and reconstruct to a 5 lane-section.	City of Nogales ADOT	\$4,000	No
15	Planning Region  Maintenance and operations of existing infrastructure	City of Nogales Santa Cruz County ADOT	\$93,500	No
Total			\$267,900	

2011 through 2020 Transportation Improvement Plan (source: 2000 Transportation Plan)







### 4. Stakeholder Identified Transportation Needs

#### 4.1 Overview

During the course of the research phase of this study, interviews were conducted with various stakeholders to determine the known deficiencies, problem areas, needed improvements, and desired projects for the local communities and the county. The summary of the discussions with stakeholders can be found in Appendix B of this report.

### **4.2** Specific Needs Identification and Locations

The stakeholders interviewed identified some 57 or so needed improvements to the transportation system for the local communities. There were many of the identified needs that were common to all of the stakeholders meaning universal support for most of the identified improvements to the transportation system. The stakeholders identified needs for the entire county and did not limit their remarks to their local community only. Many of these identified projects were also cited by the Santa Cruz County Public Works Director and the City of Nogales City Engineer as needed transportation system improvements. The indication is that the public will support most, if not all, of these improvements when funding becomes available from any source. These sites were used as a basis for an expanded list of candidate projects.

### 5. Forecast of Future Conditions

### **5.1** Population Growth

The US Census Bureau counts the population of the entire US every 10 years. Table P1 shows the 1950-2000 census population counts for Arizona, Santa Cruz County and the City of Nogales. Between 1950 and 2000, Arizona's population increased almost 7-fold, Santa Cruz County's population increased 4-fold, and Nogales' population increased 3-fold. Because these numbers were derived from actual counts of the population, there is little question about these historical (1950-2000) counts. In addition to the decennial counts, Table P1 also shows a Census Bureau estimate (not a count) of the 2007 population. Because these numbers are estimates and not counts, there is more room for differing estimates of both existing and future population.

Table P1: US Census Population Counts & Estimates: 1950-2007										
AREA	2007	2000	1990	1980	1970	1960	1950			
Arizona	6,338,755	5,130,632	3,665,339	2,716,546	1,775,399	1,302,161	749,587			
Santa Cruz County	42,845	38,381	29,676	20,459	13,966	10,808	9,344			
Nogales City	19,870	20,878	19,489	15,683	8,946	7,286	6,153			
Source: U.S. Bureau of Census										

For example, Table P2 presents estimates of 2007 population and forecasts of 2010-2050 population prepared by the Arizona Department of Employment Security (DES). The DES estimate of 2007 Santa Cruz county population is almost 10% higher than the Census Bureau



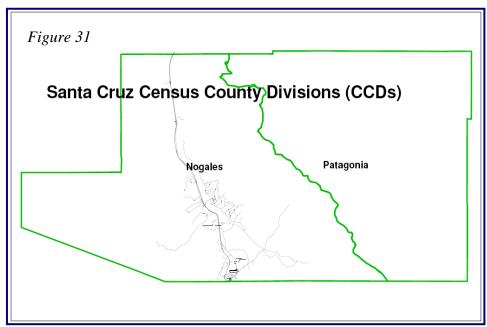
estimate. Each agency used a different methodology to develop their 2007 estimate, which resulted in somewhat different answers. Neither agency actually counted the population in 2007, so there is no way to tell which number is more accurate. Fortunately, they are close enough that, for the purposes of this study, it makes little difference which estimate and forecasts are used

Table P2: DES Population Estimates & Forecasts										
AREA	2000	2007	2010	2020	2030	2040	2050			
Santa Cruz County	38,381	46,545	50,210	61,658	71,033	78,526	84,708			
Nogales CCD	35,600	43,293	46,746	57,534	66,368	73,428	79,254			
Amado CDP	275	380	427	573	693	790	869			
Nogales city	20,878	22,248	22,863	24,783	26,356	27,614	28,651			
Rio Rico Northeast CDP	3,189	4,376	4,921	6,621	8,013	9,126	10,044			
Rio Rico Northwest CDP	2,901	4,625	5,408	7,853	9,855	11,455	12,775			
Rio Rico Southeast CDP	1,633	2,866	3,439	5,228	6,694	7,865	8,831			
Rio Rico Southwest CDP	2,777	4,469	5,228	7,601	9,543	11,096	12,377			
Tubac CDP	949	1,111	1,184	1,411	1,597	1,745	1,868			
Tumacacori-Carmen CDP	562	702	762	948	1,101	1,223	1,323			
Remainder of Nogales CCD	2,436	2,516	2,516	2,516	2,516	2,516	2,516			

For this project, the DES estimates and forecasts are being used. This is primarily because DES also produced a companion set of sub-county estimates and forecasts. These sub-county areas are based upon census geography. As shown in *Figure 31*, Santa Cruz County is divided into

two major census divisions: the Nogales CCD (western Santa Cruz County), and the Patagonia CCD (eastern Santa Cruz County). The study area for this project falls entirely within the Nogales CCD.

As shown in *Figure* 32, the Nogales CCD is sub-divided into eight Census Designated Places (CDPs): Amado,



Tubac, Tumacacori-Carmen, Rio Rico Northeast, Rio Rico Northwest, Rio Rico Southeast, Rio Rico Southwest, and the City of Nogales. Table P2 presented counts of 2000 population, estimates of 2007 population, and forecasts of 2010-2050 population for each of the eight CDPs



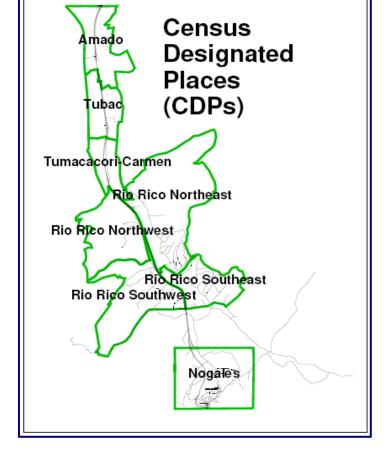
and for the remaining portion of western Santa Cruz County. The 2007 DES estimates indicate that:

Figure 32

- 93% of the total County population is located within western Santa Cruz County;
- 51% of the western Santa Cruz population is located within the City of Nogales;
- 38% of the western Santa Cruz population is located within the combined Rio Rico CDPs.

Given the current economic climate, the population forecasts for 2010 and 2020 might be viewed as somewhat optimistic. Even so, the 2030 numbers appear achievable and reasonable. The 2030 DES forecasts indicate that:

- The total Santa Cruz County population will be 71,033 and the western County population will be 66,400, both of which represent 53% increases from 2007;
- 51% of the western Santa Cruz population will be located within the combined Rio Rico CDPs;



• 40% of the western Santa Cruz population will be located within the City of Nogales.



### 5.2 Housing Growth

The 2000 Census also counts the number of housing units. This is important because traffic forecasting models use housing units to estimate traffic generation. DES has not published housing unit estimates and forecasts to go with their population estimates and forecasts. However, estimates and forecasts of housing units have been imputed from the DES population data. Table H1 presents the counted housing units for 2000, the estimated housing units for 2007, and the forecast housing units for 2020 and 2030.

Table H1: Counted, Estimated & Forecast Housing Units										
AREA	2000	2007	2020	2030	2007 Incre					
Nogales CCD	11,494	13,978	20,640	23,809	9,831	70%				
Amado CDP	107	148	248	300	152	103%				
Nogales city	6,501	6,928	8,575	9,119	2,191	32%				
Rio Rico Northeast CDP	1,115	1,530	2,572	3,113	1,583	103%				
Rio Rico Northwest CDP	837	1,335	2,517	3,159	1,825	137%				
Rio Rico Southeast CDP	452	793	1,608	2,059	1,265	160%				
Rio Rico Southwest CDP	749	1,205	2,278	2,860	1,655	137%				
Tubac CDP	569	666	940	1,064	398	60%				
Tumacacori-Carmen CDP	246	307	461	535	228	74%				
Remainder of Nogales CCD	918	948	1,053	1,053	105	11%				
Sources: 2000=Census Data,	2007-2030	) imputed b	oy WSA fro	m DES po	pulation da	ata				

Overall, the distribution and increases in housing units largely parallel the distribution and increases in population. However, the percentage increase in housing units is somewhat higher than the percentage increase in population because the number of persons per housing unit decreases over time. Between 2007 and 2030, the number of housing units in Western Santa Cruz County increases by 9,831 (70%). The City of Nogales has the largest absolute increase in housing units (2,191), but the smallest percentage increase (32%). Some portion of this increase could occur in the unincorporated area surrounding the city. The individual Rio Rico CDPs have somewhat smaller absolute increases, but the largest percentage increases. Combined, the number of housing units in the Rio Rico area increase by 6,328 (130%) to almost 11,200.



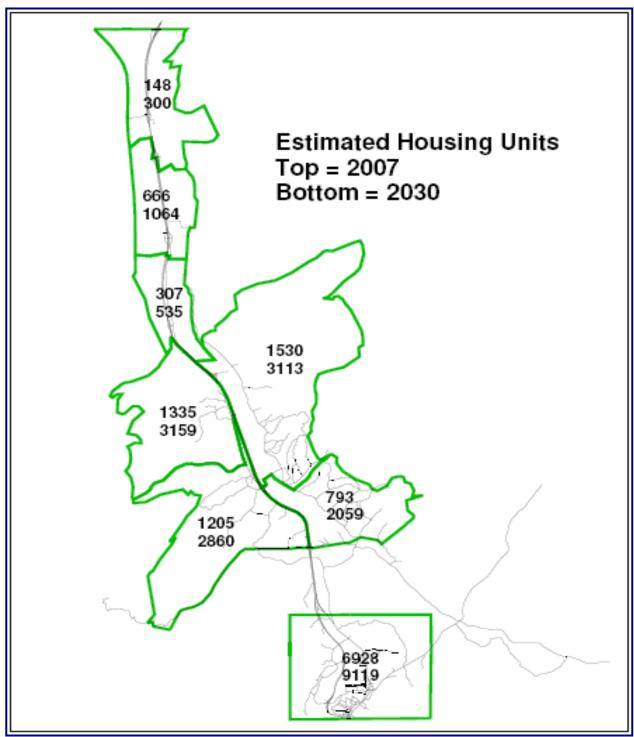


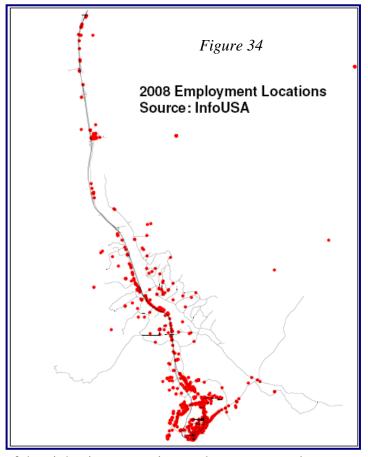
Figure 33 – Estimated Housing Units



## **5.3** Employment Growth

Like housing units, existing and future employment by location is a critical input to the traffic forecasting process. To support the Unified Nogales Santa Cruz Transportation Plan 2010, 2008 employment data from was purchased from InfoUSA. InfoUSA maintains a database of all employers throughout the USA, including Santa Cruz County. For each employer, the database lists employer name, work location(s), contact and phone number, standard industrial code (SIC), and the number of employees by size category: 1-4, 5-9, 10-19, 20-49, 50-99, 100-249, 250-499, and 500-999 employees. For Santa Cruz County, the InfoUSA data identifies 1,758 employee work locations (Figure 34). Most employers having more than one work location are listed once for each location.

Published Arizona Department of Commerce data was used to estimate



the average number of employees in each of the eight size categories used to report employment in the InfoUSA data (see Table E2). Based on these averages, the InfoUSA data estimates Santa Cruz County employment to be approximately 15,600, which is very consistent with published Department of Commerce estimates.

Table E2: 2008 Santa Cruz County Employment Locations By Size									
Employee Size Category	Average Employees	Employment Locations	Total Employees	Percent of Total					
500 to 999	674.6	1	675	4%					
250 to 499	342.1	3	1,026	7%					
100 to 249	149.8	12	1,798	12%					
50 to 99	69.1	37	2,557	17%					
20 to 49	30.3	112	3,394	22%					
10 to 19	13.4	179	2,399	16%					
5 to 9	6.6	329	2,171	14%					
1 to 4	1.3	1,070	1,391	9%					
Grand Total	8.8	1,743	15,410	100%					
Source: InfoUSA									



The InfoUSA data shows that of the 1,743 employment locations in Santa Cruz County, there are 4 employment locations with 250 or more employees, 16 with 100 or more, and 53 with 50 or more. These 53 locations alone (Table E4) account for about 40% of total employment, while the 165 employment locations with 20 or more employees account for more than 60% of total employment. At the other end of the spectrum, almost 1,100 employment locations have less than 5 employees, and altogether account for less than 10% of total employment. Of the 1,743 employment locations:

- 565 are retail establishments. Altogether, retail establishments account for 5,400 employees, or 35% of total employment. The 132 retail employee locations reporting more than 10 employees account for 78% of retail employment and 27% of total employment.
- 105 are government employers. Altogether, government facilities account for almost 1,700 employees, or 11% of total employment. Of the 1,758 employer locations, 38 are educational facilities. These account for 1,225 employees, or 8% of total employment. Together, the government and educational employment locations account for 19% of total employment in Santa Cruz County.
- 1,557 (89%) employment locations are found in the project study area (western Santa Cruz County).

Table E3 shows the distribution of 2008 employment locations and employees within western Santa Cruz County. The vast majority (77%) of all employees within the study area work within the City of Nogales while 16% work in Rio Rico and 3% work in Amado, Tubac, or Tumacacori. Most of the remaining 4% of employees work in the unincorporated areas just north and east of the City of Nogales.

Table E3: 2008 Western Santa Cruz County Employees By Location										
	2008 Em	ploymen	t Locati	ons	2008 Employees					
Area	Non-Retail	Retail	Total	Pct	Non-Retail	Retail	Total	Pct		
Nogales CCD	1,030	527	1,557	100%	9,366	5,163	14,528	100.0%		
Amado CDP	19	7	26	2%	53	14	67	0.5%		
Nogales City	780	366	1,146	74%	7,400	3,789	11,190	77.0%		
Rio Rico Northeast CDP	27	8	35	2%	128	64	192	1.3%		
Rio Rico Northwest CDP	38	4	42	3%	500	34	534	3.7%		
Rio Rico Southeast CDP	43	61	104	7%	323	813	1,137	7.8%		
Rio Rico Southwest CDP	56	13	69	4%	363	79	442	3.0%		
Tubac CDP	33	44	77	5%	222	137	359	2.5%		
Tumacacori-Carmen CDP	6	2	8	1%	25	3	28	0.2%		
Remainder of Nogales CCD	28	22	50	3%	350	229	580	4%		
Source: InfoUSA										



Tal	ble E4: 2008 Employment	Locations With 50 Or M	ore Emplo	yees		
ID	Name	Mail Address	Mail City	SIC	SIC Name	Size Category
1	Walmart Supercenter	100 W White Park Dr	Nogales	5311-02	Department Stores	500 to 999
2	Alpha Pro Tech	1287 W Fairway Dr	Nogales	3841-04	Physicians & Surgeons Equip & Supls-Mfrs	250 to 499
3	Ict Group	251 N Grand Court Plz	Nogales	7389-12	Telemarketing Services	250 to 499
4	US Border Patrol	1500 W LA Quinta Rd # 1	Nogales	9721-01	Federal Government-International Affairs	250 to 499
5	Bionova Holding Corp	PO Box 1586	Nogales	8731-01	Laboratories-Research & Development	100 to 249
6	C R Bard Inc	PO Box 488	Nogales	3841-04	Physicians & Surgeons Equip & Supls-Mfrs	100 to 249
7	Citizen Express Lines	67 E Baffert Dr	Nogales	4225-03	Storage-Household & Commercial	100 to 249
8	Food City	450 N Grand Court Plz	Nogales	5411-05	Grocers-Retail	100 to 249
9	Grg Construction	3740 E 43rd Pl	Tucson	1771-07	Concrete Pumping Service	100 to 249
10	Holy Cross Hospital	1171 W Target Range Rd	Nogales	8062-02	Hospitals	100 to 249
11	Home Depot	430 W White Park Dr	Nogales	5211-38	Home Centers	100 to 249
12	Medici's Palo Duro Creek Golf	2690 N Country Club Dr	Nogales	5812-08	Restaurants	100 to 249
13	Nogales High School	1905 N Apache Blvd	Nogales	8211-03	Schools	100 to 249
14	Prestolite Wire Corp	1204 W Industrial Park Dr	Nogales	3357-98	Drawing/Insulating-Nonferrous Wire (Mfr)	100 to 249
15	Produce Exchange	805 E Frontage Rd	Rio Rico	5431-01	Fruits & Vegetables & Produce-Retail	100 to 249
16	Ups Supply Chain Solutions	240 N Freeport Dr	Nogales	4731-13	Customs Brokers	100 to 249
17	A Family Mart	176 N Morley Ave	Nogales	5311-02	Department Stores	50 to 99
18	A J Mitchell Elementary School	855 N Bautista St	Nogales	8211-03	Schools	50 to 99
19	Big Chuy Distributing CO	PO Box 1441	Nogales	5431-01	Fruits & Vegetables & Produce-Retail	50 to 99
20	Bracker's	PO Box 1489	Nogales	5621-01	Women's Apparel-Retail	50 to 99
21	Brasher Real Estate	PO Box 4241	Tubac	6531-18	Real Estate	50 to 99
22	Calabasas Middle School	1374 W Frontage Rd	Rio Rico	8211-03	Schools	50 to 99
23	Challenger Elementary School	310 W Plum St	Nogales	8211-03	Schools	50 to 99
24	Charles E Gillman CO	907 E Frontage Rd	Rio Rico	5063-46	Wire Harnesses-Electrical (Wholesale)	50 to 99
25	Church of Jesus Christ of Lds	621 W Green PI	Nogales	8661-07	Churches	50 to 99
26	Country Store	PO Box 99	Sonoita	5411-03	Convenience Stores	50 to 99
27	County Sheriff	1250 N Hohokam Dr	Nogales	9221-03	Sheriff	50 to 99
28	DE Coronado Elementary School	2301 N al Harrison Rd	Nogales	8211-03	Schools	50 to 99



Ta	ble E4: 2008 Employment I	Locations With 50 Or Mo	ore Emplo	yees		
ID	Name	Mail Address	Mail City	SIC	SIC Name	Size Category
29	Desert Shadows Middle School	340 Boulevard Del Rey David	Nogales	8211-03	Schools	50 to 99
30	Foxworth-Galbraith Lumber CO	631 W Mesa Verde Dr	Nogales	5211-42	Lumber-Retail	50 to 99
31	Francisco Vasquez DE Coronado	2301 N al Harrison Rd	Nogales	8211-03	Schools	50 to 99
32	Home Town Buffet	251 W White Park Dr	Nogales	5812-08	Restaurants	50 to 99
33	Kelcourt Plastics Inc	1440 N Industrial Park Dr # 2	Nogales	3082-01	Plastics-Rod, Tube, Sheets, Etc-Supl (Mfr)	50 to 99
34	Korean Church of Nogales	959 W Paul Bond Dr	Nogales	8661-07	Churches	50 to 99
35	Manuel Huerta Trucking	PO Box 7089	Nogales	4213-03	Trucking-Transportation Brokers	50 to 99
36	Mc Donald's	470 W Mariposa Rd	Nogales	5812-08	Restaurants	50 to 99
37	Nogales Police Dept	777 N Grand Ave	Nogales	9221-04	Police Departments	50 to 99
38	Nogales Work Activity Ctr	70 E LA Castellana Dr	Nogales	8299-31	Training Programs & Services	50 to 99
39	Oasis Cinema	240 W Roper Rd	Nogales	7832-01	Theatres-Movie	50 to 99
40	Our Lady of Lourdes High Schl	PO Box 1865	Nogales	8211-01	Religious Schools	50 to 99
41	Pena Blanca Elementary School	131 Camino Maricopa	Rio Rico	8211-03	Schools	50 to 99
42	Rcci Carpentry Inc	1225 W Frontage Rd	Rio Rico	1751-02	Carpenters	50 to 99
43	Rio Rico Gold Course	1069 Camino Caralampi	Rio Rico	7992-01	Golf Courses-Public	50 to 99
44	Safeway	465 W Mariposa Rd	Nogales	5411-05	Grocers-Retail	50 to 99
45	Santa Cruz County Sheriffs	1250 N Hohokam Dr	Nogales	9221-03	Sheriff	50 to 99
46	Santa Cruz Special Education	451 N Arroyo Blvd	Nogales	8351-02	Schools-Nursery & Kindergarten Academic	50 to 99
47	Santa Cruz Training Programs	PO Box 638	Nogales	8399-05	Disability Services	50 to 99
48	Southeastern AZ Behavioral Svc	32 Boulevard Del Rey David	Nogales	8063-01	Mental Health Services	50 to 99
49	Tubac Fire District	PO Box 2881	Sierra Vista	9224-04	Fire Departments	50 to 99
50	Tubac Golf Resort & Spa	PO Box 1297	Tubac	7992-01	Golf Courses-Public	50 to 99
51	US Border Patrol	PO Box 37	Sonoita	9721-01	Federal Government-International Affairs	50 to 99
52	US Food Safety Inspection Svc	2771 N Grand Ave	Nogales	9641-01	Federal Government-Agricultural Programs	50 to 99
53	Wade Carpenter Middle School	595 W Kino St	Nogales	8211-03	Schools	50 to 99
Sou	ırce: InfoUSA					



Because there is no known source for future employment data, the magnitude and distribution of future employment was estimated by Wilbur Smith Associates. For 2007-2008, there were 1.04 employees per housing unit. Assuming this ratio remains constant, and applying it to the 23,800 housing units forecast for 2030, results in a 2030 forecast of 24,750 employees for western Santa Cruz County. This represents an increase of 10,200 employees (70%) over the 2007-2008 estimate of 14,500.

The land use designations presented in the 2004 Santa Cruz Comprehensive Plan were used to guide the distribution of future employment throughout the study area. The Comprehensive Plan Land Use Map (*Figure 35*) designates large areas north and east of Nogales as mixed use (commercial). Additional areas adjacent to I-19 within Rio Rico, Tubac and Amado are also designated as mixed use. While not reflected in the County's Comprehensive Plan, there are significant opportunities for commercial development within the City of Nogales as well.

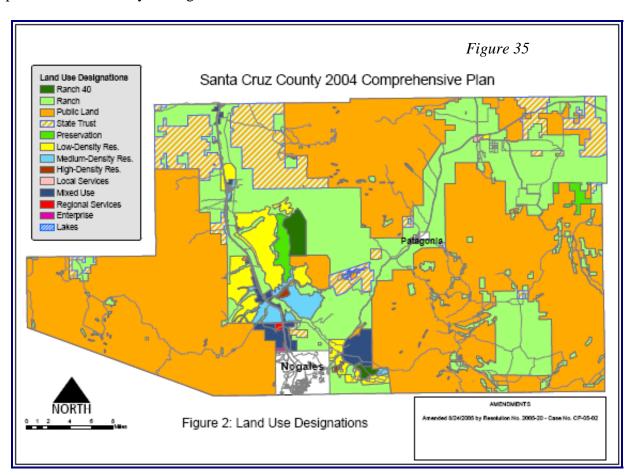


Table E6 presents the forecast distribution of 2030 employees. The vast majority (96%) of the additional employment is divided between the City of Nogales, Rio Rico, and the "Remainder" area. Most of the employment allocated to the "Remainder" area was assigned to the mixed use area between Nogales and Rio Rico. Under this distribution, 58% of total 2030 employment will be located in Nogales compared to 77% in 2008, 19% would be located in Rio Rico compared to 16% in 2008, and 15% would be located in the Remainder area, compared to 4% in 2008.



Table E6: 2030 Western Santa Cruz County Employees By Location										
_	2008-30 l	ncrease	In Employ	ees		_				
Area	Non-Retail	Retail	Total	Pct	Non-Retail	Retail	Total	Pct5		
Nogales CCD	6,587	3,631	10,218	100%	15,953	8,793	24,746	100%		
Amado CDP	66	36	102	1%	119	51	169	1%		
Nogales City	2,108	1,162	3,270	32%	9,508	4,951	14,459	58%		
Rio Rico CCD	2,108	1,162	3,270	32%	3,423	2,152	5,575	23%		
Tubac CDP	132	73	204	2%	354	210	564	2%		
Tumacacori-Carmen CDP	66	36	102	1%	91	39	130	1%		
Remainder of Nogales CCD	2,108	1,162	3,270	32%	2,458	1,391	3,849	16%		
Source: Wilbur Smith Assoc	iates									

### 5.4 Future Traffic & Level of Service

A travel forecasting model is being developed to provide future roadway-level traffic forecasts for freeways, arterials, and collectors throughout the region. This tool is providing insights into the overall magnitude and distribution of future traffic within western Santa Cruz County. Today, and in the future, the major factors generating traffic in the City of Nogales and throughout Santa Cruz County are:

- The magnitude and location of future housing and employment within Nogales and Santa Cruz County;
- The magnitude and nature of traffic at the Ports of Entry (POE) to and from Mexico (Mariposa POE, DeConcini POE, and the Morley Gate); and
- The magnitude of traffic to and from Pima County and points beyond.

The magnitude and location of 2007 and 2030 housing and employment within the region was discussed earlier. The traffic model uses this information to estimate the number and location of vehicle trips that are produced from housing throughout the region, as well as the number of vehicle trips that are attracted to retail and non-retail employment throughout the region. Table T1 summarizes, by area, the 2007 and 2030 Housing and Employment estimates. It also summarizes the average percentage increase in traffic predicted by the model for each area.



Table T1: Development Related Traffic Increases By Area

	Housing Units			Employment			% Traffic Increase
Area	2007	2030	%Inc	2007	2030	%Inc	By 2030
Nogales CCD	13,978	23,809	70%	14,528	24,746	70%	58%
Amado CDP	148	300	103%	67	169	152%	104%
Nogales City	6,928	9,119	32%	11,190	14,459	29%	30%
Rio Rico Northeast CDP	1,530	3,113	103%	192	458	139%	109%
Rio Rico Northwest CDP	1,335	3,159	137%	534	1,375	158%	161%
Rio Rico Southeast CDP	793	2,059	160%	1,137	1,375	21%	142%
Rio Rico Southwest CDP	1,205	2,860	137%	442	1,375	211%	183%
Tubac CDP	666	1,064	60%	359	564	57%	60%
Tumacacori-Carmen CDP	307	535	74%	28	130	368%	77%
Remainder Nogales CCD	948	1,053	11%	580	3,849	564%	171%
Source: Wilbur Smith Associates							

At this point, the model provides preliminary information for arterials. Table T2 summarizes the 2007 counts and forecast 2030 traffic volumes and the resultant levels of service for all arterials within the study area. In addition, several collector roads and one local road are included in the list because they had been identified as existing roads of concern with traffic problems. Based on the 2030 forecast, approximately 22 locations that were LOS A-C in 2007 moved into the LOS D-F category. These include several sections of Grand/Arroyo and SR 189, and are denoted with **bold font**.

Table T2: 2030 Traffic & Resultant Level of Service

Location	Road Type	LOS C Capacity	Current ADT	LOS	2030 ADT	LOS
Compound St	4Ln Urban Arterial	13,600	14,673	D-F	19,000	D-F
Grand, N of Morley	4Ln Urban Arterial	13,600	24,625	D-F	32,000	D-F
Grand, N of Western	4Ln Urban Arterial	13,600	23,531	D-F	31,000	D-F
Grand, S of Morley	4Ln Urban Arterial	13,600	23,711	D-F	31,000	D-F
Grand, S of Western	4Ln Urban Arterial	13,600	23,129	D-F	30,000	D-F
Sonoita Ave, Compound to Crawford	4Ln Urban Arterial	13,600	14,673	D-F	19,000	D-F
Arroyo SB, N of Crawford	2Ln 1Way Arterial	7,000	8,943	D-F	12,000	D-F
Arroyo SB, N of Walnut/Oak	2Ln 1Way Arterial	7,000	9,024	D-F	12,000	D-F
Grand NB, N of Crawford	2Ln 1Way Arterial	7,000	8,975	D-F	12,000	D-F
Grand NB, S of Court	2Ln 1Way Arterial	7,000	11,438	D-F	15,000	D-F
Grand NB, S of Walnut/Oak	2Ln 1Way Arterial	7,000	11,820	D-F	15,000	D-F
Grand, N of Baffert	4Ln Suburban Arterial	23,700	19,815	A-C	26,000	D-F
Grand, N of Frank Reed	4Ln Suburban Arterial	23,700	25,987	D-F	34,000	D-F
Grand, N of Gold Hills	4Ln Suburban Arterial	23,700	23,540	A-C	31,000	D-F
Grand, N of SR-189	4Ln Suburban Arterial	23,700	22,594	A-C	29,000	D-F
Grand, S of Baffert	4Ln Suburban Arterial	23,700	23,164	A-C	30,000	D-F
Grand, S of Country Club	4Ln Suburban Arterial	23,700	22,807	A-C	30,000	D-F
Grand, S of Frank Reed	4Ln Suburban Arterial	23,700	23,570	A-C	31,000	D-F
Grand, S of Gold Hills	4Ln Suburban Arterial	23,700	25,713	D-F	33,000	D-F



		LOS C	Current		2030	
Location	Road Type	Capacity	ADT	LOS	ADT	LOS
Grand, S of SR-189	4Ln Suburban Arterial	23,700	21,572	A-C	28,000	D-F
SR-189, E of Frank Reed	4Ln Suburban Arterial	23,700	21,955	A-C	29,000	D-F
SR-189, E of I-19	4Ln Suburban Arterial	23,700	25,353	D-F	33,000	D-F
SR-189, W of Grand	4Ln Suburban Arterial	23,700	19,800	A-C	26,000	D-F
SR-189, W of I-19	4Ln Suburban Arterial	23,700	23,585	A-C	31,000	D-F
Bankerd Ave, Morley Ave to Doe St	2Ln Urban Arterial	7,000	7,712	D-F	10,000	D-F
Banks Bridge, E of Grand	2Ln Urban Arterial	7,000	5,730	A-C	7,000	D-F
Calle Sonora, E of Grand	2Ln Urban Arterial	7,000	6,993	A-C	9,000	D-F
Calle Sonora, W of Hohokam	2Ln Urban Arterial	7,000	5,519	A-C	7,000	D-F
Crawford, W of Grand	2Ln Urban Arterial	7,000	11,750	D-F	15,000	D-F
Doe Street, E of Grand	2Ln Urban Arterial	7,000	5,730	A-C	7,000	D-F
Frank Reed, N of SR-189	2Ln Urban Arterial	7,000	8,194	D-F	11,000	D-F
Monroe St, Morley Ave to Perkins Ave	2Ln Urban Arterial	7,000	6,240	A-C	8,000	D-F
Morley Ave, Park St to Park St +0.90	2Ln Urban Arterial	7,000	7,199	D-F	9,000	D-F
Perkins Ave, Monroe St +0.09 to SR-82	2Ln Urban Arterial	7,000	6,304	A-C	8,000	D-F
Rio Rico Dr, E from Exit 17 to Pendleton Dr	2Ln Urban Arterial	7,000	9,950	D-F	24,000	D-F
Rio Rico Dr, Rail Crossing	2Ln Urban Arterial	7,000	9,571	D-F	23,000	D-F
Ruby Rd, Potrero Creek	2Ln Urban Arterial	7,000	7,518	D-F	18,000	D-F
Ruby Rd, Rail Crossing	2Ln Urban Arterial	7,000	7,793	D-F	19,000	D-F
Ruby Rd, Santa Cruz River	2Ln Urban Arterial	7,000	4,214	A-C	11,000	D-F
Santa Cruz St, Bejarano St to Grand Ave	2Ln Urban Arterial	7,000	7,550	D-F	10,000	D-F
SR-82 W of Morley	2Ln Urban Arterial	7,000	6,671	A-C	9,000	D-F
Western, E of Mcnab	2Ln Urban Arterial	7,000	6,957	A-C	9,000	D-F
Western, W of Grand	2Ln Urban Arterial	7,000	6,066	A-C	8,000	D-F
Western, W of Mcnab	2Ln Urban Arterial	7,000	7,344	D-F	10,000	D-F
Yavapai Dr, I-19 to Camino Caralampi	2Ln Urban Arterial	7,000	11,748	D-F	33,000	D-F
Old Tucson Rd, Nogales TB to I-19 Front	2Ln Suburban Arterial	11,900	4,867	A-C	13,000	D-F
SR-82, E of Morley	2Ln Suburban Arterial	11,900	9,064	A-C	12,000	D-F
Grand, N of POE	4Ln Urban Arterial	13,600	10,062	A-C	13,000	A-C
Grand, N of Country Club	4Ln Suburban Arterial	23,700	16,168	A-C	21,000	A-C
SR-189, E of Industrial Park Dr W	4Ln Suburban Arterial	23,700	14,453	A-C	19,000	A-C
SR-189, N of Target Range	4Ln Suburban Arterial	23,700	13,598	A-C	18,000	A-C
SR-189, S of Target Range	4Ln Suburban Arterial	23,700	13,750	A-C	18,000	A-C
SR-189, W of Frank Reed	4Ln Suburban Arterial	23,700	15,829	A-C	21,000	A-C
SR-189, W of Industrial Park Dr W	4Ln Suburban Arterial	23,700	14,323	A-C	19,000	A-C
Arivaca Rd, W Frontage Rd to W Frontage Rd	2Ln Urban Arterial	7,000	1,813	A-C	4,000	A-C
Court, E of Grand	2Ln Urban Arterial	7,000	4,668	A-C	6,000	A-C
Hohokam Dr, Calle Sonora approach	2Ln Urban Arterial	7,000	3,095	A-C	4,000	A-C
Horse Shoe Bend, Crawford St to MacNab Dr	2Ln Urban Arterial	7,000	1,112	A-C	1,000	A-C
Macnab, S of Western	2Ln Urban Arterial	7,000	4,115	A-C	5,000	A-C
Morley Ave, Park St +0.90 to Bankerd Ave	2Ln Urban Arterial	7,000	4,113	A-C	5,000	A-C
MONEY AVE, I alk St +0.70 to Dalikelu AVE	ZEH OIDAH ARCHAI	7,000	4,120	M-0	3,000	M-C



Location	Road Type	LOS C Capacity	Current ADT	LOS	2030 ADT	LOS
Morley, N of SR-82	2Ln Urban Arterial	7,000	2,496	A-C	3,000	A-C
Nelson Ave, International St to East St	2Ln Urban Arterial	7,000	1,552	A-C	2,000	A-C
Park, E of Grand	2Ln Urban Arterial	7,000	3,388	A-C	4,000	A-C
Target Range, E of SR-189	2Ln Urban Arterial	7,000	4,253	A-C	6,000	A-C
Walnut/Oak W of Arroyo	2Ln Urban Arterial	7,000	4,413	A-C	6,000	A-C
Walnut/Oak, E of Arroyo	2Ln Urban Arterial	7,000	3,656	A-C	5,000	A-C
Walnut/Oak, W of Grand	2Ln Urban Arterial	7,000	4,179	A-C	5,000	A-C
Country Club, W of Grand	2Ln Suburban Arterial	11,900	7,908	A-C	10,000	A-C
Frank Reed, W of Grand	2Ln Suburban Arterial	11,900	5,409	A-C	7,000	A-C
Old Tucson Rd, Grand Ave to Nogales TB	2Ln Suburban Arterial	11,900	5,862	A-C	8,000	A-C
Pendleton Dr, 1/4 miles N of Paseo Mexico	2Ln Suburban Arterial	11,900	2,745	A-C	7,000	A-C
Pendleton Dr, 1/4 miles S of Paseo Mexico	2Ln Suburban Arterial	11,900	1,934	A-C	5,000	A-C
Pendleton Dr, N of Just Ct	2Ln Suburban Arterial	11,900	1,781	A-C	4,000	A-C
Pendleton Dr, N of Rio Rico Dr	2Ln Suburban Arterial	11,900	3,490	A-C	7,000	A-C
Pendleton Dr, S of Calle Coyote	2Ln Suburban Arterial	11,900	122	A-C	-	A-C
Pendleton Dr, S of Rio Rico Dr	2Ln Suburban Arterial	11,900	5,317	A-C	11,000	A-C
Yavapai Dr, N of Camino Providencia	2Ln Suburban Arterial	11,900	1,313	A-C	4,000	A-C
Yavapai Dr, S of Camino Providencia	2Ln Suburban Arterial	11,900	2,154	A-C	6,000	A-C
Yavapai Dr, W of Camino Caralampi	2Ln Suburban Arterial	11,900	2,626	A-C	7,000	A-C

The Mariposa and DeConcini Ports of Entry with Mexico have a significant influence on traffic within the region. Unfortunately, 2030 traffic at the two ports of entry is very difficult to forecast with any degree of certainty. Because of physical constraints at the DeConcini POE, a modest 30% increase has been asserted. The existing and Mariposa POE is operating at or near capacity during peak months. Given that the planned improvements will almost triple its capacity, a 150% increase has been asserted for the Mariposa POE. The additional Mariposa POE traffic is not reflected in the 2030 volumes presented in Table T2. As shown in Table T3, including the additional 11,000 vehicles per day (including 3,000 additional heavy trucks) would result in LOS D-F on SR 189 from the POE to Grand Ave.

Table T3: SR-189 2030 Traffic & Level of Service with Mariposa POE Traffic

Table 13. 5K-107 2030 Traine			Current		2030	
Location	Road Type	Capacity	PCE	LOS	PCE	LOS2
SR-189, S of Target Range	4Ln Suburban Arterial	23,700	18,678	A-C	41,000	D-F
SR-189, N of Target Range	4Ln Suburban Arterial	23,700	18,462	A-C	41,000	D-F
SR-189, W of Industrial Park Dr W	4Ln Suburban Arterial	23,700	20,425	A-C	44,000	D-F
SR-189, E of Industrial Park Dr W	4Ln Suburban Arterial	23,700	20,117	A-C	43,000	D-F
SR-189, W of Frank Reed	4Ln Suburban Arterial	23,700	21,047	A-C	44,000	D-F
SR-189, E of Frank Reed	4Ln Suburban Arterial	23,700	27,173	D-F	52,000	D-F
SR-189, W of I-19	4Ln Suburban Arterial	23,700	30,313	D-F	56,000	D-F
SR-189, E of I-19	4Ln Suburban Arterial	23,700	29,151	D-F	45,000	D-F
SR-189, W of Grand	4Ln Suburban Arterial	23,700	23,066	A-C	37,000	D-F



The I-19 frontage roads function as major, but discontinuous, north-south arterials. The frontage roads begin just south of Rio Rico and terminate at the Pima County line. As discussed previously, the West Frontage Rd north of Rio Rico Rd is the only section of frontage road currently operating at LOS D-F, while the rest operate at LOS A-C. As shown in Table T4, all but two sections of the West Frontage road system within Rio Rico will be operating at LOS A-C in 2030. However, this assumes that the frontage roads continue to function as relatively high speed suburban arterials. If the frontage roads are allowed to become more urban in nature (slower speeds with more signals and access driveways), the LOS C capacity will be reduced and LOS D-F congestion could be experienced on additional sections of the East and West Frontage roads.

Historic traffic data on I-19 between Santa Cruz and Pima Counties is somewhat inconsistent, but average daily traffic appears to have almost doubled in the past 10 years and tripled in the past 20 years. Both Santa Cruz and Pima Counties experienced significant growth during those periods. Similar growth is expected between 2007 and 2030. As discussed earlier, the population of western Santa Cruz County will increase by 53% by 2030, while the population of Pima County will increase by more than 40% (from 1 million to 1.4 million).

Table T4: I-19 Frontage Road 2030 Traffic & Level of Service

Table 14. 1-19 Frontage Road	2030 Traine & Level o	1 Sel vice				
From	To/At	LOS C Capacity	E Frontage Rd 2030 ADT	2030 LOS	W Frontage Rd 2030 ADT	2030 LOS2
	Exit 12 SR 289 / Ruby					
Exit 8 Grand Ave	Rd	11,900	8,000	A-C	4,000	A-C
Exit 12 SR 289 / Ruby Rd	Exit 17 Rio Rico Rd	11,900	9,000	A-C	8,000	A-C
Exit 17 Rio Rico Rd	Exit 22 Peck Canyon Rd	11,900	n/a	n/a	16,000	D-F
Exit 22 Peck Canyon Rd	Exit 25 Palo Parado Rd	11,900	n/a	n/a	12,000	D-F
Exit 25 Palo Parado Rd	Exit 29 Tumacacori Rd	11,900	3,000	A-C	n/a	n/a
Exit 29 Tumacacori Rd	Exit 34 Tubac Rd	11,900	4,000	A-C	1,000	A-C
Exit 34 Tubac Rd	Exit 40 Chavez Rd	11,900	9,000	A-C	2,000	A-C
Exit 40 Chavez Rd	Exit 42 Agua Linda Rd	11,900	100	A-C	n/a	n/a
Exit 42 Agua Linda Rd	Exit 48 Arivaca Rd	11,900	2,000	A-C	1,000	A-C

Preliminary results from the new travel model indicate that local travel (travel beginning and ending within Santa Cruz County) on I-19 from Rio Rico south will double between 2007 and 2030. Together with the increase in POE traffic, there is little question that traffic on most of I-19 within Nogales and Santa Cruz County, and between Santa Cruz and Pima Counties will at least double by 2030. Table T5 presents the 2030 traffic forecast and resulting level of service for I-19. The forecast 2030 traffic exceeds the level of service C volume from Exit 8 (Grand Ave) to Exit 29 (Tumacacori Rd). Taking into account the exceptionally high percentage of heavy trucks going to and from the Mariposa POE, I-19 between Exit 4 (Mariposa Rd) and Exit 8 (Grand Ave) most likely will be operating at LOS D-E as well.

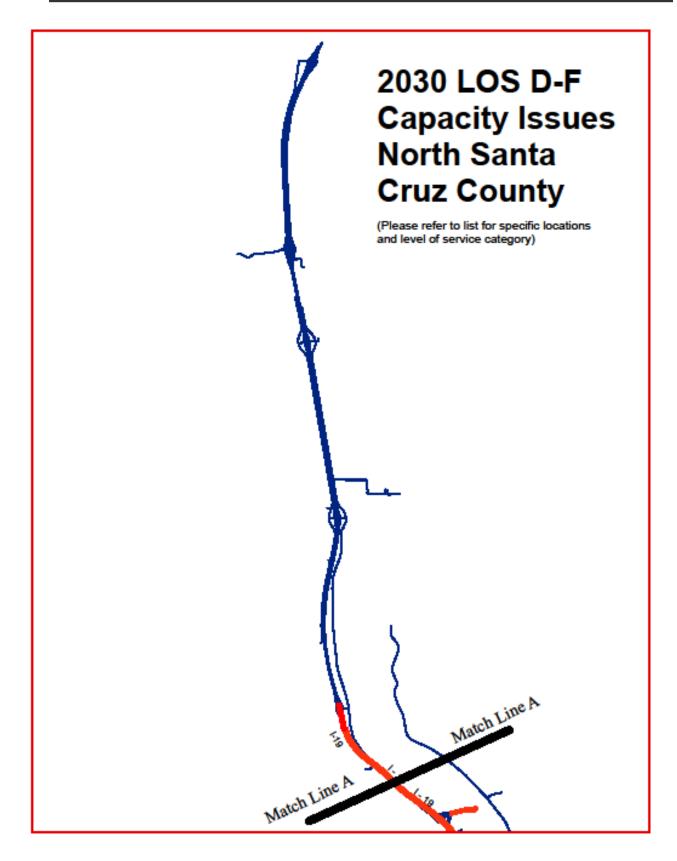


Table T5: 2030 Traffic & Level of Service on I-19

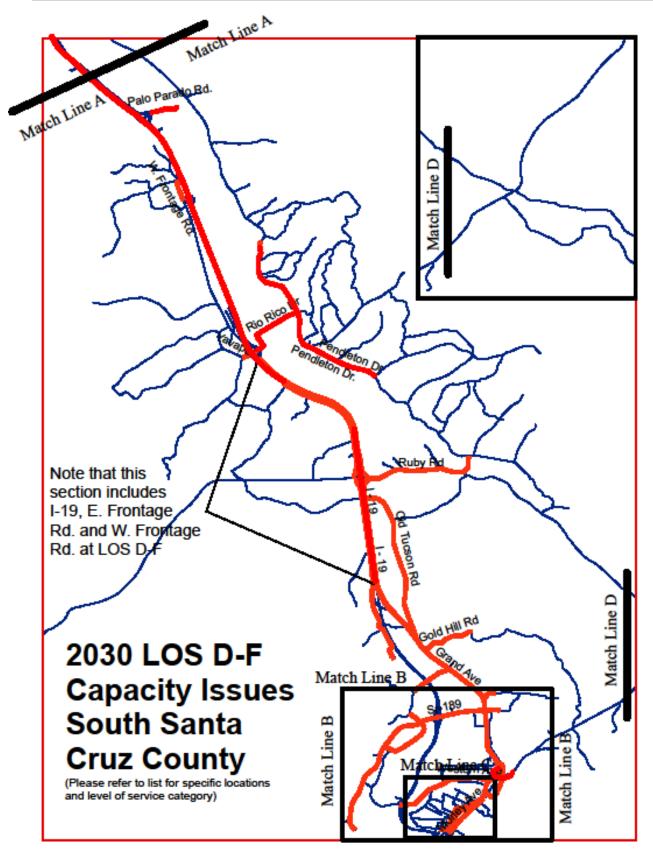
Route	ВМР	From	EMP	То	LOS C Capacity	2030 ADT	Los
I 19	0	SB 19 (1) - Nogales	1.18	Exit 1 Western Ave	54,000	22,050	A-C
I 19	1.18	Exit 1 Western Ave	2.95	Exit 4 SR 189 / Mariposa Rd	54,000	23,250	A-C
I 19	2.95	Exit 4 SR 189 / Mariposa Rd	5.31	Exit 8 SB 19 (1)	54,000	49,000	A-C
I 19	5.31	Exit 8 SB 19 (1)	7.72	Exit 12 SR 289 / Ruby Rd	54,000	77,200	D-F
I 19	7.72	Exit 12 SR 289 / Ruby Rd	10.88	Exit 17 Rio Rico Rd	54,000	59,400	D-F
I 19	10.88	Exit 17 Rio Rico Rd	13.96	Exit 22 Peck Canyon Rd	54,000	58,200	D-F
I 19	13.96	Exit 22 Peck Canyon Rd	15.63	Exit 25 Palo Parado Rd	54,000	56,800	D-F
I 19	15.63	Exit 25 Palo Parado Rd	18.13	Exit 29 Tumacacori Rd	54,000	54,200	D-F
I 19	18.13	Exit 29 Tumacacori Rd	21.62	Exit 34 Tubac Rd	54,000	48,800	A-C
I 19	21.62	Exit 34 Tubac Rd	24.82	Exit 40 Chavez Rd	54,000	43,600	A-C
I 19	24.82	Exit 40 Chavez Rd	26.54	Exit 42 Agua Linda Rd	54,000	40,800	A-C
I 19	26.54	Exit 42 Agua Linda Rd	29.98	Exit 48 Arivaca Rd	54,000	38,200	A-C

Under the projected 2030 traffic, the roadway segments with capacity issues are shown graphically in red in the three exhibits on the following pages.

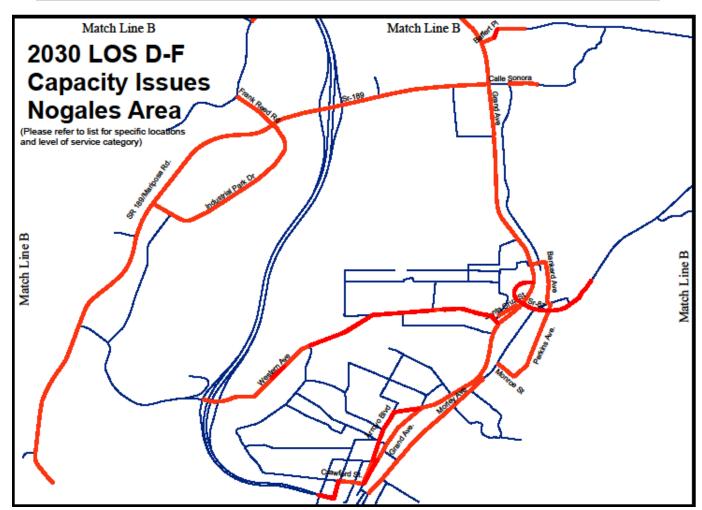














### 5.5 Multimodal Conditions

### 5.5.1 Pedestrian and Bicycle Circulation

Regardless of the size of a community, it can benefit by increasing the share of non-motorized transportation among its residents. Walking and bicycling expand mobility for non-drivers, reduce motor vehicle demands on the street system, do not impact the environment with noise, air pollution or consumption of valuable oil resources, and provides a venue for healthy exercise.

Currently, the infrastructure to support walking and bicycling in the study area is limited. The few sidewalks that do exist are mostly found within the City of Nogales, while there are no designated bikeways in the study area at all. Pathways include two unpaved sections of the Anza Trail and a paved pathway in the village of Rio Rico.

Even with the limited infrastructure, there is significant existing demand for these modes, most notably at the ports of entry at the US/Mexico border and along Grand Avenue in downtown Nogales. As evidenced by comments from stakeholders collected in March 2009 (see Appendix B), there is a high level interest in improved facilities for pedestrians and bicyclists. Key issues include:

- Need for walking and bicycling connections to schools.
- Need for new paved shoulders for walking and bicycling and repairs to existing shoulders on all roadways for safe pedestrian and bicyclist use.
- Need for pedestrian and bicycle access on bridges across I-19.
- Need for pedestrian and bicycle access on I-19 frontage roads including new frontage roads to provide connection to locations north of the study area.
- Need for pedestrian bridges for safe railroad crossing.
- Need for better pedestrian facilities (sidewalks and crosswalks) in downtown Nogales, particularly to connect the ports of entry with Mexico to retail establishments along Grand Avenue.
- Need for pedestrian facilities that connect to the Mariposa Port of Entry west of downtown, including a possible multi-use path connection to downtown Nogales and adding sidewalks along Mariposa Road.
- Need for a developed pick-up/drop-off area for pedestrians crossing at Mariposa Port of Entry
- Need for pedestrian/bicycle facilities in Rio Rico with connections to Tubac and north to Green Valley.
- Need for effective wayfinding and signage, particularly for tourists and visitors.

With an eye on future growth, this is the perfect time to begin the process of building the pedestrian and bicycle infrastructure to ensure that, as the region grows, the pedestrian and bicycle systems are planned and developed to be a safe, attractive and functional part of the region's transportation system. These systems are important to the community as evidenced by the anecdotal input collected from stakeholders and the goals and objectives included in the planning and policy documents discussed in the Existing Conditions section of this document.



Currently, pedestrians and bicyclists in the study area are finding it difficult to make their trips safely and conveniently, especially across highways and railroads with the lack of marked pathways and roadway crossings. It will be a challenge to develop suitable pedestrian and bicycle networks given the limitations of roadway rights of way and funding, while balancing these efforts to maintain the rural and semi-rural character of the community. However, overcoming these obstacles to provide safe and convenient pedestrian and bicycle access will contribute greatly to the community's quality of life. With today's pressures to reduce our carbon footprint, walking and bicycling provide an inexpensive, environmentally-friendly, and healthy alternative.

The communities in the study area are aware of the benefits of walking and bicycling and are moving forward with projects to provide walking and bicycling access to schools, accommodate pedestrians in the high demand areas of downtown Nogales including pedestrian railroad crossings, and to improve and expand I-19 frontage roads to include pedestrian and bicycle access.

The following recommendations are suggested to build on existing efforts towards pedestrian- and bicycle-friendly communities.

- Develop pedestrian and bicycle master plans for the study area to provide ample and convenient connections within the communities, between communities, and to locations outside the study area.
- Make minor and major improvements as funding and resources become available. Remember that even small inexpensive improvements (painted crosswalks or roadway sweeping) will improve conditions for pedestrians and bicyclists.
- Develop guidelines and standards to provide for pedestrian and bicycle facilities in all new and redevelopment development projects, particularly those involving construction of new roadways or upgrades to existing roadways.
- Develop guidelines and standards to insure that new development provides for convenient pedestrian and bicycle access through and to the new development. 'Shortcut' pathways to surrounding major roads and destinations are especially important to encourage walking and bicycling.
- Piggyback on other development or redevelopment projects, such as street repaving projects, to improve walking and bicycling networks.
- Do not forget the other elements important to pedestrians and bicyclists such as bicycle parking, education (directed at pedestrians, bicyclists, drivers, adults, and children), enforcement, facility maintenance, wayfinding/signage, and ADA accessibility.

### **5.5.2** Transit Circulation

Transit is a beneficial element for any community providing access for those who cannot or choose not to drive. In addition, transit can replace trips currently made by the automobile, thereby reducing our contribution to roadway congestion, consumption of oil resources, and noise and air pollution. Transit, in conjunction with walking and bicycling, extends the range of trips made by the individual modes. As the population in the study area grows older, transit will become even more necessary to support mobility for seniors who can no longer drive.



Currently there is no fixed route transit in the study area. On-demand transit for trips to the doctor, shopping and community events is provided to seniors, the disabled, and clients of provider organizations; the largest of which is *Nogales Rides*. The demand for these services is obvious based on the almost 50 percent increase in ridership that *Nogales Rides* has experienced in 2009 over the previous year.

Stakeholders contacted in March 2009 expressed an interest in transit, both for the City of Nogales and for connections to Rio Rico, Tubac, and the Mariposa Port of Entry. Passenger rail service from Nogales to Tucson was also mentioned, as well as park-and-ride lots for commuter traffic.

The City of Nogales is interested in expanding transit to include service to the general public. It is expected that the City will apply for funding for a 5311 (rural transit) grant in the next funding cycle to provide this service. The design of this system is currently being studied (*Nogales Transit Study* - Draft 12/31/08) and would most likely include a combination of call-and-ride, flexible route, and fixed-route services. Three alternatives were evaluated with the recommended alternative providing call-and-ride service in northern and southern service areas in combination with a flexible route serving Morley and Grand Avenues.

Although there is interest in transit services along the I-19 corridor to Rio Rico and Tubac, with possible connections to Tucson, no public agency has stepped forward with an interest in spearheading this effort. While the population densities along the I-19 corridor are not adequate to support service at this time, future transit service along the I-19 corridor should be considered.

A connection to the Mariposa Port of Entry is not currently planned, but would be a sound addition to the routes provided in the *Nogales Transit Study*. Pedestrian counts at the port have increased significantly due to the maquiladora industry despite the fact that there are no current pedestrian facilities. Future pedestrian traffic at the Mariposa Port of Entry is projected to be significant.

Considerations for future transit service in the study area include:

- Work trips provide a good basis for transit service with repeat trips to/from fixed locations.
- A system of park-and-ride lots and vanpools can offer a low cost startup for future transit focused on commuter trips.
- The approach being considered by the City of Nogales to build on the existing demand-responsive service provided by *Nogales Rides* is a practical way to expand service to the general public while refining the fixed-routes based on actual usage.
- Bus stops and transfer facilities are an important element of the transit system. They should be accessible, safe and convenient for users as well as for transit operators. Bus shelters, benches, lighting, and transit information are key factors.
- Good pedestrian and bicycle connections to transit are important with these modes serving as an extension of, and access to, the transit routes. Bicycle parking at bus stops or transfer stations should be provided along with the ability to carry bicycles on board transit.
- Education and promotion are key factors to encouraging potential users to use transit instead of driving. Employers are a good source of transit promotion and can offer guaranteed-rides home (in case of family emergency or illness, the employee is given a ride home with company vehicle, rental



car or taxi), transit fare subsidies, and transit information. Similar programs can also encourage bicycle and pedestrian commuting.

## 6. Existing and Future Condition Findings

The previous portion of this study reported on the existing conditions as related to the transportation system supporting the City of Nogales and Santa Cruz County including the communities of Rio Rico, Tumacacori/Carmen, and Tubac. The study also analyzed the current transportation system under projected future traffic conditions. Some of the more important findings are set forth as follows:

- 1. SR 189, Mariposa Road, will need to be widened and improved to handle the future traffic. The existing interchange and the area from Frank Reed Road to Grand Avenue is already operating at or near capacity at peak times and improvements in these areas are needed as soon as can be programmed and funded. The traffic issues on this facility will become greatly exacerbated once the expanded port of entry is completed in a few years.
- 2. The I-19 frontage roads serve as major north-south arterial roads, but the system is incomplete. The frontage road system needs to be made continuous from Mariposa Road to the north county line, and will need to be planned and programmed for expansion and widening when traffic volumes warrant.
- 3. I-19 will need to be widened to accommodate the future traffic from SR 189, Mariposa Road (Exit 4), north to at least Tumacacori Road (Exit 29).
- 4. Grand Avenue through Nogales needs to be improved to more effectively handle traffic volumes, both under existing and future conditions, within the constrained rights of way that exist. This can include traffic signalization improvements, intersection improvements, widening where possible, and provision of alternate routes.
- 5. Pendleton Drive is the only north-south roadway corridor of any significant length outside the I-19 corridor area. As such, the Pendleton Drive corridor is vitally important as an alternative route to I-19 and its frontage road system, and its existing and future corridor needs to be protected and preserved. Pendleton Drive needs to be extended north and south with adequate right of way width for at least four lanes. An extension of Pendleton Drive north to at least Tubac, and possibly to the county line will be critically important for the future transportation system of Santa Cruz County.
- 6. The Nogales Wash and Santa Cruz River, along with the UP railroad tracks, present major safety concerns and barriers to effective traffic circulation in an east-west direction throughout the county. Additional bridges and railroad overpass structures are needed at other locations to handle existing and future traffic conditions. Pedestrian crossings of the railroad tracks are needed in the downtown Nogales area. Possible locations include:
  - Vehicular/Pedestrian Bridge at Palo Parado over River
  - Vehicular/Pedestrian Overpass at Ruby Road over Railroad
  - Vehicular/Pedestrian Overpass at Gold Hill Road over Railroad
  - Vehicular/Pedestrian Overpass at Public Library Area over Railroad
  - Pedestrian Overpass at Court Street over Railroad
  - Pedestrian Overpass at Crawford Street over Railroad



- 7. Alternate non-motorized modes of transportation are needed to enhance the quality of life for the citizens of Santa Cruz County. Bicycle and pedestrian master plans should be developed and the identified bicycle and pedestrian transportation facilities should be constructed concurrently with the future development of vehicular transportation facilities.
- 8. A public transit system, initially in Nogales and expanded along the I-19 corridor within the county in the future, is another transportation system improvement needed to enhance the quality of life for the citizens of Santa Cruz County.
- 9. The means for funding transportation system improvements need to be developed and implemented to adequately serve the public and deliver necessary improvements when warranted. This will become increasingly important to maintain a good quality of life for the citizenry, and needs to be accomplished without compromising the necessary maintenance of the system.
- 10. The future mixed-use growth area between Nogales and Rio Rico is not effectively served by existing transportation infrastructure. A network of roads and improved access to I-19 would be needed to encourage and support future growth in this area.
- 11. The Ruby Road interchange area is extremely congested and of concern to all stakeholders. The situation should be carefully examined and addressed to find a workable solution.
- 12. There is a potential need for improved east-west connectivity across I-19 in Nogales to support future growth. Connecting western Nogales and the Mariposa Road area to Grand Avenue and eastern Nogales, including SR 82, would be beneficial to the overall traffic circulation within the community.



## 7. Evaluation of Transportation Improvements

This section of the Unified Nogales Santa Cruz County Transportation Plan evaluates and recommends specific improvement projects for the multimodal transportation system in the City of Nogales and the portion of western Santa Cruz County located within the study area. The projects are to satisfy the transportation needs for the region, inclusive of streets, highways, transit, bicycle, and pedestrian facilities.

The previous section of the plan, *Current and Future Conditions*, provided the background information for this section. The findings of this section were developed in close coordination with members of the project's Technical Advisory Committee, and with significant input from plan stakeholders and interested members of the public. The findings of the *Current and Future Conditions* section included:

- SR 189, Mariposa Road, will become critically congested, especially in the vicinity of the I-19 interchange, as the port of entry project is completed that will enable increasing throughput
- I-19 Frontage Road system needs to be continuous with additional capacity
- I-19 will eventually reach capacity and will need capacity improvements
- Grand Avenue through the City of Nogales has existing congestion and safety issues
- Pendleton Drive is the only parallel arterial road to I-19 and needs to be extended north
- The UPRR tracks and the Nogales Wash/Santa Cruz River are major east-west barriers and additional crossings are needed
- There is great public demand for alternate transportation modes to enhance quality of life
- Funding is limited and supplemental funding sources are required to meet the needs
- Transportation infrastructure will be needed to serve targeted growth areas
- Ruby Road interchange area in particular is very congested and has safety concerns
- Improved east-west connectivity is needed in Nogales proper

This section of the Plan focuses on two components essential for planning transportation improvements: environmental justice, and identification and evaluation of specific solutions. The environmental justice component examines minority and low-income populations found from census data. Results show that significant low-income populations reside in the City of Nogales and western Santa Cruz County, and would greatly benefit from many of the proposed transportation improvements.

The second component of this section concentrates on describing planning level details and cost estimates for the eighty (80) proposed projects identified herein. The need for these projects was initially identified in *Current and Future Conditions*, and solutions to mitigate those needs are contained in the following pages. The project solutions proposed address the anticipated traffic impacts of continuing development, congestion at I-19 interchanges, additional crossings of the UPRR tracks, the Nogales Wash and the Santa Cruz River, identified safety issues, providing for multimodal transportation facilities, and additional transportation system needs identified by travel demand modeling and stakeholder and public input.

Upon review and approval by ADOT, the City of Nogales, Santa Cruz County, and the members of the TAC, this information will be fed into the next step of the process which is developing an implementation plan for next five, ten and twenty years. The implementation strategies and plan will



include prioritization of the projects and selection of specific projects to be included in the short, medium and long-range programs based on available and anticipated capital improvement funding and operations and maintenance funding. Additional funding sources are to be identified and discussed that would enable the City of Nogales and Santa Cruz County to undertake more projects than would be possible using only existing project funding sources.

### 8. Environmental Justice

### 8.1 Introduction

Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin. Executive Order 12898 and the DOT and FHWA Orders on Environmental Justice address persons belonging to any of the following groups:

**Black** - a person having origins in any of the black racial groups of Africa.

**Hispanic** - a person of Mexican, Puerto Rican, Cuban, Central American, South American, or other Spanish culture or origin, regardless of race.

**Asian** - a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent.

**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.

**Native Hawaiian or Other Pacific Islander** - a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

**Low-Income** - a person whose household income (or in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

Environmental justice and Title VI are not new concerns. A 1994 Presidential Executive Order directed every Federal agency to make environmental justice part of its mission by identifying and addressing the effects of all programs, policies, and activities on "minority populations and low-income populations." Today, because of the evolution of the transportation planning process, they are receiving greater emphasis. Effective transportation decision making depends upon understanding and properly addressing the unique needs of different socioeconomic groups.

There are three fundamental environmental justice principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and lowincome populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.



Environmental justice is more than a set of legal and regulatory obligations. Properly implemented, environmental justice principles and procedures are intended to improve all levels of transportation decision making. This approach will:

- Make better transportation decisions that meet the needs of all people.
- Design transportation facilities that fit more harmoniously into communities.
- Enhance the public-involvement process, strengthen community-based partnerships, and provide minority and low income populations with opportunities to learn about and improve the quality and usefulness of transportation in their lives.
- Improve data collection, monitoring, and analysis tools that assess the needs of, and analyze the potential impacts on minority and low-income populations.
- Partner with other public and private programs to leverage transportation-agency resources to achieve a common vision for communities.
- Avoid disproportionately high and adverse impacts on minority and low-income populations.
- Minimize and/or mitigate unavoidable impacts by identifying concerns early in the planning phase and providing offsetting initiatives and enhancement measures to benefit affected communities and neighborhoods.

### 8.2 Santa Cruz County Title VI & Environmental Justice Populations

The objective of this section is to identify and locate significant Title VI populations that might be impacted, in a positive or negative manner, by projects considered in this planning process. The 2000 Census SF3 data provides block group level information on the six Title VI populations in Western Santa Cruz County and the City of Nogales, the study area for this project. As shown in Figure 36 on the next page, Western Santa Cruz County and the City of Nogales are divided into 17 Census block groups, numbered from 1011 in the far north to 4022 in the far south. The City of Nogales is highlighted in yellow.



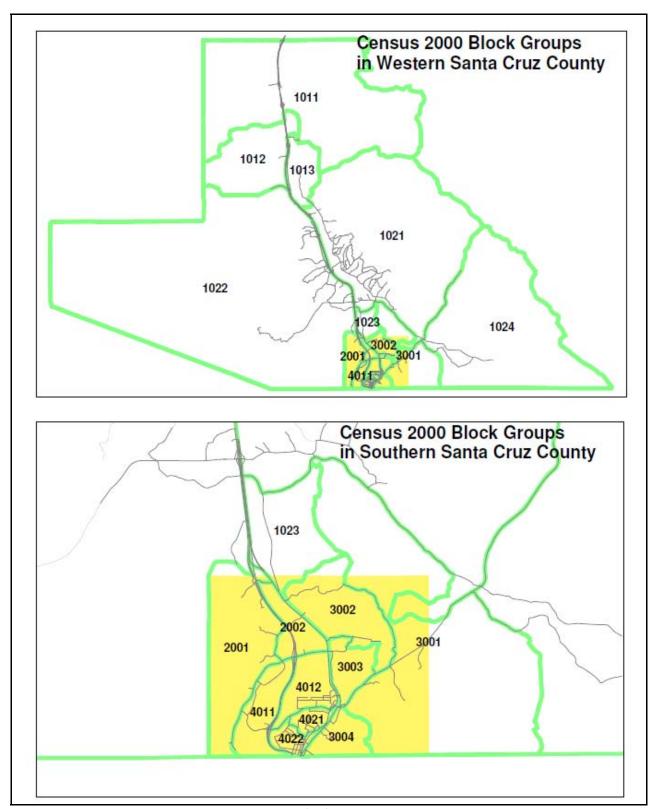


Figure 36 – Census 2000 Block Groups in Santa Cruz County



Table 1 on the next page presents the 2000 Census SF3 data for the six Title VI populations within each of the 17 block groups. It should be noted that SF3 information is based on data from the census long form, which was administered to only one of every six households. While this data has been factored up to reflect all households within each block group, the sampling and factoring process does introduce some degree of uncertainty into the results. The uncertainty is relatively insignificant for larger populations, but becomes increasingly more significant as populations become smaller.

As can be seen in Table 1, four of the six Title VI populations (Black, American Indian, Asian and Hawaiian) in Santa Cruz County are very small. Combined, they account for less than 2% of the total 2000 population. Consequently, very limited conclusions can be drawn from populations this small. For example, we know that a small number of each group live in Santa Cruz County, but we do not know the exact number or where they live. Based on the available SF3 data, it is apparent that very small Black, American Indian, Asian, and Hawaiian populations may exist in any of the 17 block groups, but none appear to represent significant Title VI communities in the study area.

In stark contrast, the remaining two Title VI populations (Hispanic and Low Income) are both very large. The Hispanic population accounts for 85% of the total western Santa Cruz County population, and is an overwhelming majority in all but the two most northern block groups. Assuming that a majority should be treated as a minority population, all 17 block groups should be viewed as having significant Title VI Hispanic communities.

The 2000 Census SF3 data also identifies the populations living at various levels of poverty, based on income. For the purposes of this study, low income population has been defined as those persons with an income of less than 1.5 times the Federal poverty level income. Using this definition, 42% of the western Santa Cruz County population is classified as low income. All 17 block groups contain some low income population. However, the low income populations in eight block groups are particularly high (42% - 75% of the block group populations) and should be viewed as having significant Title VI Low Income populations. Figure 37 (located on the page following Table 1) shows the location of the eight block groups with significant Title VI Low Income populations (shaded blue), all of which are located in the Southern part of the County, and seven of which are located in the City of Nogales.



Table 1: 2000 Census SF3 Block Group Level Environmental Justice Data for Western Santa Cruz County

Table 1:	2000 C	ensus i	3F 3 BIG	ck Group	Level I	ruvicon	mentai	Justice Da	ua ior	western 5	anta Cri	ız Count	y		
Block Group	Total 2000 Pop	Black Pop	%Tot	American Indian Pop	%Tot	Asian Pop	%Tot	Hawaiian Pop	%Tot	Hispanic Pop	%Tot	Low Income Pop	%Tot	EJ Category	Block Group
1011	402	0	7020	0	7020	13	3.2%	0	7020	105	26%	91	23%	ounce or j	1011
1012	697	0		8	1.1%	0		0		11	2%	36	5%		1012
1013	766	0		16	2.1%	0		8	1.0%	431	56%	204	27%		1013
1021	5375	67	1.2%	15	0.3%	44	0.8%	0		3934	73%	1336	25%		1021
1022	5900	12	0.2%	32	0.5%	163	2.8%	0		4986	85%	2087	35%		1022
1023	1278	0		0		17	1.3%	0		1221	96%	723	57%	Н	1023
1024	322	2	0.6%	0		0		0		173	54%	48	15%		1024
2001	1520	0		0		0		0		1291	85%	366	24%		2001
2002	2627	0		10	0.4%	0		0		2527	96%	1635	63%	Н	2002
3001	1226	0		0		2	0.2%	0		993	81%	233	19%		3001
3002	2872	11	0.4%	0		0		0		2769	96%	1001	35%		3002
3003	1546	0		0		0		0		1508	98%	817	55%	Н	3003
3004	2425	12	0.5%	8	0.3%	8	0.3%	0		2294	95%	1813	75%	Н	3004
4011	1529	0		0		0		0		1426	93%	745	50%	Н	4011
4012	2116	5	0.2%	14	0.7%	17	0.8%	0		2047	97%	1018	48%	Н	4012
4021	2274	0		54	2.4%	39	1.7%	0		2037	90%	963	42%	Н	4021
4022	2725	6	0.2%	58	2.1%	0		0		2634	97%	1936	72%	Н	4022
Total:	35600	115		215		303		8		30387		15052			
% Tot:	2000 G	0.3%	12 D +	0.6%		0.9%		0.02%		85%		42%			

Source: 2000 Census SF3 Data



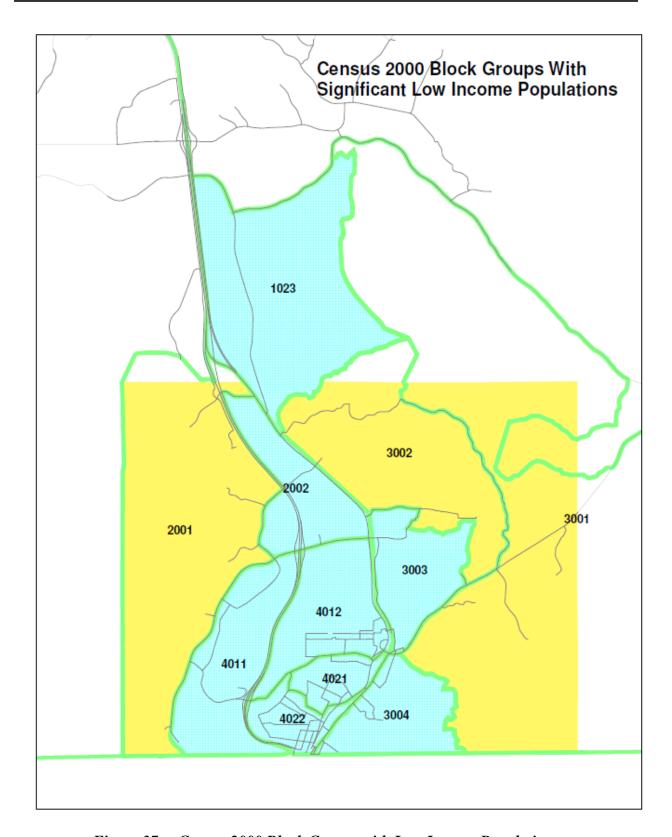


Figure 37 - Census 2000 Block Groups with Low Income Populations



#### 9. Transportation Improvements

The Environmental Justice analysis clearly shows there is an overwhelming majority of Hispanic residents across western Santa Cruz County and within the City of Nogales. In addition, a significant percentage of the population in western Santa Cruz County and the City of Nogales is classified as low income. The transportation improvements identified and described herein will greatly contribute toward improving quality of life. The Environmental Justice analysis shows the proposed transportation improvements will be balanced across populations, thus satisfying the intent of the regulations.

#### 9.1 Proposed Solutions

In the *Current and Future Conditions* section, project stakeholders identified issues at 57 sites located throughout Santa Cruz County. In addition, travel demand modeling identified an additional 23 sites that need additional capacity provided to serve the forecasted traffic demands at an acceptable level of service. The specific location, deficiency, source of how the issue was identified, and the project type needed were cataloged. This section takes the findings of Working Paper #1 and recommends specific transportation improvement projects at the 80 identified sites. The recommended solutions cover all modes of transportation, including roadway improvements, safety and operations enrichment, pedestrian and bicycle enhancements, and new and expanded transit systems. They also include a planning level cost estimate that can be used for budgeting purposes and capital improvement programming. The proposed projects will be further prioritized, and an implementation plan with potential funding sources for each project identified, in the following Implementation Plan section.

Each site has been given a site number that is consistent throughout all of the related working papers. If multiple options for methods to address the deficiencies were possible, they are evaluated in the solution description, along with the benefits and challenges of each. A recommendation is made for the best alternative, unless multiple alternatives prove best implemented in phases. A planning level cost estimate is also presented on the final recommendation. Some projects may not have an evaluation of multiple alternatives if multiple options were not considered feasible or one clear solution was identified. A summary of all the projects and the associated cost estimates is provided at the end of this section.

#### 9.2 Union Pacific Railroad

The Union Pacific Railroad (UP Railroad) bisects the City of Nogales in the north-south direction, as shown in Figure 38 found on the next page. It is a branch line that serves the Phelps-Dodge mine site in Santa Cruz County. The line commences in Tucson, north of the county, and continues through Nogales into Mexico. Most of the Nogales Subdivision UPRR line is located east of the Santa Cruz River and east of Interstate 19 passing through Amado, Tubac, Rio Rico, and Nogales, Arizona. The line is a single track with a few siding locations along the route. UP Railroad representatives state there are on average 7 trains per day at 5,000 feet in length, traveling 10-25 mph through town. This can result in delays of 11 minutes or



more each train at each crossing, seven times a day, for local streets that have 'at grade' crossings. This does not include occasions when trains come to a complete stop in the center of town, increasing the delay. For seven trains a day, the total delay can add up to well nearly an hour and one half daily. This causes significant back-up of traffic, vehicular and pedestrian, particularly in the Nogales downtown area.

Currently, the railroad line has only one grade-separated crossing (outside of the international border crossing) in Santa Cruz County and it is located on SR 82 in Nogales. Both the city and the county agree on the need for additional grade separated crossings to mitigate congestion when trains are operating, to enhance public safety, and to improve traffic circulation, thereby saving fuel and time.

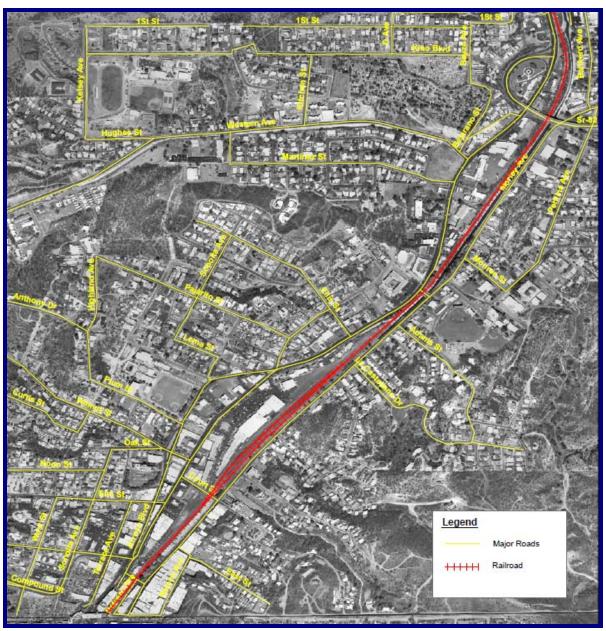


Figure 38 - Location of Union Pacific Rail Line in Downtown Nogales



#### 9.3 Proposed Project Sites and Details

#### Site No. 1

Project Type: Pedestrian Crossing of Union Pacific Railroad

**Location:** Crawford Street Alignment in Nogales

Solution Description: Approximately 1500 pedestrians per day on a Saturday are crossing the Union Pacific Railroad and Grand Avenue in the vicinity of Park Street. This is the most heavily used crossing location in downtown Nogales outside of the border crossing. When trains go by, the ability for pedestrians to cross is blocked for significant amounts of time, causing delay and safety concerns. An overpass was identified as a potential solution to facilitate the ability for pedestrians to cross safely and unimpeded; however, an underpass may also be an option. In addition, the exact location of the crossing in the vicinity of Crawford Street or Park Street should be evaluated based on the feasibility of engineering details and any other design elements that may be determined during the initial process. The crossing should also be lighted to allow for use during all hours.

The pedestrian overpass bridge will meet UP Railroad requirements of 23-feet of vertical clearance, and a minimum of 9-feet of horizontal clearance from the center of the rail line. The crossing structure will satisfy ADA requirements for slopes and landing areas. Evaluation processes will look at minimizing engineering conflicts, addressing utility conflicts, coordinating regulatory and railroad approvals, obtaining environmental clearances, and utilizing available right-of-way wherever possible. Floodplain issues will also be investigated if required. An overpass study has already been conducted by the City of Nogales and includes this potential overpass location.

The ability of this project to facilitate the safe and free flow movement of pedestrians and bicyclists across the regularly used railroad tracks bisecting the City of Nogales is imperative for the City to provide a safe environment for its residents and visitors. The pedestrian bridge overpass will create a safe environment to allow people to access both sides of the railroad tracks on a continuous basis, increase tourism, enhance trade, improve access to employment, reduce delays, and eliminate conflicts. Additionally, the project will enhance public safety by enabling law enforcement, and other agency personnel to cross the railroad tracks freely and safely while trains are in operation on the line.

During the future Design Concept Report and Alternatives Analysis study, an evaluation of the specific location and alignment of the pedestrian crossing in the vicinity of Park Street and Crawford Street should take place. Details to consider will be length of the approach ramps, necessary right-of-way, and other engineering parameters.



### Planning Level Cost Estimate

**City of Nogales Crawford Street Pedestrian Railroad Overpass Structure** 

Design Concept Report and Alternatives Analysis	\$250,000
Design and Construction Documents	\$500,000
Environmental Approvals	\$100,000
Regulatory Agency Coordination and Permitting	\$50,000
Utilities (UG & OHE)	\$200,000
Lighting/Electrical Systems	\$500,000
Misc./Other	\$500,000
Pre-Fabricated Steel Bridge, Structural, Complete	\$1,600,000
Bridge Foundations, Approach Improvements, Accessible Routes,	\$1,150,000
Embankment/Grade Improvements	
Pedestrian Gazebo/Shade Structures	\$100,000
Public Art Enhancement (1%)	\$50,000
TOTAL =	\$5,000,000

Figure 39: Example Pedestrian Overpass Bridges



http://www.walkinginfo.org/problems/problems-crossing.cfm



Portland, Oregon

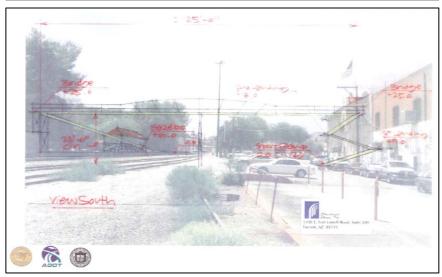


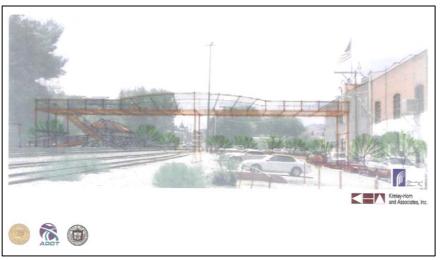
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Figure 40: Architectural Renderings of Pedestrian Overpass at Park Street









Source: Pedestrian and Vehicle Railroad Small Area Transportation Study in Nogales and Santa Cruz County

April 30, 2010



	Final Report						
Site No. 1 Loca	Site No. 1 Location Map						
Project Type	oject Type Pedestrian Overpass of Railroad						
Location	Crawford Street at UP Railroad, Nogales						
Provide accessible and continuous crossing for pedestrians when trains are operating, improving public safety and eliminating conflicts							
Crawford	Street St						



#### Site No. 2

Project Type: Pedestrian Crossing of Union Pacific Railroad

**Location:** Court Street in Nogales

Solution Description: Approximately 550 pedestrians per day on a Saturday are crossing the Union Pacific Railroad at Court Street. When trains go by, the ability for pedestrians to cross is blocked for significant amounts of time, causing delay and safety concerns. An overpass was identified as a potential solution to facilitate the ability for pedestrians to cross safely and unimpeded; however, an underpass may also be an option and should be studied. The west end of the structure would be adjacent to private commercial uses presenting partnership opportunities and possible right-of-way challenges. The east end of the crossing structure would be near the courthouse which may provide the opportunity to coordinate aesthetic and cultural enhancements into the design that complement the courthouse architecture. The crossing should also be lighted.

The pedestrian overpass bridge will meet UP Railroad requirements of 23-feet of vertical clearance, and a minimum of 9-feet of horizontal clearance from the center of the rail line. The crossing structure will satisfy ADA requirements for slopes and landing areas. Evaluation processes will look at minimizing engineering conflicts, addressing utility conflicts, coordinating regulatory and railroad approvals, obtaining environmental clearances, and utilizing available right-of-way wherever possible.

The ability of this project to facilitate the safe and free flow movement of pedestrians and bicyclists across the regularly used railroad tracks bisecting the City of Nogales is imperative for the City to provide a safe environment for its residents and visitors. The pedestrian bridge overpass will create a safe environment to allow people to access both sides of the railroad tracks on a continuous basis, increase tourism, increase trade, improve access to employment, reduce delays, and eliminate conflicts. Additionally, the project will enhance public safety by enabling law enforcement, and other agency personnel to cross the railroad tracks freely and safely while trains are in operation on the line.

During the future Design Concept Report and Alternatives Analysis study, an evaluation of the specific alignment of the pedestrian crossing at Court Street should take place. Details to consider will be length of the approach ramps, right-of-way constrictions, and other engineering parameters.



### Planning Level Cost Estimate

City of Nogales Court Street Pedestrian Railroad Overpass Structure

city of 110guies court street I caestrian Ramoua over push	, D 12 11 C 1 C 1
Design Concept Report and Alternatives Analysis	\$250,000
Design and Construction Documents	\$500,000
Environmental Approvals	\$100,000
Regulatory Agency Coordination and Permitting	\$50,000
Utilities (UG & OHE)	\$200,000
Lighting/Electrical Systems	\$500,000
Misc./Other	\$500,000
Pre-Fabricated Steel Bridge, Structural, Complete	\$1,600,000
Bridge Foundations, Approach Improvements, Accessible Routes,	\$1,150,000
Embankment/Grade Improvements	
Pedestrian Gazebo/Shade Structures	\$100,000
Public Art Enhancement (1%)	\$50,000
TOTAL =	\$5,000,000

Figure 41: Example Pedestrian Overpass Bridges over Railroads



Calgary, LRT on CPR R/R, Anderson Station



Portland, Oregon



Site No. 2 Loca						
Project Type						
Project Type	Project Type Pedestrian Overpass of Railroad					
Location	Court Street at UP Railroad, Nogales					
Provide accessible and continuous crossing for pedestrians when trains are operating, impropublic safety and eliminating conflicts						
Tonk soles on the sole of the	Proposed New Pedestrian Overpass					



#### Site No. 3

Project Type: Vehicular Overpass of Union Pacific Railroad

**Location:** South of Public Library area in Nogales

Grand Avenue/Morley Avenue Connection and new Roundabout

Solution Description: The need for a vehicle overpass has been identified in the vicinity of the public library in downtown Nogales to provide continuous and safer access over the Union Pacific Railroad. The overpass structure would require one-quarter mile approaches, up to approximately 4 blocks on each side, for the grade separation ramps leading up to the overpass structure. The location is approximately midway between Wayside Drive and Beck Street. The proposed alignment for the overpass is an open area south of the existing Nogales Public Library and north of a retail shopping center. The west end of the overpass will then extend to Grand Avenue, creating a new intersection connection in a roundabout configuration which will increase safety and capacity at the intersection. The east side will consist of elevated ramps branching off the new overpass in the north and south direction connecting with Morley Avenue. Care will be taken during design to minimize the number affected properties and any access restrictions to businesses.

Additional infrastructure that would be required such as frontage roads and noise walls will also be included and will be minimized. Right-of-way acquisition will also be included with this project. The overpass bridge will meet Union Pacific Railroad requirements of 23-feet and 4-inches of vertical clearance, and a minimum of 9-feet of horizontal clearance from the center of the rail line. The crossing structure will also satisfy requirements for slopes and drainage, and will coordinate with any other state and railroad regulations. The design and alignment evaluation process will look at minimizing engineering conflicts, addressing utilities, coordinating regulatory and railroad approvals, obtaining environmental clearances, and utilizing available right-of-way wherever possible. The project will also include sidewalks and bike lanes, and will satisfy ADA requirements for slopes and landing areas. The crossing will also be lighted to allow for use during all hours.

A photo of the existing area in the vicinity of the new connector road alignment is included in Figure 40. In addition, art and landscaping aspects should be incorporated into the design of the overpass to integrate the structure with its natural surroundings.

A design concept report will be needed to determine the ultimate layout of the bridge and the alignment of the roadway connections. During the preliminary engineering, the design phase will look at options to also incorporate additional travel lanes, width for sidewalks and bike lanes, a stairwell located mid-way on the approach ramp structure for additional pedestrian access, and art enhancement elements. An example overpass structure is shown in Figure 41 and architectural renderings of a crossing at this location with new roundabout intersection are shown in Figure 42.



This project will allow the safe and unrestricted movement of vehicles across the railroad tracks that bisect the City of Nogales and cause significant delay when a train is traveling through town or stops and blocks traffic. The proposed vehicle overpass is imperative for the City to provide a safe environment for its residents and visitors. The vehicular overpass will allow vehicles, including emergency services, medical response, and law enforcement to reach both sides of the railroad tracks on a continuous basis. It will increase access to retail businesses, job opportunities, reduce delays, and eliminate conflicts. Union Pacific representatives also support this project as it will reduce liability by eliminating an at-grade crossing. A significant aspect of the proposed crossing will benefit local emergency services, border patrol, and U.S. Military Services in the area by allowing accessible and continuous crossing for vehicles when trains are operating, improving response to emergency calls.

Figure 42: View to the East from Grand Avenue—Library Area and New Connector Road Alignment with Railroad and Train in Background



April 30, 2010

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### Planning Level Cost Estimate **City of Nogales Vehicular Crossing Structure** at Public Library & Grand/Morley Avenue Connection

Design Concept Report and Alternatives Analysis	\$250,000
Design and Construction Documents	\$1,400,000
Bridge Overpass, Roundabout & Roadway Construction *	\$9,250,000
ROW Acquisition/Legal	\$1,200,000
TOTAL =	\$12,100,000

<sup>\*</sup> Note: Construction includes allocation for public art enhancement



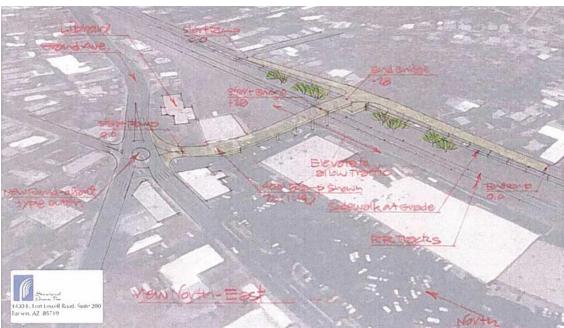


Genesee Road over Canadian National Railroad, Lapeer County, MI





Figure 44: Architectural Renderings of Vehicle Overpass at Public Library



Source: Pedestrian and Vehicle Railroad Small Area Transportation Study in Nogales and Santa Cruz County



Site No. 3 Location Map						
Project Type	Vehicular Overpass of Railroad					
Location	Public Library Vicinity, Nogales					
Benefit	Provide accessible and continuous crossing for vehicles and emergency services when trains are operating, improving public safety and eliminating conflicts					
Round aloo	New Vehicle Overpass Bridge with Approach Ramps & Side Street Improvements					



#### Site No. 4

Project Type: Vehicular Overpass of Union Pacific Railroad

**Location:** Roper Road in Nogales

**Solution Description:** The need for a vehicular overpass has been identified at Roper Road to allow vehicles continuous and unrestricted ability to travel over the railroad without delay when a train is passing. This overpass would allow for the connection of an alternative route or bypass to SR 82, creating an evacuation route and addressing other Homeland Security issues. The area is currently only 20% developed. With the construction of the new overpass improvement, access would be created for additional building of commercial, retail and industrial uses in the area creating employment opportunities. The proposed overpass improvement would also increase access to the Oasis Town Center facility, regional shopping and the movie theater.

Approaches for approximately ¼-mile on each side would be needed. Coordination would take place during design to align the new extension connector roadways with potential future connections with SR 82 and Interstate 19. It will include sidewalks and bike lanes to all modes of transportation have access over the railroad crossing.

As with the proposed vehicular overpass bridge at the Public Library area, this overpass bridge will meet Railroad requirements of 23-feet 4-inches of vertical clearance, and a minimum of 9-feet of horizontal clearance from the center of the rail line. The crossing structure will satisfy requirements for slopes, drainage and coordinate with any other state and railroad issues. The project will also address utility conflicts, coordinate regulatory and railroad approvals, obtain environmental clearances, and utilize available right-of-way where possible. It will also meet ADA requirements for access.

This project will allow the safe and unrestricted movement of vehicles across the regularly used railroad tracks bisecting the City of Nogales which is imperative for the City to provide a safe environment for its residents and visitors. The vehicular overpass will allow vehicles, including emergency services, medical response, and law enforcement to reach both sides of the railroad tracks on a continuous basis. It will increase access to retail businesses, create job opportunities with new businesses, commercial and warehousing for truck freight, reduce delays, and eliminate conflicts with the at-grade railroad crossing. This project will significantly benefit residents, visitors, and municipal services alike. Union Pacific representatives also support this project as it will reduce liability by eliminating an at-grade crossing.

This proposed project will also enhance public safety by enabling law enforcement and other agency personnel to cross the railroad tracks freely and safely when a train is present. A significant aspect of the proposed crossing will benefit local emergency services, border patrol, and U.S. Military Services by allowing continuous accessible for vehicles, improving response to emergency calls.



A site photo of the proposed connector road alignment extension from Grand Avenue looking east is shown in Figure 43. Architectural renderings of the proposed vehicle overpass are included in Figure 44.

During the future alternatives analysis study, options should be reviewed for a two-lane bridge versus additional travel lanes. It should also include additional width for sidewalks and bike lanes, a stairwell located mid-way on the approach ramp structure for additional pedestrian access, and art enhancement elements. Alignment alternatives of the new connector road and potential future intersection connections to SR 82 and Interstate 19 should also be reviewed. This proposed project is consistent with consistent with the *Pedestrian and Vehicle Railroad Small Area Transportation Study in Nogales and Santa Cruz County*. It was identified based on conflicts with existing transportation facilities and users, future needs based on growth, review of previous studies and reports, and input from key stakeholders and the public.

Figure 45: View of Proposed Roper Road Extension from Grand Avenue - View to the East



### Planning Level Cost Estimate City of Nogales Vehicle Crossing Structure at Roper Road

v 0	1
Design Concept Report and Alternatives Analysis	\$500,000
Design and Construction Documents	\$3,300,000
Bridge Overpass, Roundabout & Roadway Construction *	\$22,000,000
ROW Acquisition/Legal	\$2,700,000
TOTAL =	\$28,500,000

<sup>\*</sup> Note: Construction includes allocation for public art enhancement



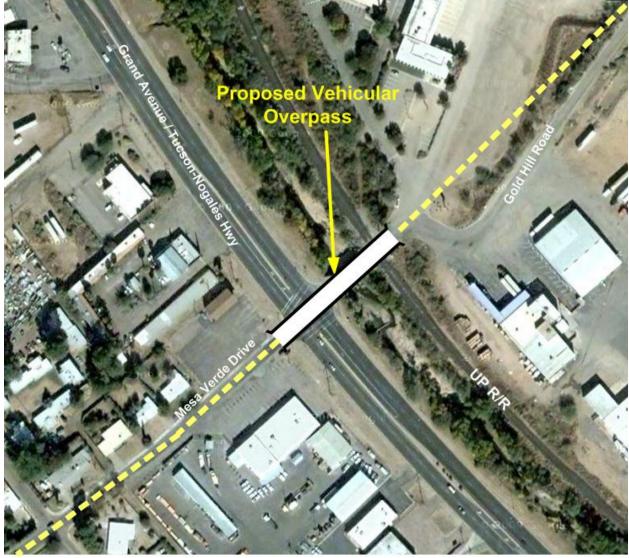


Figure 46: Architectural Renderings of Vehicle Overpass at Roper Road

Source: Pedestrian and Vehicle Railroad Small Area Transportation Study in Nogales and Santa Cruz County



Site No. 4 Location Map					
Project Type Vehicular Overpass of Railroad					
Location Gold Hill Road at UP Railroad, Nogales					
Benefit	Provide accessible and continuous crossing for vehicles and emergency services when trains are operating, improving public safety and eliminating conflicts				



Coordinates: 31°21'34"N 110°55'50"W



#### Site No. 5

Project Type: Vehicular Overpass of Union Pacific Railroad

**Location:** Ruby Road in Rio Rico

**Solution Description:** The need for a vehicular overpass has been identified at Ruby Road to allow vehicles continuous and unrestricted ability to travel over the railroad tracks without delay when a train is passing. This overpass would allow for the connection of an alternative route or bypass to SR 82, creating an evacuation route and addressing other Homeland Security issues including increased ability to assist border patrol and other law enforcement with access. Approximately ½ mile approaches would be needed on each side.

The overpass bridge will meet UP Railroad requirements of 23-feet of vertical clearance, and a minimum of 9-feet of horizontal clearance from the center of the rail line. The crossing structure will satisfy requirements for slopes and drainage, and will coordinate with any other state and railroad requirements. The evaluation process will look at minimizing engineering conflicts, addressing utility conflicts, coordinating regulatory and railroad approvals, obtaining environmental clearances, and utilizing available right-of-way wherever possible. A design concept report is recommended.

The vehicular overpass will allow vehicles, including emergency services, medical response, and law enforcement to reach both sides of the railroad tracks on a continuous basis. It will increase access to retail businesses, job opportunities, schools, reduce delays, and eliminate conflicts. This project will significantly benefit residents, visitors, and municipal services alike. During the future alternatives analysis (DCR) study, widening the roadway to accommodate additional travel lanes will be necessary. It should also include additional width for sidewalks and bike lanes. Coordination with the existing bridge over the Santa Cruz River and the truck stop access will also be a consideration. The existing at-grade railroad crossing is very close to a cattleguard that may also be a concern to address.



### Planning Level Cost Estimate

### **Ruby Road Vehicular Railroad Overpass Structure**

Design Concept Report and Alternatives Analysis	\$150,000
Design and Construction Documents	\$1,050,000
Construction - Roadway	\$1,900,000
Construction - Bridge, Railroad Overpass	\$2,500,000
Construction - Bridge, Santa Cruz River	\$2,100,000
ROW Acquisition/Legal	\$100,000
TOTAL =	\$7,800,000

Figure 47: Ruby Road View to the east, of At-Grade Railroad Crossing and Cattleguard





Site No. 5 Location Map				
Project Type Vehicular Overpass of Railroad				
Location Ruby Road at UP Railroad, Rio Rico				
Benefit	Provide accessible and continuous crossing for vehicles and emergency services when trains are operating, improving public safety and eliminating conflicts			





#### Site No. 6

Project Type: Bridge over Santa Cruz River & At-Grade Crossing of the Union Pacific Railroad

**Location:** Palo Parado, in Santa Cruz County

Solution Description: The need for a vehicular overpass has been identified at Palo Parado to allow vehicles continuous and unrestricted ability to travel over the Santa Cruz River safely and without delay even during flood conditions. There is currently an at-grade railroad crossing at Palo Parado and there are 1200 vehicles per day crossing at this location. The approximate bridge span needed over the Santa Cruz River is ¼-mile, with additional ¼-mile approaches on each side. The next nearest crossing of the river and rail is 5 miles away at Rio Rico Road, creating traffic circulation issues and public safety concerns due to the longer response times when floodwater is present in the river.

The overpass bridge will meet state requirements for stream crossings. The crossing structure will satisfy requirements for slopes and drainage, and will coordinate with any other state and federal regulations. The evaluation process will look at minimizing engineering conflicts, addressing utility conflicts, coordinating regulatory and railroad approvals, obtaining environmental clearances, and utilizing available right-of-way wherever possible.

This project will allow the safe and unrestricted movement of vehicles across the Santa Cruz River and the regularly used railroad tracks at Palo Parado. The river bridge will allow vehicles, including emergency services, medical response, and law enforcement to reach both sides of the river on a continuous basis. It will increase access to retail businesses, job opportunities, schools, reduce delays, detours, and eliminate conflicts. This project will significantly benefit residents, visitors, and municipal services.

**Alternatives**: A. Alignment 1 (Preferred alternative)

B. Railroad Overpass Bridge on preferred alignment

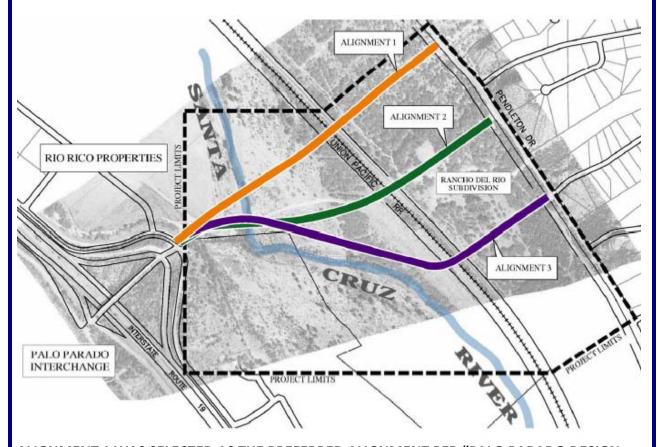
# Planning Level Cost Estimate Palo Parado Bridge Structure over Santa Cruz River & At-Grade Crossing of the UPRR Line

Line		
Alternative A		
Design and Construction Documents		\$1,000,000
Construction		\$6,750,000
	TOTAL =	\$7,750,000
Alternative B		
Design Concept Report and Alternatives Analysis		\$250,000
Design and Construction Documents		\$1,350,000
Construction		\$6,750,000
Bridge over R/R		\$2,350,000
	TOTAL =	\$10,700,000

Costs based on Palo Parado Design Concept Report



Site No. 6 Location Map		
Project Type	Bridge crossing for vehicular and pedestrian traffic	
Location	Palo Parado Road at UP Railroad and Santa Cruz River, Rio Rico	
Benefit	Provide accessible and continuous crossing for vehicles and emergency services when river has water present, improving public safety and eliminating conflicts	



ALIGNMENT 1 WAS SELECTED AS THE PREFERRED ALIGNMENT PER "PALO PARADO DESIGN CONCEPT REPORT".

<sup>\*</sup>Exhibit from Palo Parado Design Concept Report



#### Site No. 7

Project Type: Pedestrian Crosswalks across Grand Avenue

**Location:** Park Street to Arroyo Blvd. in Nogales

Solution Description: Several intersections along Grand Avenue need pedestrian safety improvements. These improvements at intersections along Grand Avenue include low-cost, short-term projects that can be done rather quickly such as high visibility pavement markings, additional signage, and traffic signal upgrades including countdown pedestrian signal heads. Long-term projects that may take more time and funding to design, but will ultimately increase safety benefits and add aesthetic enhancements to the community include pedestrian friendly center island medians, channelization measures to help shorten crossing distances, and traffic calming such as raised crosswalks or decorative speed tables that increase the visibility of a pedestrian. Vehicular restrictions may also be alternatives, such as restricting U-turns or channelizing left turning movements with the addition of landscaped or decorative medians. All improvements will be made to meet applicable American Disability Act requirements; this may include intersection improvements as well.

**Alternatives**: A. Short-Term, Low Cost Signing, Pavement Marking and Traffic Signal Upgrades

B. Long-Term Projects, Center Island Medians, Raised Crosswalks, and Channelization

Figure 48: Examples of Short Term, Low Cost Improvements
Including Signing, Striping, and Signals







Figure 49: Examples of Long Term, Higher Cost Improvements such as Traffic Calming





It is recommended that the City of Nogales pursue low-cost measures as a first phase project to implement some safety improvements in the short-term, followed by planning for long-term infrastructure improvement projects in the budget planning process to further enhance the safety of pedestrians crossing Grand Avenue. Vehicular restrictions could be considered in the future if additional safety measures are needed based on specific traffic problems at locations with ongoing conflicting movements.

#### Planning Level Cost Estimate

**Crosswalk Improvements along Grand Avenue** 

Phase 1	
Traffic Safety Study	\$20,000
Design and Construction Documents	\$25,000
Utilities (UG for Signal Improvements)	\$10,000
Traffic Signal/Electrical Systems	\$20,000
Signing & Striping Improvements	\$30,000
Misc./Other	\$5,000
Public Education Campaign & Relations	\$10,000
Phase 1 Subtotal =	\$120,000
Phase 2	
Traffic Safety Study	\$30,000
Design and Construction Documents	\$50,000
Utilities	\$25,000
Roadway Infrastructure Improvements	\$750,000
Misc./Other	\$30,000
Public Education Campaign & Relations	\$15,000
Phase 2 Subtotal =	\$900,000
TOTAL =	\$ 1,020,000



Site No. 7 Location Map			
Project Type	Crosswalk Installation		
Location	Grand Avenue, Park St to Arroyo Blvd, Nogales		
Benefit	Increase pedestrian safety by improving crossing visibility		
	LEGEND Locations are approximate. Final locations will be determined through further study.    Improved Pedestrian Crossing		



#### Site No. 8

**Project Type:** Widen Roadway and Bridge, plus Intersection Improvements

**Location:** Calle Sonora & Hohokam Drive in Nogales

Solution Description: Calle Sonora becomes Mariposa Road west of Grand Avenue, and connects to the Mariposa Port of Entry which generates large truck traffic volumes. Calle Sonora is an extension of Mariposa Road to the east that links to warehousing and residential areas beyond, creating an undesirable mix of heavy trucks with cars. At the intersection of Hohokam Drive, the north side of the intersection is a private driveway. Coordination with the owner would be needed for any improvements on private property.

The intersection of Calle Sonora & Hohokam Drive is less than 300 feet from the major arterial intersection of Mariposa Road and Calle Sonora/Grand Avenue. Due to the amount of vehicle and truck traffic queued at the intersection and in the turn lanes, there are back-ups of traffic and sight distance issues from vehicles blocking views. Calle Sonora is currently 2 lanes in each direction with poor signing and pavement marking. Roadway improvements are to include installing turn lanes and the appropriate tapers on each approach to the intersection of Calle Sonora & Hohokam Drive that will extend approximately 500 feet. The signing and pavement marking should also be upgraded to standards. In addition, the Santa Cruz River is between Grand Ave and Hohokam Drive and the bridge span, which is less than 100 feet, will need to be widened. Lastly, the traffic signal at Mariposa Road and Calle Sonora/Grand Avenue will need upgrades to accommodate the turning movements and to improve operations. One option to consider is combining this project with Site No. 9 for additional intersection improvements at Mariposa Road and Calle Sonora/Grand Avenue.

Planning Level Cost Estimate

Calle Sonora Roadway Widening & Santa Cruz River Bridge Structure & Hohokam Drive

Intersection

Design Concept Report and Alternatives Analysis	\$300,000
Design and Construction Documents	\$750,000
Construction	\$4,250,000
TOTAL =	\$5,300,000

April 30, 2010



Site No. 8 Location Map		
Project Type	Widen Roadway Bridge plus Intersection Improvements	
Location	Calle Sonora & N Hohokam Dr, Nogales	
Benefit	Provide accessible crossing for vehicles and emergency services, decreasing delay, reducing turning movement conflicts, and increasing capacity at the intersection	





#### Site No. 9

**Project Type:** Intersection Improvements

**Location:** Mariposa Road & Grand Avenue in Nogales

Solution Description: The intersection of Mariposa Road and Calle Sonora/Grand Avenue is a major arterial intersection. Mariposa Road connects to Mariposa Port of Entry which generates large truck traffic volumes. Calle Sonora is an extension of Mariposa Road to the east that links to warehousing and residential areas beyond, creating an undesirable mix of heavy trucks with cars. The intersection currently has dual left turn lanes in the eastbound to northbound direction. Further engineering investigation should be conducted to determine if turning radii on the corners could be improved, signal timing improvements could be implemented, signal timing progression installed, railroad crossing gates upgraded, or other roadway aspects widened to help improve capacity.

As described in Site No. 8, the nearest intersection to the east at Calle Sonora & Hohokam Drive is less than 300 feet away. Vehicles queuing in the westbound direction at the signalized intersection of Mariposa Road and Calle Sonora/Grand Avenue block the intersection at Hohokam Drive, creating back-ups of traffic and sight distance issues from queued vehicles. Calle Sonora is currently 1 lane in each direction with poor signing and pavement marking. For the purposes of the intersection, Calle Sonora needs to be widened to include separated turn lanes. In between the two intersections, within the 300-feet, is a narrow at-grade Union Pacific railroad crossing and bridge crossing over the Santa Cruz River. Roadway improvements, bridge widening, railroad gate widening, and intersection improvements could all be combined together into one project. This project could be combined with the Site No. 8 project.

**Alternatives**: A. Signal Timing Improvements only

B. Intersection Improvements only

#### Planning Level Cost Estimate

Mariposa Road & Grand Avenue Intersection Improvements

Phase 1/Alternative A				
Traffic Safety Study (for Both Phases)	\$40,000			
Design and Construction Documents	\$30,000			
Signal and Minor Roadway Improvements	\$180,000			
Phase 1 Subtotal =	\$250,000			
Phase 2/Alternative B				
Design and Construction Documents	\$500,000			
Intersection Reconstruction and Improvements	\$3,450,000			
Phase 2 Subtotal =	\$3,950,000			
TOTAL =	\$ 4,200,000			



Site No. 9 Location Map	
Project Type	Intersection Improvement
Location	Mariposa Road & Grand Avenue, Nogales
Benefit	Increase capacity at the intersection





#### Site No. 10

**Project Type:** Sidewalk Improvements

**Location:** Western Avenue, from Interstate 19 to Grand Avenue in Nogales

Solution Description: Western Avenue is approximately 1.1 miles in length. Some segments have no sidewalks, while others segments of Western Avenue with existing sidewalks have missing sections or sidewalks in need of repair. Along Western Avenue, there are also sight visibility issues for pedestrians crossing the street. Sidewalks should be improved to standard sidewalk widths, and constructed as detached sidewalks where possible to increase separation between pedestrians and motor vehicles. The City of Nogales currently uses Maricopa Association of Governments (MAG) *Uniform Standard Details for Public Works Construction* for their sidewalk standards. According to these standards, the minimum sidewalk width should be 4-feet wide on local streets, increasing in width as the roadway classification increases. In addition, all new construction or street improvements should include installing new, missing links, repairing damaged, or upgrading substandard sidewalks.

Alternatives: A. Install prioritized missing sidewalk links at minimum 4-foot width

B. Install entire length of sidewalk at 5-foot width

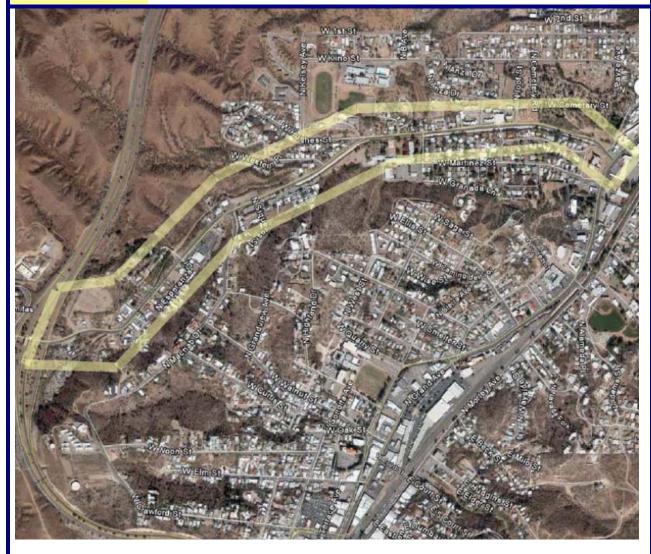
### Planning Level Cost Estimate

Sidewalk Improvements along Western Avenue, I-19 to Grand Ave

Alternative A		
Design and Construction Documents		\$20,000
Sidewalk Installation		\$50,000
ROW Acquisition/Legal		\$50,000
	TOTAL =	\$120,000
Alternative B		
Design and Construction Documents		\$50,000
Sidewalk Installation (and minor utility adjustment)		\$250,000
ROW Acquisition/Legal		\$100,000
	TOTAL =	\$400,000



Site No. 10 Location Map		
Project Type	ject Type Sidewalk Improvements	
Location	Western Avenue, I-19 to Grand Avenue, Nogales	
Benefit	Increase pedestrian safety	





#### Site No. 11

**Project Type:** Sidewalk Improvements

**Location:** Target Range Road, from Mariposa Road to Interstate 19 in Nogales

**Solution Description:** Target Range Road is approximately 1.23 miles long with sidewalks. It is also the extension of Western Avenue, featured in Site No. 10, between Interstate 19 and Mariposa Road. Along Target Range Road, there are no connected facilities for pedestrians to walk along the roadway. Sidewalks should be improved to the City specified standard sidewalk width. The City of Nogales currently uses Maricopa Association of Governments (MAG) Uniform Standard Details for Public Works Construction for their sidewalk standards. According to these standards, the minimum sidewalk width should be 4-feet wide on local streets, increasing in width as the roadway classification increases. However, due to the fact that Target Range Road functions as a major thoroughfare connecting Mariposa Road to I-19 and to downtown Nogales, and carries heavy truck volumes, a wider sidewalk of 6-feet is suggested for installation in this area. Six feet is a comfortable width for two people to walk side-by-side. In addition, sidewalks should be constructed as detached from the roadway where possible to increase separation of pedestrians from motor vehicle traffic. All new construction or street improvements should include installing new, missing links, repairing damaged, or upgrading substandard sidewalks.

### Planning Level Cost Estimate

Sidewalk Improvements along Target Range Road, Mariposa Rd to I-19

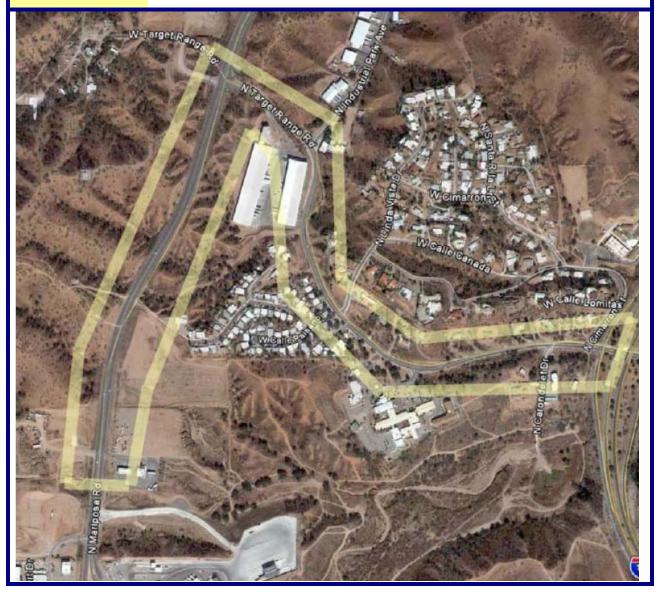
Design and Construction Documents	\$50,000
Sidewalk Installation	\$300,000
ROW Acquisition/Legal	\$100,000
TOTAL =	\$450,000

Figure 50: Target Range Road, View to the West at Mariposa Road (no sidewalks)





Site No. 11 Location Map	
Project Type	Sidewalk Improvements
Location	Target Range Rd, Mariposa Road to I-19, Nogales
Benefit	Improve Pedestrian Safety





#### Site No. 12

**Project Type:** Intersection Improvements

**Location:** Target Range Road & Mariposa Road in Nogales

**Solution Description:** Concerns at the intersection of Target Range Road and Mariposa Road center around high speed vehicles, particularly trucks, approaching the intersection on Mariposa Road in the north-south direction and the need to improve the approach to current roadway standards. Mariposa Road at this location is a 4-lane roadway with a center turn lane. The east leg of Target Range Road has a curved approach, and the west leg is an unimproved dirt surface drive that also has a curved approach with a cattle guard. In addition, a vertical curve on Mariposa Road due to the slope from the hill causes sight distance issues for vehicles turning onto this main thoroughfare.

Short term improvements could include upgrading the signage and pavement markings, installing warning devices along Mariposa Road to encourage approaching vehicles to slow down such as rumble strips or driver feedback signs. However, there are on-going maintenance costs to consider, and decreased effectiveness with time. A signal warrant study could be conducted to determine if the intersection should be controlled by a traffic signal or flashing beacon. Long-term, the intersection could be completely redesigned, including realigning and repaving the approaches on Target Range Road, and smoothing out the horizontal and vertical curves on Mariposa Road to increase visibility and discourage speeding. The improvement of this intersection should be coordinated with the design of Mariposa Road improvements related to the improvements underway at the Mariposa port of entry.

**Alternatives**: A. Signage and Pavement Marking to warn drivers

- B. Rumble Strips, but could become maintenance issue
- C. Signalize Intersection
- D. Redesign and reconstruct intersection, flatten vertical curves, realign approaches, improve sight lines

Due to the expense of the proposed solutions, it is recommended that a two-phased approach be taken at this intersection. The first phase would be a set of short-term solutions that include signing and striping upgrades, rumble strips, or another driver awareness application that is cost effective to install. The short-term solutions would need to be followed-up with a more permanent, lower maintenance long-term project that redesigns the intersection approaches and smoothes out the vertical grades.



#### Planning Level Cost Estimate

#### **Intersection Improvements Tangent Range Road & Mariposa Road**

Phase 1	
Traffic Safety Study (for Both Phases)	\$40,000
Design and Construction Documents	\$25,000
Signing & Striping Improvements	\$30,000
Roadway Improvements	\$95,000
Misc./Other	\$10,000
Phase 1 Subtotal =	\$200,000
Phase 1 Subtotal = Phase 2	\$200,000
	<b>\$200,000</b> \$150,000
Phase 2	. ,
Phase 2 Design and Construction Documents	\$150,000

Figure 51: Mariposa Road Views of Grade In the Vicinity of Target Range Road





Site No. 12 Location Map		
Project Type	Intersection Improvement	
Location	Target Range Rd & Mariposa Rd, Nogales	
Benefit	Improve public safety at intersection	





**Project Type:** Traffic Interchange Improvements

**Location:** Interstate 19 & Mariposa Road in Nogales

Solution Description: Several possible alternatives for traffic interchange improvements at Interstate 19 and Mariposa Road were identified in the *Mariposa/I-19 Connector Route Study* completed in 2008. These alternatives were identified to help alleviate increasing traffic in the area. Mariposa Road, or State Route 189, connects the Mariposa Port of Entry to the interstate highway system. The Mariposa POE recently received funding for a port expansion that will ultimately triple the amount of traffic that can pass through the port. This will cause already congested roadway facilities to fail. The alternatives identified include a diverging diamond interchange, a flyover ramp for eastbound to northbound traffic, and the flyover ramp and diverging diamond interchange combination.

A diverging diamond interchange is a variant on the traditional diamond interchange. The difference lies in the center where the through lanes on the crossroad intersect each other at the ramp termini intersections and are "flipped" through the middle of the interchange. The diverging diamond interchange's biggest advantage is that left turns from the crossroad do not conflict with oncoming traffic. All turning movements are removed from the signalized intersections allowing for the two signals to be controlled with two simple phases as no turning phases are required.

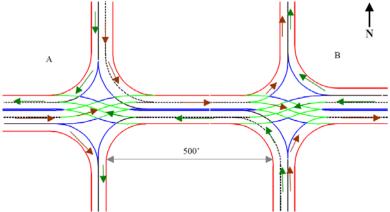


Figure 52 – Schematic Concept Plan of Diverging Diamond Interchange (Source: Paper by Praveen K. Edara, et al, Virginia Polytechnic Institute and State University)

The flyover option addresses the fact that the significant traffic demand for eastbound to northbound left turns negatively impacts the capacity and performance of the existing Mariposa Road interchange with I-19. A highly effective remedy to handle the demand and upgrade the overall performance of the interchange would be to provide for this movement by construction an overpass structure (flyover) that would carry the eastbound to northbound traffic over I-19 and Mariposa Road, thus providing free-flow movement. The combination of the diverging diamond with the flyover only helps to further increase the capacity and efficiency of this interchange. More detailed descriptions of these alternatives can be found in the *Mariposa/I-19 Connector Route Study*.



Alternatives: A. Diverging Diamond

B. Flyover

C. Diverging Diamond/Flyover Combination

#### Planning Level Cost Estimate

#### TI Improvements at I-19 & Mariposa Road

Alternative A	
Design Concept Report	\$100,000
Design and Construction Documents	\$700,000
Diverging Diamond Interchange Construction	\$7,700,000
Alternative A - TOTAL =	\$8,600,000
Alternative B—Flyover	
Design Concept Report	\$600,000
Design and Construction Documents	\$2,500,000
Flyover Construction	\$22,000,000
Alternative B TOTAL =	\$25,100,000
Alternative C- Diverging Diamond/Flyover Combination	
Alternative C TOTAL =	\$33,700,000



Site No. 13 Location Map		
Project Type	Project Type Traffic Interchange Improvements	
Location	Mariposa Rd/I-19 Interchange, Nogales	
Benefit	Increased Capacity and Access to the Region	





Site No. 14

**Project Type:** Intersection Improvements

**Location:** Frank Reed Road & Mariposa Road in Nogales

Solution Description: This major arterial intersection is heavily used, with a significant amount of truck traffic. The north-south approaches along Frank Reed Road/Industrial Park Drive also need to be improved to current design standards and realigned to improve sight visibility issues. A previous study prepared for the Arizona Department of Transportation (ADOT), the *Mariposa/I-19 Connector Route Study*, identified two options for this intersection: a grade-separated intersection or an Arizona Parkway intersection design along Mariposa Road in the vicinity of this intersection that would implement restricted left turns at the intersection and provide for U-turn loops at approximately 1/8-mile. The next intersection to the north along Frank Reed Road is Paul Bond Road, only 300-feet away and that intersection should be taken into consideration. According to the *Mariposa Road/I-19 Connector Route Study*, either of the following two options will provide adequate capacity for Year 2040 projected traffic with acceptable levels of service:

Alternatives: A. Grade separated intersection

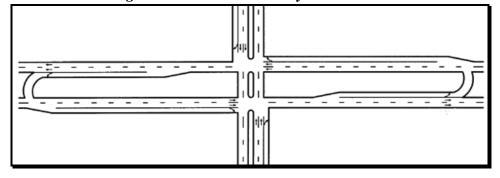
B. Arizona Parkway Intersection (can be implemented even before full is parkway built)

Planning Level Cost Estimate

Intersection Improvements at Frank Reed Road & Mariposa Road in Nogales

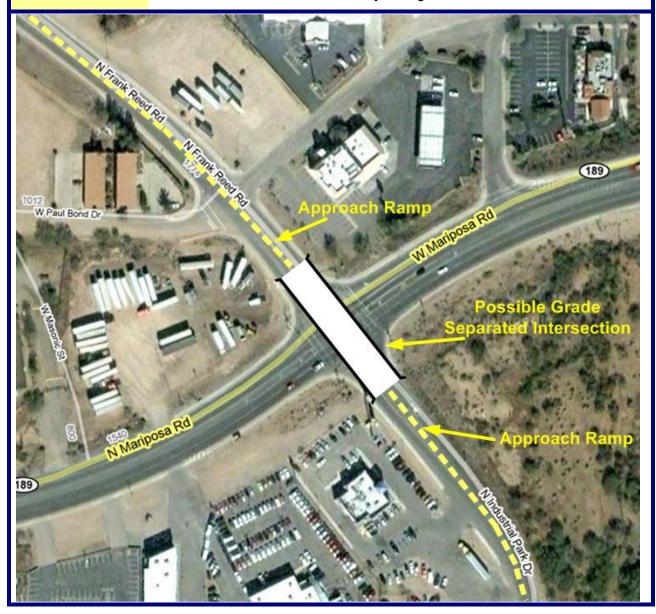
Alternative A—Grade Separate Intersection	\$25,200,000
Design Concept Report	\$ 250,000
Design and Construction Documents	\$2,500,000
Environmental Approvals	\$500,000
Alternative A TOTAL =	\$28,450,000
Alternative B—Arizona Parkway Intersection design	\$9,000,000
Design Concept Report	\$50,000
Design and Construction Documents	\$900,000
Environmental Approvals	\$500,000
Alternative B TOTAL =	\$10,450,000

Figure 53: Arizona Parkway Intersection





Site No. 14 Location Map	
Project Type	Intersection Improvement
Location	Mariposa Rd & Frank Reed Rd, Nogales
Benefit	Increase intersection capacity





**Project Type:** Roadway Widening & Intersection Improvements

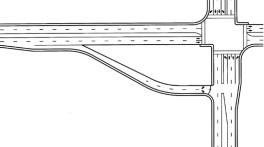
**Location:** Mariposa Road from Mariposa Port of Entry to Interstate 19 in Nogales

Solution Description: SR 189/Mariposa Road in this area is approximately 3 miles long and is currently a 4-lane roadway with a two-way center turn lane. The Arizona Department of Transportation has preserved approximately 200-feet of roadway right-of-way for future improvements. Mariposa Road currently experiences little access management control and average daily traffic ranges from 15,000 (near the Port of Entry) to 30,000 (near Interstate 19) vehicles per day. According to the *Mariposa/I-19 Connector Route Study*, future traffic is expected to more than double to 43,000 vehicles per day near the Port of Entry and 69,000 per day near Interstate 19 by the Year 2040. Considering the very high heavy truck traffic on SR 189/Mariposa Road, the passenger car equivalent is even greater: 73,000 vehicles per day near the Port of Entry and 107,000 vehicles per day at Interstate 19. A standard arterial roadway cannot accommodate this volume of traffic.

To handle the anticipated traffic from future growth, Mariposa Road should be widened and improved to increase capacity and effective access management strategies should be implemented immediately. There are several options for roadway widening beyond the traditional roadway widening from 4-lanes to 6-lanes. The *Mariposa/I-19 Connector Route Study* considered an Arizona Parkway within the current 200-foot right-of-way and/or an enhanced arterial roadway with jughandle intersections that eliminate left turns at major arterial intersections.

Figure 54: Example Parkway in Michigan and Jughandle Intersection







Alternatives: A. Traditional Roadway Widening

B. Arizona Parkway

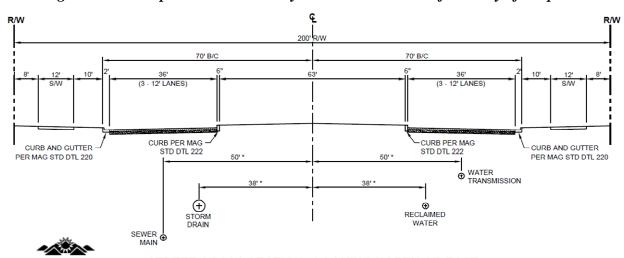
C. Enhanced Arterial Roadway with Jughandle Intersections

#### Planning Level Cost Estimate

Mariposa Road (SR 189) Roadway Widening and Intersection Improvements

Alternative A—Traditional Roadway Widening	\$25,200,000
DCR	\$250,000
Design and Construction Documents	\$5,000,000
Environmental Approvals	\$1,000,000
Alternate A TOTAL =	\$31,450,000
Alternative B—Arizona Parkway	\$47,400,000
DCR	\$250,000
Design and Construction Documents	\$5,000,000
Environmental Approvals	\$1,000,000
Alternate B TOTAL =	\$53,650,000
Alternative C—Enhanced with Jughandles	\$40,500,000
DCR	\$250,000
Design and Construction Documents	\$5,000,000
Environmental Approvals	\$1,000,000
Alternate C TOTAL =	\$46,750,000

Figure 55: Example Arizona Parkway Street Cross-Section from City of Surprise





Site No. 15 Location Map		
Project Type	Roadway Widening and Improvement, Nogales	
Location	Mariposa Rd/SR 189, POE to I-19	
Benefit	Increased capacity and improved safety by eliminated conflicts with the introduction of access management	
	Westing	



**Project Type:** Frontage Road Extension

**Location:** W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico

**Solution Description:** The existing Frontage Road alignment from Calle Calabasas to Yavapai Drive in Rio Rico has a missing link measuring approximately 4,300 feet in length. It is currently an unimproved dirt road that needs to be built to current roadway standards to provide residents and public services an additional arterial route. The road would be a rural, 2-lane roadway with paved shoulders. Additional right-of-way should be acquired and preserved for future roadway widening when additional lanes for increased capacity are required in the future. Vertical and horizontal alignments will need to be studied in the design concept report prior to design as the roadway would be on currently unimproved land. This extension will also help provide increased transportation connectivity for the region.

**Alternatives**: A. Two lane road to match existing with paved shoulders for bike and pedestrian use

B. Surface treatment of a dirt road extension—not an environmental option

#### Planning Level Cost Estimate

West Frontage Road Extension, Calle Calabasas to Yavapai Drive in Rio Rico

Design Concept Report	\$80,000
Design and Construction Documents	\$420,000
Roadway Construction	\$4,400,000
TOTAL =	\$4,900,000

Figure 56: West Frontage Road, View to the North at Roadway End





Site No. 16 Location Map		
Project Type	Frontage Road Extension	
Location	W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico	
Benefit	Improved connectivity and local access	



April 30, 2010

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Site No. 17

Project Type: Roadway Overlay & Shoulder Improvement for Bike and Pedestrian Use

**Location:** W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico

**Solution Description:** Bicyclists from as far away as Green Valley ride long distance along frontage roads in the area. This segment of frontage roadway is approximately 4 miles in length and needs to be upgraded to current standards with shoulders, clearances, and pavement surface overlay. The new shoulders would be graded, widened and paved to current ADOT standards, and able to accommodate a Bike Route designation. The Bike Route designation would be shared with the widened shoulder and not an official on-street bike lane. This is typical for long-distance rural roadways.

Alternatives: A. Overlay existing roadway with shoulder stabilization

B. Widen existing roadway with new shoulders

C. Overlay both existing roadway and new shoulders

#### Planning Level Cost Estimate

West Frontage Road Overlay and Shoulder Widening, Rio Rico Dr to Peck Canyon Rd

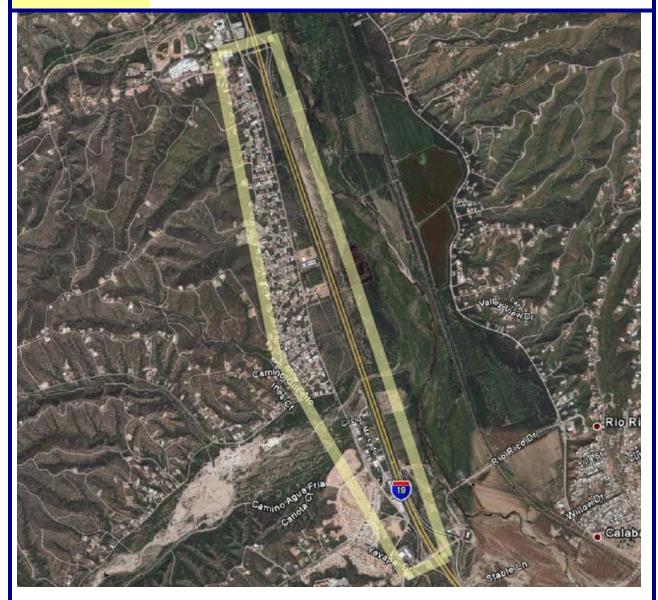
Alternative A	-	-
Design and Construction Documents		\$180,000
Construction		\$1,200,000
	Alternative A TOTAL =	\$1,380,000
Alternative B		
Design and Construction Documents		\$1,980,000
Construction		\$13,200,000
	<b>Alternative B TOTAL =</b>	\$15,180,000
Alternative C		
Design and Construction Documents		\$2,145,000
Construction		\$14,300,000
	Alternative C TOTAL =	\$16,445,000

Figure 57: West Frontage Road View to the North, Existing Conditions





Site No. 17 Location Map		
Project Type	Roadway Overlay and Shoulder Widening	
Location	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico	
Benefit	Increase safety for bicyclists and motorists	





#### Site No. 18

Project Type: Widen I-19 Overpass and Approach Roads

**Location:** Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico

Solution Description: The overpass of Interstate 19 needs to be widened to increase capacity and reduce turning movement conflicts, including turn lanes and roadway widening for school traffic in peak hours. Rio Rico High School, Mountain View Elementary School, and San Cayetano Elementary Schools are all located on the west side of Interstate 19 and the overpass is the only local route that residents have to access the schools from the eastern side of I-19. The ramp intersections should be evaluated for the feasibility of roundabouts at one or both of the intersections to improve the ramp intersection operational characteristics and safety. In addition, the installation of sidewalks and bike lanes should be considered. A Safe Routes to School Plan, including upgraded signing, striping, and other possible improvements such as school flashers should also be investigated. This project could also be combined with Site No. 19 for cost and time savings due to its close proximity.

#### **Alternatives**:

- A. Widen Bridge for turn lanes (1 additional lane) with Intersection Improvements
- B. Widen Bridge for turn lanes plus sidewalks and bike lanes with Intersection Improvements

#### Planning Level Cost Estimate

#### Widen Peck Canyon Road Overpass at I-19 Improvements

Alternative A		
Design and Construction Documents		\$250,000
Construction		\$1,500,000
	Alternate A TOTAL =	\$1,750,000
Alternative B		
Design and Construction Documents		\$500,000
Construction		\$3,200,000
	Alternate B TOTAL =	\$3,700,000

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Site No. 18 Location Map		
Project Type	Widen I-19 Overpass and Approach Roads	
Location	Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico	
Benefit	Increase capacity and reduce turning movement conflicts	



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#### Site No. 19

**Project Type:** Intersection Improvement

**Location:** W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico

Solution Description: Rio Rico High School, Mountain View Elementary School, and San Cayetano Elementary are located west of Interstate 19 and south of the Rio Rico traffic interchange. Traffic accesses the school mainly from the West Frontage Road. The main intersection with the West Frontage Road is at Camino Lito Galindo, which is stop controlled in the eastbound direction only. The approach roads entering the intersection are one lane in each direction with no turn lanes to accommodate peak hour school traffic. Existing signing and striping should be upgraded. In addition, sidewalks, bike facilities, and Safe Routes to School amenities should be improved in the area. Due to the sites proximity to other needed projects, it may be advantageous to combine this project with Site No. 18.

Alternatives: A. Turn lanes, signing, striping, SRTS improvements

B. Approach Roadway Improvements

#### Planning Level Cost Estimate

#### West Frontage Rd & Camino Lito Galindo Intersection Improvement, Rio Rico

		,
Phase 1—Short Term		
Signing and Striping, SRTS Plan		\$50,000
Phase	1 SUBTOTAL =	\$50,000
Phase 2 – Complete Improvements		
Design and Construction Documents		\$115,000
Construction		\$635,000
Phase	2 SUBTOTAL =	\$750,000
	TOTAL=	\$800,000



	Final Report
Site No. 19 Loc	cation Map
Project Type	Intersection Improvement
Location	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico
Benefit	Improved capacity, reduced turning movement conflicts, increased pedestrians & bicyclists and safer school traffic
	Add Northbound
	Add Northbound  Left Turn and  Southbound  Right Turn Lanes



#### Site No. 20

**Project Type:** Frontage Road Improvement

**Location:** W Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado

Solution Description: The existing West Frontage Road dead ends at a landfill on the north end and needs to be extended to be improved and built as a 2-lane road frontage road with paved shoulders. The existing frontage road also needs to be extended north to the next interchange at Agua Linda Road to provide Tubac area residents and public services an additional arterial road and local access route. The approximate length of this section is 3,100 feet and the road would be a rural, 2-lane, roadway with shoulders, and should be built to State roadway standards. However, additional right-of-way should be also be acquired and preserved for future roadway widening when additional lanes for increased capacity are needed in the future. In addition, vertical and horizontal alignments will need to be studied in a corridor study or design concept report phase prior to design as the roadway would be traversing currently vacant land. This extension will also help provide increased transportation connectivity for the region.

#### Planning Level Cost Estimate

West Frontage Road Extension from W Chavez Siding Rd to Agua Linda Rd at Amado

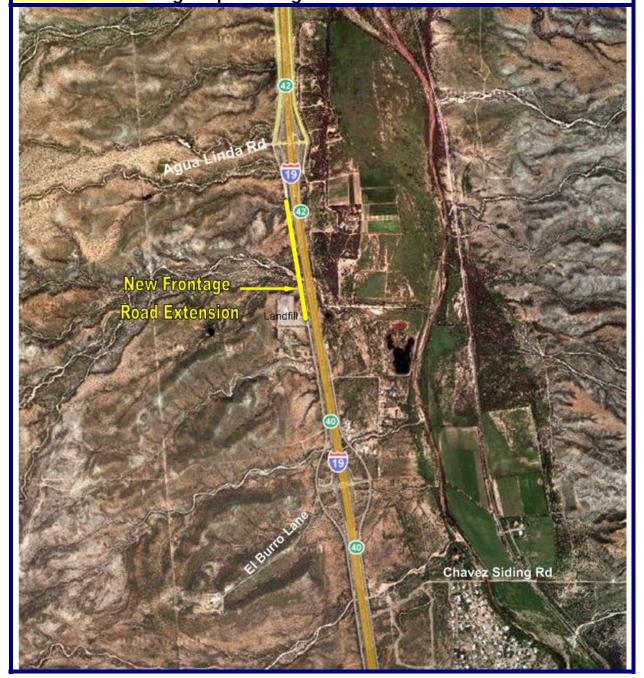
Design and Construction Documents		\$550,000
Construction		\$2,950,000
	TOTAL =	\$3,500,000

Figure 58: West Frontage Road View to the North, Roadway ends at Landfill Site





Site No. 20 Location Map		
Project Type	Frontage Road Improvement	
Location	W Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado	
Benefit	Connectivity will increase traffic circulation in region providing alternative access to I-19	





#### Site No. 21

**Project Type:** Frontage Road Improvement

**Location:** E Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado

Solution Description: The existing Frontage Road alignment from Chavez Siding Road needs to be extended north to Agua Linda Road in the Tubac area to provide residents and public services an additional arterial road and local access route. The approximate length of the section is 4,900 feet and the road would be a rural, 2-lane, roadway with shoulders, built to State roadway standards. However, additional right-of-way should be acquired and preserved for future roadway widening when additional lanes for increased capacity are needed in the future. In addition, vertical and horizontal alignments will need to be studied in a corridor study or design concept report prior to design as the roadway would be traversing currently vacant land. This extension will also help provide increased transportation connectivity for the region.

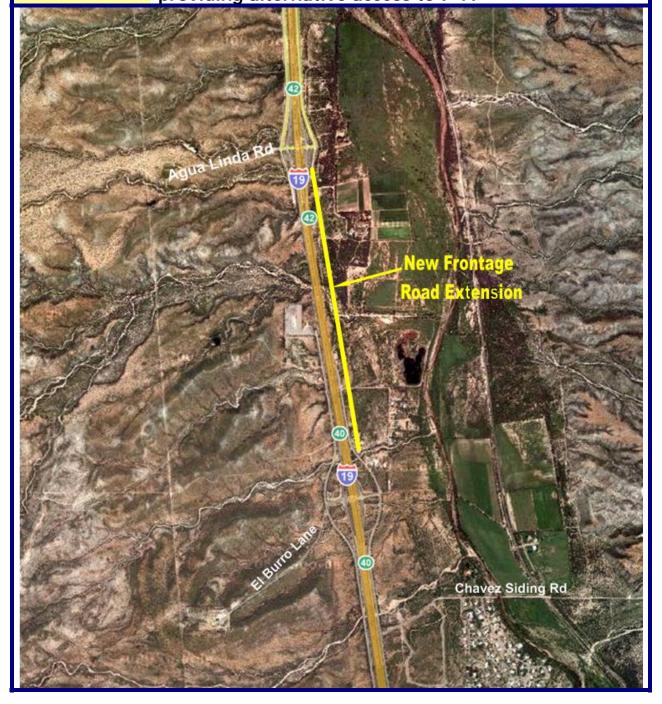
#### Planning Level Cost Estimate

East Frontage Road Extension, W Chavez Siding Rd to Agua Linda Rd

Design and Construction Documents	\$700,000
Construction	\$3,800,000
TOTAL =	\$4,500,000



Site No. 21 Location Map		
Project Type	Frontage Road Improvement	
Location	E Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado	
Benefit	Connectivity will increase traffic circulation in region providing alternative access to I-19	





#### Site No. 22

**Project Type:** Intersection Improvement

**Location:** E Frontage Rd & Tumacacori Rd, Tubac

Solution Description: Based on peak hour demand and intersection turning movements, a northbound left turn lane is needed at the intersection of Tumacacori Road and the East Frontage Road. Currently, northbound traffic turning left towards I-19 must do so from the through lane. If there is on-coming traffic in the southbound direction, the northbound left-turning vehicles block the through traffic, creating significant backups in the northbound direction. Signing and striping should also be updated at the intersection. As traffic congestion increases and traffic volumes grow, a traffic signal could be warranted in the future. Traffic volumes should continue to be monitored at this location. A roundabout solution could be evaluated at this time as well to eliminate the need for signalization. The cost of constructing a roundabout would far exceed the signal system; but the benefits would include reduced severity of accidents, significantly less operations and maintenance costs, and fuel and time savings.

Alternatives: A. Northbound Left Turn lane

B. Future Traffic Signal

The northbound left turn lane is the only current need and should be the improvement programmed at this time. The intersection can continue to be monitored for future needs.

## Planning Level Cost Estimate Intersection Improvement at Tumacacori Road and East Frontage Road

Alternative A	
Design and Construction Documents	\$60,000
Construction	\$400,000
Alternative A TOTAL =	\$460,000
Alternative B	
Design and Construction Documents	\$35,000
Construction	\$250,000
Alternative B TOTAL =	\$285,000



Site No. 22 Location Map	
Project Type	Intersection Improvement
Location	E Frontage Rd & Tumacacori Rd, Tubac
Benefit	Improved capacity, reduced turning movement conflicts





#### Site No. 23

**Project Type:** Intersection Improvement

**Location:** E Frontage Rd & Tubac Rd, Tubac

Solution Description: Based on peak hour demand and intersection turning movements, northbound and southbound left turn lanes are needed at the intersection. Currently, traffic turning left must do so from the through lane in both directions. If there is on-coming traffic in the opposing direction, the left-turning vehicles block the through traffic, creating significant backups. Signing and striping should also be updated at the intersection. As traffic congestion increases and traffic volumes grow, a traffic signal could be warranted in the future. Traffic volumes should continue to be monitored at this location. A roundabout solution could be evaluated at this time as well to eliminate the need for signalization. The cost of constructing a roundabout would far exceed the signal system; but the benefits would include reduced severity of accidents, significantly less operations and maintenance costs, and fuel and time savings.

Alternatives: A. Northbound and Southbound Left Turn lane

B. Traffic Signal

The northbound and southbound left turn lanes are the only current need and should be the improvements programmed at this time. The intersection can continue to be monitored for future needs.

## Planning Level Cost Estimate Intersection Improvement at Tubac Road and the East Frontage Road

Alternative A	
Design and Construction Documents	\$75,000
Construction	\$500,000
Alternate A TOTAL =	\$575,000
Alternative B	
Design and Construction Documents	\$35,000
Construction	\$250,000
Alternate B TOTAL =	\$285,000



Site No. 23 Location Map	
Project Type	Intersection Improvement
Location	E Frontage Rd & Tubac Rd, Tubac
Benefit	Improved capacity, reduced turning movement conflicts





**Project Type:** Roadway and Intersection Improvements

**Location:** E Frontage Rd, Avenida Goya to Bridge Rd, Tubac

Solution Description: The existing East Frontage Road, from Kenyon Ranch Road to Bridge Road in Tubac needs to be widened to provide residents and public services an improved local access route. There are several intersecting side streets that lead directly to the downtown shopping district area of Tubac and are essential for traffic circulation. Currently, the frontage road is one lane in each direction with no turn lanes and becomes congested due to traffic stopping for turning vehicles. This delay causes vehicles to attempt to pass on the right on the dirt shoulder to drive around turning vehicles. The approximate length of the frontage road section is 3,700 feet. The road would be widened to a 2-lane roadway with a two-way center turn lane and should be built to State roadway standards. Another option could include warrant studies for left turn lanes at those intersections with high turning movement volumes. Additional right-of-way should be acquired and preserved the length of the frontage road section for future roadway widening when additional lanes for increased capacity are needed in the future. This improved roadway will also help provide increased transportation connectivity for the region.



Figure 59: East Frontage Road looking North, in Tubac

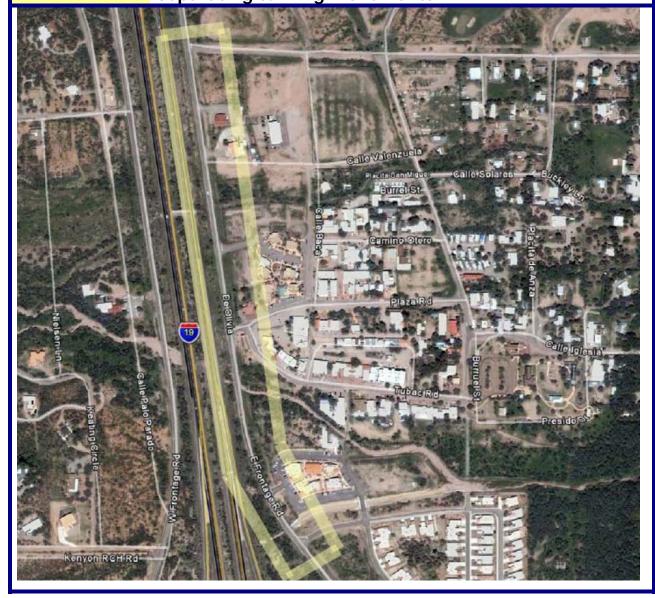
#### Planning Level Cost Estimate

# Roadway and Intersection Improvements at the East Frontage Rd from Avenida Goya to Bridge Rd

Design and Construction Documents	\$305,000
Construction	\$1,725,000
TOTAL =	\$2,030,000



Site No. 24 Location Map	
Project Type	Roadway and Intersection Improvements
Location	E Frontage Rd, Avenida Goya to Bridge Rd, Tubac
Benefit	Improved local access and reduced conflicts by separating turning movements





**Project Type:** Intersection Improvement

**Location:** E Frontage Rd & Avenida de Otero, Tubac

**Solution Description**: The intersection of the East Frontage Road and Avenida de Otero is currently a three-legged (T) intersection with one lane in the north and south direction on the Frontage Road and no turn lanes. The third leg is on the east approach, called Avenida de Otero, accesses the Tubac Golf Resort and its residential neighborhood. Improvements to this intersection would include widening of the Frontage Road to create a northbound right turn lane. This would help separate northbound turning traffic entering the Tubac Golf Resort and residential community from through traffic on the Frontage Road.

Figure 60: East Frontage Road View to the North at Avenida de Otero near Tubac Golf Resort



Planning Level Cost Estimate

Intersection Improvement at East Frontage Road and Avenida de Otero

Design and Construction Documents	\$40,000
Construction	\$155,000
Drainage Enhancements	\$50,000
TOTAL =	\$245,000



Site No. 25 Location Map	
Project Type	Intersection Improvement
Location	E Frontage Rd & Avenida de Otero, Tubac
Benefit	Improved capacity, reduced turning movement conflicts





#### **Site No. 26**

**Project Type:** Frontage Road Connection

**Location:** Connector Road, Mariposa Rd to Country Club Dr Nogales

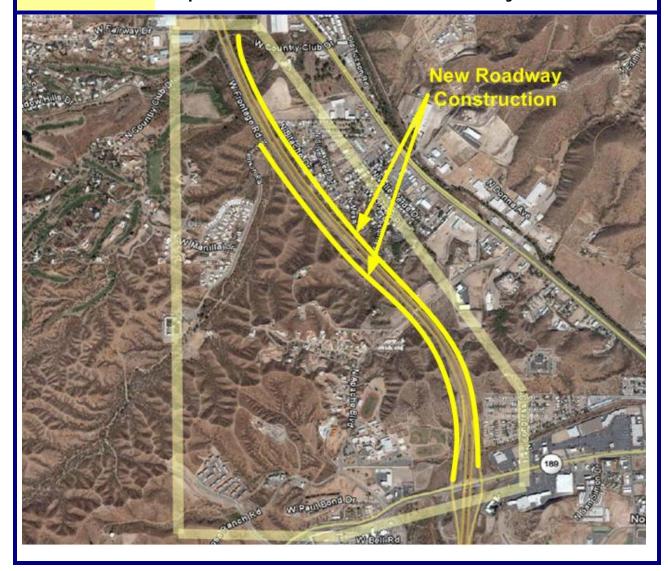
Solution Description: A need has been identified for increased connectivity from the Mariposa Road area to Country Club Road. Frontage Roads should be provided if feasible on both the east and west sides of I-19 to improve connectivity and traffic circulation in the region. The approximate length of the study area is 2 miles, this includes the feasibility analysis for frontage roads on both the east and west side of the interstate. Currently, there is a short frontage road extension leading south from Country Club Drive to North Al Harrison Road. This frontage road would be included in the study to see whether the additional frontage road on the west side of the interstate would tie in at that location, or extend to Country Club Road with new roadway. Due to topography and existing development in the area, a feasibility study and corridor study should be conducted to determine planning level cost estimates, investigate the advantages and disadvantages, and review alternative alignments in greater detail. It is assumed the new road would be a 2-lane roadway; however, the feasibility study would review potential cross-section alternatives further.

Planning Level Cost Estimate Frontage Road Feasibility Study

Feasibility Study/Corridor Alternatives Analysis		\$250,000
	TOTAL =	\$250,000



Site No. 26 Location Map	
Project Type	Frontage Road Connection
Location	Connector Road, Mariposa Rd to Country Club Dr, Nogales
Benefit	Improved local access and connectivity





#### Site No. 27

Project Type: Roadway Reconstruction

**Location:** Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico

**Solution Description:** The existing roadway is in poor condition with many vertical and horizontal curves creating a roller coaster effect and sight visibility issues. In addition, there are safety concerns for pedestrians as the existing roadway has little to no shoulder for the entirety of the section. This roadway section is approximately 4.5 miles long and provides the only major north-south connection outside of the state system of I-19 and its frontage roads. With many people using this as their only route to their homes, improvements along this road are imperative to the safety and well-being of the community.

**Alternatives**: A. Two-Lane Roadway Reconstruction

B. Roadway Reconstruction and Widening with Paved Shoulders

### Planning Level Cost Estimate

### Pendleton Drive Roadway Reconstruction, Rio Rico Dr to Palo Parado Dr

Tondicton Bille Road way Reconstruction, Into Inco Bi to In	
Alternative A	
Design and Construction Documents	\$3,375,000
Land Acquisition	\$825,000
Construction	\$22,500,000
Alternative A TOTAL=	\$26,700,000
Alternative B	
Design and Construction Documents	\$5,400,000
Land Acquisition	\$1,100,000
Construction	\$36,000,000
Alternative B TOTAL =	\$42,500,000

Figure 61: Pendleton Drive View to the North from Rio Rico Drive





Site No. 27 Location Map		
Project Type	Project Type Roadway Reconstruction	
Location Pendleton Drive, Rio Rico Drive to Palo Parado Drive Rio Rico		
Benefit	Improved sight visibility increasing public safety	





#### Site No. 28

Project Type: New Roadway Construction

**Location:** Pendleton Drive, North Terminus to Bridge Rd, Tubac

Solution Description: The existing Pendleton Drive alignment needs to be extended north from its existing terminus to Bridge Road in Tubac to provide residents and public services an alternative arterial roadway parallel to I-19 and a local access route. The new roadway construction would be approximately 3 miles in length. The roadway cross-section would be a rural, 2-lane, roadway with paved shoulders. However, additional right-of-way should be acquired and preserved for future roadway widening when additional lanes for increased capacity are needed in the future. In addition, vertical and horizontal alignments will need to be studied in a corridor study or design concept report prior to design as the roadway would be traversing currently vacant land. This extension will help provide increased transportation connectivity and circulation for the region. Public safety will be vastly improved with a north-south arterial roadway that is separate and independent of I-19. Pendleton Drive should ultimately be extended into Pima County to a logical terminus.

# Planning Level Cost Estimate New Roadway Construction to extend Pendleton Drive from its current North Terminus to Bridge Rd

Design Concept Report	\$700,000
Design and Construction Documents	\$3,600,000
Construction	\$24,000,000
Land Acquisition	\$1,420,000
TOTAL =	\$29,720,000

<sup>\*</sup>Project and construction costs can be phased as development occurs



Site No. 28 Loc	cation Map	
Project Type	Roadway Construction	
Location	Pendleton Drive, North Terminus to Bridge Rd, Tubac	
Benefit	Lack of pedestrian amenities and connectivity creating public safety concerns for pedestrians	
	New Roadway Construction	



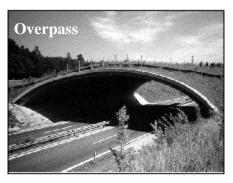
#### Site No. 29

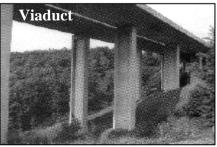
**Project Type:** Wildlife Preservation **Location:** Tumacacori to Tubac

**Solution Description:** Wildlife travels in corridors between large blocks of habitat areas. In order to help preserve wildlife habitat when transportation and human activity intersects wildlife areas, a wildlife crossing is proposed to be constructed with channelized approaches to help animals maintain connectivity to habitats across transportation facilities.

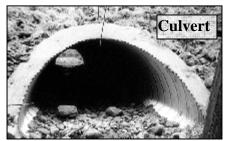
The Santa Cruz County Flood Control District and Floodplain Administration have expressed desire to preserve natural resources in the area. In previous studies that have addressed flood protection, safeguarding residents, wildlife habitat, water quality, recreational areas, and enhanced biological productivity were identified as important issues. The Arizona Game and Fish Department would like to see major wildlife linkage corridors be considered when transportation improvement projects are planned, designed, and constructed. One major wildlife linkage corridor they have identified is across the Santa Cruz River valley located between Tumacacori and the San Cayetano mountains. This linkage corridor connects major wildlife habitats on each side of the valley in and around the Coronado National Forest lands.

The Arizona Game and Fish Department currently has GIS modeling efforts underway for the "Fracture Zone" located between Tumacacori and the San Cayetano mountains. The Site Location Map (from the document *Evaluation of Wildlife Crossings along the Proposed Expansion and Realignment of Camino de Manana, October 2006.*) on the next page shows the general location of the wildlife linkage fracture zone. Depending on the transportation facility improvement, several types of structures maybe options for wildlife crossings, such as an overpass, underpass, viaduct or culvert.









Source: Wildlife Crossings, Portland State University Planning Workshop, June 2003



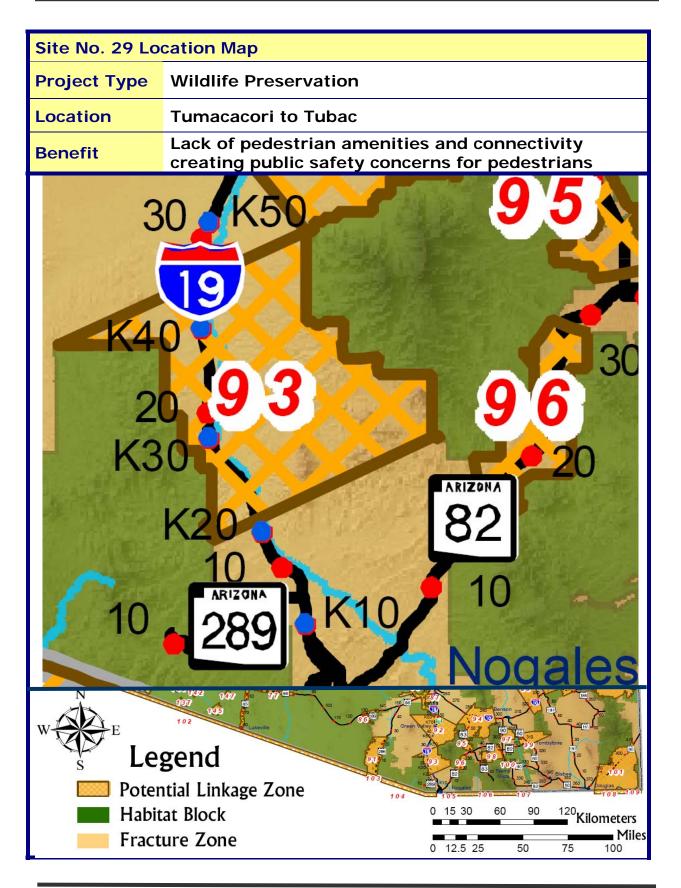
# Planning Level Cost Estimate Wildlife Crossing (Each)

Design Concept Report	\$100,000
Design and Construction Documents	\$150,000
Construction	\$1,000,000
TOTAL =	\$1,250,000

Figure 62: Example of Wildlife Overpass Crossing, Habitat Preservation in Germany









#### Site No. 30

**Project Type:** Interchange Improvements

**Location:** Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico

Solution Description: The existing Traffic Interchange at Ruby Road and Interstate 19 experiences heavy truck traffic due to warehouse use and a major truck stop fuel station located at the interchange. There is additional development proposed at this interchange including another truck stop and hotel in the southeast quadrant. There is a significant amount of traffic weaving and lane changing on Ruby Road with traffic trying to access the road or business they are seeking. Consequently, this road has a high incident level of collisions. This Traffic Interchange needs to be studied and evaluated for capacity and safety improvements.

The project needs to be coordinated with ADOT due to the Interstate jurisdiction. Communications with ADOT staff at this time to begin the process of programming evaluation, design, and construction in the statewide transportation plan is important. Access restrictions to driveways located in close proximity to the on/off ramp intersections with Ruby Road may need to be considered. An option that would alleviate some congestion is reconstructing Ruby Road to have the truck stop's east driveway serve all inbound traffic with outbound traffic using the frontage road to re-access I-19. This will keep inbound and outbound traffic from having to cross each other's paths and will keep truck queues on the truck stop property rather than on Ruby Road.

Another option that may warrant additional study is a large roundabout on the east side of I-19 that would serve both the ramps and frontage roads. This can eliminate the signal systems in close proximity to each other and ample and adequate signage can be provided to guide and direct traffic to their desired destinations. The adjacent truck stop can be coordinated with to reroute their circulation patterns to work better with the new facility.

**Alternatives**: A. Minor Interchange Improvements

B. Roundabout

# Planning Level Cost Estimate TI Improvements at I-19 & Ruby Road

**Alternative A** \$50,000 Safety Analysis **Design and Construction Documents** \$50,000 Construction \$300,000 TOTAL = \$400,000 **Alternative B** Design Concept Report \$100,000 **Design and Construction Documents** \$400,000 \$2,500,000 Construction \$3,000,000 TOTAL =



Site No. 30 Loc	ation Map
Project Type	Interchange Improvements
Location	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico
Benefit	Improved Capacity and Levels of Service, Reduced Delay
SR-289	Ruby Rd  Ruby Rd  Afternative A: Capacity and Safety Improvements at Overpass, such as Widening or Access Management Stategies.  Alfernative B: Large Roundabout to sarve the Ramps, Provided Roundabout to sa



#### Site No. 31

**Project Type:** Nogales Gateway Enhancements

**Location:** Grand Avenue and Crawford Street vicinity, Nogales

Solution Description: A Gateway Enhancement opportunity exists at the intersection of Grand Avenue and Crawford Street, in downtown Nogales' central business district that would serve as an entrance feature or monument. It would incorporate public art and cultural aspects from the community, welcoming visitors to the area. It could also incorporate wayfinding signage and/or possibly a Gateway Plaza for pedestrian and event use. The opportunity exists for it to be combined with another roadway improvement project, or the proposed pedestrian overpass bridge structure discussed in Site No. 1. If combined with a transportation improvement project that increases capacity and/or improves safety, additional funding sources may become available.

**Alternatives**: A. Sculpture (Public Art)

- B. Roadway median with Landscaped/Decorative Center Island (minor improvements)
- C. Roundabout or plaza area with Landscaped/Art/Sculpture in Center
- D. Monument Signage

### Planning Level Cost Estimate

#### Gateway Enhancement - Grand Ave & Crawford Ave Vicinity

Alternative A	· ·
Art Installation	\$50,000
Alternative A TOTAL =	\$50,000
Alternative B	
Design and Construction Documents	\$30,000
Construction	\$200,000
Alternative B TOTAL =	\$230,000
Alternative C	
Design and Construction Documents	\$75,000
Roundabout	\$500,000
Alternative C TOTAL =	\$575,000
Alternative D	
Signage Installation	\$15,000
Alternative D TOTAL =	\$15,000



Figure 63: Example Monument Signage with Direction in Median Island Enhancement







Site No. 31 Location Map	
Project Type	Nogales Gateway Enhancements
Location	Grand Avenue and Crawford Street vicinity, Nogales
Benefit	Entrance Feature welcoming visitors and tourists





Site No. 32

**Project Type:** Nogales Gateway Enhancements

**Location:** Mariposa Rd in the POE/Target Range Rd vicinity, Nogales

Solution Description: A Gateway Enhancement opportunity exists at the intersection of Mariposa Road and Target Range Road that would serve as an entrance feature or monument to the City of Nogales welcoming visitors and tourists. It would incorporate public art and cultural aspects from the community, as well as wayfinding signage. The possibility exists for it to be combined with another roadway improvement project, such as a roundabout or intersection improvement project. The Arizona Parkway design option for Mariposa Road will have wide medians of approximately 60-feet that would also be able to accommodate public art, enhanced landscaping, or other decorative features. If combined with a transportation improvement project that increases capacity and/or improves safety, additional funding sources may become available.

Alternatives: A. Sculpture

- B. Roadway median with Landscaped/Decorative Center Island (minor improvements)
- C. Roundabout or plaza area with Landscaped/Art/Sculpture in Center
- D. Monument Signage

Planning Level Cost Estimate

Gateway Enhancement - Mariposa Rd in the POE/Target Range Road Vicinity

Gateway Emianeement – Mariposa Ku in the I	OD/ Tai get ixang	c Road vicinity
Alternative A		
Art Installation		\$50,000
Alternati	ve A TOTAL =	\$50,000
Alternative B		
Design and Construction Documents		\$30,000
Construction		\$200,000
Alternati	ve B TOTAL =	\$230,000
Alternative C		
Design and Construction Documents		\$75,000
Roundabout		\$500,000
Alternati	ve C TOTAL =	\$575,000
Alternative D		
Signage Installation		\$15,000
Alternati	ve D TOTAL =	\$15,000

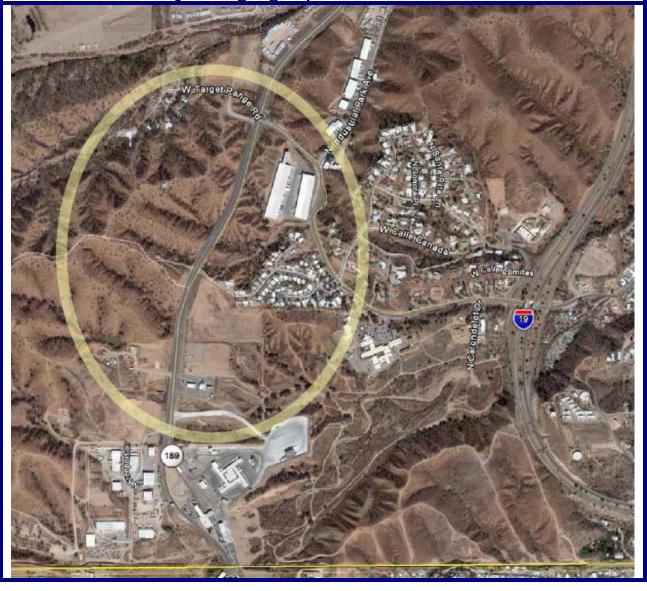
Figure 64: Example Monument Entrance Feature Signage Markers







Site No. 32 Location Map	
Project Type Nogales Gateway Enhancements	
Location	Mariposa Rd in the POE/Target Range Rd vicinity, Nogales
Benefit	Entrance Feature welcoming visitors and tourists plus wayfinding signs provide direction to motorists





Site No. 33

**Project Type:** Nogales Gateway Enhancements

**Location:** I-19/Grand Avenue vicinity, Nogales

Solution Description: A Gateway Enhancement opportunity exists at the intersection of Grand Avenue and Interstate 19 that would serve as an entrance feature or monument to the City of Nogales welcoming visitors and tourists to the City. It would incorporate public art and cultural aspects from the community. It would also be an ideal location to install wayfinding signage as drivers enter the City as this is one of several exits that eventually lead to the central business district. The possibility exists for it to be combined with another improvement project, such as Site No. 35 for the traffic interchange improvement project. If combined with a transportation improvement project that increases capacity and/or improves safety, additional funding sources may become available.

Alternatives: A. Large Wayfinding or Monument Signage

- B. Roadway median with Landscaped/Decorative Center Island (minor improvements)
- C. Sculpture

### Planning Level Cost Estimate

Gateway Enhancement – I-19/Grand Ave Vicinity

Guteway Emianeement 1197 Grand 1170 Vienne	<u>J</u>
Alternative A	
Signage Installation	\$15,000
Alternative A TOTAL =	\$15,000
Alternative B	
Design and Construction Documents	\$30,000
Construction	\$200,000
Alternative B TOTAL =	\$230,000
Alternative C	
Art Installation	\$50,000
Alternative C TOTAL =	\$50,000

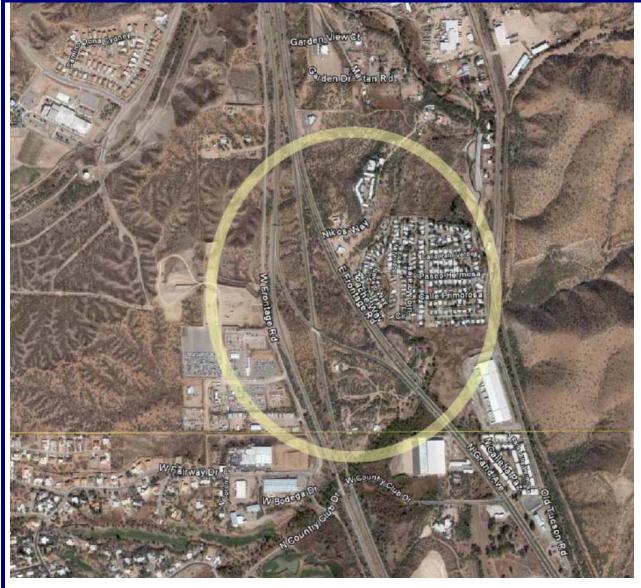
Figure 65: Example Entrance Feature Monuments & Signage







Site No. 33 Location Map	
Project Type Nogales Gateway Enhancements	
Location	I-19/Grand Avenue vicinity, Nogales
Benefit Entrance Feature welcoming visitors and tourists plus	





#### Site No. 34

**Project Type:** Safety Corridor Improvement

**Location:** I-19 "The Curve" area between Ruby Rd & Rio Rico Dr, Rio Rico

Solution Description: Along Interstate 19 there is a distinct horizontal curve that has caused issues for many drivers in western Santa Cruz County. One of the highest single crash fatality locations is along this stretch of Interstate 19 through the curve. While the design of I-19 through the curve is to standards, crash records show that this location of presents a persistent pattern for Santa Cruz County residents and visitors traveling on the interstate. Improvements in this area could include increased lighting and additional warning signs on curve approaches. In general, problems occur at night for southbound drivers on approach to the curve section of I-19. With increased lighting and signage, drivers would be more aware of conditions ahead, keeping them alert to their upcoming surroundings. A further detailed safety study may identify additional engineering factors that would also help improve the area.

### Planning Level Cost Estimate

I-19 "The Curve" Corridor Improvement

Safety and Operations Study	\$ 25,000
Design and Construction Documents	\$ 50,000
Construction	\$300,000
TOTAL =	\$375,000







Site No. 34 Location Map	
Project Type	Safety Corridor Improvement
Location	I-19 "The Curve" area between Ruby Rd & Rio Rico Dr, Rio Rico
Benefit	Improved visibility and driver awareness of section of I-19





#### Site No. 35

**Project Type:** Interchange Improvement

**Location:** I-19/Grand Avenue Partial Interchange, Nogales

**Solution Description:** The current traffic interchange at Interstate 19 and Grand Avenue is a partial interchange with an existing left lane exit. This is confusing to visitors and local drivers, and has some safety concerns. It is suggested to upgrade the Interchange to meet current standards and to address capacity issues, safety improvements, and changing the left hand exit to a traditional right exit. The existing structure will need to be reviewed for the feasibility of an underpass ramp or overpass flyover. Due to the close proximity of the projects, this project could be combined with the project at Site No. 33 for efficiencies of cost and logistics.

Additionally, it is recommended that this interchange be looked at for reconstruction to convert it to a full movement interchange. The area between the Mariposa Road and Ruby Road interchanges is a prime growth area for the City of Nogales, and a full interchange at this location will eventually be needed to serve the growth and development in this area.

**Alternatives**: A. Underpass

B. Overpass

C. Reconstruct to a full movement interchange

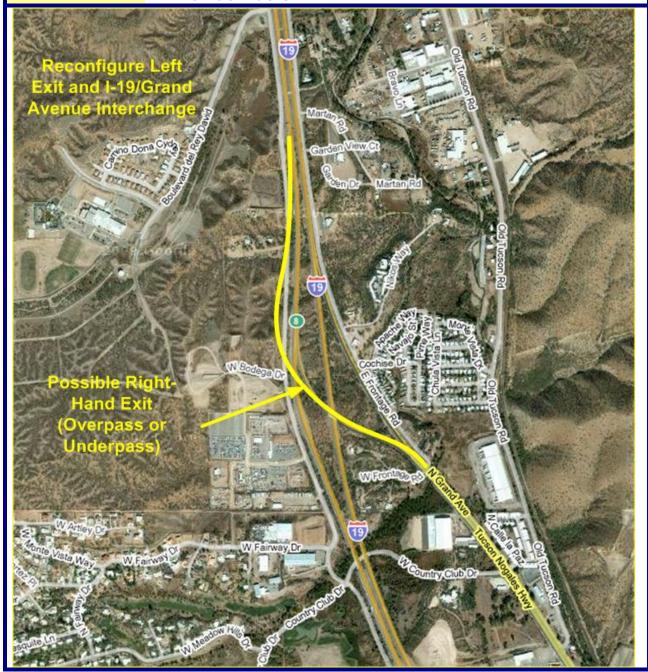
### Planning Level Cost Estimate

#### TI Improvements at I-19 & Grand Avenue

Alternative A		
Design Concept Report		\$150,000
Design and Construction Documents		\$700,000
Construction		\$4,550,000
	Alternative A TOTAL =	\$5,400,000
Alternative B		
Design Concept Report		\$400,000
Design and Construction Documents		\$2,900,000
Construction		\$19,250,000
	Alternative B TOTAL =	\$22,550,000
Alternative C		
Design Concept Report		\$800,000
Design and Construction Documents		\$4,000,000
Construction		\$30,200,000
	Alternative C TOTAL =	\$35,000,000



Site No. 35 Location Map	
Project Type	Interchange Improvement
Location	I-19/Grand Avenue Partial Interchange, Nogales
Benefit	Improved Interchange Efficiency and Decreased Driver Confusion





#### Site No. 36

**Project Type:** Roadway Corridor Improvements

**Location:** Connector Road, I-19 to SR 82, Nogales

Solution Description: A new connector road has been identified as a regional need for an alternative route or Nogales bypass route to relieve some traffic from Interstate 19 and Grand Avenue that is traveling to State Route 82. The new road would be approximately 6 miles in length. However, there is currently a substandard road, South River Road, which could be used as a corridor for the connector route. Currently, the road connects to Old Tucson Road on the west and runs along the southwest side of Santa Cruz River until terminating at SR 82. If used, the existing road would need to be widened and improved and the floodplain issues satisfactorily addressed. It would also be beneficial to use the existing South River road alignment due because it already traverses the area's mountainous terrain. If a new alignment is used, a full 6 miles of roadway would need to be constructed at significant cost. Therefore, it may be best to phase with development. In addition, consideration could be given to building a 2-lane roadway as a first phase, while acquiring and preserving right-of-way for future roadway widening, with an ultimate roadway width of two lanes in each direction with a center turn lane, or 4 lanes in each direction with a two-way center turn lane, and paved shoulders for safety.

Alternatives: A. Use South River Road Existing Alignment

B. Create New Alignment

#### Planning Level Cost Estimate

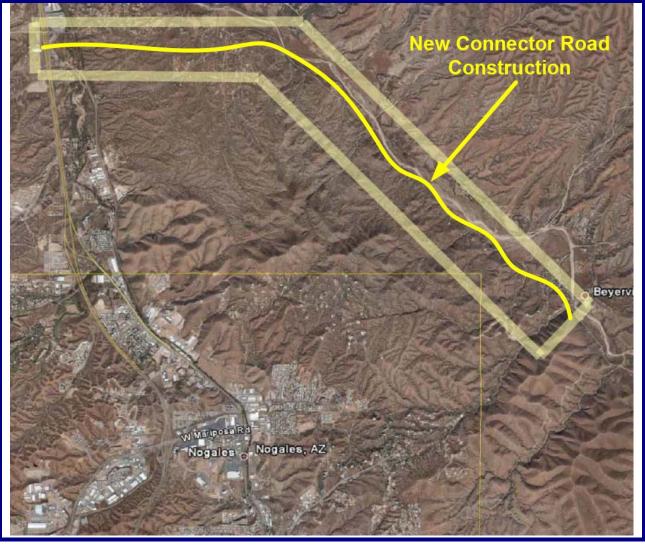
I-19 to SR 82 Connector Route - New Roadway Construction

Alternative A	
Design Concept Report	\$750,000
Design and Construction Documents	\$4,500,000
Land Acquisition	\$1,300,000
Construction	\$30,000,000
Alternative A TOTAL =	\$36,550,000
Alternative B	
Design Concept Report	\$1,200,000
Design and Construction Documents	\$7,200,000
Land Acquisition	\$2,600,000
Construction	\$48,000,000
Alternative B TOTAL =	\$59,000,000

<sup>\*</sup>Project and construction costs can be phased as development occurs



Site No. 36 Location Map	
Project Type	Roadway Corridor Improvements
Location	Connector Road, I-19 to SR 82, Nogales (South River Rd.)
Benefit	Improved Regional Access for Residents, Visitors, Travelers and Emergency Services





#### Site No. 37

**Project Type:** Traffic Signal System Improvements

**Location:** City-wide traffic signal locations, Nogales

**Solution Description:** There currently is no citywide traffic signal coordination plan to provide progression along major corridors. In addition, many individual intersection signal timing plans should be reviewed, analyzed and updated for current traffic conditions. A citywide data collection effort and study should take place to analyze the existing traffic signal operations and evaluate for needed improvements to signal programming. Timing plan changes and corridor progression plans will help with the movement of traffic through the city, especially during peak periods, and increase capacity. Most of the traffic signals in Nogales are on state routes and are owned and controlled by ADOT. This activity will need to be initiated by ADOT and completed in close coordination with the City of Nogales.

The analysis may identify additional signal equipment that could be installed. A traffic management system that can review video detection feedback, provide remote communication feedback to traffic signals, and manage multiple timing plans for special events or different peak hour conditions. Further study is needed to determine the type of system and number of signalized intersections to connect. Communications systems can be implemented through wireless technologies, underground fiber optic interconnect or other means of advanced traffic management systems.

Alternatives: A. Individual Traffic Signal Timing Plan Upgrades

B. Citywide Traffic Signal Timing Plan and Progression Implementation

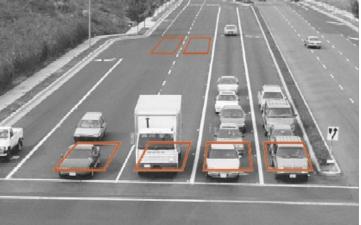
### Planning Level Cost Estimate

Citywide Traffic Signal Coordination Plan

Data Collection	\$8,000
Traffic Safety Study & Analysis	\$20,000
Timing Implementation	\$22,000
Total =	\$50,000

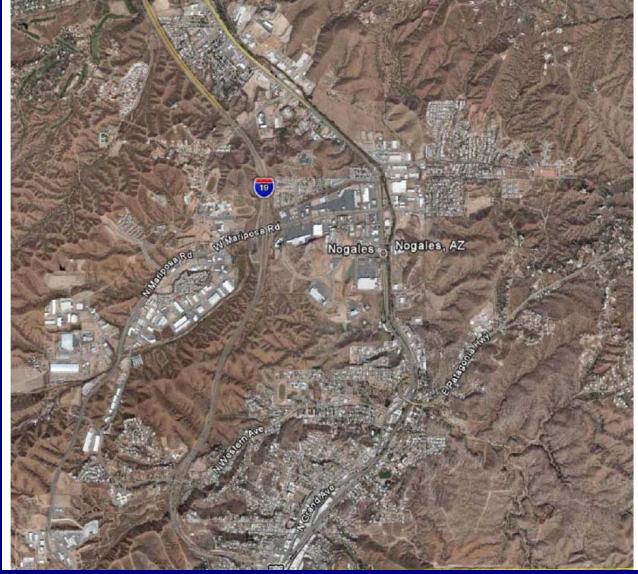
Figure 67: Example of Vehicle Video Detection Camera System and Monitor Feedback







Site No. 37 Location Map	
Project Type	Traffic Signal System/Timing Plan Updates
Location	City-wide traffic signal locations, Nogales
Benefit Improved intersection efficiency, signal timing, capacity, reduced delay and decreased traffic backup	



April 30, 2010



#### Site No. 38

Project Type: Connector Road

**Location:** Monte Carlo Neighborhood to SR 82, Nogales

**Solution Description:** The Monte Carlo neighborhood is located east of Interstate 19 and north of State Route 82. The main access to the area is a series of local residential roadways connecting to Calle Sonora at Grand Avenue/I-19. Currently, this is the only ingress and egress for the entire neighborhood. This also hinders emergency services and law enforcement response when responding to calls. In case of a road closure, evacuation or other incident or event, a second means of access to the neighborhood is needed.

It is proposed to build a new standard 2-lane roadway along the existing dirt road (Roper Road) alignment to provide additional access to and from the Monte Carlo Neighborhood. This additional access point will aid in emergency service response and provide better access for residents. It will also improve connectivity in the area by providing a route for residents to get to SR 82 without having to traverse to Grand Avenue in Nogales. This project will need to include intersection improvements where the new roadway connects to SR 82. A 2-lane roadway with shoulders is adequate and would be approximately 4,500 feet in length. Given the public safety access necessity of the roadway and its relatively short length, it is cost effective to build the entire roadway at one time.

Figure 68: Roper Road, South End of Dirt Segment, View to the North



Planning Level Cost Estimate

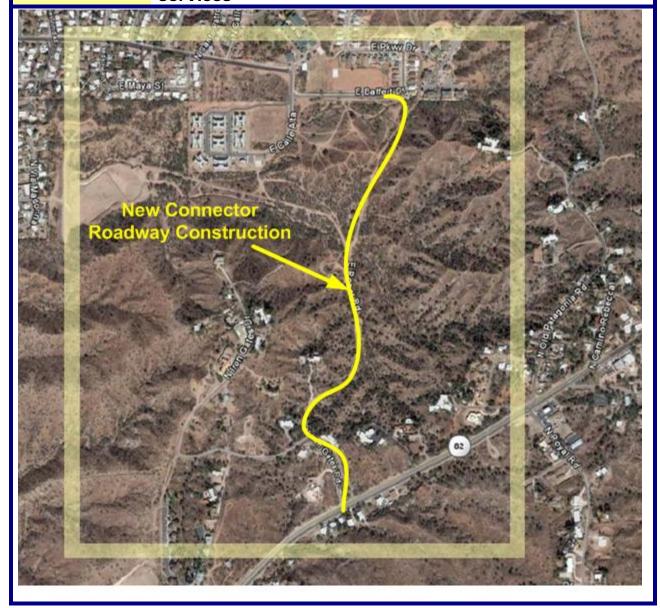
Connector Road from the Monte Carlo Neighborhood to SR 82 – New Roadway

Construction

Corridor Study	\$75,000
DCR	\$125,000
4500 Linear Feet of new Roadway (2 lanes with shoulders & center turn	\$2,100,000
lane)	
If doesn't include CD's, add it in	\$250,000
Land Acquisition	\$250,000
Environmental Clearances	\$50,000
TOTAL =	\$2,850,000



Site No. 38 Location Map	
Project Type	Connector Road
Location	Monte Carlo Neighborhood to SR 82, Nogales
Benefit	Improved access for local residents and emergency services





Site No. 39

Project Type: City Transit System

**Location:** City of Nogales

**Solution Description:** Implement a public transit system in the City of Nogales for residents and visitors to access jobs, shopping, the central business district, tourist landmarks, cultural sites, and other destinations. A variety of mechanisms can be utilized to implement an initial transit system, but care should be taken to thoroughly evaluate alternates and have forethought into future expansions. The initial transit system will set a precedent for future transit growth, and a system should be implemented that is user friendly, accepted by the public, and easily expandable. A transit system is a considerable investment and the first steps should be taken wisely.

A phased approach that builds upon existing demand-based transit services and utilizes recommendations in the 2006 Study, *Nogales Transit Feasibility Review and Implementation Plan*, would best employ existing resources. The current dial-a-ride systems can be expanded to a combination of flexible fixed route services supplemented by limited call-and-ride. Initial routes could be concentrated on Morley and Grand Avenues with 60 minute headways operating from 7 AM to 9 PM weekdays and 9 AM to 8 PM on weekends. The second phase may be to implement a citywide transit service in the City of Nogales. Additional routes can be added, with headways increased to 30 minutes in peak hours. Hours of operation could be expanded, including on the weekends. Approximately six new buses would be needed and could range from local shuttles, trolleys or full buses depending on ridership projections and use. Although the initial capital cost is slightly higher, biodiesel fueled vehicles are more environmentally friendly and affordable in the long-term. Additional costs would include scheduling software and fareboxes. In addition, other communities and municipalities in the area may want to consider forming a public transit authority to administer the system and plan for future expansion.

**Phasing Alternatives:** 

- A. Flexible Fixed Route with Dial-A-Ride
- B. Citywide Transit Service with Set Routes

### Planning Level Cost Estimate

### **New Transit System**

Phase 1—Expand "Nogales Rides" Service	
Capital Cost - Transition Dial-A-Ride to Limited Flexible/Fixed Route	\$ 185,000
Bus Stops	\$ 10,000
Operating, Maintenance, Administrative Costs	\$ 650,000
Phase 1 SUBTOTAL	<i>L</i> = \$845,000
Phase 2—Citywide Transit Service	
Capital Cost - Vehicles, software, fareboxes	\$ 785,000
Bus Stops Infrastructure	\$ 75,000
Operating, Maintenance, Administrative Costs	\$ 580,000
Phase 2 SUBTOTAL	x = \$1,440,000
TOTAL	x = \$2,285,000

Note: cost estimates do not include fare or advertising revenue.



Site No. 39 Location Map	
Project Type	City Transit System
Location	City of Nogales
Benefit	Increased modes of transportation choices





#### Site No. 40

**Project Type:** Expanded Transit System

**Location:** Santa Cruz County

Solution Description: Implement expanded routes on existing County demand-based transit systems in Santa Cruz County for residents and visitors to access Rio Rico and Tubac from Nogales. Express service from key station locations in the City of Nogales to Rio Rico and Tubac will provide riders increased access to additional tourist locations, employment opportunities, and retail through alternative modes of transportation. Commuter service would provide two roundtrips in the AM and PM peak hours with 60 minute headways, while weekday and weekend bus service for retail shopping or other destinations would provide for two roundtrips in the AM, midday, and PM time periods thereby meeting the needs of both commuters and other passengers. One consideration may be to initiate service to Rio Rico and expand service to Tubac in the future. Service to Tubac would include stopping at Rio Rico. Additional costs would include scheduling software and fareboxes. In addition, municipalities may want to consider forming a public transit authority to administer the system and plan for future expansion. Note that cost estimates do not include any fare or advertising revenue.

**Phasing Alternatives:** 

- A. Daily Express Service to Rio Rico
- B. Daily Express Service to Tubac including Rio Rico

#### Planning Level Cost Estimate

### **Expanded Transit System from Nogales to Rio Rico and to Tubac**

Alternative A	
Capital Cost—Vehicles, software, fareboxes	\$ 400,000
Bus Stops	\$2,000
Operating, Maintenance, Administrative Costs	\$ 123,000
Alternative A TOTAL =	\$525,000
Alternative B	
Capital Cost—Vehicles, software, fareboxes	\$ 800,000
Bus Stops	\$2,000
Operating, Maintenance, Administrative Costs	\$ 243,000
Alternative B TOTAL =	\$1,045,000



Site No. 40 Location Map	
Project Type	Expanded Transit System
Location	Santa Cruz County
Benefit	Improved Regional Choices for Alternative Modes of Transportation
Ruby	Rio Rico Ricanon Ricanon Rio Rico Ricanon Rico Ricanon Ricanon Rico Rico Ricanon Rico Rico Rico Rico Rico Rico Rico Rico



#### Site No. 41

Project Type: Park and Ride Lots

**Location:** Santa Cruz County

**Solution Description:** Site study locations for, and construct of, park and ride lots in Nogales and Santa Cruz County for commuters based in Nogales, Rio Rico, and Tubac. Local entities identify that demand exists for park and ride facilities, but a demand study would be an integral part of the site location study to be sure that lots are located where they are most beneficial to the community. It would be effective to combine park and ride lots with locations next to express bus service. Park and ride lots should include site amenities such as landscaping, lighting, emergency call-boxes, restrooms, kiosks, bike storage lockers, and signage.

# Planning Level Cost Estimate New Park and Ride Site Location Study, Facility Design, and Park and Ride Lot Construction

Study and Analysis	\$25,000
Design and Construction Documents (each)	\$75,000
Land Acquisition (each, dependent upon location)	\$250,000
Construction (each)	\$500,000
Ongoing Maintenance	\$20,000
TOTAL =	\$870,000



Site No. 41 Loc	Site No. 41 Location Map	
Project Type	Park and Ride Lots	
Location	Santa Cruz County	
Benefit	Increased facilities to promote alternative modes of transportation choices including transit and carpooling	
Ruby	RIO RICO RORES  RORICO RORES  RORALES  ROGALES	



#### Site No. 42

**Project Type:** Sidewalk Improvements

**Location:** City of Nogales

Solution Description: There are very few existing sidewalks throughout the City of Nogales. This creates safety concerns for pedestrians citywide. A pedestrian circulation program that prioritizes locations based on highest usage, ADA access to crossings, safe routes to schools, and major destinations should be implemented. The City of Nogales currently uses Maricopa Association of Governments (MAG) *Uniform Standard Details for Public Works Construction* for their sidewalk standards. According to these standards, the minimum sidewalk width should be 4-feet wide on local streets, increasing in width as the roadway classification increases. In addition, all new construction or street improvements should include installing new, missing links, repairing damaged, or upgrading substandard sidewalks. On collector roadways, sidewalks should be 5 to 6 feet wide. Along major arterials and parkways, and near schools and heavily concentrated pedestrian areas, sidewalks should be increased to a width of 8 to 10 feet. Detached sidewalks should be installed wherever possible to increase separation of pedestrians from vehicular traffic. At a minimum, sidewalks should be located along at least one side of streets and on both sides of major collectors and arterial streets.

When a prioritization list of locations is established and local input from citizens' requests and City Council members received, an annual budget may be created to incrementally implement improvements. The annual cost identified is an estimate for approximately 1 mile of sidewalk. As part of this process, an inventory of missing links may also be gathered.

### Planning Level Cost Estimate City of Nogales Sidewalk Improvement Program

only of mosaics sidewank improvement i rost am		
Phase A (Initial Cost Only)		
Implement City Policy	\$ 2,000	
Inventory and Prioritize Missing Links	\$ 43,000	
Phase A SUBTOTAL =	\$45,000	
Phase B (Annual Cost based on one mile of sidewalk per year)		
Design and Construction Documents	\$ 10,000	
Sidewalk Installation	\$125,000	
ROW Acquisition/Legal	\$ 40,000	
Phase B SUBTOTAL =	\$175,000	
TOTAL =	\$220,000	



Site No. 42 Location Map	
Project Type	Sidewalk Improvements
Location	City of Nogales
Benefit	Safer Walking Environment and Increase Pedestrian Activity
189 189	Normal And Andrews And



#### Site No. 43

**Project Type:** Sidewalk Improvements

**Location:** Rio Rico area

Solution Description: There are very few sidewalks existing around the area of Rio Rico. This creates safety concerns for pedestrians citywide. A pedestrian circulation program that prioritizes locations based on highest usage, ADA access to crossings, safe routes to schools, and major destinations should be implemented. Santa Cruz County currently uses Maricopa Association of Governments (MAG) *Uniform Standard Details for Public Works Construction* for their sidewalk standards. According to these standards, the minimum sidewalk width should be 4-feet wide on local streets, increasing in width as the roadway classification increases. In addition, all new construction or street improvements should include installing new, missing links, repairing damaged, or upgrading substandard sidewalks. On collector roadways, sidewalks should be 5 to 6 feet wide. Along major arterials and parkways, and near schools and heavily concentrated pedestrian areas, sidewalks should be increased to a width of 8 to 10 feet. In addition, detached sidewalks should be installed wherever possible to increase separation of pedestrians from vehicular traffic. At a minimum, sidewalks should be located along at least one side of streets and on both sides of major collectors and arterial streets.

When a prioritization list of locations is established and local input from citizens' requests and County Supervisors received, an annual budget may be created to implement sidewalk improvements in the Rio Rico area. The annual cost identified is an estimate for approximately 1 mile of sidewalk. As part of this process, an inventory of missing links may also be gathered.

### Planning Level Cost Estimate

Rio Rico Area Sidewalk Improvement Program

Phase A	
Implement County Policy	\$ 2,000
Inventory and Prioritize Missing Links around Rio Rico area	\$ 43,000
Phase A SUBTOTAL =	\$45,000
Phase B (Annual Cost based on one mile of sidewalk per year)	
Design and Construction Documents	\$ 10,000
Sidewalk Installation	\$125,000
ROW Acquisition/Legal	\$ 40,000
Phase B SUBTOTAL =	\$175,000
TOTAL =	\$220,000



Sito No. 42 Los	ration Man
Site No. 43 Loc	
Project Type	Sidewalk Improvements
Location	Rio Rico area
Benefit	Safer Walking Environment and Increase Pedestrian Activity
	RD Rto Northwest  RD Rto Roftware  RD Rto Southwest  RD Rto



### Site No. 44

**Project Type:** Connector Route

**Location:** White Park Dr west to Mariposa Road, Nogales

There is a lack of transportation options crossing Interstate 19 in **Solution Description:** Nogales between the U.S./Mexico border and Mariposa Road. This creates east-west connectivity and circulation issues. A new connector road that connects to the White Park Drive alignment (north of Walmart) has been identified as a location that would provide efficient and effective alternative access across Interstate 19 for local traffic. This route was identified as an option in the Arizona Department of Transportation's, Mariposa/I-19 Connector Route Study, as an alternate route between Mariposa Road and Grand Avenue in Nogales. This route was not chosen as the best option to connect the Mariposa Port of Entry to I-19, but by extending the proposed route to White Park Drive, it does retain usefulness to create better circulation within the City of Nogales. Particularly, this route would provide another east-west alternative to connect Western Nogales to downtown and the central business district. This would also provide an alternative route for emergency services and law enforcement personnel to respond to calls. The new connector road is proposed to be built as a standard 2-lane roadway with shoulders and a center two-way turn lane with an approximate length of 5,600 feet. The crossing at Interstate 19 could either be an overpass or underpass and a study would be required to ascertain the best option. This project will also need to include intersection improvements where the new roadway connects to Mariposa Road and the current White Park Drive alignment. In addition, the shoulders and center turn lane would be required for safety so emergency vehicles can pass when responding to a call. Without shoulders for stalled vehicles to pull over or a center turn lane for turning vehicles to pull out of the through travel lanes, back-ups could occur.

**Alternatives**: A. Two-lane Roadway with Overpass

B. Two-lane Roadway with Underpass

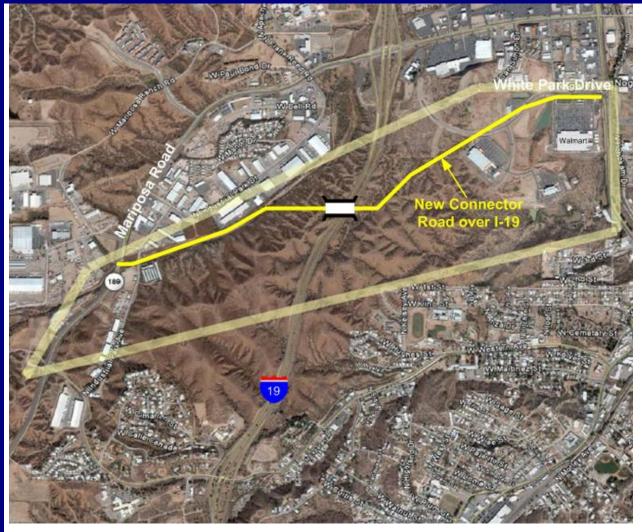
#### Planning Level Cost Estimate

### White Park Drive Connector Route New Roadway Construction

Alternative A	
Design Concept Report	\$1,600,000
Design and Construction Documents	\$9,600,000
Construction	\$64,000,000
Alternative A TOTAL =	\$75,200,000
Alternative B	
Design Concept Report	\$775,000
Design and Construction Documents	\$4,650,000
Construction	\$31,000,000
Alternative B TOTAL =	\$36,425,000



Site No. 44 Location Map	
Project Type	Connector Route
Location	White Park Dr west to Mariposa Road, Nogales
Benefit	Improved regional access for local residents and emergency services





### Site No. 45

**Project Type:** Intersection Improvement

**Location:** Frank Reed Rd/Masonic St Intersection, Nogales

Solution Description: This 5-legged intersection at Nogales High School with a school driveway to the east, Frank Reed Road to the southeast and northwest, Mariposa Ranch Road to the west, and Apache Boulevard to the north. In addition, there is a second driveway to the high school less than 200-feet to the north from the intersection and school crosswalks at the main high school driveway. Compounding the complicated intersection is the introduction of inexperienced drivers from the high school and warehousing land uses in the area that attract trucks. Peak hours with the high school, commuter traffic, and freight truck deliveries overlap. Almost all students are either bused or driven to school at Nogales High School. This project could be combined with Site No. 14, due to its close proximity—it is approximately 900 feet north from the intersection of Mariposa Road and Frank Reed Road.

Intersection improvements are required, due to the competing users of the intersection, to add turn lanes, possible signalization, realign approaches, add signing, striping, and other traffic control. A roundabout may be a viable alternative to address the 5-legs of the intersection. Otherwise, restricted access may need to be addressed at one or more access points such as the high school driveway or other legs to the intersection. There is also a large drainage canal that meets in the middle of the intersection, so impacts to drainage will need to be a critical focus.

**Alternatives**: A. Access Reconfiguration - High School Driveways and Turning Movement Restrictions

- B. Traffic Signal Installation (minor roadway improvements)
- C. Redesign Intersection and Realign Approaches
- D. Roundabout

It is recommended that an alternatives analysis study be conducted to review the effectiveness of the different traffic improvement options. One possible solution may be a combination of surface level improvements such as turn lanes and signalization or a roundabout.



Figure 69: Apache Blvd, View to the North, School Crosswalks at Nogales High School



### Planning Level Cost Estimate

Intersection Improvements at Frank Reed Road & Masonic Road in Nogales

intersection improvements at 110	11000 11000 00 1/1000110 11	500 III 1 10 B010 2
Alternative A		
Design and Construction Documents		\$15,000
Construction		\$100,000
	Alternative A TOTAL =	\$115,000
Alternative B		
Design and Construction Documents		\$50,000
Construction		\$350,000
	Alternative B TOTAL =	\$400,000
Alternative C		
Design Concept Report	_	\$60,000
Design and Construction Documents		\$360,000
Construction		\$2,400,000
	Alternative C TOTAL =	\$2,820,000
Alternative D		
Design Concept Report		\$50,000
Design and Construction Documents		\$160,000
Construction		\$1,050,000
	Alternative D TOTAL =	\$1,260,000



Site No. 45 Location Map	
Project Type	Intersection Improvement
Location	Frank Reed Rd/Masonic St Intersection, Nogales
Benefit	Reduced conflict points and improved traffic circulation through intersection





### **Site No. 46**

**Project Type:** Bike Lane Improvements

**Location:** Ruby Road/SR 289, Ranger Station to Pina Blanca Lake, Rio Rico

**Solution Description:** Bicyclists like to use this roadway on long distance rides in the area. Feedback from the US Forest Service and the Santa Cruz County bicycling community confirms that bicyclists on the roadway would benefit from increased shoulder widths and designated bike lanes or bike routes. This roadway needs to be upgraded to current standards with shoulders, clearances, and pavement surface overlay. For a rural, two-lane roadway, the new shoulders should be 8 feet wide per Arizona Department of Transportation standards, and would be able to accommodate a Bike Route designation. The route is approximately 8.5 miles.

Alternatives: A. Overlay Existing Roadway with Stabilized Earthen Shoulder

B. Widen Existing Roadway with New Paved Shoulders

C. Overlay Existing Roadway with New Paved Shoulders

### Planning Level Cost Estimate

SR 289 Roadway Shoulder Widening for Bike Route to Pina Blanca Lake

Alternative A	
Design Concept Report	\$65,000
Design and Construction Documents	\$400,000
Construction	\$2,650,000
Alternative A TOTAL =	\$3,115,000
Alternative B	
Design Concept Report	\$700,000
Design and Construction Documents	\$4,200,000
Construction	\$28,050,000
Alternative B TOTAL =	\$32,950,000
Alternative C	
Design Concept Report	\$760,000
Design and Construction Documents	\$4,560,000
Construction	\$30,400,000
Alternative C TOTAL =	\$35,720,000

Figure 70: Ruby Road (SR 289), View to the East





Site No. 46 Location Map	
Project Type	Bike Lane Improvement
Location	Ruby Road/SR 289 from Ranger Station to Pena Blanca Road in Santa Cruz County
Benefit	Widened shoulders creates safe and enjoyable area for bicyclists to share the roadway





### **Site No. 47**

**Project Type:** Connector Route

**Location:** New Route, Mariposa Rd TI to Grand Ave, Nogales

Solution Description: Due to significant congestion at the intersection of Mariposa Road and Grand Avenue, it would be very efficient to have a separate by-pass route to Grand Avenue off the northbound Interstate 19 on-ramp at the Mariposa Road Interchange. This would allow vehicles needing to access Grand Avenue to avoid the conflicting turning movements and onstreet congestion along Mariposa Road and at the Mariposa Road and Grand Avenue intersection. A free-flow entrance and exit or standard intersection at the northbound on-ramp to Interstate 19 would be a very functional and direct alternative route. This would allow traffic moving northbound on Grand Avenue, particularly heading to warehousing, to avoid the local traffic congestion at the intersection of Grand Ave. and Mariposa Road. Additionally, local traffic heading southbound to downtown Nogales would be subjected to less congestion with truck traffic. Access connections would need to be coordinated and approved with ADOT and FHWA due to freeway jurisdiction.

The spacing of where the bypass intersects at Grand Avenue would have to be located a safe distance from existing intersections. Given the public safety access necessity of the roadway and relatively short length, it is most cost effective to build the entire roadway at one time as opposed to phasing. In addition, shoulders and a center turn lane are required for emergency service vehicle response. The new connector road is proposed to be built as a standard 2-lane roadway with shoulders and a center two-way left turn lane at approximately 3,500 feet in length.

#### Planning Level Cost Estimate

Mariposa Road TI to Grand Avenue North Bypass - New Roadway Construction

Corridor Study	\$100,000
Design Concept Report	\$200,000
Design and Construction Documents	\$500,000
Construction	\$2,800,000
Right-of-Way	\$2,600,000
TOTAL =	\$6,200,000

April 30, 2010

Costs based on Mariposa/I-19 Connector Route Study



Site No. 47 Location Map	
Project Type	Connector Route
Location	New Route, Mariposa Rd TI to Grand Ave, Nogales
Benefit	Additional connector route would relieve congestion at traffic interchange and provide direct route for local traffic





### **Site No. 48**

**Project Type:** Intersection Improvement

**Location:** Grand Ave/Mesa Verde Dr Intersection, Nogales

**Solution Description:** The existing intersection at Grand Avenue and Mesa Verde Drive is signalized; however, there is still congestion and delays creating safety concerns. The existing signal needs to be upgraded and studied for timing improvements. The intersection also needs to be studied for capacity improvements including lengthening turn lanes. In addition, a new or widened bridge over the Santa Cruz River may be needed to allow the eastern approach to the intersection to be widened. Crash history reveals that both rear-end crashes and angle crashes are a concern, during the day and at night. Therefore, lighting at the intersection and on the approaches may also need to be improved.

**Alternatives**: A. Upgrade Traffic Signal

B. Intersection Capacity and Traffic Signal Improvements

C. Widen Bridge, Intersection Capacity and Traffic Signal Improvements

It is recommended that the widening of the bridge be pursued as a major component of this project, as the eastern approach capacity improvements are anticipated to be a very valuable component of the solution. Intersection capacity improvements will be most effective if the eastern leg with the widened bridge and the traffic signal upgrades are construction with the entire capacity improvement needs.

# Planning Level Cost Estimate Intersection Improvements at Grand Avenue and Mesa Verde Drive

intersection improvements t	it Grand Avenue and Mesa vi	rue Biive
Alternative A		
Design and Construction Documents		\$25,000
Construction		\$100,000
	Alternative A TOTAL =	\$125,000
Alternative B		
Design and Construction Documents		\$90,000
Construction		\$600,000
	Alternative B TOTAL =	\$690,000
Alternative C		
Traffic Engineering Safety Study		\$ 15,000
Design and Construction Documents		\$ 150,000
Construction		\$ 1,000,000
	Alternative C TOTAL =	\$1,165,000



	Finai Kepori
Site No. 48 Loc	ation Map
Project Type	Intersection Improvement
Location	Grand Ave/Mesa Verde Dr Intersection, Nogales
Benefit	Lack of ingress and egress points to neighborhood and connectivity to surrounding roadway network creates public safety concerns
	Widen Bridge to Add Turn Lanes, Possible Dual Left Turns Lengthen Storage and Improve Traffic Signal



### Site No. 49

**Project Type:** Intersection Improvement

**Location:** Grand Ave/Old Tucson Rd Intersection, Nogales

**Solution Description:** The existing intersection is a three-legged signalized intersection; however there are safety concerns with the skewed angle of the eastern approach, sight visibility, and other capacity deficiencies. The intersection needs to be studied for capacity improvements including lengthening turn lanes, traffic signal upgrades, and some minor realignment of the approaches. In addition, the western side of the intersection is a private truck stop and construction company driveway and incorporating issues with truck traffic and the driveway design should be included into the intersection improvements. The overall intersection design should be upgraded to current design standards.

A safety study will need to review the engineering requirements to improve the intersection including minor realignment, signal upgrades, and other capacity improvements. It is recommended that the intersection improvements incorporate both the eastern leg reconstruction and capacity upgrades. Improvements for the intersection will be most cost effective if the entire project is constructed together.

### Planning Level Cost Estimate

Intersection Improvement at Grand Avenue and Old Tucson Road

Traffic Engineering Safety Study	\$15,000
Design and Construction Documents	\$70,000
Construction	\$440,000
TOTAL =	\$525,000

Figure 71: View of Grand Avenue to the North





Site No. 49 Location Map	
Project Type	Intersection Improvement
Location	Grand Ave/Old Tucson Rd Intersection, Nogales
Benefit Increased capacity and improved sight visibility	
Con Million Con Con	





### Site No. 50

**Project Type:** Intersection Improvement

**Location:** Grand Ave/Country Club Dr Intersection, Nogales

**Solution Description:** The existing intersection is a three-legged signalized intersection; however it experiences congestion during peak periods due to the 2-lane roadway on the western approach. The intersection needs to be studied for capacity improvements including lengthening turn lanes, traffic signal upgrades, and realignment of the approaches. In addition, the eastern side of the intersection is a private townhouse complex driveway (Calle Villa Hermosa) and incorporating issues with the driveway design should be included into the intersection improvements. The overall intersection design should be upgraded to current design standards.

Alternatives: A. Widen Western Leg and Signal Improvements

B. Widen Western Leg and Improve Intersection Capacity and Signal

It is recommended that the intersection improvements incorporate both the western leg widening and the capacity upgrades. Intersection improvements for the intersection will be most cost effective if the entire project is constructed together.

# Planning Level Cost Estimate Intersection Improvement at Grand Avenue and Country Club Drive

Alternative A	-	
Design and Construction Documents		\$50,000
Construction		\$350,000
	Alternative A TOTAL =	\$400,000
Alternative B		
Design and Construction Documents		\$150,000
Construction		\$900,000
	Alternative B TOTAL =	\$1,050,000



Site No. 50 Loc	ation Map	
Project Type	Intersection Improvement	
Location	Grand Ave/Country Club Dr Intersection, Nogales	
Benefit	Increased Capacity and Ability to Handle Future Growth	
Add Turn Possible Dua Lengthen Si Improve Tra	Lanes, Left Turns, torage and offic Signal	



Site No. 51

Project Type: Roadway and Intersection Improvements

**Location:** Bridge Road, I-19 to Calle Iglesia, Tubac

**Solution Description:** The existing roadway is approximately 3,000 feet long from the I-19 East Frontage Road to Calle Iglesia on the west side of the bridge over the Santa Cruz River. Santa Cruz County staff confirms that approximately 3,000 dwelling units are projected in the future in this area with limited existing roadway infrastructure. Bridge Road will need to be improved for increased capacity and upgraded pavement surfacing to accommodate the traffic generated by the anticipated future growth and to provide a safe means of access for residents and emergency services.

This project could be phased with development. The roadway cross-section should include shoulders and a center turn lane. However, additional right-of-way should be acquired and preserved for future roadway widening in anticipation of additional lanes for increased capacity needs in the future. This project will also need to include intersection improvements where Bridge Road intersects with intersecting side streets. In addition, vertical and horizontal alignments should be flattened when the roadway improvements are constructed. There are two right-angle turns that should be redesigned if no additional legs will be constructed at their juncture to form an improved intersection in the future. The overall roadway design should be upgraded to current design standards.

It is recommended that the roadway improvements be phased with development. Some intersection improvements, such as where Bridge Road meets De Olivia (East Frontage Road), Burruel Street, and Calle Iglesia, may need to be constructed with the first phase.

Figure 72: Bridge Road, View to the North, south of Turn in the Road

Planning Level Cost Estimate

Roadway and Intersection Improvement for Bridge Road, I-19 to Calle Iglesia

Design and Construction Documents		\$ 450,000
Roadway Improvements		\$2,850,000
	TOTAL =	\$3,300,000



Site No. 51 Location Map	
Project Type Roadway and Intersection Improvements	
Location	Bridge Road, I-19 to Calle Iglesia, Tubac
Benefit	Increased capacity and Ability to Handle Future





### Site No. 52

Project Type: Roadway Construction

**Location:** Pendleton Drive, Bridge Rd to Pima County line, Amado

**Solution Description:** There is a need for a north-south connector roadway with public railroad and river crossings that connect to Pendleton to the north line of Santa Cruz County. This will allow residents and new developments to access the bridged areas from Tubac north to Pima County. I-19 serves as the backbone of north-south travel in this area of Santa Cruz County, but there are no other alternative routes. An extension of Pendleton Road from Bridge Road to the Pima County line would provide alternative access to a significant number of existing and future residents in the Tubac and Amado area, as well as improving access for emergency vehicles. The approximate length of roadway is 8 miles and will include a river crossing and railroad crossing.

Due to the length of this new roadway project, consideration should be made to phase it with new development. The roadway cross-section would be a rural, 2-lane, roadway with paved shoulders. However, additional right-of-way should be acquired and preserved for future roadway widening when additional lanes for increased capacity are needed in the future. This project may also need to include intersection improvements at Bridge Road and other intersecting side streets. In addition, vertical and horizontal alignments will need to be studied in a corridor study or design concept report prior to design as the roadway would be traversing current vacant land

Alternatives: A. Two-lane Roadway with No Shoulders or Center Turn Lane

B. Two-lane Roadway with a Center Left Turn Lane and Shoulders

# Planning Level Cost Estimate New Roadway Construction for Pendleton Drive extension from Bridge Road to Pima County Limits

	- 7	
Alternative A		
Design Concept Report		\$1,000,000
Design and Construction Documents		\$6,000,000
Construction		\$40,000,000
Right-of-Way Acquisition		\$2,000,000
	Alternative A TOTAL =	\$49,000,000
Alternative B		
Design Concept Report		\$1,600,000
Design and Construction Documents		\$9,600,000
Construction		\$64,000,000
Right-of-Way Acquisition		\$2,000,000
-	<b>Alternative B TOTAL =</b>	\$77,200,000



Site No. 52 Location Map	
Project Type	Roadway Construction
Location	Pendleton Drive, Bridge Rd to Pima County line, Amado
Benefit	Improved access and additional alternative transportation routes for residents and emergency services





### Site No. 53

**Project Type:** Interchange Improvements

**Location:** I-19, Exit 22 (Peck Canyon Rd) to Exit 48 (Arivaca Rd), Santa Cruz County

Solution Description: The current traffic interchanges (7 total) along Interstate 19 from Exit 22, Peck Canyon Road, to Exit 48, Arivaca Road, in Santa Cruz County will need to be upgraded and improved when warranted to meet future traffic demands. These efforts need to be coordinated with ADOT and FHWA. Each Traffic Interchange will need to be programmed into ADOT's Statewide Transportation Plan, studied and evaluated, designed, and funds allocated toward their planning, design and improvement construction. As this will take some time, beginning communications with ADOT staff now help start the process so that the improvements can be programmed in a timely manner for when development occurs and the capacity is needed.

One option that holds promise for the interchange ramp termini is a roundabout intersection that can combine frontage roads and freeway ramps into a common intersection. A roundabout currently exists at the west ramp and frontage roads at the Canoa Road traffic interchange in southern Pima County. Similar roundabouts would be beneficial in Santa Cruz County at ramp intersections for the efficient movement of traffic as an alternative to the use of traffic signals and stop controlled intersections.

### Planning Level Cost Estimate

Traffic Interchange Improvements along Interstate 19 in Santa Cruz County

Design Concept Report (each)	\$500,000
Design and Construction Documents (each)	\$3,000,000
Construction (each)	\$20,000,000
TOTAL =	\$23,500,000

Figure 73: Roundabout under Construction, West Ramp/Frontage Roads, Canoa Road TI





Site No. 53 Loc	ation Man	
Project Type	Interchange Improvements	
Location	I-19, Exit 22 (Peck Canyon Rd) to Exit 48 (Arivaca Rd), Santa Cruz County	
Benefit	Improved capacity and efficient traffic circulation	
Agua Linda Rd  Chavez Siding Rd	Tubac Rd  Palo garado Rd  Camino Oc  Tubac Rd  Ganylon  Camino Lito Galindo  Tumacacori Ro  Tumacacori Ro  Camino Lito Galindo  Camino Romanales  Camino Rom	



### Site No. 54

**Project Type:** Roadway Improvements, Bridge Construction, and At-Grade Railroad Crossing Improvements

**Location:** Bridge Road, Calle Iglesia to the Proposed Pendleton Dr Extension, Tubac

**Solution Description:** This project could be coordinated with Site No. 51 above. The existing roadway in the section west from the future Pendleton Road connection to Calle Iglesia on the west side of the Bridge Road structure over the Santa Cruz River is approximately 2,000 feet long and crosses both the Santa Cruz River and the UP Railroad. In addition to the roadway improvements to meet future capacity demands, an at-grade railroad crossing and a new bridge over the Santa Cruz River are anticipated to be required.

This project could be phased with development. The roadway cross-section should include paved shoulders and a center turn lane. Additional right-of-way should be acquired and preserved for future roadway widening in anticipation of additional lanes needed for increased capacity on Bridge Road with continuing development. This right-of-way preservation will be especially important in the design of the at-grade railroad crossing and the new bridge construction. As with the section of Bridge Road from the I-19 frontage road east to Calle Iglesia, it is recommended that the roadway improvements be phased with development.





Planning Level Cost Estimate

# Roadway and Intersection Improvement for Bridge Road, Calle Iglesia to Extended Pendleton Drive

Design and Construction Documents	\$ 600,000
Construction	\$4,000,000
TOTAL =	\$4,600,000

<sup>\*</sup>Project and construction costs can be phased as development occurs



Project Type Roadway Improvements, Bridge Construction, and At-Grade Railroad Crossing Improvements  Bridge Road, I-19 Frontage to Proposed Pendleton Dr Extension, Crosby Rd to Pendleton Rd, Tubac  Improved local access, increased capacity for future growth, and reduced turning movement conflicts  Improved and Wifened Roadway plus Bridge over River and Railroad Tracks			
At-Grade Railroad Crossing Improvements  Bridge Road, I-19 Frontage to Proposed Pendleton Dr Extension, Crosby Rd to Pendleton Rd, Tubac  Improved local access, increased capacity for future growth, and reduced turning movement conflicts  Improved and Widened Roadway plus Bridge over River and Railroad Tracks	Site No. 54 Loc	cation Map	
Benefit  Ben	Project Type		
Extension, Crosby Rd to Pendleton Rd, Tubac Improved local access, increased capacity for future growth, and reduced turning movement conflicts  Improved and Widened Roadway plus Bridge over River and Railroad Tracks	Troject Type		
Benefit  Improved local access, increased capacity for future growth, and reduced turning movement conflicts  Improved and Widened Roadway plus Bridge over River and Railroad Tracks	Location	· · · · · · · · · · · · · · · · · · ·	
growth, and reduced turning movement conflicts  Improved and Widened Roadway plus Bridge over River and Railroad Tracks		-	
Improved and Widened Roadway plus Bridge over River and Railroad Tracks  Endpo Rd  Callo Solares  Bridgo Rd  Callo Solares  Ca	Benefit	·	
Roadway plus Bridge over River and Railroad Tracks  Bridge Rd  Calle Valenzuella Calle Solares  Reg  Calle Valenzuella Calle Solares  Reg  Reg  Reg  Reg  Reg  Reg  Reg  R	Prado	growth, and reduced turning movement conflicts	
Roadway plus Bridge over River and Railroad Tracks  Bridge Rd  Calle Valenzuella Calle Colares  Plaza Rd  Will Rogers Ln  Roadway plus Bridge over River and Railroad Tracks  Railroad Tracks	7 1		
Roadway plus Bridge over River and Railroad Tracks  Bridge Rd  Calle Valenzuella Calle Colares  Plaza Rd  Will Rogers Ln  Roadway plus Bridge over River and Railroad Tracks  Railroad Tracks	Veranera		
Roadway plus Bridge over River and Railroad Tracks  Bridge Rd  Calle Valenzuella Calle Colares  Plaza Rd  Will Rogers Ln  Roadway plus Bridge over River and Railroad Tracks  Railroad Tracks		to the state of th	
Roadway plus Bridge over River and Railroad Tracks  Bridge Rd  Calle Valenzuella Calle Colares  Plaza Rd  Will Rogers Ln  Roadway plus Bridge over River and Railroad Tracks  Railroad Tracks			
Over River and Railroad Tracks  Bridge Rd  Calle Valenzuela Calle Valenzuela Calle Valenzuela River Aug  River Aug  River Aug  River Aug  Calle (plesia	Olivie		
Railroad Tracks  Bridge Rd  Bridge Rd  Calle Valenzuela  Calle Solares  Euro Solares		Roadway plus Bridge	
Bridge Rd  Bridge Rd  Bridge Rd  Calle Valenzuela  Calle Solares  Rumal St  Rumal St  Rumal St  Rumal St  Ruman Rd  Plaza Rd  River And  River	over River and		
Calle Solares  Burriel SI  Camino Otero  Camino Otero  River  Plaza Rd  Plaza Rd  Will Rogers Ln  Calle Tolesia	Bridge Rd Bridge Rd Railroad Tracks		
Calle Solares  Burriel SI  Camino Otero  Camino Otero  River Para Rd  Plaza Rd  Will Rogers Ln  Calle Iglesia			
Calle Solares  Burriel SI  Camino Otero  Camino Otero  River 19  River 19  Will Rogers Ln  Calle Iglesia			
Santa Cruz River  Santa Cruz R	Calle Valenzuela		
Santa Cruz River (Company)  Sa	Surrei St. A. S.		
Santa Cruz River  Santa Cruz River  Lipac L  L  Lipac L  L  L  L  L  L  L  L  L  L  L  L  L	© Ca	mino otero	
Santa Cruz Rive  Santa Cruz Rive  Fresido State Historic Paix  Fresido Dr.  Presido			
Will Rogers In Tubac Rd  Tubac Rd  Fresido State Historic Parix Rrosldo Cr  Fresido Cr  Fresido State Historic Parix Rrosldo Cr	Plaza		
Santa Cruz Riv.  Santa	Conta Will Ri	ogers Ln 1 Calle (glesia	
Santa Cruz	Qe Pa Rd	Rresidio State	
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#### Site No. 55

**Project Type:** Roadway Improvements, Bridge Construction, and At-Grade Railroad Crossing Improvements

**Location:** Chavez Siding Rd, I-19 Frontage to Proposed Pendleton Dr Extension, Tubac

**Solution Description:** The existing roadway is approximately 7,000 feet (or 1-1/3 miles) long from the I-19 East Frontage Road east to the connection with the extended Pendleton Road. Chavez Siding Road will need to be improved for increased capacity and upgraded pavement surfacing to accommodate the future growth and to provide a safe means of access for residents, emergency services, and future development.

This project could be phased with development. The roadway cross-section should include paved shoulders and a center turn lane. However, additional right-of-way should be acquired and preserved for future roadway widening in anticipation of additional lanes for increased capacity needs on Chavez Siding Road. This project will also need to include intersection improvements where it intersects with the Interstate 19 East Frontage Road and other intersecting side streets. In addition, vertical and horizontal alignments should be flattened when the roadway improvements are constructed. An at-grade railroad crossing and a new bridge over the Santa Cruz River are also required.

It is recommended that the roadway improvements be phased with development. Some improvements, such as the intersection where Chavez Siding Road meets the Interstate 19 Frontage Road, the railroad crossing, and the new bridge, may need to be constructed with the first phase.

Figure 75: Chavez Siding Road, View to the East, Existing Conditions



Planning Level Cost Estimate

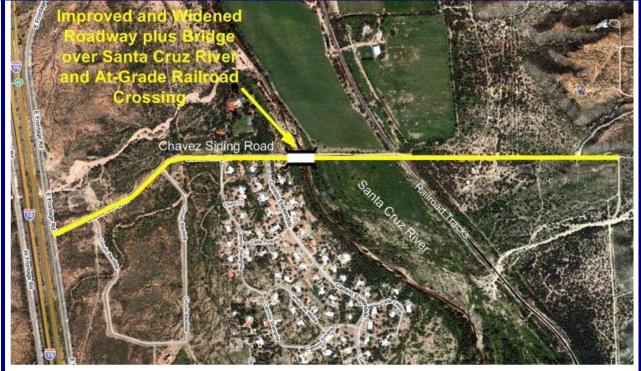
Roadway and Intersection Improvement for Chavez Siding Road from I-19 to Future

Pendleton Dr

Design and Construction Documents	\$ 1,300,000
Construction	\$8,730,000
TOTAL =	\$10,030,000



Site No. 55 Location Map	
Project Type	Roadway Improvements, Bridge Construction, and
	At-Grade Railroad Crossing Improvements
Location	Chavez Siding Rd, I-19 Frontage to Proposed
	Pendleton Dr. Extension, Tubac
Benefit	Improved local access, increased capacity and
Dellellt	reduced turning movement conflicts





### **Site No. 56**

**Project Type:** Traffic Study and Evaluation

**Location:** I-19 East Frontage Road, Ruby Road to Rio Rico Dr, Rio Rico

**Solution Description:** The existing Frontage Road segment between Ruby Road and Rio Rico does not provide for continuity for traffic circulation. It changes from a two-way roadway to northbound one-way only. The northbound one-way section is approximately 4,500 feet and the two-way section, composed of one lane in each direction, is approximately 14,000 feet, or 2.65 miles in length. The traffic control configuration should be studied for safety and proper long-term traffic circulation. Consideration should also be made for consistency with the surrounding frontage roadway system. Roadway improvements may need to be made as a result of the study to bring roadway conditions along the East Frontage Road up to standard.

There is a significant amount of warehousing and industrial uses along the East Frontage Road for the 2.65 miles north of the Ruby Road traffic interchange. The two-way section was implemented to meet traffic needs for these sites. The East Frontage Road transitions to a one-way operation immediately north of the industrial land uses and joins with off-ramp traffic at the Rio Rico traffic interchange. This one way section was implemented to prevent heavy trucks from utilizing the Rio Rico interchange. North of the Rio Rico traffic interchange, the East Frontage Road becomes a two-way roadway again. In addition, the East Frontage Road south of Ruby Road also operates as a two-way roadway. During stakeholder interviews it was found that this one-way section severely hinders emergency response teams in the area. Changing the one-way section to two-way operations would provide better circulation for the general public, and enhanced safety and emergency response for area residents.

For purposes of the planning level cost estimate, it was assumed that the existing two-way frontage road operation be maintained to serve the warehouse and industrial uses in the area, and that an extension of the two-way East Frontage Road operation be constructed for approximately 4,500 feet, separate from I-19 ramp traffic that meets up with the existing intersection of the East Frontage Road to the north. The proposed frontage road intersection is located approximately 230-feet east of the signalized intersection with the I-19 ramp traffic. It is stop controlled in both the north and south directions. There is an existing two-lane roadway extension from Stable Lane that may be able to be utilized for a portion of the new Frontage Road extension, depending on pavement conditions. This alternative would also be consistent with frontage road operations north and south of the nearest traffic interchanges.

# Planning Level Cost Estimate East Frontage Road, Ruby Rd to Rio Rico Dr, Traffic Operations Study, Evaluation and Improvements

Traffic study	\$25,000
Design and Construction Documents	\$25,000
Roadway Improvements	\$100,000
TOTAL =	\$150,000



Site No. 56 Loc	ation Map
Project Type	Traffic Study and Evaluation
Location	I-19 East Frontage Road, Ruby Road to Rio Rico Dr, Rio Rico
Benefit	Improved traffic circulation and reduced conflicts
ale Ale	New Two-Way Prontage, Road Extension  Existing One-Way to Two-Way Transition  Frontage Road  Ruby-Nogales Rd  19



### Site No. 57

**Project Type:** Street Construction

**Location:** Western Nogales, West of I-19

**Solution Description:** There is a need for an interconnected collector street system in the Western area of Nogales west of Interstate 19 and SR 189 to support the proposed development and provide for access and circulation in this area. Existing residential roadways either taper off into dirt roads or dead end roads. A planned roadway network should be implemented as development occurs to allow for access to future development properties and to create at least two points of entry into each residential area. This will also be vital for emergency services response and the provision of municipal services such as sanitation pick up.

Most collector roadways are two-lane roadways or two-lanes with a median or center left turn lane. Collector roadways are also excellent opportunities for on-street bike lanes and sidewalks to allow residents to access parks, schools, and other recreational activities, as collector roadways generally carry less traffic volumes than major arterial roadways.

**Alternatives**: A. Urban Minor Collector System (2-lane, with curb and sidewalk)

B. Urban Major Collector System (3-lane, bike lanes, curbs, and sidewalks)

Due to the amount of new roadway construction required to implement this new collector street system, the collector streets should be phased with development. A study should be conducted to determine the exact location of the new collector streets depending on the locations of future anticipated developments. Also, depending on the corridors selected for the future collector streets, additional right-of-way should be preserved through dedications for possible roadway widening should additional lanes for increased capacity be needed in the future. This project may also need to include intersection improvements at intersecting side streets such as turn lanes and/or traffic signals.

# Planning Level Cost Estimate Western Nogales Collector Street System – New Roadway Construction

Alternative A (per mile costs) **Design and Construction Documents** \$900,000 \$6,000,000 Construction Right-of-Way Acquisition \$1,200,000 **Alternative A TOTAL =** \$8,100,000 **Alternative B (per mile costs) Design and Construction Documents** \$1,200,000 Construction \$8,000,000 Right-of-Way Acquisition \$1,600,000 **Alternative B TOTAL =** \$10,800,000



Site No. 57 Loc	ation Map
Project Type	Street Construction
Location	Western Nogales, West of I-19
Benefit	Interconnected street system, improved access for local residents and emergency services
2 Joseph Start of the start of	Urban Major Collector  Urban Minor Collector  Urban Minor Collector



### Site No. 58

Project Type: Roadway Improvements for Future Capacity

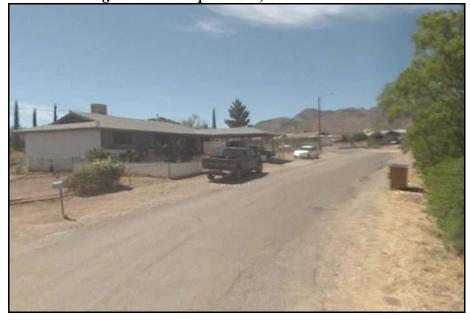
**Location:** Yavapai Drive from Rio Rico Drive to West Frontage Road, Rio Rico

Solution Description: Yavapai Drive was identified during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030 as having a LOS of "D" or worse in the future. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. There are several major points of interest in the area, including Garrett's Shopping Center and the Esplendor Resort, causing increased traffic volumes. In addition, there are significant amounts of residential development located off of Yavapai Drive. There are many general solutions to mitigate congestion on roads with future LOS of D, E, or F in lieu of roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even new zoning regulations for areas where traffic volumes have not yet met, but are projected to meet, failing LOS levels. All of these alternative solutions would need to be explored in studies at the time the improvements are programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening this roadway for approximately 4800-feet.

# Planning Level Cost Estimate Yavapai Drive Roadway Improvements for Future Capacity, Rio Rico Dr to the W Frontage Rd

Design and Construction Documents	\$700,000
Construction	\$4,600,000
TOTAL =	\$5,300,000







Site No. 58 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Yavapai Drive from Rio Rico Drive to W. Frontage Road, Rio Rico
Benefit	Increased capacity for future traffic growth





### Site No. 59

Project Type: Roadway Improvements for Future Capacity

**Location:** Old Tucson Road (entire length), Nogales

Solution Description: Old Tucson Road was identified as having a LOS of "D" or worse during the Level of Service (LOS) Analysis made when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. This is a major route for freight traffic in the area due to significant warehousing located off of the route. In addition, there is residential development accessing the roadway as well. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these alternate solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening it for the approximate 3 mile length.

### Planning Level Cost Estimate

**Old Tucson Road Improvements for Future Capacity** 

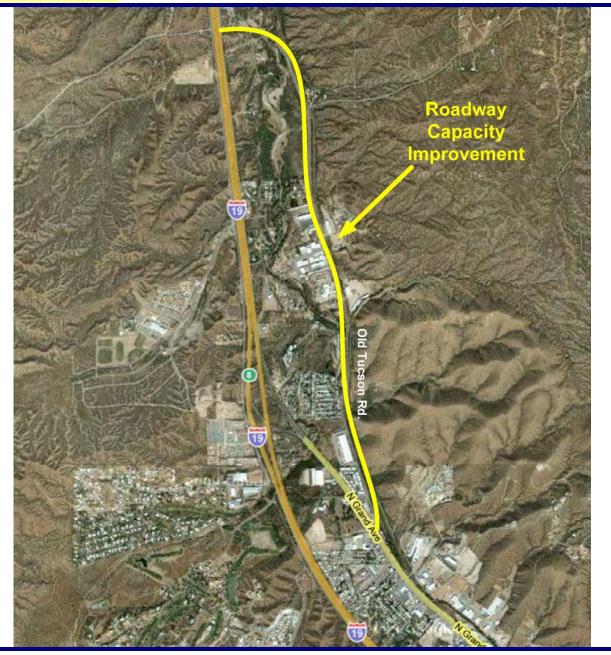
Design and Construction Documents	\$2,250,000
Construction	\$15,000,000
TOTAL =	\$17,250,000







Site No. 59 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Old Tucson Road, Nogales
Benefit	Increased capacity for future traffic growth





### Site No. 60

Project Type: Roadway Improvements for Future Capacity

**Location:** West Country Club Drive from Grand Avenue to Interstate 19, Nogales

Solution Description: West Country Club Road was identified as having a LOS of "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Country Club Drive connects a large residential population to the main roadway network of I-19 and Grand Avenue. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for its length of approximately 1 mile.

### Planning Level Cost Estimate

West Country Club Drive Improvements for Future Capacity from Grand Ave to I-19

Design and Construction Documents	\$750,000
Construction	\$5,000,000
TOTAL =	\$5,750,000







Site No. 60 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	W. Country Club Drive from Grand Avenue to I-19, Nogales
Benefit	Increased capacity for future traffic growth





### Site No. 61

Project Type: Roadway Improvements for Future Capacity

**Location:** Gold Hill Road from Grand Avenue to Edith Place, Nogales

Solution Description: Gold Hill Road was identified as having a LOS of "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Currently, there are major warehousing centers on either side of Gold Hill Road at its intersection with Grand Avenue. Past the warehousing area, Gold Hill continues for several miles into a residential area. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening the facility for its length of approximately 4900 feet.

## Planning Level Cost Estimate Gold Hill Road Improvements for Future Capacity from Grand Ave to Edith Place

 Design and Construction Documents
 \$180,000

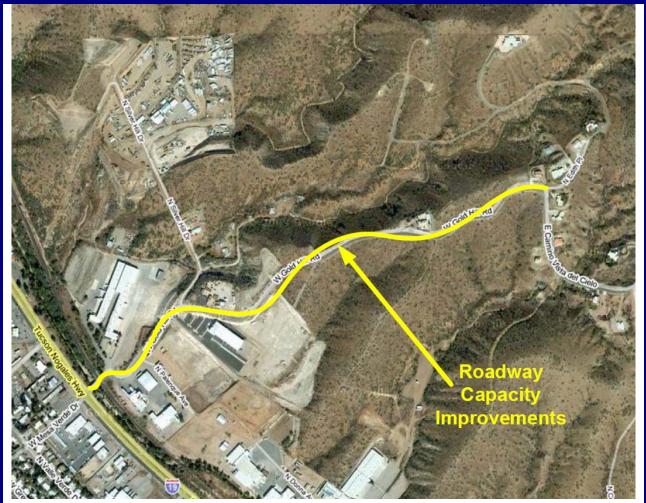
 Construction
 \$1,200,000

 TOTAL =
 \$1,380,000





Site No. 61 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location Gold Hill Road from Grand Avenue to Edith Place, Nogales		
Benefit	Increased capacity for future traffic growth	





#### Site No. 62

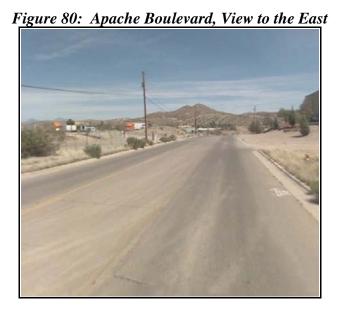
Project Type: Roadway Improvements for Future Capacity

Location: Apache Boulevard, from Grand Avenue to Mariposa Hills Drive, Nogales

Apache Boulevard was identified as having a LOS "D" or worse **Solution Description:** during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Currently, there is some warehousing in the Grand Avenue vicinity with residential areas further west on the road. Of interest is that Apache Boulevard is used as a "cut-through" route by some local residents as it is one of the few alternative routes to get from Grand Avenue to the western area of Mariposa Road and to the Nogales High School. Such travel movements must be taken into account. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for approximately 4,200 feet.

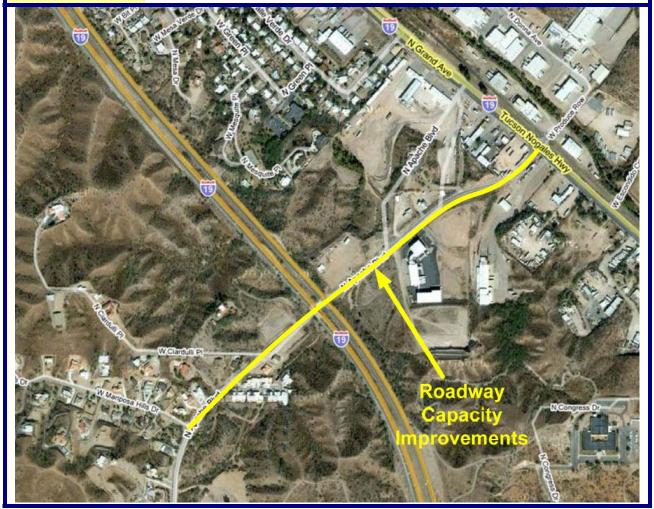
# Planning Level Cost Estimate Apache Boulevard Roadway Improvements for Future Capacity from Grand Ave to Mariposa Hills Dr

Design and Construction Documents	\$600,000
Construction	\$3,950,000
TOTAL =	\$4,550,000





Site No. 62 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location Apache Blvd from Grand Avenue to Mariposa Historica Drive, Nogales		
Benefit	Increased capacity for future traffic growth	





#### Site No. 63

Project Type: Roadway Improvements for Future Capacity

**Location:** Industrial Park Drive Loop, Nogales

Solution Description: Industrial Park Drive Loop was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Industrial Park Drive serves a primarily industrial warehousing district with one mobile home park in the center. It connects to Mariposa Road on either end and shares an intersection with Frank Reed Road at its northeastern terminus. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for its length of approximately 6,400 feet.

# Planning Level Cost Estimate Industrial Park Drive Roadway Improvements for Future Capacity

Design and Construction Documents	\$950,000
Construction	\$6,050,000
TOTAL =	\$7,000,000

Figure 81: Industrial Park Drive, View to the Northeast





Site No. 63 Location Map		
Project Type Roadway Improvements for Future Capacity		
Location	Industrial Park Drive Loop, Nogales	
Benefit	Increased capacity for future traffic growth	





#### Site No. 64

Project Type: Roadway Improvements for Future Capacity

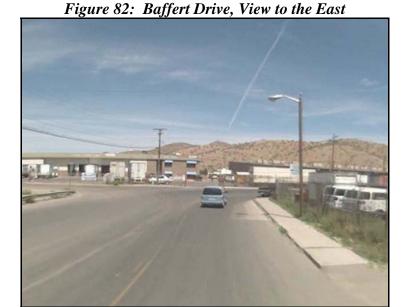
**Location:** Baffert Drive from Grand Avenue to Monte Carlo Place, Nogales

Solution Description: Baffert Drive was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. There is warehousing concentrated near Grand Avenue with residential communities beyond. Directly east of its intersection with Grand Avenue, Baffert Drive crosses the UP Railroad tracks and has a bridge crossing over the Santa Cruz River. These features will need to be taken into account during any planned capacity improvements. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening the road for its length of approximately 1,500 feet.

Planning Level Cost Estimate

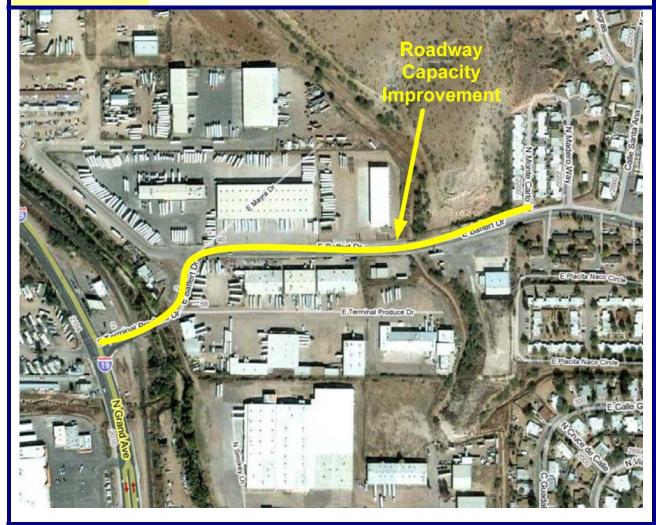
Baffert Drive Roadway Improvements for Future Capacity from Grand Ave to Monte
Carlo Pl

Design and Construction Documents	\$120,000
Construction	\$1,450,000
TOTAL =	\$1,570,000





Site No. 64 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location Baffert Drive from Grand Avenue to Monte Carlo Place, Nogales		
Benefit	Increased capacity for future traffic growth	





#### Site No. 65

Project Type: Roadway Improvements for Future Capacity

**Location:** Doe Street from Grand Avenue to Bankerd Avenue, Nogales

Solution Description: Doe Street was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Doe Street is located in a commercial district of Nogales just north of the SR 82 terminus at Grand Avenue. Doe Street also crosses the railroad and has a bridge crossing over the Santa Cruz River that will need to be taken into account during any planned capacity improvements. There are many general solutions to mitigate congestion on roads with future failing levels of service outside of roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for its length of approximately 550 feet.

### Planning Level Cost Estimate

Doe Street Roadway Improvements for Future Capacity from Grand Ave to Bankerd Ave

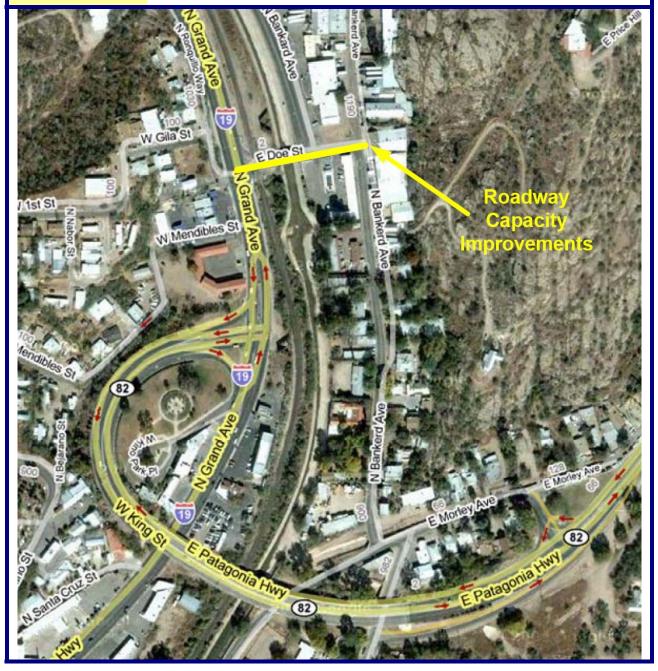
Design and Construction Documents	\$150,000
Construction	\$980,000
TOTAL =	\$1,130,000







Site No. 65 Location Map	
Project Type Roadway Improvements for Future Capacity	
Location Doe Street from Grand Avenue to Bankerd Aven Nogales	
Benefit	Increased capacity for future traffic growth





### **Site No. 66**

**Project Type:** Roadway Improvements for Future Capacity

**Location:** Bankerd Avenue from Doe Street to Morley Avenue, Nogales

Solution Description: Bankerd Avenue was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Bankerd Avenue serves a primarily residential area with several commercial uses located at its northern intersection with Doe Street. Due to the tight layout of existing facilities, attention will need to be paid to parking regulations and innovative design. Additional right-of-way will be needed for any roadway widening. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for its length of approximately 1,350 feet.

#### Planning Level Cost Estimate

Bankerd Avenue Roadway Improvements for Future Capacity from Doe St to Morley Ave

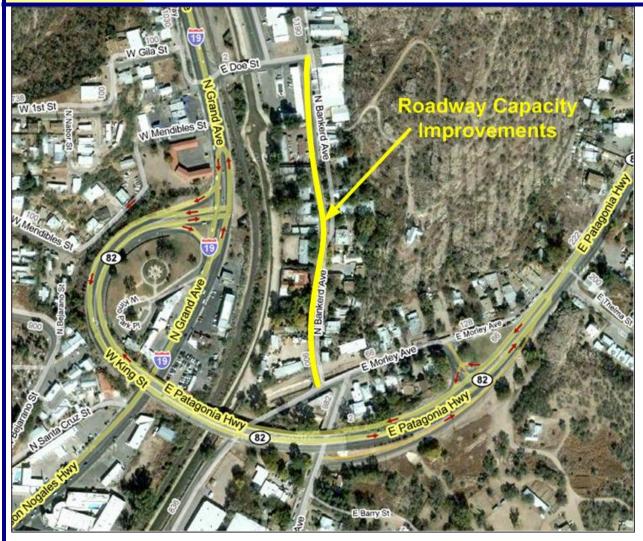
Design and Construction Documents	\$200,000
Construction	\$1,300,000
Right-of-Way	\$300,000
TOT	AL =  \$1,800,000

Figure 84: Bankerd Avenue, View to the North





Site No. 66 Location Map	
Project Type Roadway Improvements for Future Capacity	
Location	Bankerd Avenue from Doe Street to Morley Avenue, Nogales
Benefit	Increased capacity for future traffic growth





### **Site No. 67**

Project Type: Roadway Improvements for Future Capacity

**Location:** SR 82 from Grand Avenue Terminus to Thelma Street, Nogales

SR 82 for the segment from its termination at Grand Avenue to **Solution Description:** Thelma Street was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. There is an 850 foot bridge crossing over Grand Avenue, the UP Railroad, and the Santa Cruz River. State Route 82 has also begun experiencing freight truck traffic bound for eastern Arizona that will need to be taken into consideration when analyzing pavement sections. In addition, widening the identified section of road will only help for a short amount of time until failures occur further to the east where the roadway constricts to one-lane in each direction. Currently there are overhead electric lines on both sides of the road to the eastern end of the section. These would need to be relocated or buried during construction phases. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening for its length of approximately 3,250 feet.

Alternatives: A. Roadway Widening with No Bridge Improvements

B. Roadway Widening with Bridge Improvements

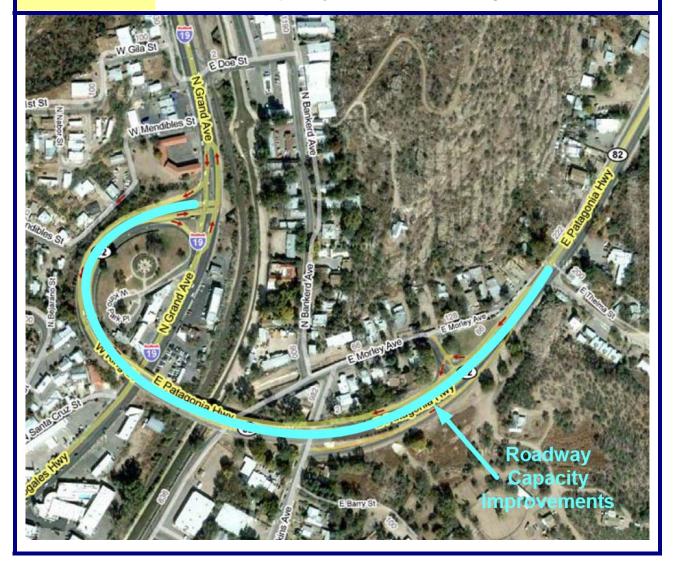
#### Planning Level Cost Estimate

SR 82 Roadway Improvements for Future Capacity from Grand Ave to Thelma St

Alternative A	-	
Design and Construction Documents		\$450,000
Construction		\$ 2,950,000
	Alternative A TOTAL =	\$3,400,000
Alternative B		
Design and Construction Documents		\$1,600,000
Construction		\$ 10,550,000
	Alternative B TOTAL =	\$12,150,000



Site No. 67 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	SR 82 from Grand Avenue to Thelma Street, Nogales
Benefit	Increased capacity for future traffic growth





#### Site No. 68

Project Type: Roadway Improvements for Future Capacity

**Location:** N Santa Cruz Street from Grand Avenue to Bejarano Street, Nogales

**Solution Description:** North Santa Cruz Street was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. North Santa Cruz Street is a residential road in the heart of Nogales. It is a narrow street with limited visibility behind commercial land uses. Widening is a poor option for this location as there is significant development on either side of the road with various access points. The road should be further studied as to why it is not meeting capacity needs. Planning level analysis indicates that the reclassification as a one-way road with installation of turn lanes could mitigate the congestion issues expected to be experienced on Santa Cruz Street.

Planning Level Cost Estimate

North Santa Cruz Street Roadway Improvements for Future Capacity from Grand Ave to

Bejarano St

Traffic Study	\$15,000
Design and Construction Documents	\$25,000
Roadway Improvements	\$75,000
TOTAL =	\$115,000



Site No. 68 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Santa Cruz St. from Grand Avenue to Bejarano Street, Nogales
Benefit	Increased capacity for future traffic growth





#### Site No. 69

Project Type: Roadway Improvements for Future Capacity

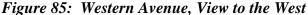
**Location:** Western Avenue from Grand Avenue to Interstate 19, Nogales

Solution Description: Western Avenue was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Western Avenue serves primarily a residential area along with several commercial sites and a public park along this approximately 1.1 mile meandering roadway. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening. This roadway would most likely benefit from one lane of widening plus the installation of turn lane facilities where warranted along the route.

### Planning Level Cost Estimate

Western Avenue Roadway Improvements for Future Capacity from Grand Ave to I-19

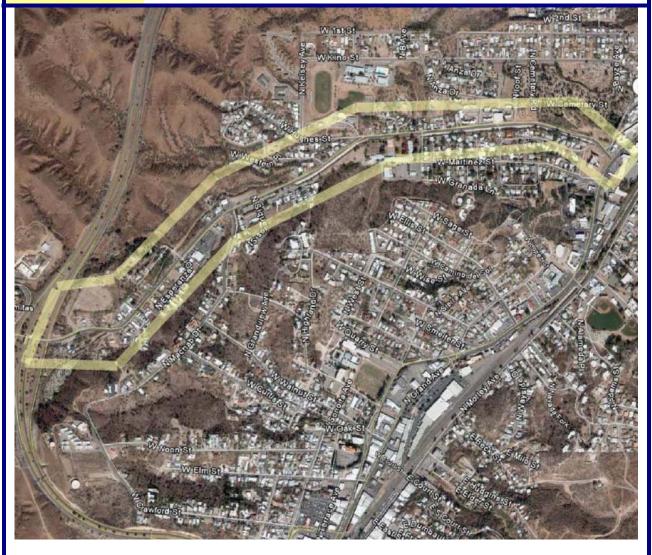
Design and Construction Documents	\$500,000
Construction	\$3,300,000
TOTAL =	\$3,800,000







Site No. 69 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Western Avenue from Grand Avenue to I-19, Nogales
Benefit	Increased capacity for future traffic growth





#### Site No. 70

Project Type: Roadway Improvements for Future Capacity

**Location:** Perkins Avenue from Morley Avenue to Jackson Street, Nogales

Solution Description: Perkins Avenue was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Perkins Avenue is a primarily a residential roadway and the length to be evaluated is approximately 2200 feet. There are many general solutions to mitigate congestion on roads with future failing levels of service in addition to roadway widening. These include options such as changes to traffic control, creation of alternative routes, or even adopting zoning regulations in areas where traffic has not yet met, but is projected to meet, failing LOS levels. All of these different solutions would need to be explored in studies at the time the improvement is programmed due to their influence on the system as a whole. However, the traditional solution is to increase capacity of the current roadway by widening. This roadway would most likely benefit from one lane of widening plus the installation of turn lane facilities where warranted along the route.

### Planning Level Cost Estimate

Perkins Ave Roadway Improvements for Future Capacity from Morley Ave to Jackson St

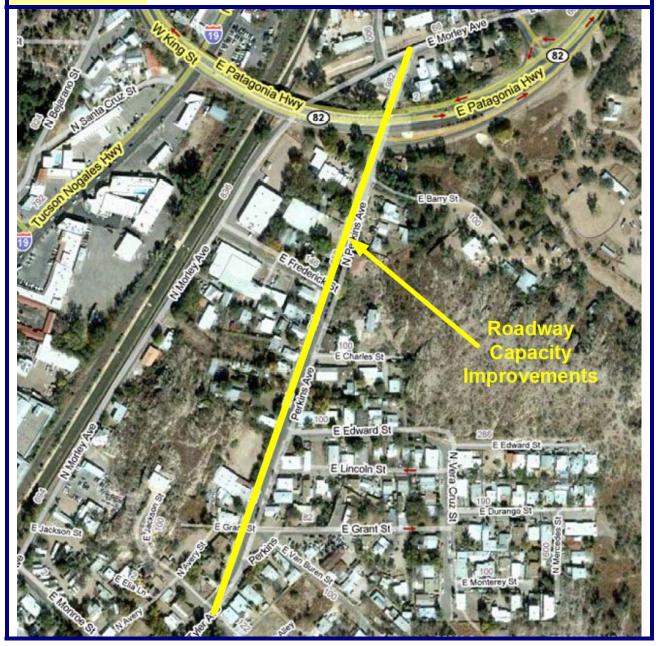
Design and Construction Documents	\$200,000
Construction	\$1,250,000
TOTAL =	\$1,450,000

Figure 86: Perkins Avenue, View to the South from Morley Avenue





Site No. 70 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Perkins Avenue from Morley Avenue to Jackson Street, Nogales
Benefit	Increased capacity for future traffic growth





#### **Site No. 71**

Project Type: Roadway Improvements for Future Capacity

**Location:** Monroe Street from Morley Avenue to Tyler Avenue, Nogales

**Solution Description:** Monroe Street was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Monroe Street is used as a cut-through street from Morley Avenue to Tyler/Perkins Avenue in a commercial area with traffic bound for residential areas beyond. This short road, approximately 1000 feet, would benefit from traffic intersection improvements such as warranted turn lanes.

#### Planning Level Cost Estimate

### Monroe Street Roadway Improvements for Future Capacity from Morley Ave to Tyler Ave

Design and Construction Documents	\$120,000
Construction	\$750,000
TOTAL =	\$870,000



Site No. 71 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Monroe Street from Morley Avenue to Tyler Avenue, Nogales
Benefit	Increased capacity for future traffic growth





#### Site No. 72

**Project Type:** Roadway Improvements for Future Capacity

**Location:** Banks Bridge from Grand Avenue to Morley Avenue, Nogales

Solution Description: Banks Bridge was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Banks Bridge has an at-grade railroad crossing used to cross from the two major north-south thoroughfares in downtown Nogales: Grand Avenue and Morley Avenue. Banks Bridge is too short to store any queue, so roadway improvements must be made to Morley Avenue and Grand Avenue to include adequate left turn bays. In addition, Banks Bridge would not benefit from widening due to the restrictions on queue storage, so signals should be utilized to move traffic efficiently through this area. Planning level assessments indicate that a multiphase traffic signal system upgrade, with modifications to traffic lights at the intersections of Banks Bridge and Grand Avenue and at Banks Bridge and Morley Avenue would be advantageous.

Planning Level Cost Estimate

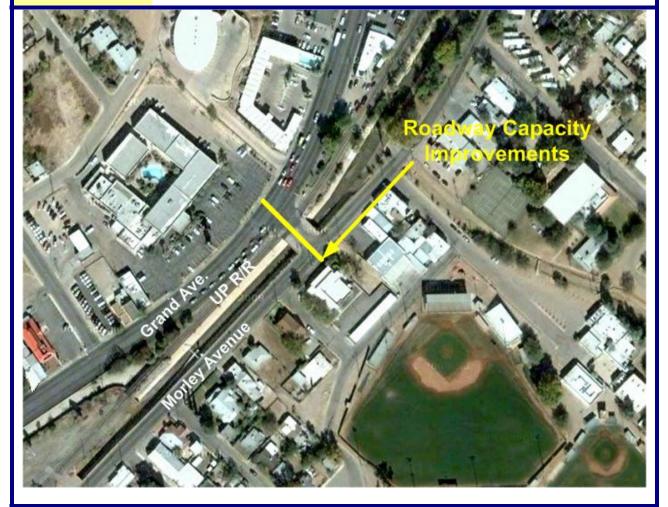
Banks Bridge Roadway Improvements for Future Capacity from Grand Ave to Morley

Ave

Design and Construction Documents	\$120,000
Intersection Improvements	\$800,000
TOTAL =	\$820,000



Site No. 72 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Banks Bridge from Grand Avenue to Morley Avenue, Nogales
Benefit	Increased capacity for future traffic growth





#### Site No. 73

Project Type: Roadway Improvements for Future Capacity

**Location:** Morley Avenue from Banks Bridge to Park Street, Nogales

Solution Description: Morley Avenue was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. The section identified from Banks Bridge to Park Street is 4,650 feet long. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Morley Avenue in this section serves mostly commercial uses and is located in the heart of downtown Nogales' Central Business District. This section is heavily trafficked by both pedestrian and vehicular users bound for shops and is located within one-tenth of a mile of DeConcini Port of Entry and the Morley Pedestrian Gate. Due to the urban nature of the surrounding area, Morley Avenue is restricted in right-of-way for expansion. Planning level analysis suggests that the roadway would benefit from the installation of turn lanes at major intersections to mitigate the delay of through traffic.

Planning Level Cost Estimate

Morley Avenue Roadway Improvements for Future Capacity from Banks Bridge to Park

Street

Design and Construction Documents	\$470,000
Intersection Improvements	\$3,100,000
TOTAL =	\$3,570,000



Site No. 73 Location Map	
Project Type	Roadway Improvements for Future Capacity
Location	Morley Avenue from Banks Bridge to Park Street, Nogales
Benefit	Increased capacity for future traffic growth



April 30, 2010



#### Site No. 74

Project Type: Roadway Improvements for Future Capacity

**Location:** Grand Avenue & Arroyo Boulevard from I-19 to the DeConcini Port of Entry, Nogales

**Solution Description:** This section of Grand Avenue and Arroyo Boulevard is also known as the Interstate 19 Business Route. It was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. It serves as the primary route through the heart of Nogales and is the primary commercial route to its northern terminus of the route at Interstate 19. There are some warehousing land uses on the northern end of the roadway segment, and minimal residential uses in the vicinity. Conversely, the southern section of the route is primarily residential and commercial in a mixed use environment. The Central Business District of Nogales has all modes of transportation and includes a high number of pedestrian travelers. Coordination with the Arizona Department of Transportation will be required for any project planning on this roadway segment. Due to the built nature of the Grand Avenue environment, innovative solutions, other than roadway widening, must be used to mitigate congestion concerns. While widening for addition of through lanes or turn lanes may be feasible in some sections, signal retiming and upgrades and spot capacity improvements throughout the route will be beneficial to drivers. There are 12 existing traffic signals along the corridor, and a signal interconnect solution may be required. The coordination of signal timing will improve the progression of overall traffic flow. The entire corridor is approximately 5.5 miles in length.

Alternatives: A. Signal Retiming and Upgrades with Interconnect

- B. Roadway and Intersection Improvements
- C. Roadway and Intersection Improvements with Signal Retiming and Interconnect



### Planning Level Cost Estimate

# Grand Avenue & Arroyo Blvd Improvements for Future Capacity from I-19 to the DeConcini POE

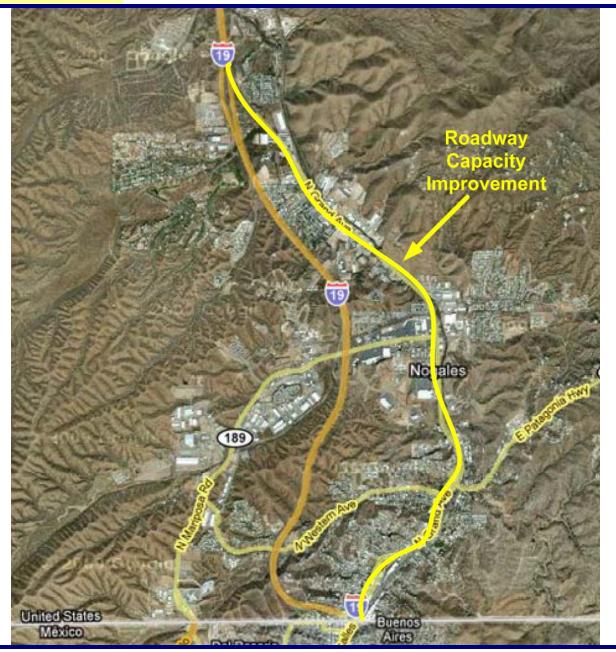
Alternative A		
Design and Construction Documents		\$ 400,000
Construction		\$2,600,000
	Alternative A TOTAL =	\$3,000,000
Alternative B		
Design and Construction Documents		\$ 2,100,000
Construction		\$13,750,000
	Alternative B TOTAL =	\$15,850,000
Alternative C		
Design and Construction Documents		\$ 2,500,000
Construction		\$16,350,000
	Alternative C TOTAL =	\$18,850,000

Figure 87: Grand Avenue & Arroyo Blvd, View to the South





Site No. 74 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location	Grand Avenue & Arroyo Blvd. from Interstate 19 to the DeConcini Port of Entry, Nogales	
Benefit	Increased capacity for future traffic growth	





#### **Site No. 75**

Project Type: Roadway Improvements for Future Capacity

**Location:** Interstate 19 from Interstate 19B Terminus to West Street, Nogales

Solution Description: Interstate 19 was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. This section of I-19 is at the southern end of the interstate and there are several intersections with local city streets in this area. The freeway extension serves mainly commercial retail with some surrounding residential uses. The right-of-way in this area is limited, but the route may benefit greatly from better access control. The road goes from full free-flow movement to the addition of unlimited driveway access and meandering drivers. By reducing the number of driveways, this corridor automatically becomes better suited to its purpose as the transitional end of an interstate. In addition, creating one-way routes to enter and leave the free-flow interstate section further increases the efficiency of traffic flow and safety in the area. A corridor study should be prepared to analyze the effectiveness of access control and possible one-way circulation. Coordination with the Arizona Department of Transportation will be required for any project planning on this roadway segment.

Alternatives: A. Access Management and One-Way Routes

B. Route Widening and Intersection Improvements.

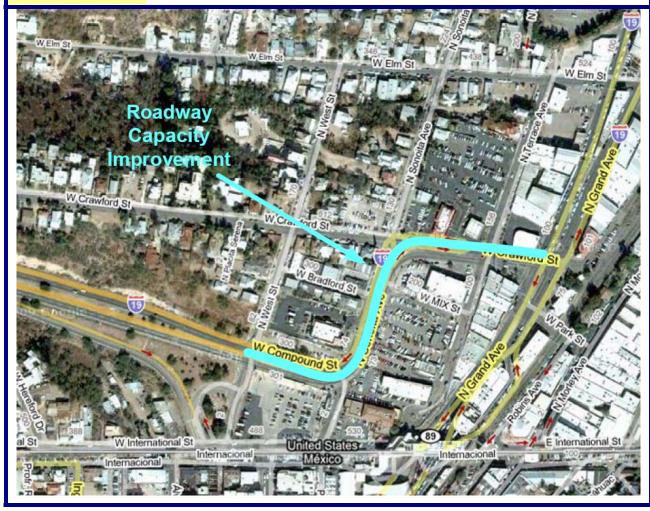
### Planning Level Cost Estimate

#### I-19 Southern Terminus Transition Section Roadway Improvements for Future Capacity

Alternative A	
Corridor Study	\$75,000
Design and Construction Documents	\$50,000
Construction	\$250,000
Alternative A TOTAL =	\$375,000
Alternative B	
Design and Construction Documents	\$ 120,000
Construction	\$800,000
Right-of-Way	\$250,000
Alternative B TOTAL =	\$1,170,000



Site No. 75 Location Map	
Project Type Roadway Improvements for Future Capacity	
Location	Interstate 19 from I-19 B Terminus to West Street, Nogales
Benefit	Increased capacity for future traffic growth





#### **Site No. 76**

**Project Type:** Roadway Improvements for Future Capacity

**Location:** Interstate 19 from the Tumacacori Interchange to the SR 189/Mariposa Road

Interchange, Santa Cruz County

**Solution Description:** Interstate 19 was identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, it needs to be evaluated for future roadway capacity improvements in anticipation of growth in the area. The current interstate consists of two lanes in each direction throughout. This route is heavily trafficked by freight as Mariposa Port of Entry has more freight traffic than any other commercial port of entry in Arizona. While traffic volumes continue to increase with development in the area, freight volumes are also projected to increase. Each truck is roughly the equivalent of 4 privately operated vehicles being on the road. Due to these increases in POV and heavy truck traffic, it is anticipated that Interstate 19 will need to be widened by one lane in each direction to accommodate the projected 2030 traffic. At approximately 17 miles in length, this is a significant section of roadway. Breaking the project into phases will be the easiest way to acquire funding over the twenty-year period. Coordination with the Arizona Department of Transportation and FHWA will be required for any project planning on this roadway segment of Interstate 19.

Planning Level Cost Estimate I-19 Roadway Improvements for Future Capacity from the Mariposa Rd TI to the Tumacacori TI

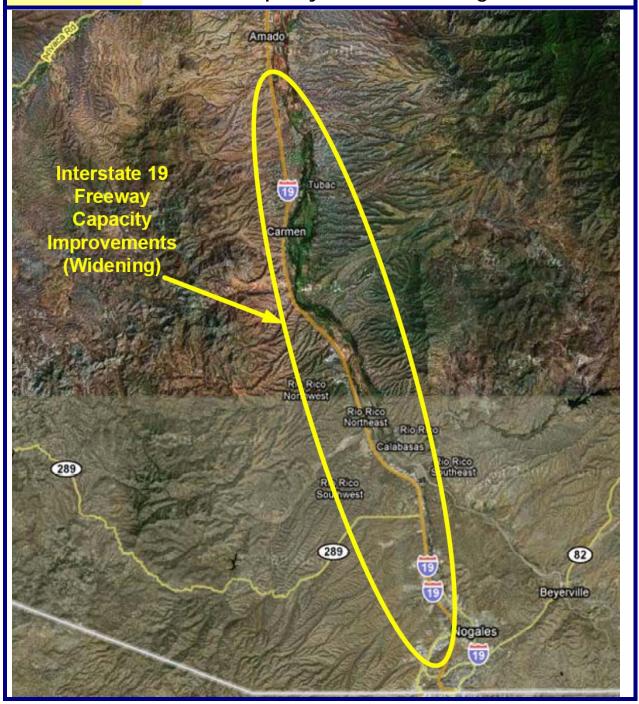
Design Concept Report	\$9,000,000
Design and Construction Documents	\$68,000,000
Construction	\$452,000,000
TOTAL =	\$529,000,000

Figure 88: I-19 at Ruby Road





Site No. 76 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location	I-19 from Tumacacori TI to SR 189/Mariposa Rd TI, Santa Cruz County	
Benefit	Increased capacity for future traffic growth	





#### **Site No. 77**

Project Type: Roadway Improvements for Future Capacity

**Location:** East and West Interstate 19 Frontage Roads from the Rio Rico Drive Traffic

Interchange to the Grand Avenue Traffic Interchange, Rio Rico

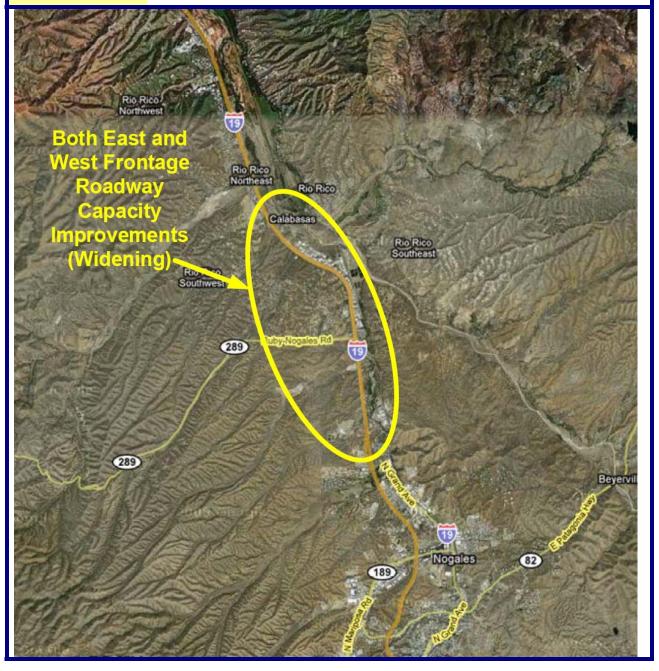
Solution Description: The East and West Frontage Roads were identified as having a LOS "D" or worse during the Level of Service (LOS) Analysis when projecting future traffic volumes into the Year 2030. Therefore, the frontage roads need to be evaluated for future roadway capacity improvements in anticipation of growth in the area. Interstate 19 serves as the backbone of the transportation system through western Santa Cruz County. The frontage road system provides relief to the interstate for short local trips in the area. Due to the lack of parallel north-south routes (Palo Parado is the only other route), these frontage roads provide access to all residents in the Rio Rico Area. To provide additional capacity and reduce congestion, planning level assessments indicate that the addition of one center turn lane will mitigate concerns. Left turners will be able to wait for a safe time to cross on-coming traffic without hindering the movement of through vehicles. Sufficient right of way should be acquired and preserved to enable widening in the future when warranted. Coordination with the Arizona Department of Transportation will be required for any project planning on this roadway segment.

# Planning Level Cost Estimate I-19 Frontage Road Improvements for Future Capacity from Rio Rico Dr TI to Grand Ave TI

Design Concept Report	\$625,000
Design and Construction Documents	\$3,750,000
Construction	\$25,000,000
TOTAL =	\$29,375,000



Site No. 77 Location Map		
Project Type	Roadway Improvements for Future Capacity	
Location E. & W. Frontage Roads from Rio Rico TI to Gran		
Benefit	Increased capacity for future traffic growth	





#### **Site No. 78**

Project Type: Pedestrian Plan

**Location:** Nogales and Santa Cruz County, Citywide and Countywide

**Solution Description:** Regardless of the size of a community, it can benefit from increasing the share of non-motorized transportation among its residents. Bicycling and walking are beneficial as they expand mobility for non-drivers, reduce demand on the street system, do not impact the environment with noise and air pollution, reduce consumption of valuable oil resources, and provide a venue for healthy exercise. In light of current national concerns over climate change and the growing epidemic of obesity among children and adults, these benefits surely deserve serious consideration in future planning efforts.

Pedestrian planning is not currently a frequent practice as a standalone discipline although consideration of sidewalks, crosswalks, and other pedestrian amenities has long been a factor in roadway planning and design. Recent interest in improving the pedestrian environment as well as accommodating ADA accessibility has generated focused pedestrian planning efforts at the local, regional and state levels<sup>3</sup> throughout Arizona and the United States. These plans vary in scope and content with some providing detailed pedestrian networks and others general goals and design guidelines. A review of these plans and their relevance to this study provides guidance as to what may be applicable to the Unified Nogales Santa Cruz County study area. This guidance includes:

- Walking has an important role in promoting health and preventing disease. School
  children and low income individuals are most likely to walk when compared to other
  populations.
- The pedestrian environment extends beyond merely providing sidewalks and crosswalks. Creating safe, attractive, and inviting places to walk while providing convenient connections to schools, transit, and other destinations are key factors.
- Land use is a prime determinant on where pedestrian travel can best be promoted, i.e. rural areas, such as those found in much of this study area, will not be as attractive to pedestrians. Effort is better spent on more populated areas and/or connections to schools and other key destinations within rural communities.
- Plans included an extensive community outreach process with neighborhood meetings and stakeholder, technical, and community advisory groups.
- Plans focused on streets or areas with the highest potential pedestrian demand. Where
  networks were specified, they were generally limited to these high pedestrian traffic
  areas.
- Plans are expected to serve as a framework for the implementation of new policies and practices that include the importance of the pedestrian in planning as well as to provide

<sup>&</sup>lt;sup>3</sup> Oakland, California: *Pedestrian Master Plan* (2002); Phoenix, Arizona: *Pedestrian Plan* 2000 (1999); Denver, Colorado: *Pedestrian Master Plan* (2004); Sacramento, California: *Pedestrian Master Plan* (2006); Alameda, California: *Pedestrian Plan* (2009); Arizona: *Statewide Bicycle and Pedestrian Plan* (2003).



guidance to staff, developers, and decision makers in the development of other planning and projects.

- Design guidelines were included for elements of the pedestrian network including sidewalks (widths, lighting, paving materials, signage, plantings, and street furniture), crossing treatments (crosswalks, crosswalk striping and paving, curb ramps, bulb-outs and refuge islands, and traffic controls), and traffic calming (speed humps, raised crosswalks, chicanes, traffic circles and roundabouts, lane restriping, lane reduction, buffers from traffic, street closures, and pedestrian-only zones).
- Educational programs were outlined including driver and pedestrian education and
  enforcement, individualized marketing to educate pedestrians and motorists about the
  benefits of and opportunities for walking, walking maps, and focused marketing
  campaigns including organized walks in the community, walk to school days, and
  walking to work incentives.
- A set of high-priority projects was selected based on a wide range of criteria including proximity to facilities likely to generate pedestrian traffic, existence of sidewalks and condition, socio-economic data, collision history, adjacent roadway conditions (width of roadway, traffic speeds and volumes, existence of buffer from traffic), elimination of hazards or barriers, and connections to schools and transit.
- Funding opportunities were discussed for new improvements and maintenance of existing facilities as part of other projects or as standalone projects.

# Planning Level Cost Estimate Nogales/Santa Cruz County Pedestrian Plan

Pedestrian Plan (Study cost to develop a detailed plan)	\$200,000
TOTAL =	\$200,000



Site No. 78 Lo	ocation Map		
Project Type	ect Type Nogales/Santa Cruz County Pedestrian Plan		
Location	Countywide		
Benefit	Provides guidance for developing a pedestrian system that can be integrated with other modes of transportation		
Agus	mage for		



#### **Site No. 79**

Project Type: Bicycle Plan

**Location:** Nogales and Santa Cruz County, Citywide and Countywide

**Solution Description:** Regardless of the size of a community, it can benefit from increasing the share of non-motorized transportation among its residents. Bicycling and walking are beneficial as they expand mobility for non-drivers, reduce demand on the street system, do not impact the environment with noise and air pollution, reduce consumption of valuable oil resources, and provide a venue for healthy exercise. In light of current national concerns over climate change and the growing epidemic of obesity among children and adults, these benefits surely deserve serious consideration in future planning efforts.

Bicycle planning is based on the bicycle network that can be designated to connect likely trip origins and destinations between residential areas, schools, places of employment, shopping areas and entertainment destinations, or on a grid system to provide evenly spaced bicycle connections throughout the planning area. The network is mostly concerned with arterial and collector streets where traffic volumes and speeds necessitate improvements for safer road sharing between bicyclists and motor vehicles. An established bicycle network serves several purposes: 1) guiding the bicyclist to the most bicycle-friendly roadways and 2) informing motorists that bicyclists may be on the road. Utilitarian trips using city streets are most often the focus of the bicycle network, although recreational facilities can be an important asset to the network.

While the network is the focal point of the Bicycle Plan, the following components should also be included:

- Goals and Objectives As with any planning exercise, goals and objectives define the
  accomplishments and outcomes desired from the document. The more specific or actionbased the goals and objectives are, the better direction the plan will provide for
  implementation and for measuring the success of the plan.
- Existing Conditions and Needs Assessment To best determine what future facilities and improvements are needed for bicycle travel, it is important to understand what conditions currently exist for bicyclists. This can include identification of existing bikeways, opportunities for future bikeways (wide streets, available rights-of-way), hazardous conditions for bicyclists (narrow roadways with no shoulders, roadways with poor pavement conditions, railroad crossings, freeway ramps) or barriers to bicycle use. The bikeway needs would form the basis for improvements outlined in the bicycle network.
- Bicycle Support Facilities and Programs More than just good bikeways are needed to encourage bicycling. Additional support facilities, such as bicycle parking, shower facilities and support programs, such as education and promotion, are essential.



- Implementation Plan The actual implementation of the projects described in the Plan will occur incrementally and can be implemented as stand-alone projects or in conjunction with other development activities, such as repaving projects, frontage development or redevelopment, roadway extensions, and new developments. The Implementation Plan will provide the direction needed to take advantage of all opportunities that may arise. It should include specific action items to support the Goals and Objectives identified at the beginning of the planning process.
- Prioritization Prioritization of the projects is another important aspect of implementation.
  Recognizing that there are limited financial resources that can be devoted to development of
  the bicycle network, it is important to recognize the projects that can provide the most 'bang
  for the buck'. Prioritization criteria can include an assessment of projects that close an
  existing gap in the bicycle network, remove an existing barrier to or hazardous situation for
  bicycle use, are relatively easy to implement, provide access to important destinations, have
  the potential to increase bicycle use, or have strong community support. Cost estimates for
  high priority projects and potential funding sources can also be included as part of the
  implementation Solution Description.
- Design Guidelines These guidelines provide recommendations to staff, developers, and decision makers

## Planning Level Cost Estimate Nogales/Santa Cruz County Bicycle Plan

Bicycle Plan (Study cost to develop a detailed plan)		\$200,000
T	TOTAL =	\$200,000



Location   Benefit	Nogales/Santa Cruz County Bicycle Plan  Countywide  Provides guidance for developing a bicycle system that can be integrated with other modes of transportation
Location I Benefit	Countywide  Provides guidance for developing a bicycle system that can be integrated with other modes of transportation
Benefit	Provides guidance for developing a bicycle system that can be integrated with other modes of transportation
Benefit	that can be integrated with other modes of transportation
Agoa	
	Budge Rd
	Control of the contro
4	Plub) (Abr. 182)  Rich



#### Site No. 80

Project Type: Trail Extension

**Location:** Avenida Coatimundi, Avenida Leon to Coatimundi Middle School, Santa Cruz

County

Solution Description: The village of Rio Rico developed an approximately one-mile section of a 10-foot wide paved pathway located on the west side of Pendleton Drive from Rio Rico Drive south to Avenida Leon, originally funded with ADOT Transportation Enhancement funds. The pathway crosses Pendleton Drive with an improved crossing and follows along the south side of Avenida Coatimundi, passing the Rio Rico fitness center, the Rio Rico community center, and terminating at the Most Holy Nativity Catholic Church. The proposed project would extend this pathway east on Avenida Coatimundi for an additional approximately 1 mile to connect with Coatimundi Middle School and ultimately with the Sonoita Creek Trail.

The pathway will be designed to accessibility standards and should include appropriate amenities such as pedestrian refuge benches, shade and rest areas. A trailhead, parking, and signage should also be included. This project will provide added benefit for not only recreational users in the region, but additional options for alternative modes of transportation and safe routes to school. Providing walking and bicycling alternatives for school children will in turn reduce the amount of vehicular traffic congestion during peak drop-off and pick up times at the school. It also increases physical activity levels and healthy choices for children.

The project is supported by several local area stakeholder groups including the Tubac Chamber of Commerce, Santa Cruz Valley Citizens Council, Santa Cruz Valley Bicycle Advocacy Committee, Tubac Fire District, and the BACA Float Coalition.



Figure 89: Existing Coatimundi Trail

Planning Level Cost Estimate

Santa Cruz County Coatimundi Trail Extension

Design and Construction Documents	\$75,000
Construction	\$475,000
TOTAL =	\$550,000



Site No. 80 Location Map		
Project Type	Project Type Trail Extension	
Location	Avenida Coatimundi, Avenida Leon to Coatimundi Middle School, Santa Cruz County	
Provide accessible and alternative mode of transportation for recreation users and safe rout school		





### 9.4 Proposed Project Summary

A summary of all eighty (80) proposed transportation improvements and their planning level cost estimates are listed in the following table. For projects with multiple phases, the total project sum is provided.

**Table 2: Project Summary with Costs** 

Site	Project Location		Cost (x \$1,000) Alt A /B/C/D	
No.	Project Description	Jurisdiction		
1	Crawford Street at UP Railroad, Nogales	- City of	\$5,000	
	Pedestrian Overpass of Railroad	Nogales		
	Court Street at UP Railroad, Nogales	City of	\$5,000	
2	Pedestrian Overpass of Railroad	Nogales		
	Public Library Vicinity, Nogales	City of	<b>#</b> 40.400	
3	Vehicular Overpass of Railroad	Nogales	\$12,100	
	Gold Hill Road at UP Railroad, Nogales	City of	<b>#00 500</b>	
4	Vehicular Overpass of Railroad	Nogales	\$28,500	
_	Ruby Road at UP Railroad, Rio Rico	Santa Cruz	<b>#7</b> 000	
5	Vehicular Overpass of Railroad	County	\$7,800	
	Palo Parado Road at UP Railroad and Santa Cruz River, Rio Rico	Santa Cruz County	\$7,750 / \$10,700	
6	Bridge crossing for vehicular and pedestrian traffic			
_	Grand Avenue, Park St to Arroyo Blvd, Nogales	City of	\$1,020	
7	Crosswalk Installation	Nogales / ADOT		
	Calle Sonora & N Hohokam Dr, Nogales	City of	<b>^</b>	
8	Widen Roadway and Bridge and Improve Intersection	Nogales	\$5,300	
	Mariposa Rd & Grand Avenue, Nogales	City of	\$4,200	
9	Intersection Improvement	Nogales / ADOT		
4.0	Western Avenue, I-19 to Grand Ave, Nogales	- City of	<b>4400 / 4400</b>	
10	Sidewalk Improvements	Nogales	\$120 / \$400	
4.4	Target Range Rd, Mariposa Road to I-19, Nogales	City of	0.450	
11	Sidewalk Improvements	Nogales	\$450	
40	Target Range Rd & Mariposa Rd, Nogales	City of	ФО 500	
12	Intersection Improvement	Nogales	\$2,500	



	Project Location		Cost
Site No.	Project Description	Jurisdiction	(x \$1,000) Alt A /B/C/D
	Mariposa Rd/l-19 Interchange, Nogales	City of	\$8,600 /
13	Traffic Interchange Improvements	Nogales / ADOT	\$25,100 / \$33,700
	Mariposa Rd & Frank Reed Rd, Nogales	City of	\$28,450 /
14	Intersection Improvement	Nogales	\$10,450
	Mariposa Rd/SR 189, POE to I-19	City of	\$31,450 /
15	Roadway Widening and Improvement	Nogales / ADOT	\$53,650 / \$46,750
40	W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico	A.D.O.T.	<b>#</b> 4.000
16	Frontage Road Extension	ADOT	\$4,900
	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico	1007	\$1,380 /
17	Roadway Overlay & Shoulder Widening	ADOT	\$15,180 / \$16,445
	Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico		\$1,750 /
18	Widen I-19 Overpass and Approach Roads	ADOT	\$3,700
	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico	Santa Cruz County	
19	Intersection Improvement		\$800
	W Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado	4507	\$3,500
20	Frontage Road Improvement	ADOT	
	E Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado		<b>A</b>
21	Frontage Road Improvement	ADOT	\$4,500
	E Frontage Rd & Tumacacori Rd, Tubac	Santa Cruz County / ADOT	
22	Intersection Improvement		\$460 / \$285
	E Frontage Rd & Tubac Rd, Tubac	Santa Cruz County / ADOT	
23	Intersection Improvement		\$575 / \$285
	E Frontage Rd, Avenida Goya to Bridge Rd, Tubac	Santa Cruz	•
24	Roadway and Intersection Improvements	County	\$2,030
	E Frontage Rd & Avenida de Otero, Tubac	Santa Cruz	
25	Intersection Improvement	County	\$245
	Connector Road, Mariposa Rd to Country Club Dr, Nogales		
26	Frontage Road Connection	ADOT	\$250
		1	



	Project Location		Cost
Site No.	Project Description	Jurisdiction	(x \$1,000) Alt A /B/C/D
07	Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico	Santa Cruz	\$26,700 /
27	Roadway Reconstruction	County	\$42,500
	Pendleton Drive, North Terminus to Bridge Rd, Tubac	Santa Cruz	
28	Roadway Construction	County	\$29,720
	Tumacacori to Tubac	Santa Cruz	44.050
29	Wildlife Preservation	County / ADOT	\$1,250
	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico		\$400 /
30	Interchange Improvements	ADOT	\$3,000
	Grand Avenue and Crawford Street vicinity, Nogales	City of	\$50 / \$230 /
31	Nogales Gateway Enhancements	Nogales	\$575 /\$15
	Mariposa Rd in the POE/Target Range Rd vicinity, Nogales	City of	\$50 / \$230 /
32	Nogales Gateway Enhancements	Nogales	\$575 /\$15
	I-19/Grand Avenue vicinity, Nogales	City of Nogales	\$15 / \$230 / \$50
33	Nogales Gateway Enhancements		
	I-19 "The Curve" area between Ruby Rd & Rio Rico Dr, Rio Rico		\$375
34	Safety Corridor Improvement	ADOT	
	I-19/Grand Avenue Partial Interchange, Nogales		\$5,400 /
35	Interchange Improvement	ADOT	\$22,550 / \$35,000
	Connector Road, I-19 to SR 82, Nogales		\$36,550 /
36	Roadway Corridor Improvements	ADOT	\$59,000
	City-wide traffic signal locations, Nogales	City of	<b>A-</b> 0
37	Traffic Signal System/Timing Plan Updates	Nogales	\$50
	Monte Carlo Neighborhood to SR 82, Nogales	City of	40.050
38	Connector Road	Nogales	\$2,850
	City of Nogales	City of	40.00=
39	City Transit System	Nogales	\$2,285
40	Santa Cruz County	Santa Cruz	
40	Expanded Transit System	County	\$525 / \$1,045



Site	Project Location		Cost (x \$1,000) Alt A /B/C/D	
No.	Project Description	Jurisdiction		
41	Santa Cruz County	Carata Cara	\$870	
	Park and Ride Lots	Santa Cruz County		
40	City of Nogales	City of	\$45 (initial)/	
42	Sidewalk Improvements	Nogales	\$175 (annual)	
40	Rio Rico area	Santa Cruz	\$45 (initial)/	
43	Sidewalk Improvements	County	\$175 (annual)	
44	White Park Dr west to Mariposa Road, Nogales	City of	\$75,200 /	
44	Connector Route	Nogales	\$36,425	
	Frank Reed Rd/Masonic St Intersection, Nogales	City of	\$115 / \$400 / \$2,820 / \$1,260	
45	Intersection Improvement	Nogales		
	Ruby Road/SR 289, Ranger Station to Pina Blanca Lake, Rio Rico	- Santa Cruz County	\$3,115 / \$32,950 / \$35,720	
46	Bike Lane Improvement			
	New Route, Mariposa Rd TI to Grand Ave, Nogales	City of	\$6,200	
47	Connector Route	Nogales / ADOT		
	Grand Ave/Mesa Verde Dr Intersection, Nogales	City of	\$125 / \$690 / \$1,165	
48	Intersection Improvement	Nogales / ADOT		
	Grand Ave/Old Tucson Rd Intersection, Nogales	City of Nogales / ADOT	\$525	
49	Intersection Improvement			
	Grand Ave/Country Club Dr Intersection, Nogales	City of	\$400 /	
50	Intersection Improvement	Nogales / ADOT	\$1,050	
	Bridge Road, I-19 to Calle Iglesia, Tubac	Santa Cruz County	_	
51	Roadway and Intersection Improvements		\$3,300	
	Pendleton Drive, Bridge Rd to Pima County line, Amado	- Santa Cruz	\$49,000 /	
52	Roadway Construction	County	\$77,200	
53	I-19, Exit 22 (Peck Canyon Rd) to Exit 48 (Arivaca Rd), Santa Cruz County	ADOT	\$23,500	
53	Interchange Improvements	🗸 .	(each)	



0:4-	Project Location		Cost	
Site No.	Project Description	Jurisdiction	(x \$1,000) Alt A /B/C/D	
54	Bridge Road, I-19 Frontage to Proposed Pendleton Dr Extension, Crosby Rd to Pendleton Dr, Tubac	Santa Cruz	\$4,600	
	Roadway Improvements, Bridge Construction, and At-Grade Railroad Crossing Improvements	County		
	Chavez Siding Rd, I-19 Frontage to Proposed Pendleton Dr. Extension, Tubac	Santa Cruz	<b>\$40,000</b>	
55	Roadway Improvements, Bridge Construction, and At- Grade Railroad Crossing Improvements	County	\$10,030	
	I-19 East Frontage Road, Ruby Road to Rio Rico Dr, Rio Rico			
56	Traffic Study and Evaluation	ADOT	\$150	
	Western Nogales, West of I-19	City of	\$8,100 / \$10,800 (per mile)	
57	Street Construction	Nogales		
	Yavapai Drive from Rio Rico Drive to W. Frontage Road, Rio Rico	Santa Cruz	\$5,300	
58	Roadway Improvements for Future Capacity	County		
	Old Tucson Road, Nogales	City of	\$17,250	
59	Roadway Improvements for Future Capacity	Nogales		
	W. Country Club Drive, Grand Avenue to I-19, Nogales	City of	\$5,750	
60	Roadway Improvements for Future Capacity	Nogales		
	Gold Hill Road, Grand Avenue to Edith Place, Nogales	City of	\$1,380	
61	Roadway Improvements for Future Capacity	Nogales		
	Apache Blvd, Grand Avenue to Mariposa Hills Drive, Nogales	- City of		
62	Roadway Improvements for Future Capacity	Nogales	\$4,550	
	Industrial Park Drive Loop, Nogales	- City of	4	
63	Roadway Improvements for Future Capacity	Nogales	\$7,000	
	Baffert Drive, Grand Avenue to Monte Carlo Place, Nogales	City of	4	
64	Roadway Improvements for Future Capacity	Nogales	\$1,570	
	Doe Street, Grand Avenue to Bankerd Avenue, Nogales	City of	<b>A.</b>	
65	Roadway Improvements for Future Capacity	Nogales	\$1,130	
0.0	Bankerd Avenue, Doe Street to Morley Avenue, Nogales	- City of	04.000	
66	Roadway Improvements for Future Capacity	Nogales	\$1,800	



Site	Project Location		Cost (x \$1,000) Alt A /B/C/D	
No.	Project Description	Jurisdiction		
07	SR 82, Grand Avenue Terminus to Thelma Street, Nogales	City of	\$3,400 /	
67	Roadway Improvements for Future Capacity	Nogales	\$12,150	
	Santa Cruz Street, Grand Avenue to Bejarano Street, Nogales		\$115	
68	Roadway Improvements for Future Capacity	City of Nogales		
	Western Avenue, Grand Avenue to Interstate 19, Nogales	- City of	_	
69	Roadway Improvements for Future Capacity	Nogales	\$3,800	
	Perkins Avenue, Morley Avenue to Jackson Street, Nogales	- City of		
70	Roadway Improvements for Future Capacity	Nogales	\$1,450	
	Monroe Street, Morley Avenue to Tyler Avenue, Nogales	- City of	\$870	
71	Roadway Improvements for Future Capacity	Nogales		
	Banks Bridge, Grand Avenue to Morley Avenue, Nogales	- City of	\$820	
72	Roadway Improvements for Future Capacity	Nogales		
	Morley Avenue, Banks Bridge to Park Street, Nogales	- City of	\$3,570	
73	Roadway Improvements for Future Capacity	Nogales		
74	Grand Avenue & Arroyo Blvd, I-19 to DeConcini Port of Entry, Nogales	City of	\$3,000 / \$15,850 / \$18,850	
, ,	Roadway Improvements for Future Capacity	Nogales		
	Interstate 19, Interstate 19B Terminus to West Street, Nogales	City of	\$375 / \$1,170	
75	Roadway Improvements for Future Capacity	Nogales / ADOT		
76	Interstate 19, Tumacacori Interchange to SR 189/Mariposa Road Interchange, Santa Cruz County	ADOT	\$529,000	
	Roadway Improvements for Future Capacity			
77	East and West Interstate 19 Frontage Roads, Rio Rico Drive Traffic Interchange to Grand Avenue Traffic Interchange, Rio Rico	ADOT	\$29,375	
	Roadway Improvements for Future Capacity			
78	Nogales (citywide) & Santa Cruz County (countywide)	Joint City &	\$200	
70	Pedestrian Plan	County	ΨΖΟΟ	
79	Nogales (citywide) & Santa Cruz County (countywide)	Joint - City &	\$200	
	Bicycle Plan	County	•	
80	Avenida Coatimundi, Avenida Leon to Coatimundi Middle School, Santa Cruz County	Santa Cruz County	\$550	
	Trail Extension	County		



#### 10. Evaluation of Transportation Improvements

This section of the Plan sets forth proposed solutions to the many transportation needs (80 total project sites) that previously described. These projects were identified based on forecasts of future traffic volumes, determinations of the capacities of existing transportation facilities, analysis of crash data, review of previous studies and reports, and input from key stakeholders and the public. In many cases, multiple options for solutions existed. The alternatives were evaluated and the most feasible are presented herein, along with a planning level cost estimate (in 2010 dollars).

It is evident that significant minority and low-income populations both in Santa Cruz County and the City of Nogales would benefit greatly from the proposed transportation improvement projects. This not only shows that the proposed improvements benefit residents, citywide and countywide, but it also demonstrates that the transportation solutions are equitable among populations in the region.

The information contained in this working paper, once approved by ADOT, the City of Nogales, Santa Cruz County, and members of the project's Technical Advisory Committee, will provide the basis for prioritizing and financially constraining the prospective projects. The projects can then be grouped into:

- A short-term (5 year) Transportation Implementation Plan
- A medium term (10 year) Transportation Improvement Plan
- A long-term (20 year) Transportation Improvement Program
- A Transportation Needs List containing the balance of the projects not included in the short-term, medium term, or long-term programs

The next section, *Implementation Plan*, will focus on prioritizing the proposed transportation projects and financially constraining the program to determine the specific projects that are to be included in the short-term, medium term, and long-term programs based on anticipated funding levels. The next task will also include researching funding and financing options for discussion purposes. The section will present options to increase the funding levels for consideration and possible adoption by the City Council of the City of Nogales and the Board of Supervisors of Santa Cruz County. Should measures be approved that increase the funding and financing levels for transportation projects, the program can be expanded accordingly

### 11. Implementation Plan Overview

The *Implementation Plan* focuses on the prioritization of the projects evaluated and set forth in the previous section. The projects were aligned into short term (five year), medium term (ten year), and long term (twenty year) project categories and listed separately for the City of Nogales



and for Santa Cruz County. This effort also describes both potential public and private funding sources and suggests ways that such resources may be used to deliver projects from the priority listings. Options are provided for additional revenue sources, along with an order of magnitude approximation of how much the revenue source may be on an annualized basis, for consideration and possible adoption by the Nogales City Council and the Santa Cruz County Board of Supervisors and implementation by the local jurisdiction public works department staff.

#### 12. Project Prioritization Tables

The projects are sorted into three individual tables: one each for Santa Cruz County, the City of Nogales, and ADOT (State and Federal) system projects. These tables are then further categorized by eligibility for federal aid and by mode.

The Technical Advisory Committee discussed and agreed that input from Santa Cruz County and the City of Nogales on the prioritization of projects was invaluable to the ranking process due to their intimate understanding of the community's needs and objectives. The local agency members of the TAC, in collaboration with the Wilbur Smith Associates study team, ranked and categorized the highest priority projects using local priorities, applicable evaluation factors, and sound engineering judgment. This process was also used to rank and categorize the federal and state system projects to provide local input and direction to ADOT. These tables can be found in Appendices D, E, and F of this document.

The following sections include all of the identified transportation system improvement projects in one of four different categories. These categories are listed and described as follows:

#### 1. **Short Term Priority Program** (FY2011 through FY2015)

The projects receiving the highest ranking by the local agencies are included in this category. The number of projects is constrained by an estimated funding level that includes both current revenue sources and several suggested additional revenue sources.

#### 2. **Medium Term Implementation Program** (FY2016 through FY2020)

The projects of the next level of magnitude of priority to the local agencies are included in this category. The number of projects in this listing is also constrained by an estimated funding level that includes current and suggested additional revenue sources.

#### 3. **Long Term Implementation Program** (FY2021 through FY2030)

The projects of the next lower magnitude of priority to the local agencies are included in this category. The number of projects in this listing is also constrained by an estimated funding level that includes current and suggested additional revenue sources.



#### 4. Needed Projects Beyond the 20 Year Program

All identified projects that were not included in the short, medium or long term improvement programs are included in this listing of needed projects that may not be implementable within this 20 year program due to fiscal constraints.

#### 12.1 Short Term Priority Program – Santa Cruz County

Based on the rankings and prioritization by Santa Cruz County in coordination with Wilbur Smith Associates, the following projects are suggested for short term priority for the five year capital improvement program – FY2011 through FY2015.

Short Term Priority Program Roadway Projects - Eligible for Federal Aid				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
4		Palo Parado Road at UP Railroad and Santa Cruz River, Rio Rico	\$7,750,000	
1	δА	Bridge crossing for vehicular and pedestrian traffic - Alternative Preferred Alignment 1		
2	16	W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico	\$4,900,000	
2	10	Frontage Road Extension	ψ4,300,000	
Total: Short Term Priority Program - Federal Aid Eligible \$12,650,000				

Short Term Priority Program Roadway Projects - Local Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description		
	* Site I	Paper #2		
1	58	Yavapai Drive from Rio Rico Drive to W Frontage Rd, Rio Rico	\$5,300,000	
	30	Roadway improvements for future capacity needs	ψ3,500,000	
Total: Short Term Priority Program - Local Funding \$5,300,000				

Note: Reclassifying this Project #58 to a rural minor collector will make the project eligible to apply for federal funding.



Short Term Priority Program  Transit Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
1	41A	Santa Cruz County - Park and Ride Lot at Rio Rico	\$870.000	
•	717	Park and Ride Lot(s)	ψ070,000	
Total: Sh	Total: Short Term Priority Program - Transit Projects \$870,000			

Short Term Priority Program Bicycle & Pedestrian Projects - Eligible for Federal Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
1	80	Coatimundi Trail Extension, Avenida Coatimundi, Rio Rico	\$400,000		
'	00	Multipurpose trail			
2	78	Santa Cruz County (Countywide)	\$200,000		
	70	Pedestrian Master Plan	Ψ200,000		
3	79	Santa Cruz County (Countywide)	\$200,000		
,	73	Bicycle Master Plan	<b>⊅∠∪∪,∪∪∪</b>		
Total: Sh	Total: Short Term Priority Program - Bicycle/Pedestrian Projects \$800,000				

Note: Project No. 80 is eligible for funding under the Transportation Enhancement Program and/or the Safe Route to Schools Program.

Note: Projects #78 and #79 are eligible for ADOT MPD PARA Program funding.



#### 12.2 Short Term Priority Program – City of Nogales

Based on the rankings and prioritization by City of Nogales in coordination with Wilbur Smith Associates, the following projects are suggested for short term priority for the five year capital improvement program – FY2011 through FY2015.

Short Term Priority Program Roadway Projects - Eligible for Federal Aid					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description			
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
	3	Public Library Vicinity, Nogales	\$10,300,000		
		Vehicular overpass of UP railroad			
2	45D	Frank Reed Road/Masonic Street Intersection, Nogales	\$1,260,000		
2		Intersection improvement, Alternative D, roundabout			
Total: Sl	Total: Short Term Priority Program - Federal Aid Eligible \$11,560,000				

Note: Cost for Project #3 was taken from the City's TIGER Grant Application.

Short Term Priority Program Roadway Projects - Local Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
1	8	Calle Sonora & North Hohokam Drive, Nogales	\$5,300,000		
	0	Widen roadway and bridge; improve intersection	ψ3,300,000		
Total: Sh	Total: Short Term Priority Program - Local Funding \$5,300,000				

Note: Reclassifying this Project #8 to an urban minor arterial will make the project eligible to apply for federal funding.



#### Short Term Priority Program Transit Projects - Eligible for Federal Funding Project Location Site Project Cost No.\* Ranking Project Description Site No. refers to site location numbers in exhibits shown in Working Paper #2 City Public Transit System, Nogales **1A** 39A \$195,000 City public transit system, Phase One, Expand the "Nogales Rides" system - capital costs City Public Transit System, Nogales 1B 39A \$650,000 City public transit system, Phase One, Expand the "Nogales Rides" system - annualized operating costs @ \$650,000/year Total: Short Term Priority Program - Transit Projects \$845,000

Short Term Priority Program Bicycle & Pedestrian Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
1	1	Crawford Street Overpass of the UPRR, Nogales	\$5,000,000	
'	'	Pedestrian overpass over the railroad tracks		
2	78	Nogales (Citywide)	\$200,000	
2		Pedestrian circulation master plan	Ψ200,000	
3	79	Nogales (Citywide)	000 000	
•	19	Bicycle circulation master plan	\$200,000	
Total: SI	Total: Short Term Priority Program - Bicycle/Pedestrian Projects			

Note: Projects #78 and #79 are eligible for ADOT MPD PARA Program funding.



Short Term Priority Program Enhancement Projects - Eligible for Federal Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description			
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
1	31	DeConcini POE Area at Grand Avenue & Crawford St, Nogales	\$870,000		
_	31	Gateway enhancements, monument signs, public art, roundabout, landscaping, etc.	φο/0,000		
Total: St	Total: Short Term Priority Program - Enhancement Projects \$870,000				

#### 12.3 Medium Term Implementation Program – Santa Cruz County

Based on the rankings and prioritization by Santa Cruz County in coordination with Wilbur Smith Associates, the following projects are suggested for medium term priority for the five year program from FY2016 through FY2020.

Medium Term Implementation Program Roadway Projects - Eligible for Federal Aid					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
	27B	Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico			
3A		Roadway reconstruction, Alternative B, roadway reconstruction with paved shoulders (Note: Due to the size of this project, the construction should be phased into affordable component projects - this is Phase 1 of 3)	\$14,000,000		
4	19A	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico	\$50,000		
4		Intersection improvement, Phase One, turn lanes, signing, striping, SRTS improvements	Ψ30,000		
Total: Me	Total: Medium Term Impl. Program - Federal Aid Eligible \$14,050,000				



Medium Term Implementation Program Roadway Projects - Local Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
2	51	Bridge Road, I-19 Frontage Rd to Calle Iglesia, Tubac	\$3,300,000	
2		Roadway and intersection improvements	ψ3,300,000	
•	54	Bridge Rd, Calle Iglesia to Prop. Pendleton Dr Extension, Tubac	\$4,600,000	
3		Roadway improvements, bridge construction, and at-grade railroad crossing improvements		
Total: Me	edium	Term Implementation Program - Local Funding	\$7,900,000	

Note: Reclassifying these Projects #51 & #54 to rural minor collectors will make the projects eligible to apply for federal funding.

Medium Term Implementation Program  Transit Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
2	41B	Santa Cruz County - Park and Ride Lot at Tubac	\$870,000	
4	410	Park and ride lot(s)	ψ070,000	
Total: Medium Term Implementation Program - Transit Projects \$870,000				

Note: There are no bike/pedestrian projects identified for the medium term program for Santa Cruz County.



#### 12.4 Medium Term Implementation Program – City of Nogales

Based on the rankings and prioritization by the City of Nogales in coordination with Wilbur Smith Associates, the following projects are suggested for medium term priority for the five year program from FY2016 through FY2020.

Medium Term Implementation Program Roadway Projects - Eligible for Federal Aid				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
3	66	Bankert Avenue, Doe Street to Morley Avenue, Nogales	\$1,800,000	
,	0	Roadway improvements	\$1,000,000	
4	73	Morley Avenue, Banks Bridge to Park Street, Nogales	\$3,570,000	
4		Roadway improvements	ψ3,370,000	
5	65	Doe Street, Grand Avenue to Bankert Avenue, Nogales	\$1,130,000	
,	3	Roadway improvements	ψ1,130,000	
6	69	Western Avenue, Grand Avenue to I-19, Nogales	\$3,800,000	
		Roadway improvements	Ψ0,000,000	
Total: Me	edium	Term Impl. Program - Federal Aid Eligible	\$10,300,000	



#### Medium Term Implementation Program Roadway Projects - Local Funding **Project Location** Site Project Cost Ranking No.\* Project Description Site No. refers to site location numbers in exhibits shown in Working Paper #2 Monte Carlo Neighborhood Connection to SR-82 38 2 \$2,850,000 New connector road White Park Drive Extension west to Mariposa Road New connector route to extend roadway to improve circulation; two 3 \$36,425,000 lane road with I-19 underpass (Note: Due to the size of the project, it may need to be divided into phases for affordable implementation) Gold Hill Road, Grand Avenue to Edith Place, Nogales 4 61 \$1,380,000 Roadway improvements Monroe Street, Morley Avenue to Tyler Avenue, Nogales

Note: Reclassifying these Projects (#38, #61, #44, & #71) to urban collector will make the projects eligible to apply for federal funding.

Medium Term Implementation Program  Transit Projects - Eligible for Federal Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
2A	39B	City Public Transit System, Nogales	\$860,000		
ZA		City public transit system, Phase Two - capital costs	\$000,000		
		City Public Transit System, Nogales			
2B	39B	City public transit system, Phase Two, citywide fixed route transit system - annualized operating costs @ \$580K per year plus Phase I on-going operating costs (see Project #39A)	\$580,000		
Total: Me	Total: Medium Term Implementation Program - Transit Projects				

\$870,000

\$41,525,000

5

71

Roadway improvements

Total: Medium Term Implementation Program - Local Funding



Medium Term Implementation Program Bicycle & Pedestrian Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Froject Cost	
	* Site No. refers to site location numbers in exhibits shown in Working Paper #			
4	2	Court Street Overpass of the UPRR, Nogales	\$5,000,000	
4	2	Pedestrian overpass of UP railroad tracks	ψ5,000,000	
Total: M	edium	Term Impl. Program - Bicycle/Pedestrian Projects	\$5,000,000	

Medium Term Implementation Program Enhancement Projects - Eligible for Federal Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description			
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
•	32	Mariposa POE Area, Mariposa Rd & Target Range Rd, Nogales	\$870,000		
2	32	Gateway enhancements, monument signs, public art, roundabout, landscaping, etc.			
Total: M	Total: Medium Term Impl. Program - Enhancement Projects \$870,000				



#### 12.5 Long Term Implementation Program – Santa Cruz County

Based on the rankings and prioritization by Santa Cruz County in coordination with Wilbur Smith Associates, the following projects are suggested for long term priority for the ten year program from FY2021 through FY2030.

Long Term Implementation Program Roadway Projects - Eligible for Federal Aid				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
	27B	Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico		
3B		Roadway reconstruction, Alternative B, roadway reconstruction with paved shoulders (Note: Due to the size fo this project, the construction should be phased into affordable component projects - this is Phase 2 of 3)	\$14,000,000	
	17C	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico	\$16,445,000	
5		Roadway overlay & shoulder improvements for bike/ped use, Alternative C, overlay both existing roadway & new shoulders		
Total: Lo	Total: Long Term Impl. Program - Federal Aid Eligible			

Long Term Implementation Program Roadway Projects - Local Funding				
	Site No.*	Project Location	Project Cost	
Ranking		Project Description		
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2			
4	55	Chavez Siding Rd, I-19 Frontage Road to Proposed Pendleton Drive Extension, Tubac	\$10,030,000	
4	3	Roadway improvements, bridge construction, and at-grade railroad crossing improvements	ψ10,030,000	
Total: Long Term Implementation Program - Local Funding			\$10,030,000	

Note: Reclassifying this Project #55 to a rural minor collector will make the project eligible to apply for federal funding.

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Long Term Implementation Program  Transit Projects - Eligible for Federal Funding					
	Site	Project Location	Drainet Cont		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
	40.4	Santa Cruz County	<b>*</b> 400 000		
3	40A	Expanded transit system, Phase One, daily express service to Rio Rico, capital costs	\$402,000		
4	40A	Santa Cruz County	\$123,000		
4		Expanded transit system, Phase One, daily express service to Rio Rico, annualized operating costs	Ψ123,000		
5	40B	Santa Cruz County	\$802,000		
5	406	Expanded transit system, Phase Two, daily express service extension to Tubac - capital costs	\$602,000		
6	40B	Santa Cruz County	\$243,000		
Ü		Expanded transit system, Phase Two, daily express service extension to Tubac - annualized operation costs	Ψ243,000		
Total: Lo	Total: Long Term Implementation Program - Transit Projects \$1,570,000				

Long Term Implementation Program Bicycle & Pedestrian Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description		
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2			
4	43	Rio Rico Area  Sidewalk improvements - annual program - annual funding level @ \$220,000 per year	\$2,200,000	
Total: Lo	\$2,200,000			



#### 12.6 Long Term Implementation Program – City of Nogales

Based on the rankings and prioritization by the City of Nogales in coordination with Wilbur Smith Associates, the following projects are suggested for long term priority for the ten year program from FY2021 through FY2030.

Long Term Implementation Program Roadway Projects - Eligible for Federal Aid					
	Site	Project Location	Broject Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
7	72	Banks Bridge, Grand Avenue to Morley Avenue, Nogales	\$820,000		
,	, _	Roadway improvements	Ψ020,000		
8	70	Perkins Avenue, Morley Avenue to Jackson Street, Nogales	\$1,450,000		
· ·	,,	Roadway improvements			
9	68	North Santa Cruz Street, Grand Ave to Bejarano St, Nogales	\$115,000		
,		Roadway improvements	ψ110,000		
10	63	Industrial Park Drive Loop, Nogales	\$7,000,000		
2	3	Roadway improvements	Ψ7,000,000		
11	59	Old Tucson Road, Nogales	\$17,250,000		
- 11		Roadway improvements	ψ17,230,000		
12	4	Gold Hill Road Overpass of the UPRR, Nogales	\$9,600,000		
12	7	Bridge overpass of the railroad	ψ3,000,000		
Total: Lo	Total: Long Term Impl. Program - Federal Aid Eligible \$36,235,000				

Note: Project Site #4 was moved from the Roper Road Alignment to the Gold Hill Road alignment as directed by the City of Nogales.



Long Term Implementation Program Roadway Projects - Local Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description	Project Cost		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2		
6	64	Baffert Drive, Grand Avenue to Monte Carlo Place, Nogales	\$1,570,000		
		Roadway improvements			
7	62	Apache Boulevard, Grand Ave to Mariposa Hills Drive, Nogales	\$4,550,000		
	02	Roadway improvements	ψ4,550,000		
8	60	West Country Club Drive, Grand Avenue to I-19, Nogales	\$5,750,000		
<u> </u>		Roadway improvements			
Total: Lo	Total: Long Term Implementation Program - Local Funding				

Note: Reclassifying these Projects (#64, #62, & #60) to urban collector will make the projects eligible to apply for federal funding.

Long Term Implementation Program Transit Projects - Eligible for Federal Funding				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
3A	41A	Downtown Transit Center & Short Term Parking, Nogales	\$870,000	
34		Facility to accommodate transit and shared ride users	ψ070,000	
3B	41A	Walmart Area Transit Center & Short Term Parking	\$870,000	
36	717	Facility to accommodate transit and shared ride users	ψ070,000	
3C	41A	Mariposa POE Area Transit Center & Short Term Parking	\$870,000	
3		Facility to accommodate transit and shared ride users	<b>Φ</b> 070,000	
Total: Lo	Total: Long Term Implementation Program - Transit Projects			



#### Long Term Implementation Program Bicycle & Pedestrian Projects - Eligible for Federal Funding Project Location Site Project Cost No.\* Ranking Project Description Site No. refers to site location numbers in exhibits shown in Working Paper #2 Nogales (Citywide) 5 42 \$2,200,000 Annual sidewalk installation and improvement program; funding at \$220,000 per year Western Avenue, I-19 to Grand Avenue, Nogales 10A 6 \$120,000 Sidewalk improvments Target Range Road, Mariposa Road to I-19, Nogales 7 11 \$450,000 Sidewalk improvments Total: Long Term Impl. Program - Bicycle/Pedestrian Projects \$2,770,000

Long Term Implementation Program Enhancement Projects - Eligible for Federal Funding					
	Site	Project Location	Project Cost		
Ranking	No.*	Project Description			
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2				
3	33	I-19 at Grand Avenue Area, Nogales	\$295.000		
•	55	Gateway enhancements, monument signs, public art, landscaping, etc.	Ψ293,000		
Total: Long Term Impl. Program - Enhancement Projects			\$295,000		



### 12.7 Needed Projects Beyond the 20 Year Program – Santa Cruz County

Needed Projects Beyond the 20 Year Program Roadway Projects - Eligible for Federal Aid				
	Site	Project Location	Project Cost	
Ranking	No.*	Project Description	Project Cost	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
		Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico		
3C	27B	Roadway reconstruction, Alternative B, roadway reconstruction with paved shoulders (Note: Due to the size fo this project, the construction should be phased into affordable component projects - this is Phase 3 of 3)	\$14,500,000	
6	19B	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico	\$750 000	
0		Intersection improvement, Phase Two, approach roadway improvements	\$750,000	
7	28	Pendleton Drive, North Terminus to Bridge Rd, Tubac	\$29,720,000	
,	20	Roadway Construction	Ψ23,720,000	
8	5	Ruby Road at the UP Railroad, Rio Rico	\$7,800,000	
· ·	, , , , , , , , , , , , , , , , , , ,	Vehicular overpass of railroad	Ψ1,000,000	
Total: Ne	eeded	Projects Beyond the 20 Years - Federal Aid Eligible	\$52,770,000	

Need Projects Beyond the 20 Year Program Roadway Projects - Local Funding				
	Site No.*	Project Location	Project Cost	
Ranking		Project Description		
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2			
		Pendleton Drive, Bridge Road to Pima County Line, Amado		
5	52B	Roadway construction, Alternative B, two lane roadway with a center turn lane and shoulders (Note: Due to the size of this project, it may warrant splitting into logical phases for funding and implementation)	\$77,200,000	
Total: Needed Projects Beyond The 20 Years - Local Funding \$77				

Note: Reclassifying this Project #52B to a rural major collector will make the project eligible to apply for federal funding.



### 12.8 Needed Projects Beyond the 20 Year Program – City of Nogales

Need Projects Beyond the 20 Year Program Roadway Projects - Local Funding				
	No *	Project Location	Project Cost	
Ranking		Project Description		
	* Site No. refers to site location numbers in exhibits shown in Working			
9	37	Citywide Traffic Signal System Upgrades	\$50.000	
9		Traffic signal timing plan upgrades and progression improvements	\$50,000	
10	57	New Collector Streets in Western Nogales	\$23,750,000	
10		Two lane roadways to serve development needs; cost at \$9,500,000/mile		
Total: Needed Projects Beyond The 20 Years - Local Funding			\$23,800,000	

Note: Project No. 57 cost estimate in the above table is based on the average cost for minor and major collector streets (57A & 57B) in the master planned Western Nogales development.



### 12.9 Local Priorities for Federal/State Transportation System Projects

Local Priorities for Federal/State System Projects					
Ranking	Site No.*	Project Location	Cost		
		Project Description			
	* Site No. refers to site location numbers in exhibits shown in Working				
_	13A	Mariposa Rd/l-19 Interchange, Nogales			
1		Traffic Interchange Improvements - Alternative A - Diverging Diamond Interchange	\$8,600,000		
		Mariposa Rd/l-19 Interchange, Nogales			
1	13B	Traffic Interchange Improvements - Alternative B - Flyover	\$25,100,000		
		Mariposa Rd/l-19 Interchange, Nogales			
1	13C	Traffic Interchange Improvements - Alternative C - Diverging Diamond/Flyover Combination	\$33,700,000		
2	30A	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico	\$400,000		
		Interchange Improvements - Alternative A - Minor Improvements			
2	30B	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico	\$3,000,000		
_		Interchange Improvements - Alternative B - Roundabout	40,000,000		
3	14A	Mariposa Rd & Frank Reed Rd, Nogales	\$28,450,000		
		Intersection Improvement - Alternative A - Grade Separation	<b>42</b> 0, 100,000		
3	14B	Mariposa Rd & Frank Reed Rd, Nogales	\$10,450,000		
		Intersection Improvement - Alternative B - Arizona Parkway	Ψ 10, 100,000		
,		Mariposa Rd/SR 189, POE to I-19	****		
4	15A	Roadway Widening and Improvement - Alternative A - Traditional Roadway Widening	\$31,450,000		
	15B	Mariposa Rd/SR 189, POE to I-19			
4		Roadway Widening and Improvement - Alternative B - Arizona Parkway	\$53,650,000		
	15C	Mariposa Rd/SR 189, POE to I-19			
4		Roadway Widening and Improvement - Alternative C - Enhanced Arterial Roadway with Jughandle Intersections	\$46,750,000		
_		Mariposa Rd & Grand Avenue, Nogales	40.0/		
5	9	Intersection Improvement	\$3,640,000		



Local Priorities for Federal/State System Projects					
	Site	Project Location	Cost		
Ranking	No.*	Project Description			
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2				
	12	Target Range Rd & Mariposa Rd, Nogales			
6		Intersection Improvement	\$2,500,000		
7	16	W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico	\$4,900,000		
•	10	Frontage Road Extension	ψ4,900,000		
_		W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico			
7	17A	Roadway Overlay & Shoulder Improvement for Bike - Alternative A - Overlay existing road with shoulder stabilization	\$1,380,000		
_		W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico			
7	17B	Roadway Overlay & Shoulder Improvement for Bike - Alternative B - Widen existing road with new shoulders	\$15,180,000		
_		W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico			
7	17C	Roadway Overlay & Shoulder Improvement for Bike - Alternative C - Overlay both existing roadway and new shoulders.	\$16,445,000		
	19A	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico	\$50,000		
7		Intersection Improvement - Phase One - Turn Lanes, signing, striping, SRTS improvements			
		W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico			
7	19B	Intersection Improvement - Phase Two - Approach Roadway Improvements	\$750,000		
7	20	W Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado	\$3,500,000		
,		Frontage Road Improvement			
8	35A	I-19/Grand Avenue Partial Interchange, Nogales	\$5,400,000		
O	3371	Interchange Improvement - Alternative A - Underpass	ψ3,400,000		
8	35B	I-19/Grand Avenue Partial Interchange, Nogales	\$22,550,000		
0	335	Interchange Improvement - Alternative B - Overpass	Ψ22,330,000		
		I-19/Grand Avenue Partial Interchange, Nogales			
8	35C	Interchange Improvement - Alternative C - Reconstruct to a full movement interchange	\$35,000,000		
	21	E Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado			
9		Frontage Road Improvement	\$4,500,000		
		E Frontage Rd & Tumacacori Rd, Tubac			
9	22A	Intersection Improvement - Alternative A - Northbound Turn Lane	\$460,000		



Local Priorities for Federal/State System Projects			
Ranking	Site No.*	Project Location	Cost
		Project Description	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
•		E Frontage Rd & Tumacacori Rd, Tubac	
9	22B	Intersection Improvement - Alternative B - Future Traffic Signal	\$285,000
		E Frontage Rd & Tubac Rd, Tubac	
9	23A	Intersection Improvement - Alternative A - Northbound and Southbound Left Turn Lanes	\$575,000
•	005	E Frontage Rd & Tubac Rd, Tubac	<b>*</b> 005.000
9	23B	Intersection Improvement - Alternative B - Future Traffic Signal	\$285,000
		E Frontage Rd, Avenida Goya to Bridge Rd, Tubac	
9	24	Roadway and Intersection Improvements	\$2,030,000
		E Frontage Rd & Avenida de Otero, Tubac	
9	25	Intersection Improvement	\$245,000
	0 26	Connector Road, Mariposa Rd to Country Club Rd, Nogales	\$250,000
10		Frontage Road Connection	
		Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico	
11	18A	Widen I-19 Overpass and Approach Roads - Alternative A - Widen bridge for turn lanes with intersection improvements	\$1,750,000
		Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico	
11	18B	Widen I-19 Overpass and Approach Roads - Alternative B - Widen bridge for turn lanes plus sidewalks and bike lanes with intersection improvements	\$3,700,000
12	34	I-19 "The Curve" area between Ruby Rd & Rio Rico Dr, Rio Rico	\$375,000
14	34	Safety Corridor Improvement	Ψ57 3,000
13	47	New Route, Mariposa Rd TI to Grand Ave, Nogales	\$6,200,000
13		Connector Route	
14	53	I-19, Exit 22 (Peck Canyon Rd) to Exit 48 (Arivaca Rd), Santa Cruz County	\$23,500,000
		Interchange Improvements	(each)



	Site	Project Location	Cost
Ranking	No.*	Project Description	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
15	74A	Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry, Nogales Roadway Improvements for Future Capacity - Alternative A - Signal	\$3,000,000
		Upgrades and Interconnect	
15	74B	Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry, Nogales	\$15,850,000
10	, , ,	Roadway Improvements for Future Capacity - Alternative B - Roadway and Intersection Improvements	Ψ10,000,000
15	74C	Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry, Nogales	\$18,850,000
		Roadway Improvements for Future Capacity - Alternative C - Both Signal and Roadway Improvements	
16	56	I-19 East Frontage Road, Ruby Road to Rio Rico Dr, Rio Rico	\$150,000
10	- 00	Traffic Study and Evaluation	Ψ100,000
17	48A	Grand Ave/Mesa Verde Dr Intersection, Nogales	\$125,000
17		Intersection Improvement - Alternative A - Upgrade Traffic Signal	
4-	48B	Grand Ave/Mesa Verde Dr Intersection, Nogales	\$690,000
17		Intersection Improvement - Alternative B - Intersection Capacity and Traffic Signal Improvements	
47	400	Grand Ave/Mesa Verde Dr Intersection, Nogales	
17	48C	Intersection Improvement - Alternative C - Widen Bridge, Intersection Capacity and Traffic Signal Improvments	\$1,165,000
18	49	Grand Ave/Old Tucson Rd Intersection, Nogales	\$525,000
10		Intersection Improvement	
46		Grand Ave/Country Club Rd Intersection, Nogales	* · * *
19	50A	Intersection Improvement - Alternative A - Widen Western Leg and Signal Improvements	\$400,000
40	505	Grand Ave/Country Club Rd Intersection, Nogales	\$1,050,000
19	50B	Intersection Improvement - Alternative B - Widen Western Leg Improve Intersection Capacity and Signal	
0.0	67A	SR 82, Grand Avenue Terminus to Thelma Street, Nogales	\$3,400,000
20		Roadway Improvements for Future Capacity - Alternative A - Widening with no bridge improvements	
00	675	SR 82, Grand Avenue Terminus to Thelma Street, Nogales	M40 450 000
20	67B	Roadway Improvements for Future Capacity - Alternative B - Widening with bridge improvements	\$12,150,000



Local Priorities for Federal/State System Projects				
	Site	Project Location	Cost	
Ranking	No.*	Project Description		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
		Connector Road, I-19 to SR 82, Nogales		
21	36A	Roadway Corridor Improvements - Alternative A -Use South River Road Alignment	\$36,550,000	
	36B	Connector Road, I-19 to SR 82, Nogales		
21		Roadway Corridor Improvements - Alternative B - Create New Alignment	\$59,000,000	
		Interstate 19, Interstate 19 B Terminus to West Street, Nogales		
22	75A	Roadway Improvements for Future Capacity - Alternative A - Access Management and One-Way Routes	\$375,000	
		Interstate 19, Interstate 19 B Terminus to West Street, Nogales		
22	75B	Roadway Improvements for Future Capacity - Alternative B - Route Widening and Intersection Improvements	\$1,170,000	
23	76	Interstate 19, Tumacacori Interchange to SR 189/Mariposa Road Interchange, Santa Cruz County	\$529,000	
		Roadway Improvements for Future Capacity		
24	77	East and West Interstate 19 Frontage Roads, Rio Rico Drive Traffic Interchange to Grand Avenue Traffic Interchange, Rio Rico	\$29,375,000	
		Roadway Improvements for Future Capacity		



Local Priorities for Federal/State System Bike/Ped Projects				
	Site	Project Location	Cost	
Ranking	No.*	Project Description		
	* Site I	* Site No. refers to site location numbers in exhibits shown in Working		
4	7	Grand Avenue, Park St to Arroyo Blvd, Nogales	\$1,020,000	
1	7	Crosswalk Installation	\$1,020,000	
		Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico		
2	46A	Bike Lane Improvement - Alternative A - Overlay Existing Roadway with Stabilized Earthen Shoulder	\$3,115,000	
	46B	Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico	\$32,950,000	
2	400	Bike Lane Improvement - Alternative B - Widen Existing Roadway with New Paved Shoulders	Ψ32,330,000	
	46C	Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico	\$35,720,000	
2	400	Bike Lane Improvement - Alternative C - Overlay Existing Roadway with New Paved Shoulders	φοσ,720,000	

Local Priorities for Federal/State System Enhancement Projects				
	Site	Project Location	Cost	
Ranking	No.*	Project Description		
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2	
1	29	I-19 Tumacacori to Tubac	\$1.250.000 (acab)	
	29	Wildlife Preservation Crossings	\$1,250,000 (each)	

Note: The maximum transportation enhancement grant for state system project is \$943,000; the balance of the project cost will need to be made up with state matching funds.



## 13. Overview of Federal Funding Sources

There are a number of federal funding programs that can be used to address transportation needs within the study area. These funds are typically distributed through and by the Arizona Department of Transportation (ADOT). In some cases, such as Transportation Enhancement Funds, the regional Councils of Governments (COGs) rank the local applications. The study area, Santa Cruz County, and the City of Nogales are represented by the SouthEastern Arizona Governments Organization (SEAGO).

Federal surface transportation programs are included in an omnibus funding program that is intended to be reinstituted every five years or so. The current program, The Safe Accountable Flexible Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU), expired in 2009. A new bill has not yet been enacted by Congress. In such cases of a funding lag (which has happened in the past as well), a series of short term "continuing resolutions" serve to bridge the gap until Congress agrees on the wording and policies of a new authorization bill.

The structure of the new authorization bill is not yet known. It will be influenced by Congress, the new Obama Administration, and various transportation professional associations (such as the American Association of State Highway and Transportation Officials (AASHTO), and the American Public Transportation Association (APTA), as well as a variety of other transportation advocacy groups. The trend is for the program to focus on modal balance, flexibility of funds between programs, and performance based funding decision making.

Since the recent economic downturn, the American Recovery and Reinvestment Act (ARRA) has also provided "stimulus funding" for projects including transportation. While these funds are most welcome, the requirements for rapid obligation and expenditure of these funds, while mandating adherence to all federal project requirements, makes it difficult to use these resources for projects that would require federal environmental clearance. Environmental reviews to comply with the National Environmental Policy Act (NEPA) can be quite lengthy, and since such reviews are not required for state and local projects in Arizona, it can be difficult to use these funds for many desired projects, especially those that include right of way acquisition, utility relocation, and capacity expansion. At the present time, federal funding programs include:

<u>American Recovery and Reinvestment Act (ARRA) Funds</u>: "Stimulus Program" funds described above.

<u>Border Infrastructure Program</u>: Very limited discretionary (competitive) program in SAFTEA-LU. Projects must be related to cross-border trade and traffic movements.

<u>Congestion Mitigation and Air Quality Program (CMAQ)</u>: These funds are limited to designated areas that exceed air quality standards. The study area is not eligible for these funds.



<u>Federal Transit Adminstration (FTA) Section 5311 Funds</u>: These monies are used to support public transit service in non-metropolitan (rural) areas such as the study area. These funds can be used for both capital and operating costs.

<u>Federal Transit Adminstration (FTA) Section 5310 Funds</u>: This program provides capital funds for vehicles for agencies providing transit service to the elderly and persons with disabilities. The primary target recipients are non-profit agencies and Native American Indian tribes. Local public agencies can apply for these funds if no "willing and able" non-profit agencies are available in a service area. These funds are available to both urban and rural recipients.

<u>Highway Bridge Program</u>: These funds are used for maintenance and repairs to bridges on the State Highway System.

<u>Highway Safety Improvement Program (HSIP):</u> These funds are designated for highway safety projects, including high risk rural roads and railroad crossings of roadways. The funds are distributed through ADOT to the various regional councils of governments (COGs), and then to the local agencies for use on specific safety projects.

<u>Interstate Maintenance Funds</u>: These funds are restricted to maintenance costs for the existing Interstate Highway System.

Job Access Reverse Commute Funds: The Job Access and Reverse Commute (JARC) program was established to address the unique transportation challenges faced by welfare recipients and low-income persons seeking to obtain and maintain employment. Many new entry-level jobs are located in suburban areas, and low-income individuals have difficulty accessing these jobs from inner city, urban, or rural neighborhoods. States and public agencies are eligible designated recipients. Eligible sub-recipients are private non-profit organizations, state or local governments, and operators of public transportation services including private operators of public transportation services. The program funds capital planning and operating expenses for projects that transport low income individuals to and from jobs and activities related to employment, and for reverse commute projects, typically through the FTA Section 5311 program.

<u>National Highway System Funds</u>: The funds are used for maintenance of the designated National Highway System (NHS). In the study area, only I-19 is part of the NHS.

<u>Safe Routes to Schools Program</u>: This federal program was created in 2005 to encourage students to walk or bicycle to school, and to provide funding for programs to encourage students in elementary and middle schools to walk or bike to school and address safety improvements needed for the route to the school. The program has averaged \$2.2 million per year in funding in Arizona and is administered by ADOT. Eligible projects include:

• sidewalk improvements



- traffic calming and speed reduction improvements
- pedestrian and bicycle crossing improvements
- on-street bicycle facilities
- off-street bicycle and pedestrian facilities
- secure bicycle parking facilities
- traffic diversion improvements in the vicinity of schools
- Creation and reproduction of promotional and educational materials
- Bicycle and pedestrian safety curricula, materials and trainers
- Training including workshops that target school- and community-level audiences
- Incentives for SRTS contests and incentives that encourage more walking and bicycling
- Safety and educational tokens that also advertise the program
- Photocopying, duplicating, mailing and printing costs related to the program
- Costs for data gathering, analysis, and evaluation reporting at the local project level
- Pay for substitute teacher to cover for faculty attending SRTS functions
- Costs for additional law enforcement or equipment needed for enforcement activities
- Equipment and training needed for establishing crossing guard programs
- Stipends for parent or staff coordinators

<u>Statewide Planning and Research (SPR) funds</u>: These federal funds are used for planning studies such as ADOT's PARA program that funded this planning study.

<u>Surface Transportation Program funds (STP):</u> These are federal highway funds distributed by ADOT. They can be used for a broad number of transportation projects, including transit.

The New Freedom Program: This FTA program aims to provide additional tools to overcome existing barriers facing Americans with disabilities seeking integration into the work force and full participation in society. Lack of adequate transportation is a primary barrier to work for individuals with disabilities. The 2000 Census showed that only 60 percent of people between the ages of 16 and 64 with disabilities are employed. The New Freedom formula grant program seeks to reduce barriers to transportation services and expand the transportation mobility options available to people with disabilities beyond the requirements of the Americans with Disabilities Act (ADA) of 1990. States and public bodies are eligible designated recipients. Eligible sub-recipients are private non-profit organizations, state or local governments, and operators of public transportation services including private operators of public transportation services. Eligible activities are capital and operating expenses for new public transportation services and new public transportation alternatives beyond those required by the American with Disabilities Act of 1990 (ADA) that are designed to assist individuals with disabilities.

<u>Tolling Program</u>: Very limited discretionary money was provided in the SAFETEA-LU program for pilot or demonstration projects to finance Interstate construction or reconstruction projects.



<u>Transportation Enhancement Funds</u>: These federal funds are distributed by ADOT and may be used for bicycle, pedestrian, and aesthetic enhancements to transportation projects. Competition for these limited funds is keen. Individual project funding limits are \$943,000 for state system projects and \$750,000 for local projects, supplemented by local matching funds in the minimum amount of 5.7% of the total project value.

# 14. Overview of State Funding Sources

State funding for transportation is somewhat limited. Gasoline tax, vehicle fees, and lottery proceeds are the only revenue sources. As vehicles become more fuel efficient, and roadway costs increase, the buying power of the fuel tax is diminishing. The state gasoline tax has not been raised for many years. Forty of the fifty states have higher gasoline taxes than Arizona. In addition to these constraints, a portion of the fuel tax revenues is being used to support the operation of the Department of Public Safety, which patrols the State Highway System. Current state funding sources are as follows:

<u>Highway User Revenue Funds (HURF)</u>: These are state gasoline tax funds, distributed by population. These may be "swept" into the general fund during a state fiscal crisis. In 2009, the City of Nogales received \$2,001,624 from this fund and Santa Cruz County received \$2,801,110. The Town of Patagonia, within Santa Cruz County but outside of this study area, received \$84,478.

<u>Local Transportation Assistance Funds (LTAF)</u>: These are state shared revenues from proceeds of the state lottery, which may be spent on roadways or public transit. These funds are distributed based on population. These may be "swept" into general fund during a state fiscal crisis. These funds are distributed to cities and towns, but not to counties. In 2009, the City of Nogales received \$93,327 from this fund.

<u>Local Transportation Assistance Funds II (LTAF II)</u>: These are state shared revenues from proceeds of the state lottery that must be spent on transit. These funds are distributed based on population. These may be "swept" into general fund during a state fiscal crisis. In 2009, Nogales received \$30,127 from this fund and Santa Cruz County received \$34,455.

Safety Enforcement Transportation Infrastructure Fund (SETIF): These funds are generated from fees charged to foreign vehicles entering Arizona through the international ports of entry. The funds are used for vehicle safety enforcement, to improve and maintain facilities within twenty-five miles of the border, and to reduce congestion at the ports of entry. These funds have also been used for Department of Public Safety activities and for joint projects with the Department of Homeland Security, the Arizona-Mexico Commission, and the International Development Authority.



<u>Vehicle License Tax Funds (VLT)</u>: These are state shared revenues from vehicle license taxes. These funds may also be "swept" into general fund during a state fiscal crisis.

## 15. Overview of Local Funding Sources

There is a wide range of options available for local funding sources. State enabling legislation varies as well as some, but not all, jurisdictions have been empowered by state statutes to levy things such as dedicated sales taxes. Local funding sources overlap to some degree with private funding options since they rely on resident funding and sometimes developers as well. Local funding sources include:

<u>Bonding</u>: Funding for capital projects from the sale of bonds by a public agency. Bond programs must be approved by a vote of the public. Bonding is actually a financing tool rather than a funding source. A revenue stream, typically from a secondary property tax, is needed to retire general obligation bond debt service. A second type of bonding, revenue bonds, can be issued for projects with a dedicated revenue source, such as toll roads.

<u>Development Exactions</u>: In many areas, builders of residential and commercial developments build all internal public infrastructure (roads, curb, gutter, and sidewalks, traffic and street lights, and utility infrastructure), and then dedicate these improvements to the local public agency as public infrastructure and public street right-of-way. Sometimes these exactions extend to parks and property for public schools as well, depending on the size and scope of the developments.

<u>Development Impact Fees</u>: A number of local public agencies, both counties and cities, have imposed development impact fees. These fees cover the costs of extending public services to new developments, and, in some cases, provide funds to offset capacity demands on public service systems some distance removed from the developments. These fees can cover utility services such as water, wastewater, and refuse collection, fire and police facilities, libraries, and transportation. These fees are for capital outlays only, and do not cover ongoing operations and maintenance costs. Development Impact Fees are enabled under Arizona Revised Statutes section 11-1102 *et.seq*. The projects constructed with the fees must show a direct benefit to the district.

Transportation impact fees are typically computed based on the trip generation of new developments and are calculated on residential units and "equivalent dwelling units" for employment and commercial land uses. This analysis is usually based on planned roadway facilities in a General Plan Transportation Element. Developers usually receive credits against these fees for planned regional roadways within or adjacent to their respective developments that they have constructed. Transportation (or Development) Impact Fees, therefore, usually require the developer to front load the construction costs, as fees are imposed on building permits.



The trip analysis done for impact fee studies typically discounts "pass-through" or external traffic on targeted roadways, as such traffic is not created by the developments bearing the fees. Roadway capacity to accommodate total traffic, however, is required, and limited area impact fees only address a portion of the needed capacity. Therefore, it is preferable that impact fees are adopted over a larger regional area to address a larger portion of the regional travel needs and to prevent development from "leapfrogging" beyond the boundaries of smaller fee imposition areas.

The acceptance of such fees by the developers varies. Residential impact fees are passed on to home buyers through higher home purchase prices. Market accommodation of commercial development impact fees can only be achieved by higher commodity prices, however. Since this results in higher prices at stores within the impact fee area than at similar nearby retailers in areas with lower or no impact fees, resistance to these fees can be high. Local officials are sometimes leery of losing retail sales taxes when commercial developments seek to locate near, but outside of their impact fee areas. Impact fee rates vary, but a number of suburban communities in Maricopa County impose transportation impact fees higher than \$5,000 per home or dwelling unit. The volatility of this revenue source is high, as income rises and falls with the housing market demand.

A Santa Cruz County Development Fee Study done in 2003 by ESI Corporation stated that such a fee would generate \$879,655 per year for the western Santa Cruz County area. That study based proposed fees on a considerably smaller menu of projects than this study has identified with a resultant maximum development impact fee per home of \$763.

Improvement Districts: Improvement Districts are created to provide specific facilities for specific geographical areas, and use the proceeds from the sale of obligation bonds to fund the improvements. Historically, improvement districts were used to upgrade older areas to modern standards for such actions as installing street lights, undergrounding utilities, or converting an area from septic tanks to sanitary sewers. These districts can also be used for newer areas to provide needed capital facilities. Usually a district uses a secondary property tax to retire the bonds. Sometimes a neighborhood area approaches a local government to create such a district to provide needed improvements. Approval of 51% of the impacted area property owners, or owners of 51% of the land in the proposed district, is required to authorize a district. Bond maturation is limited to 25 years or less.

General Funds: Monies generated by local governments from local revenue sources.

<u>Local or Countywide Sales Taxes:</u> A number of urban cities and counties have dedicated general sales taxes for transportation. Some locations have restricted such tax revenues to public transit, while others have used the funds for all modes of transportation. Additionally, some local jurisdictions have dedicated sales taxes for transportation just on construction materials. Such taxes also include a computation of the materials used in new building construction as well as



purchases made at home improvement stores. The logic behind this is that new construction increases vehicular impacts on the roadways and consequently should share in the cost of needed transportation infrastructure to service the increased traffic. A number of suburban high growth cities have received rather high returns on such taxes until the recent housing slump.

Santa Cruz County's general sales taxes are at the established limit rate of ½ cent. However, a dedicated sales tax district for transportation could be implemented. As was done for Santa Cruz County's ½ cent jail sales tax, this would require a vote of the electorate during a special or general election.

<u>P3 funding</u>: On July 13, 2009, Governor Jan Brewer signed HB 2396, Arizona's landmark P3 legislation. P3s are public-private partnerships, which include toll facilities and a variety of other innovative financing techniques involving private partnerships. The bill allows ADOT to issue concessions of up to 50 years, with extensions, for P3 projects. ADOT can also grant other units of government authority to develop P3 projects.

## 16. Overview of Private Funding Sources

Community Facilities Districts (CFDs): In 1988, the Arizona Community Facilities District Act was approved. The purpose was to provide new mechanisms for funding of infrastructure improvements for both municipalities and developers. The law authorized tax exempt bonds to be issued and repaid by assessing only the lands directly benefiting by the new infrastructure. Originally, Community Facilities Districts were required to be within a city or town. In 2006, these districts were also allowed in unincorporated areas. CFD bonds can fund a number of public infrastructure needs including transportation. Developers prefer this funding approach, since their cost exposure is less than with conventional financing, and no security needs to be pledged against the bond other than the projected assessment revenue stream. Some local jurisdictions do not support CFDs due to the inherent risk that, in the event of developer default, the debt could fall on the public agency. CFD bonds are not backed by a contingent general obligation of the entire city, town or county, as are general obligation bonds.

To establish a CFD, at least 25% of the impacted property owners must petition for such a district for the establishment to move forward through hearing, notification, and election processes. The notice, hearing, and election process can be waived if 100% of the impacted property owners petition for the CFD's establishment, which could be the case for a new planned development under a single ownership entity.

<u>P3 funding</u>: A mix of public and private funding through a public-private partnership agreement.



# 17. Current Revenue Streams

The table on the following page shows the five year history of existing revenue sources and amounts that the City of Nogales and Santa Cruz County use to address their transportation needs (HURF, LTAF, LTAF 2, VLT). In addition, the table contains county and city sales tax revenues for the same years. It is important to realize that the majority of the transportation revenues are used for administration of the local transportation agencies and for the operations and maintenance of the transportation systems.

Note that all revenue sources have declined to some extent due the recent economic downturn and recession. The revenues are expected to rebound with a slower growth trend starting in the next year or two as economic conditions start to improve and the study area sees renewed population growth.



FUND		City		County		Total
HURF 2009	\$	2,001,624	\$	2,801,110	\$	4,802,734
HURF 2008	\$	2,075,019	\$	3,039,075	\$	5,114,094
HURF 2007	\$	2,577,793	\$	3,541,727	\$	6,119,520
HURF 2006 HURF 2005	\$	2,697,628	\$	3,501,790	\$	6,199,418
HURF 2005	θ	2,573,918	Ф	3,164,564	٩	5,738,482
LTAF 2009	\$	93,327	\$	-	\$	93,327
LTAF 2008	\$	61,940	\$	-	\$	61,940
LTAF 2007	\$	99,766	\$	-	\$	99,766
LTAF 2006	\$	111,815	\$	-	\$	111,815
LTAF 2005	\$	113,398	\$	-	\$	113,398
LTAF 2 2009	\$	30,126	\$	34,455	\$	64,581
LTAF 2 2008	\$	39,142	\$	43,622	\$	82,764
LTAF 2 2007	\$	34,864	\$	36,138	\$	71,002
LTAF 2 2006	\$	64,446	\$	62,896	\$	127,342
LTAF 2 2005	\$	70,341	\$	62,827	\$	133,168
VLT 2009	\$	1,408,043	\$	2,239,868	\$	3,647,911
VLT 2008	\$	1,502,790	\$	2,398,412	\$	3,901,202
VLT 2007	\$	1,558,814	\$	2,504,546	\$	4,063,360
VLT 2006	\$	1,509,735	\$	2,382,034	\$	3,891,769
VLT 2005	\$	1,348,390	\$	2,102,820	\$	3,451,210
County Sales Tax 2009	\$		\$	2,666,703	\$	2,666,703
County Sales Tax 2009 County Sales Tax 2008	\$		\$	3,257,174	\$	3,257,174
County Sales Tax 2007	\$		\$	3,404,454	\$	3,404,454
County Sales Tax 2006	\$	_	\$	3,294,924		3,294,924
County Sales Tax 2005	\$	-	\$		\$	
	Φ	0.456.447	\$			,
City Sales Tax 2009 City Sales Tax 2008	\$	9,456,447		_	\$	9,456,447
Ź	\$	10,585,366	\$	-	-	10,585,366
City Sales Tax 2007	\$	12,548,071	\$	-	_	12,548,071
City Sales Tax 2006	\$	10,658,286	\$	-	_	10,658,286
City Sales Tax 2005	\$	6,435,997	\$	-	\$	6,435,997

April 30, 2010



There are additional funding sources for the county and the city as shown in the following table:

Revenue Source for 2009	City	County	Combined
Shared State Sales Tax	\$ 1,633,920	\$ 823,494	\$ 2,457,414
County Assistance Fund	\$ 0	\$ 534,871	\$ 534,871
National Forest Fund	\$ 0	\$767,020	\$ 767,020
Totals	\$ 1,633,920	\$ 2,125,385	\$ 3,759,305

These funding sources are not specifically earmarked for transportation purposes. To the best of our knowledge, these funds are not being used for transportation system improvements by either the county or the city, although they can be used for such purposes. These are potential additional funding sources, if the local agencies choose to use them for this purpose.

# 18. Suggested New Revenue Approaches

New revenue sources that may be considered by the City of Nogales and Santa Cruz County include:

- 1. An additional sales tax dedicated to transportation system improvements, and
- 2. Development impact fees imposed on new development within the study area to fund regional roadway system improvements.

### 18.1 Additional Sales Tax Revenues

Imposition of a *one half cent sales tax* dedicated to transportation has been estimated to generate around \$3.4 million annually (2009 dollars) if imposed on all of Santa Cruz County including the City of Nogales. It is assumed that gross receipts will remain at the level that would occur under current tax levels. Since general sales tax levels for counties are capped at ½ cent, a dedicated sales tax for transportation would require a vote of the electorate in a special or general election, as was done for the current ½ cent jail sales tax.

A one half cent sales tax be could be imposed exclusively within the City of Nogales through an increase in their sales tax rate. This would generate around \$2.4 million annually (2009 dollars). Such actions, however, tend to incent the development and/or relocation of commercial enterprises outside, but near, the city limits. This can also encourage leap frog development which is undesirable since it increases dramatically the infrastructure costs to serve the development. The result is a level of unfairness since facilities within the city are used jointly by both city and unincorporated area residents.



## **18.2** Development Impact Fees

Imposition of a *three thousand dollar per dwelling unit* (\$3,000/du) *impact fee* dedicated to transportation has been estimated to generate around \$2.2 million annually (2009 dollars) if imposed on all of Santa Cruz County including the City of Nogales. The suggested amount of the impact fee is based on an analysis of the pending development within the study area contained in Appendix C. For the purpose of our calculations, it was assumed that build-out of all entitlements listed would occur within the 20 year planning period. The dwelling unit totals were discounted to assume only 1,000 new dwelling units in Kino Springs and 5,000 new dwelling units in Rio Rico because of the size of these projects and that not all lots are likely to be buildable.

A number of local jurisdictions impose development fees on new residential and commercial development. Such fees are used to offset the cost of public infrastructure, including transportation improvements. The fees are collected as building permits are issued for subject properties. The acceptance of such fees by the development communities is mixed. Residential fees are typically passed on to the homebuyer in a slightly higher home purchase price.

Commercial developers, on the other hand, have no way to absorb the costs other than through higher commodity prices that may put them at a competitive disadvantage to retailers in nearby communities not subject to the impact fees. Some jurisdictions have expressed concerns that impact fees imposed on commercial development discourages such development and acts as a brake on retail growth. For this reason, the revenue stream projected from impact fees has been limited to residential development only.

### **18.3** Public-Private Partnerships

ADOT recently completed a study entitled "Public-Private Partnership Potential for Arizona-Mexico Border Infrastructure Projects." The purpose of the study was to explore the potential for utilizing public-private partnerships to deliver infrastructure serving the seven ports of entry along the Arizona-Mexico Border. Based on the work done by the Wilbur Smith Associates study team, one specific project was identified as having the potential to be at least partially self-funding as a public-private partnership: the SR 189/Mariposa Road project connecting the Mariposa POE with I-19 in Nogales, Arizona.

The next step in the P3 Program process would be to conduct a conceptual level evaluation of the project. The elements of this evaluation would be: 1) developing a planning level layout of the project as a toll road, including looking at potential ways to deal with local access, 2) developing a toll operations plan, 3) conducting a conceptual level traffic and revenue study, 4) developing a planning level cost estimate for the project, including toll facilities, 5) developing a planning level operational and maintenance plan, and 6) preparing a conceptual level public-private partnership feasibility study. The evaluation would also include the identification and discussion



of project specific implementation issues that would need to be addressed in order to develop SR-189/Mariposa Road as a public-private partnership.

# 19. Potential Locations for Improvement Districts

## 19.1 Improvement Districts

Improvement Districts are created to provide specific facilities for specific geographical areas, and use the sale of obligation bonds to fund the improvements. Historically, improvement districts were used to upgrade older areas to modern standards for such actions as installing street lights, undergrounding utilities, or converting an area from septic tanks to sanitary sewers. These districts can also be used for newer areas to provide needed capital facilities. Usually a district uses a secondary property tax to retire the bonds. Sometimes a neighborhood area approaches a local government to create such a district to provide needed improvements. A vote of the property owners of the impacted area is required to authorize a district.

Improvement districts can be used for roadway improvements within cities or in county areas. The creation of an improvement district requires the concurrence of 51% of the property owners, and costs are imposed on properties based on calculated benefits which may include parcel size, roadway frontage, or some other value. Special assessments are then levied against the benefited property for the apportioned cost of the improvements. A "cash demand period" is established wherein owners may pay the assessment up front, interest free, within a short specified period of time. Bonds are sold for the balance of the costs of the improvements, and the owners make periodic payments including interest over the life of the bond which is based on the complete cost of the improvements to be done. If roadways are improved to public agency standards, then the city or county typically assumes ownership, maintenance responsibility, and liability for the roadway. If roadways are improved, but not up to city or county standards, the public agency will not assume maintenance or liability for the roadway, and maintenance and liability remain the responsibility of the district. It is more expensive up front to build the roadways to public agency standards, but less expensive in the long run as the public agency is thereafter responsible for operations and maintenance as well as liability exposure.

Improvement Districts are typically established to address deficiencies in the infrastructure in established areas. Infrastructure deficiencies may include roadway width, drainage, pavement, or enhancements such as sidewalks, streetlights, utility undergrounding, or installing sanitary sewers in areas with current septic systems.

## 19.2 Community Facilities Districts (CFDs)

In 1988, the Arizona Community Facilities District Act was approved. The purpose was to generate and provide new mechanisms for funding of infrastructure improvements for both municipalities and developers. The law authorized tax exempt bonds to be issued and repaid by assessing only the lands directly benefiting by the new infrastructure. Originally, Community Facilities Districts were required to be within a city or town. In 2006, these districts were also allowed in unincorporated areas. CFD bonds can fund a number of public infrastructure needs



including transportation. Developers prefer this funding approach, since their cost exposure is less than with conventional financing, and no security needs to be pledged against the bond other than the projected assessment revenue stream. Some local jurisdictions do not support CFDs due to the inherent risk that, in the event of developer default, the debt could fall on the public agency.

CFDs allow developers to create separate political subdivisions distinct from the jurisdiction they are located in for the purpose of issuing tax exempt bonds to finance public improvements. CFDs are permitted to finance public roadways, utilities, and public facilities such as police and fire stations, parks, and libraries. The responsibility to repay the bonds is placed on the end users of the property who retire the bonds over a twenty-five year period. No residents outside of the CFD are responsible for the repayment of the bonds.

Support for CFDs is growing as developers find it difficult to "front load" the costs for infrastructure for large projects. Some recent examples of projects in Arizona using CFDs include Verrado and Festival Ranch in Buckeye, Vistancia in Peoria, Marley Park in Surprise, Estrella Mountain Ranch in Goodyear, and Merrill Ranch in Florence.

# 19.3 Possible Districts and Included Improvement Projects

### West Area Improvement District

- Frank Reed Road/Masonic Street Intersection, Nogales (Project #45)
- Collector Street in Western Nogales (Project #57) \*
- Apache Boulevard from Grand Avenue to Mariposa Hills Drive (Project #62)
- Industrial Park Drive Loop (Project #63)
- Western Avenue from Grand Avenue to I-19 (Project #69)
- \* Note: The collector streets in Western Nogales (Project #57) are conducive to a CFD as these streets will likely be built through the development process.

## Nogales Core Area Improvement District

- White Park Drive Extension west to Mariposa Road (Project #44)
- Old Tucson Road (Project #59)
- West Country Club Drive from Grand Avenue to I-19 (Project #60)
- Gold Hill Road from Grand Avenue to Edith Place (Project #61)
- Baffert Drive from Grand Avenue to Monte Carlo (Project #64)
- Doe Street from Grand Avenue to Bankert (Project #65)
- Bankert Avenue from Doe Street to Morley Avenue (Project #66)
- Santa Cruz Street from Grand Avenue to Bajarano (Project #68)



- Perkins Avenue from Morley Avenue to Jackson Street (Project #70)
- Monroe Street from Morley Avenue to Tyler Avenue (Project #71)
- Banks Bridge from Grand Avenue to Morley Avenue (Project #72)
- Morley Avenue from Banks Bridge to Parks Street (Project #73)

### Monte Carlo Improvement District

• New Connector Road from the Monte Carlo neighborhood to SR-82 (Project #38)

### Citywide Sidewalk Improvement District

• Sidewalk Improvements, Citywide (Project #42)

### Citywide Traffic Signal System Improvement District

• Traffic Signal System Timing and Upgrades (Project #37)

### 19.4 Possible CFDs in the County and Associated Improvement Projects

- Ruby Road Overpass of the UPRR (Project #5)
- Pendleton Drive from Rio Rico Drive to Palo Parado Drive (Project #27)
- Pendleton Drive from North Terminus to Bridge Road (Project #28)
- West Frontage Road from Calle Calabasas to Yavapai Drive (Project #16)
- West Frontage Road from Rio Rico Drive to Peck Canyon Road (Project #17)
- West Frontage Road & Camino Lito Galindo Intersection (Project #19)
- Bridge Road from I-19 Frontage Road to Calle Iglesia (Project #51)
- Pendleton Drive from Bridge Road to Pima County Line (Project #52)
- Bridge Road from Calle Iglesia to Pendleton Drive Extension (Project #54)
- Chavez Siding Road from I-19 Frontage Road to Pendleton Drive (Project #55)
- Yavapai Drive from Rio Rico Drive to West Frontage Road I-19 (Project #58)



### 19.5 Districts as a New Revenue Source for Transportation Infrastructure

It is recommended that both the city and the county consider using improvement districts and community facilities districts, as applicable, to provide an additional revenue source (assessments against benefited properties in the district) and funding means for delivering needed transportation infrastructure. Those who benefit from the improvement are asked to pay for the improvement. The majority of the property owners should support the need for the project and be willing to be assessed for the cost of the improvement. Improvement districts are normally used to address deficiencies in existing transportation systems. Community facilities districts are typically used to advance infrastructure for new developments such as many of the identified project needs in the I-19 corridor due to the expected growth in the Santa Cruz county portion of the study area.

### 20. Functional Classification Recommendations

Functional classification is a system of classifying roadways according to the character of service they are intended to provide. This results in a hierarchy from higher volume roadways of a regional nature to lower volume roadways of a more local nature. Classifications begin at the principal arterial level and track downward to minor arterials, major and minor collectors, and local roadway classifications. Different standards exist for rural and urban areas. The 1991 Intermodal Surface Transportation Efficiency Act (ISTEA) and successor legislation required the states to functionally classify roadways and to forward the classifications to the Federal Highway Administration (FHWA) for approval.

Functional classification is also based on a regional and statewide mixture and balance of the types of facilities. In rural areas, the local street system typically comprises 65-75% of the roadway mileage, with 20-25% falling within the collector street system. In urban areas, the local road system should typically comprise 65-80% of the total mileage, with 5-10% within the collector category.

This process of classifying roadways in Arizona is led by ADOT in cooperation with the regional councils of governments; in this case, the *SouthEastern Arizona Council of Governments* (SEAGO). All roads that are part of the public roadway network are to be classified. The roads on the state system are classified by ADOT and the roads on federal lands are classified by the respective federal agencies. Functional classification is done in combination with establishing boundaries for urban areas, which result in roadways being classified as rural or urban facilities. In high growth areas such as Arizona, urban boundaries warrant periodic review.



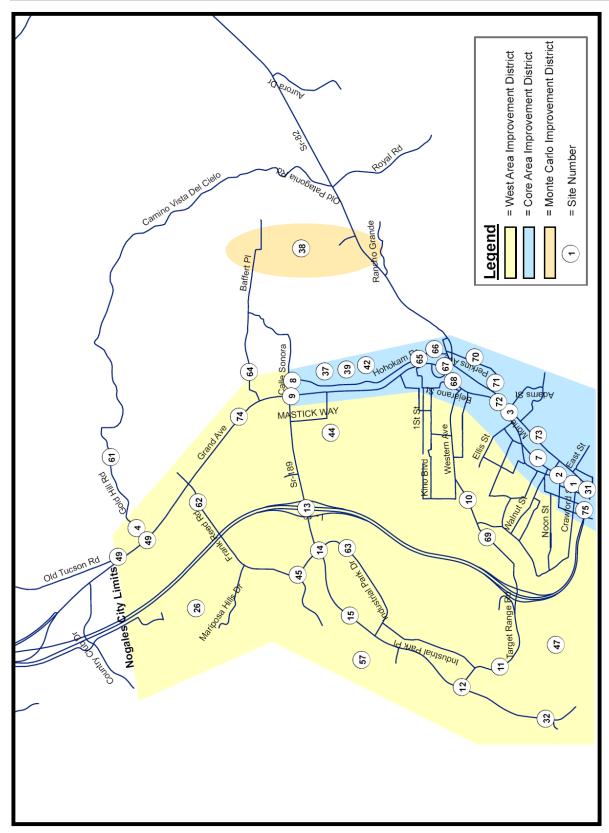


Figure 90 - Possible Nogales Improvement Districts & Project Site Locations



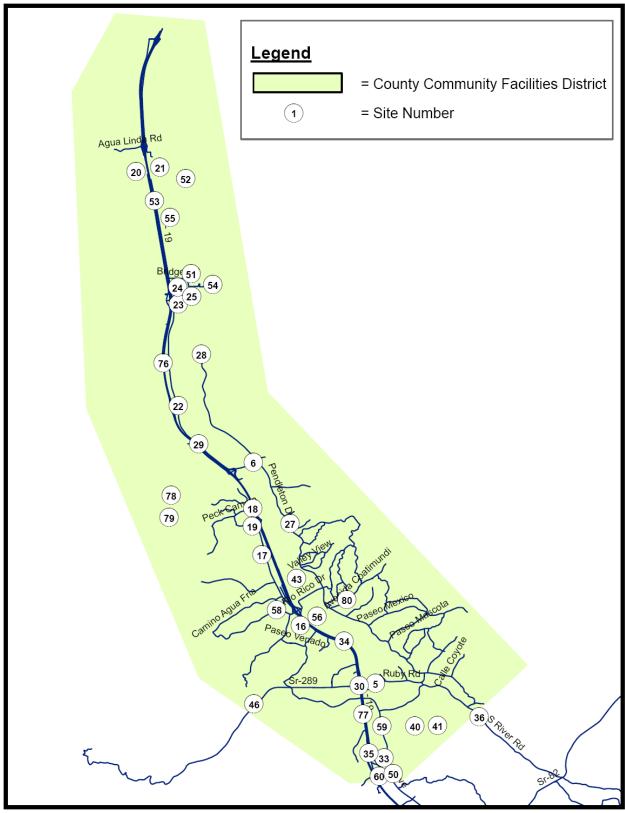


Figure 91 – Possible Santa Cruz Community Facilities District & Project Site Locations



For a project to be eligible for federal funding and to be included in the State Transportation Improvement Plan (STIP), the roadway in question must be functionally classified as a rural major collector or above or as an urban collector or above. In Section 2.2.2, maps are provided showing current functional classification of roadways within the study area. In order for the maximum number of the improvement projects recommended in this study to be eligible for federal funding, these projects were reviewed to determine if any of the roadways contained therein could potentially be reclassified to qualify for federal funding. ADOT has a process for modifying routes on Arizona's approved functional classification system. Applications for reclassification in Santa Cruz County and the City of Nogales must be submitted to ADOT through SEAGO. The application must identify the routes to be added or deleted, route termini, average daily traffic, and rationale for justifying the change in functional classification. ADOT's Multimodal Planning Division reviews the application and the impacts of reclassification on the roadway system balance for the surrounding system. They will take into account the opinions and views of local officials, regional planning bodies, and the respective ADOT District Engineer. If approved by ADOT, the request is then forwarded to the FHWA for their concurrence and approval.

Two documents from ADOT regarding functional classification are included as appendices to this report.

- 1. Arizona Functional Classification Guidelines
- 2. Process for Modifying Routes on Arizona's Approved Functional Classification System

The following tables show the current and/or recommended functional classifications for roadway segments included in the recommended projects section of this study for both the City of Nogales and Santa Cruz County. Projects on the State Highway System are not included as the functional classification of those roads is the responsibility of ADOT.

Of special note are the frontage roads along I-19 in the study area. All of the frontage road segments are the maintenance responsibility of ADOT, except for the west frontage road between Rio Rico Road and Peck Canyon Road. That roadway segment is the responsibility of Santa Cruz County. Those local projects which can be successfully reclassified may then be eligible to compete for federal funding. It should be noted that an increase in the number of eligible projects does not increase the amount of available funds for which the region can compete.



Existing and Recommended Functional Classification for Santa Cruz County Projects					
Site No.	Roadway	From	То	Current Classification	Recommended Classification
6A	Palo Parado Drive	I-19	Pendleton Drive	Rural Major Collector	Rural Major Collector
58	Yavapai Drive	Rio Rico Drive	West Frontage Rd.	None	Rural Major Collector
27B	Pendleton Drive	Rio Rico Drive	Palo Parado Drive	Rural Major Collector	Rural Major Collector
51	Bridge Road	I-19	Calle Iglesia	None	Rural Major Collector
54	Bridge Road	Calle Iglesia	Pendleton Drive Ext.	None	Rural Major Collector
17C	W. Frontage Rd.	Rio Rico Drive	Palo Parado Drive	Interstate Frontage	Interstate Frontage
55	Chavez Siding Rd.	I-19	Pendleton Drive Ext.	None	Rural Major Collector
28	Pendleton Drive	N, Terminus	Bridge Road	None	Rural Major Collector
5	Ruby Road	UPRR	UPRR	Urban Collector	Urban Collector
52B	Pendleton Drive	Bridge Road	Pima County Line	None	Rural Major Collector
Note: Yellowed lines represent roadway segments that are proposed for an upgrade to their current functional classification.					

Existing and Recommended Functional Classification for City of Nogales Projects					
Site No.	Roadway	From	То	Current Classification	Recommended Classification
3	Public Library Area	UPRR	UPRR	None	Urban Collector
45D	Frank Reed Rd.	Masonic St.		None	Urban Collector
8	Calle Sonora	Grand Avenue	Hohokam Drive	None	Urban Minor Arterial
66	Bankert Avenue	Doe St.	Morley Ave.	Urban Minor Arterial	Urban Minor Arterial
73	Morley Avenue	Banks Bridge	Park St.	Urban Minor Arterial	Urban Minor Arterial
65	Doe Street	Grand Avenue	Bankert Avenue	Urban Minor Arterial	Urban Minor Arterial
69	Western Avenue	Grand Avenue	I-19	Urban Minor Arterial	Urban Minor Arterial
38	Monte Carlo	neighborhood	SR 82	None	Urban Collector
61	Gold Hill Road	Grand Avenue	Edith Place	None	Urban Collector
44	White Park Drive	Grand Avenue	Mariposa Rd.	None	Urban Collector
71	Monroe Street	Morley Avenue	Tyler Avenue	None	Urban Collector
72	Banks Bridge	Grand Avenue	Morley Ave.	Urban Minor Arterial	Urban Minor Arterial
70	Perkins Avenue	Morley Avenue	Jackson St.	Urban Minor Arterial	Urban Minor Arterial
<b>6</b> 8	North Santa Cruz St.	Grand Avenue	Bejarano Street	None	Urban Collector
63	Industrial Park Dr.	Loop		Urban Collector	Urban Collector
59	Old Tucson Road	Grand Avenue	I-19	Urban Collector	Urban Collector
4	Gold Hill Road	UPRR	UPRR	None	Urban Collector
64	Baffert Drive	Grand Avenue	Monte Carlo Dr.	None	Urban Collector
62	Apache Blvd	Grand Avenue	Mariposa Hills Dr.	None	Urban Collector
	W. Country Club Dr.	Grand Avenue	I-19	None	Urban Collector
Note: Yello	owed lines represent street	segments that are pro	oposed for an upgrade to	their current functional clas	ssification



# 21. Implementation Plan Recommendations

- 1. Accept and approve the transportation plan and adopt the improvement program.
- 2. Apply for federal funding for eligible short-term projects and apply for any available and applicable grants to fund eligible short-term projects.
- 3. As funding becomes available, the City of Nogales and Santa Cruz County should pursue predesign work for short term priority projects.
- 4. Create new revenue sources including a **dedicated** ½ **cent sales tax** for the entire county, adopt and impose a **development impact fee of \$3,000 per dwelling unit**, and use **improvement districts** and **community facility districts** to help fund needed projects.
- 5. To maximize the use of potential federal funding, the city and county should work aggressively with the *SouthEastern Arizona Governments Organization* (SEAGO) to functionally reclassify roadways as recommended in this report to make them eligible for federal funding.
- 6. The pedestrian and bicycle plans for the study area, including both the county and the city, should be pursued as soon as possible, funded through an ADOT PARA Study grant, so that the respective pedestrian and bicycle master plans can provide the basis for applications for funding through the transportation enhancement program and the Safe Routes to School program leading to as many project designs and construction as possible. These could logically be joint county and city applications and projects.
- 7. When new roadways are planned and designed, it is advisable to incorporate multimodal facilities for bicycle and pedestrian traffic as appropriate for the facility.
- 8. Some private developments in the study area appear to have occurred without these developments contributing to or building adjacent roadway improvements. It is recommended that all new developments be required to bring contiguous roadways up to current standards for right of way, number of traffic lanes, sidewalks, bike lanes, and other appurtenant improvements. Both the county and the city should require Traffic Impact Analyses (TIAs) to be done for all significant new developments. The TIAs should be prepared and sealed by a licensed Arizona Civil Engineer. These reports will then dictate the extent of traffic impacts and suggest improvements to mitigate these impacts. These measures may include the improvements noted above and also turn lanes, deceleration lanes, and installation of all manner of traffic control devices. TIA standards from other public agencies can be obtained and provided for this purpose.
- 9. The county and the city should continue to work with SEAGO and ADOT to investigate all options for development of public transportation within the study area, including providing park and ride facilities, as well as linking the communities to the Tucson metropolitan area and beyond.



# Appendices

Appendix A –	Related Studies and Documents
Appendix B –	Stakeholder Meeting Notes
Appendix C –	Report on Current Projects in Santa Cruz County
Appendix D –	<b>Project Prioritization Listings for Santa Cruz County</b>
Appendix E –	<b>Project Prioritization Listings for the City of Nogales</b>
Appendix F –	<b>Project Prioritization Listings for the Federal and State Transportation System</b>
Appendix G –	ADOT Arizona Functional Classification Guidelines
Appendix H –	ADOT Process for Modifying Routes on Arizona's Approved Functional Classification System
Appendix I -	Public Outreach Summary



# Appendix A

### **Related Studies & Documents**

- Feasibility Study, Mariposa US Port of Entry, Nogales, AZ Arizona Department of Transportation May 2005
- Environmental Assessment for the Construction of New Patrol and Drag Roads Office of Border Patrol, Nogales Station, Santa Cruz County, Arizona February 2007
- iii. The Economic Benefits of Expanding the Border Crossing for Commercial Vehicles at the Mariposa Crossing in Nogales, Arizona US Department of Homeland Security June 2007
- iv. Unified Nogales / Santa Cruz County Transportation 2000 Plan City of Nogales & Santa Cruz County December 2000
- v. Draft Working Paper 2
  Unified Nogales / Santa Cruz County Transportation 2000 Study
  City of Nogales & Santa Cruz County
  November 2000
- vi. Arizona-Sonora Region, Regional Economic Indicators, 2006 Office of Economic and Policy Analysis, The University of Arizona November 2006
- vii. Traffic Analysis for Old Ruby Road Santa Cruz County, Arizona April 2000
- viii. Logistics Capacity Study of the Guaymas-Tucson Corridor Arizona Department of Transportation April 2006 (Phase 1)
  - ix. Technical Support Document for Recommendation that the Nogales, Arizona Area be Designated as a PM<sub>2.5</sub> Nonattainment Area Arizona Department of Environmental Quality December 2007



- x. Transearch 2005 Arizona Freight Flows with Zip Codes (Global Insight)
   Arizona Department of Transportation
   September 2007
- xi. Comprehensive Trails Master Plan Santa Cruz County, Inventory Phase 2006
- xii. Nogales Railroad Small Area Transportation Study City of Nogales April 2007
- xiii. Nogales Transit Feasibility Review and Implementation Plan Arizona Department of Transportation, City of Nogales Draft October 2006
- xiv. Santa Cruz County Crossings Analysis Arizona Nogales Subdivision Union Pacific Railroad July 22, 2008
- xv. Wildlife Friendly Guidelines Community and Project Planning Arizona Game and Fish Department February 2009
- xvi. Arizona's Wildlife Linkages Assessment Arizona Department of Transportation, Arizona Game and Fish Department, et.al. December 2006
- xvii. I-19 Frontage Roads Study Arizona Department of Transportation August 27, 2008
- xviii. Palo Parado, I-19 to Pendleton Drive, Design Concept Report Santa Cruz County August 2008
- xix. Nogales Railroad Assessment Study Southeast Arizona Regional Transportation Profile Study – White Paper Greater Nogales and Santa Cruz County Port Authority April 2005



xx. Making the Connection: Community Fitness and the Rio Rico Community School Greenway Rio Rico Community July 2005

xxi. Nogales Transit Analysis City of Nogales Draft December 2008

xxii. Mariposa Port of Entry Bottleneck Study Arizona Department of Transportation October 2008

xxiii. Comprehensive Plan Santa Cruz County June 2004

xxiv. General Plan Update 2020 City of Nogales May 2003 (plan was rejected by voters in the 2003 General Election)

xxv. Highway Performance Monitoring System (HPMS)
Arizona Department of Transportation
2007

xxvi. The Rio Rico Subregional Transportation Assessment Santa Cruz County October 2008

xxvii. North-South/East-West Interconnectors and Frontage Roads City of Nogales January 2000

xxviii. Mariposa/I-19 Connector Route Study Arizona Department of Transportation December 2008

xxix. Nogales Rides Records City of Nogales/Nogales Rides March 2009

xxx. Santa Cruz Valley Bicycle Advocate Committee Master Plan Santa Cruz Valley Bicycle Advocate Committee Updated November 2008



xxxi. Making Our Communities Walkable Workshop by Arizona Cardiovascular Disease Coalition November 2008

xxxii. Multimodal Freight Analysis Study Arizona Department of Transportation February 2009



# Appendix B

Letter sent to stakeholders included on next two pages.

# **Stakeholder Meeting Notes**

Summary of topics, items and information starts on the page following the letter to stakeholders.









March 10, 2009

Name Address City, State Zip

Re: Request for Meeting to Gain your Input and Insight on Needed Local Transportation Improvements

### Greetings:

The Arizona Department of Transportation (ADOT), in cooperation with the city of Nogales and Santa Cruz County, is beginning the process to undertake and complete a long range transportation study for the city and the county. The purpose of the study is to update the current plan, *United Nogales/Santa Cruz County Transportation 2000 Plan*. Significant population growth and economic development have occurred in the region since the 2000 plan was prepared, making it important to update the plan. Wilbur Smith Associates was selected to prepare the updated Unified Nogales/Santa Cruz County Transportation Plan.

The new comprehensive transportation plan will be developed to address the current and future demands placed on the cities' and county's streets, highways, transit, and bicycle and pedestrian facilities. The plan will include implementation strategies over a span of five, ten, and twenty years. Projects will be prioritized based on need and available finances.

As a stakeholder within the study area, your participation in this effort is vital to its success. On Tuesday, March 24; Wednesday, March 25; and Thursday, March 26, 2009, the study team will conduct discussion sessions to learn about issues of concern to you, solicit your input, and answer your questions. Below are some topics that we hope to address during the meetings:

- In your opinion, what are some of the most pressing local and regional transportation issues this project needs to address?
- What urban growth/developments and socio-economic changes do you see occurring over the next 20 years in your particular locality or region?
- How do you feel the limited funds should be spent between transportation modes (roads, transit, bicycle and pedestrian facilities)?
- What other background information or insight should we know?

You and/or your representative are invited to attend a one-hour stakeholder meeting at the Santa Cruz County Complex Building, 2150 North Congress Drive, Suite 117, Main Conference Room, Nogales, AZ 85621. A map to this location is attached.









Please let us know if you would like an appointment for a discussion session and what time and day works best for you. Our representative from the public involvement team, Sunny Bush, URS Corporation, will be calling you to set up a specific appointment time to meet on either March 24, 25, or 26, or you can contact her directly at 602-861-7440.

We look forward to meeting with you during your one-hour appointment. Should you have any questions, please do not hesitate to contact me. If you wish, you may also contact any of the other individuals listed below.

Charlene FitzGerald ADOT Project Manager (602) 712-6196 Cfitzgerald@azdot.gov

> Dale Miller Project Manager Wilbur Smith Associates (480) 477-8652 - work (480) 522-0330 - mobile DEMiller@WilburSmith.com

> Scott J. Altherr Public Works Director Santa Cruz County (520) 375-7830 sjaltherr@co.santa-cruz.az.us

Juan C. Guerra
City Engineer
City of Nogales
(520) 285-5753
jguerra@cityofnogales.net

Enclosure









MEMO To: Charlene FitzGerald, ADOT Project Manager, ADOT MPD

Scott Altherr, Public Works Director, Santa Cruz County

Juan Guerra, City Engineer, City of Nogales

**Date:** 24 - 26 March 2009; 03 April 2009;

From: Dale E. Miller, WSA Project Manager

**Subject:** Stakeholder Meeting Notes

Unified Nogales Santa Cruz County Transportation Plan 2010 ADOT Contract No. T0849AQ001; Purchase Order No. TD0251

Notice to Proceed Date: 10 December 2008

Location: Public Works Conference Room

Santa Cruz County Complex

Nogales, Arizona

The Study Team held a series of meetings with various stakeholder groups for the purpose of hearing their thoughts, ideas and concerns related to multimodal transportation issues within the City of Nogales and the study area surrounding I-19 in Santa Cruz County.

The following pages summarize the various topics of discussion and information exchanged.







10:00 am Meeting with Representatives from the Tubac Chamber of Commerce, Santa Cruz Valley Citizens Council, and Santa Cruz Valley Bicycle Advocacy Committee

#### Attendees:

- -Carol Cullen, President, Tubac Chamber of Commerce
- -John Pilger, Santa Cruz Valley Bicycle Advocacy Committee (SCVBAC)
- -Rich Bohman, President, Santa Cruz Valley Citizens Council (SCVCC)
- -Bill Adamson, Santa Cruz Valley Bicycle Advocacy Committee (SCVBAC)
- -Lee Blackwell, Santa Cruz Valley Bicycle Advocacy Committee (SCVBAC)
- The frontage road study was well done
- The I-19 Connector Route between the Mariposa Port of Entry and I-19 is needed
- Widening of I-19 by one lane in each direction is needed
- Two major developments in the Tubac area were defeated (71% of voters against); these developments would have added approximately 12,000 homes north of Tubac creating significant traffic congestion
- In the area from the north county line at Amato to Rio Rico properties there are approved developments that could add up to 3,000 homes in various places along I-19 impacting Exit 34 and Exit 40
  - 1400 on the east side of the River Tubac de la Montana; this would take a new bridge east of Chavez Siding Road Interchange
  - o At Bridge Road, the Presidio de Tubac approved for 475 homes
  - o Barrio de Tubac just south of the golf resort; 500 home sites; 300 existing homes and 200 future homes
  - Tubac Golf Resort; 200 future homes
  - On the west side of I-19, Sopori Vistas; 322 home sites approved; main exit located just south of Exit 40 Chavez Siding Rd
  - On the west side of I-19, Tubac 40; 82 home sites; located approx. between Exit 34 & Exit 40 (closer to Exit 40 than to Exit 34)
  - South of Exit 34, Ranch at Alisos Springs; 25 home sites
  - o South of Exit 34, Casas de Guadeloupe; 28 home sites
  - Full section or more to be developed, Alegria Canyon; located along the west frontage road south of Exit
     34 (main entrance on the frontage road); preliminary plat on file with the County; approved 4 years ago,
     but remains undeveloped
  - Adding all the proposed lots and the existing undeveloped lots totals around 3,000 future homes
- The current population of Tubac is approximately 1800







- The County's Comprehensive Plan area called the "Northwest Character Area"; defines the resident's desire to keep the area rural in nature with lower development densities; more density adjacent to the freeway (approximately 1 home per acre), but declining in density as you get away from the freeway (i.e. 1 home per 4.13 acres)
- Don't want major "big box" commercial development along the freeway north of Rio Rico area; don't want development like at Duval Mine Road further north
- The Chamber and SCVCC supports growth that respects the riparian area along the Santa Cruz River; that
  respects the existing farming operations; that preserves the rural character and that provides for good traffic
  circulation within its own area
- The Chamber recognizes that some major intersections may need a traffic signal or a roundabout due to the volume of traffic
- Address interchange issues when it becomes difficult to make left turns from the ramps onto the cross road; e.g. it is difficult to make left turns onto Continental Road since there are no traffic lights there
- They would like to see a POLICY RECOMMENDATION in the study that alternative parallel routes to I-19 need to be developed as part of future development
- Tubac is dependent on tourism and the transportation system needs to support that: riparian area along the river; the mountains; hiking; biking; etc.
- Keep good connectivity
- Tubac is the gateway to the county
- The Chamber support a bridge connecting Tubac Foothills, Morning Star and Solero Ranch developments south of Tubac to I-19
- Need better/more bridge crossings of the Santa Cruz River; especially at Palo Parado
- The I-19 Border Patrol Checkpoint near Aqua Linda Road is a detriment to the community; it pushes illegal activities like drug running off of I-19 so it is more prevalent and visible in the communities; illegal alien and drug traffic now comes through the foothills area to flank the I-19 checkpoint
  - o The Chamber would like to see the Border Patrol Checkpoint at the border like in Laredo TX
- Would like a good bike route from Green Valley to Tubac
- Consider biking in the study; if traffic becomes too heavy, it discourages biking; provide for bike lanes on shoulders in heavy traffic areas and/or connecting rural roads
- Curves on Arivaca Rd are abrupt and accidents have occurred there
- At Peck Canyon Road, there is a need for sidewalks and walking paths; the children can't walk to the schools
  and have to be bussed; provide a paved shoulder on the west frontage road between Yavapai Drive and Peck
  Canyon Road to enable the kids to safely walk to school
- Would like to see a connector path under I-19 at Peck Canyon Road; provide a pedestrian/bike route from the east side of I-19 to the schools on the west side
- Provide bike/ped connectivity to the Anza Trail located along the Santa Cruz River







- Widen existing bridges to provide sidewalks on at least one side
  - o POLICY RECOMMENDATION: Add a bike lane on bridges whenever they are widened or upgraded
- Group liked the ADOT enhancement funded project building a paved trail from the Community Center in Rio Rico along Pendleton to Avenida Coatimundi; would like to see it extended to the Coatimundi School
- Provide bike/ped connectivity across I-19 by building paths that go through existing drainage structures where feasible; Coperi Wash is a major corridor and is located just north of Amado
- Provide bike lanes on paved shoulders along the I-19 frontage roads; also provide left turn lanes where needed on both the east and west frontage roads
- Provide a bike/ped path connection into Tubac
- Provide connectivity for wildlife corridors like the Sky Island Alliance in Tucson (Mike Blankenship)
- The existing paved shoulders on the east frontage road between Tubac and Palo Parado are in disrepair; fix the shoulders and provide a bike route
- Implement the findings of the frontage road study

# 11:00 am Meeting with the BACA Float Coalition: Kathi Campana, Ron Campana & Ken Hallock (co-

### Attendees:

- -Kathi Campana, Co-Chair, BACA Float Coalition
- -Ron Campana, Co-Chair, BACA Float Coalition
- -Ken Hallock, Co-Chair, BACA Float Coalition
- Provide sufficient width for bike/ped use for children to get to area schools; most schools are in close proximity to I-19; there is one school on the east side of I-19
- Extend the newly constructed paved trail to the Coatimundi School
- Frontage roads need shoulders
- Provide bike/ped route on new shoulders on west frontage road for the 300 to 400 yards from the end of the
  existing frontage road to tie into the Peck Canyon interstate overpass
- Complete the frontage road north to Palo Parado it is heavily used by garbage haulers to the landfill
- Extend and connect the frontage road from Rio Rico Drive through to Palo Parado on both sides of I-19
- Construct the Palo Parado bridge over the Santa Cruz River; secure safety funds to help with signals at the railroad crossing (Section 130 funds)
- Sand & rock hauler, Mike Collins, located at the end of the frontage road north of Peck Canyon trucks in road base material on his own to keep the existing private Palo Parado river crossing in passable condition







- Pendleton Drive is heavily traveled with some 1400 to 1700 cars per day; needs to be connected to I-19 on the north
- At the river's narrowest point, there is a river crossing at Santa Grutudes; at this location, there is a private easement from 1935 that allows residents to cross the Tucson to Nogales Railroad tracks
- The west frontage road in Rio Rico needs improvement; ADOT study recommended this be a 1-way frontage road
- On the east side of I-19, provide access along Pendleton for multimodal use; provide shoulders on 1 side for this purpose; the existing earth shoulders are washed out
- Pendleton Drive needs to be rebuilt and repaved
- Pendleton Drive dead ends on the north side; extend Pendleton to Bridge Road (Wingfield Bridge) at Tubac;
   people northeast of Rio Rico have to go 8 to 10 miles to get to the freeway; the closest bridge crossing is at
   Rio Rico Drive; this is a public safety concern
- Top concerns and priority projects (in descending order of importance):
  - o Palo Parado Bridge and Connection between Pendleton and I-19
  - o Rebuild existing Pendleton Drive
  - o Pendleton extension north to the Bridge Road at Tubac
  - o Extend and connect all I-19 frontage roads so there is a complete frontage road system on both sides
  - o Provide shoulders on frontage roads and Pendleton Drive for bike/ped use; connect to Anza Trail

## 12:00 noon Meeting with Border Trade Alliance (Tri-National Organization: Canada-US-Mexico)

#### Attendee:

- -Maria Louisa O'Connell, President, Border Trade Alliance
- Nogales has the 4<sup>th</sup> largest rail crossing of the US-Mexico border; the rail moves 45% of the winter produce through Nogales
- The POE infrastructure is not sufficient to keep up with traffic
- Access to the POE on both sides of the border is congested at times; congestion for southbound traffic will
  impact Nogales and ADOT infrastructure
- On the Mexico side at Mariposa POE, there are not enough lanes, no refrigerator truck hookups and a toll road connection; there was a FAST lane project completed in coordination with ADOT, but if you can't get to the FAST lane because of congestion it is not as effective as it should be
- Need good road access to the POE on both sides of the border
- Border partnership stakeholders: CBP/GSA/FHWA/ADOT they must coordinate the processes and policies







- Rail crossing poses another set of challenges with inspections, dealing with the UP railroad; exit controls; etc.
- Need a computerized rail handling system like there is at the Laredo TX rail crossing
- Need the space/room for necessary inspections
- Rail could be elevated to lessen its impact on local traffic circulation in Nogales
- As an organization the main improvement priorities would be SR189, I-19, and the ports

### 1:00 pm Meeting with Arizona Game & Fish Department

### Attendees:

- -Kurt Bahti, Arizona Game and Fish
- -Matt Walton, Arizona Game and Fish
- -John Windes, Arizona Game and Fish
- General greater emphasis on transportation and development issues and their impacts to wildlife
- They have wildlife friendly guidelines that they provided
- ADOT wildlife linkages should be addressed per previously published document; Arizona Game and Fish Department is refining these linkages on a county by county basis
- Wildlife habitat blocks are to be connected
- There is a GIS modeling effort underway for the "Fracture Zone" located between Tumacaccori and San Cayetano mountains; there are only 16 of these fracture zones statewide
- Would like to see these wildlife linkage corridors developed; if the corridors already exist, they would like to see them not disturbed
- Game & Fish to provide I-19 corridor mapping for us to plan around
- See document: Evaluation of Wildlife Crossings along the Proposed Expansion and Realignment of Camino de Manana, October 2006
- Guidelines: Facilitate crossings for wildlife; mitigate with wildlife corridors; connections to agricultural crossings; avoid concurrent connectivity for humans in the same corridor
- Would like to see the county enforce through development regulations to maintain and create new legal access points to state and federal lands; preserve corridors and routes to state lands
- Policy/Guidelines
  - o Tumacaccori to State Lands to the north and south
  - Leave a means of public legal access to state lands
  - o The more linkages the better







- Access to state lands is important to hunters, residents, visitors, and public safety; they don't want to lose
  access points; would like to see opportunities to improve access corridors initiated; important access points
  include Chavez Siding access road, and Peck Canyon access road
  - O These recreation users bring a lot of business to the county and it is important to protect the existing access points from private ownership that does not allow passage to the forest
- Community can strengthen economic vitality via wildlife viewing and recreation
- AZ Game & Fish to send a report on how wildlife preservation can create economic benefits

### 2:00 pm Meeting with Santa Cruz County

#### Attendee:

- -Greg Lucero, County Manager, Santa Cruz County
- Top Priority is the Palo Parado Connection from I-19 to Pendleton; \$8 million; liability issue with insurance company since public is using a private crossing not to any acceptable roadway standard; Insurance carrier requires County to have a plan in place w/ funding to support the plan, and a time frame for implementation
  - O An improvement district could be formed to cover a portion of the total overall cost of the project; however, it could take 2 years to create and form the improvement district, and the project may not be able to wait that long
  - o The county currently only has \$1 million in bonding capacity
  - o The Corps has a project in Chula Vista with a local share requirement; the county is financing the local share of that project
  - The county would likely have to take out a loan to do the needed bridge work
- Second priority: Rio Rico West Frontage Road; tie in the frontage road at Rio Rico/Yavapai on the west side; the county road stops short of the interchange; there is a substation at the end of the road; and the school is in close proximity; applying for STP funds through SEAGO; looking at roundabout solution at the interchange
- Extension of Pendleton to the Tubac bridge
- Mentioned Alex Mills, developer promoting a new POE located between the City and the Airport on land to the south along the international border;
  - o Original owner of Buena Vista Ranch and he subdivided;
  - He is pushing the city and the county to study the area for a new POE including moving the rail line to the east out of the City of Nogales
- Connectivity issues with frontage roads
- Train traffic on UP rail line is more and more and longer and longer







- More produce is moving through the city; traffic congestion is increasing; during peak produce season, traffic
  will back up past Congress (road to County complex) and almost to Grand Avenue backed up from the I-19
  ramp intersections
- Trucking firms that could be interviewed include Swift and Citizens
- Ruby Road / I-19 congestion
- West Frontage Road is needed at Country Club connection to Nogales
- Need a pedestrian bridge over the railroad in Nogales
- The County Board does not support improvement districts; this study should look at this means of funding to reinforce the need for additional funding sources
- Other important issues include preserving the environment and the economic vitality of the County
- County Board does not support the cost of transit; transit extending into Rio Rico would not be supported by the board
- Bike/ped facilities should be looked at
- Property tax is capped per state statute
- Sales tax revenue is holding steady at this time; projected a 30% decline in budgeted revenues and did a little better than that; Santa Cruz County was able to avoid big cuts by anticipating the revenue shortfalls
- Economic forecasts from the Arizona Tax Research Association
- HURF funds have decreased; County is in a maintenance mode only until the state legislature stops raiding the HURF funds
- See the CLA (Curtis Leuck Associates) analysis on transportation funding
- Major traffic generators will use this plan to determine where best to site facilities such as a new hospital, school, big box retail, etc. along with an overlay of zoning and land use
- County does not have an impact fee structure for development
- Looking for a policy recommendation on impact fees
- Looking for a policy recommendation on improvement districts

### 3:00 pm Meeting with Santa Cruz County Board of Supervisors

### Attendee:

-John Maynard, Chair, Santa Cruz County Board of Supervisors

- Bike paths as part of local roads; many roads are too narrow and would require a shoulder to be safer for bike and ped use
- Bike/ped circulation needed in the Rio Rico area







- County secured a roadside enhancement grant and completed the first phase of a new Urban Trail System in Rio Rico
- Building and providing more bike/ped trails and routes will improve the health of the community
  - o Need a trail down Pendleton to Ruby Road
  - o Need a trail to the north along Pendleton
  - o Need a trail along the west frontage road between the high school and the Rio Rico central business district at Garrett's Market/Rio Rico Shopping Center
  - o It would be desirable to create a loop trail system of the west frontage road and Pendleton Drive
- Improve air quality by chip sealing heavily traveled dirt roads
- Not enough HURF funds to run the Public Works Department and to do a chip seal program
- Fugitive dust is an issue, especially from March to June
- Little support for transit at this time with the Board due to limited funds
- Could see someday a commuter train from the border to Tucson
- Once so many houses on a dirt road get built, the road needs to be paved because of maintenance and dust issues
- In the rural areas, riding bikes is easier where there is less traffic and wider roads
- Keep access to public lands; preserve wildlife linkages
- Rezoning is required when higher densities are proposed than 1 residence per 36 acres
- County needs a conservation fund for green space preservation; example Cipori project
- Roads in Arizona are well maintained compared to other states
- Would like to see the Phoenix to Tucson commuter rail line in the next five years and a Tucson to Nogales commuter rail line in the next ten years
- Sales tax is a funding tool
- 80,000 population in Santa Cruz County is on the Horizon; if the Safe Yield on water won't support more than that, then why increase the zoning density; population is currently around 40,000

#### Tuesday, March 24, 2009

#### 4:00 pm Meeting with Port Authority and Shannon Brokerage

- -JB Manson, Chairman, Port Authority
- -Terry Shannon, President, Shannon Brokerage/Past-Chairman, Port Authority
- Need the Mariposa Road improvements made from the POE to I-19







- Need a vehicular overpass of the railroad in downtown Nogales by the public library
- Railroad overpass locations needed:
  - o Connect Grand Avenue to Morley Avenue in downtown Nogales Court Street area is a possibility
  - o Mariposa/Grand Avenue area overpass of the railroad tracks (Calle Sonora)
  - o Overpass at Gold Hill Road
  - o Overpass at Ruby Road
  - o Overpass at Rio Rico Road
  - o Overpass at Palo Parado Road
- There are six or seven trains a day on the UP railroad line through Nogales
- Continue Pendleton Drive north and hook up to Bridge Road at Tubac; possibly extend further north to north county line
- Provide for a continuous frontage road system on both sides of I-19 within the county
- Country Club Drive Connection to Meadow Hills
- Provide ramps for I-19 at Country Club Drive
- Bend/curve on I-19 between Ruby Road and Rio Rico Road is a high accident location
- Left side exit for southbound traffic at Grand Avenue at Exit 8 is another high accident location
- Intersection on SR 82 at Morley / Perkins needs additional signage
- Improve the route to the airport
- Proposed POE on east side of Nogales (Alex Mills)
- Traffic signal timing needs a thorough review and to interconnect them
- No left turn arrows at Frank Reed Road/Mariposa Road making left turns difficult
- No left turn arrow at Grand Avenue to turn onto Western Avenue creating congestion and delays
- No left turn arrow at Morley heading north and turning left at Arroyo to get to Grand Ave.
- Light or something needed at Calle Sonora and N. Hohokam
- Connection of Monte Carlo Subdivision at Baffert down to SR 82
- Need a good transit system in Nogales; Nogales sent back their transit grant for 5311 funds
  - o ADOT transit contacts include Terri Kennedy, Sam Chavez & Greg Kiley
  - o Currently there is "Pancho's Bus" which is private
- Grand Avenue needs sidewalks and crossings for safe pedestrian movements
- Need bike lanes and bike routes along Grand Avenue
- Mariposa Road pedestrian movements require sidewalk from the POE north to at least Western Avenue
- Most of the streets in Nogales do not have sidewalks; provide for a good sidewalk network in Nogales







- South River Road is treacherous with lots of accidents
- Need a pedestrian overpass bridge for the railroad tracks in downtown Nogales

#### 8:00 am Meeting with Rio Rico Fire District

- -Michael (Mike) Foster, Fire Chief, Rio Rico Fire District
- -Larry Nielson, Deputy Fire Chief, Rio Rico Fire District
- Connectivity on transportation routes is paramount; travel time to locations is critical for the fire district
- Fire equipment is top-heavy and roadway design should take this into account; Code 3 driving for the fire district is the speed limit plus 10 mph
- Pendleton Drive connects everything on the east side; extension of Pendleton Drive to Bridge Road at Tubac is a critical need for the Fire District
  - o Pendleton's current road conditions are also very bad it is in need of improvement
- Palo Parado river and rail crossing is an important link; critically needed by the Fire District
- No public bridge north of Rio Rico; need a river crossing north of Rio Rico Drive
- Emergency response times between Palo Parado and Bridge Road would be improved with another bridge
- A continuous frontage road system from Nogales to Tucson are needed to facilitate population migration in case of a disaster
  - o In addition, I 2-way frontage road system would be best as currently one frontage road section is one-way only
  - Most important connection for them would be from Rio Rico Rd. to Calle Calabasas where on of their stations is located
- High accident locations include Arivaca Road, Ruby Road, the curve on I-19, very curvy roads, SR 82, and Forest Road 39
- Frontage Road is needed between Rio Rico Drive and Ruby Road
- SR 82 is a high accident route as it is a winding scenic road
- A connection between I-19 and SR82 would be beneficial; especially if it were north of Nogales to prevent that traffic from going through the City (would also be good for the airport)
- A western bypass route from the Mariposa POE to SR 289 Ruby Road
- Add public bus transit services
- Make roads wide enough to hold a bike lane; there is no place to walk or jog or bike along roads Pendleton
  Drive is especially bad







- Anza Trail is a dirt path
- A rail connection from Nogales to Tucson for passengers using existing rail infrastructure is needed
- Ruby Road is heavily congested especially near the school
- There are three major schools near Peck Canyon Road on the west side of I-19; the frontage road does not connect through to Ruby Road; major congestion is present in this vicinity during the am and pm peak times
- Right turn lanes and left turn lanes are needed on heavily traveled routes
- Route to airport (SR 82) should be improved
- Rail traffic is increasing and a second line may be needed some time
- Hermosillo Mexico has a major car manufacturing facility for Ford, and cars are shipped into the US via rail through Nogales
- The Nogales POE handles lots of truck traffic; cargo going east on SR 82 instead of using I-19 to access I-10 is a problem
- Approximately 2700 vehicles are apprehended by Border Patrol each month
- The ugliest interstate overpass bridges are located in Rio Rico; would like to see more aesthetically pleasing bridges
- Would like to see policies that include using enhancement funding to make projects more visually appealing
- Would like to see Arizona Statutes changed to eliminate the 36 acre tract exemption (Wildcat Subdivisions) from County Development Standards and requirements
  - o Would also like to change it to require developer to pave roads
- Hard surfaced roads are preferred to dirt roads for public safety vehicles
  - o If the roads are dirt, would prefer regular chip seal maintenance
- Performance Measures to use:
  - Connectivity
  - o Maintaining the major routes
  - Safety
  - River Crossings
  - o Alternative disaster migration routes
- When the freeway needs to be shut down (for a hazmat situation for example), in some places there is no alternative route for detours
- Need an emergency plan for when the freeway needs to be shut down
- Improve the airport to handle passengers via limited commercial service







### 9:00 am Meeting with City of Nogales Fire Department

- -Hector Robles, Fire Chief, City of Nogales Fire Department
- During produce season, trucks get lost, block Ruby Road east of the Pilot fuel station, and there is no lighting and suitable area to turn around in the residential area to the east
- Some freight trucks use SR 82 to access I-10 instead of I-19
- At Ruby Road & I-19, lack of signage is a real issue
- Once per month on average, Nogales Fire is asked to cooperate with the Terrorist Liaison Officer to escort a
  truck from Ruby Road area to the Mariposa Port of Entry; the truck is hauling explosives to the mines in
  Mexico
- The rail line carries lots of hazardous materials
- There are lots of incidents with the rail line in the downtown area
- There is more traffic on the railway, longer cars, longer blockages lasting 10 to 15 minutes
- When the rail line is blocked with a train, the only signage letting the fire department know this is at the end
  of SR 82 where there is a sign with signals that rail is blocked; at SR 82 at Grand Avenue; the sign indicates
  that a train is on the track so fire trucks can use the SR82 overpass to get across the railroad tracks since that
  is the only grade separated crossing
- Additional rail overpasses are needed for public safety purposes; at least one more; preferred location is at Grand Avenue and Court (by the old courthouse); would also like to include a sidewalk on the overpass for pedestrians
- Pedestrian Crossing; need safe crosswalks for pedestrians to cross Grand Avenue; location at/near Park Street would be a good candidate
- Pedestrian crossings are needed from the downtown area to Food City; it sees heavy pedestrian crossings and no crosswalks exist for this purpose
- Pedestrians on Morley Avenue and pedestrians on Grand Avenue needs connectivity and crossing of the railroad tracks
- The private road to the produce warehouses on the east side of Baffert Place is an issue; the businesses have approached the City to take it over as a public street, but it is not built to acceptable standards which is bad for emergency vehicles trying to access that area
- The existing I-19 overpasses are not well maintained, have lots of weeds, and do not present a good entryway into Nogales; there have been brush fires from the weed growth; some need vegetation/landscaping; would like to see enhancement funds applied for to beautify the overpass areas to make them look more attractive; ADOT can use up to \$1 million on State Routes while local governments can apply for grants up to \$500k to spend on local roads (City's grant writer Mauricio Chavez)
- Widening is needed on SR 189 Mariposa Road to handle the traffic from the new Mariposa POE







Stop lights at Ruby Road are an issue; the red lights last forever; the signals need to be coordinated and
retimed; they need to be synchronized; in addition, timing of the lights in general would be a significant
improvement

### Wednesday, March 25, 2009

# 10:00 am Meeting with City of Nogales Representatives and the Nogales-Santa Cruz County Chamber of Commerce

#### Attendants:

- -Jaime Fuentes, City Manager, City of Nogales
- -Arturo R. Garino, Deputy Mayor, City of Nogales
- -Eduardo Delgado, Department of Engineering, City of Nogales
- -Nils Urman, Department of Planning, City of Nogales
- -Cesar Parada, Councilman, City of Nogales
- -Rosa Elvira Padilla, Former Councilwoman, City of Nogales
- -Olivia Ainza-Kramer, Director, Nogales-Santa Cruz County Chamber of Commerce
- Nils Urman reports that The Planning Center is in the process of working on a new comprehensive plan for the City of Nogales
- Previous downtown study identified the need for grade separated crossings of the railroad tracks; 2 pedestrian crossings and 2 vehicle crossing are warranted and needed; one specifically at the City library area
- Mariposa POE project is a major project and will generate a lot more traffic; the new port will increasingly
  mix personal occupancy vehicles with commercial truck traffic
- An alternative route from the POE to I-19 would be helpful; the Benedict property owners offered to donate the land for such a route
- A big concern/issue for Nogales is the new FEMA flood insurance maps that place 1/3 of the downtown area in the Floodway; if this stands, tax rates will go down and tax revenues will decline; property tax revenue could likely be half of what they were;
- The EPA is funding the first 6,000 feet of the Nogales Wash; \$45 million project;
- Enhancement project for Morley has been obtained
- A UP intermodal facility is needed to bring more goods and freight in by rail versus truck; there is 90 acres along the railroad tracks for such a facility; Port Authority could develop; City can form a CFD (community finance district); trucks could use the facility to load and offload
- Oasis Town Center; study underway looking to extend White Park Drive past Wal-Mart and over I-19 to Mariposa Road
- Frontage Road is needed between Western Avenue and Mariposa Road; both sides would be desirable







- Grand Avenue/Business 19 from Mariposa Road to the north needs sidewalks/urban trails finish sections that do not have sidewalks; from the Arroyo split (near the library) to the south, there is a need for pedestrian crossing to remedy safety issues
- Northbound from the downtown POE, the speed limit is 25 mph and there are not enough crosswalks for safe pedestrian crossing of Grand Avenue
- There is an opportunity at the north side of city to create a entryway/gateway as the visitor enters Nogales from the north; apply for and use enhancement funds to make a aesthetically appealing gateway; likely location could be at the Grand Avenue partial traffic interchange
- Crawford roundabout; at/near the I-19 southern terminus and Grand Ave. intersection, look at the possibility of a large roundabout for traffic circulation in the vicinity near the DiConcini POE downtown Nogales
- The City would like to see several transit centers in Nogales; one downtown near or at the POE and one a the Oasis Town Center (Wal-Mart location)
- City has requested back the 5311 grant that was turned back by council due to a misunderstanding of some information
- Also interested in pushing transit connection to the hospital
- Park and ride lots are needed in Central Nogales to serve residents who may work in the Rio Rico area and to the north; park and ride lots could be sited north of Nogales to serve county residents who work in Nogales
- Desire a city trail system that will hook up with the county trail system
- The City also gave input to the bqAZ initiative and that information can be researched as well
- The Exit 8 bridge (Grand Avenue); bridge aesthetics need to be enhance; ties into entryway/gateway; apply for \$1 million enhancement grant since facility is an ADOT highway
- City envisions two more entryway/gateway plazas: one at the Mariposa POE plaza and one at the downtown POE plaza
- Funding source may include the Arizona-Mexico Commission Border Infrastructure Funding
- Prime revenue source for the City is sales tax receipts
- City does not have property tax (potential source of revenue)
- City does not have any improvement districts
- City does not have impact fees
- There are approx. 7000 pedestrian crossings daily through the Mariposa POE; possible location for a transit stop; need a staging area for personal vehicles picking up and dropping off pedestrians; consider sidewalks connecting the POE to downtown Nogales
- Layers of stakeholder in Nogales: federal, state, local and international
- Barr Development plans are limited by lack of water availability and infrastructure in western Nogales
- Morley Avenue connectivity to Mexico; plan a joint retail strip
- Priority projects:







- Railroad Crossings
- Transit Circulation
- Gateways
- Grand Avenue Enhancements and Pedestrian Safety Issues in / near the downtown area
- Bike / Ped Trail System
- New bridge at Palo Parado
- Bypass route over the ridge connective Grand Avenue to Mariposa Road and connecting to I-19 frontage roads
- Morley needs to be upgraded and repaired
- ADOT's bottleneck and congestion study finding should be implemented
- Need dual left turns for east bound Mariposa Road onto Northbound Grand Avenue
- Grand Ave/Mariposa Rd intersection is a major bottleneck and needs to be addressed
- The problem with truck traffic congestion is year round now; not just seasonal anymore
- Interconnector roads between I-19 and the Mariposa POE would be beneficial to give people a good way to access downtown Nogales when using this port
- Provide left turn phases on signals at intersections where needed
- Improve Frank Reed Road intersection with Mariposa Road
- Provide sidewalks along the east side of Grand or frequent crosswalks if west side only is feasible; allegedly
  the sidewalk on the east would encroach onto railroad right of way
- Need more street lights
- Need traffic signals coordinated and retimed
- Need safe pedestrian paths
- Need better signage and way-finding
- Need to sign the road from Grand Avenue up the hill to Wal-Mart (White Park)
- Along Grand Avenue, need better street lights from north of Baffert to the City limits; there is a lack of street lights in this area
- There are no street lights along Mariposa Road
- Need improvements to the SR 82 and Grand Avenue intersection
- Need pedestrian crosswalks on SR 82
- Need a connection at Royal Road
- Need a crosswalk at Arroyo and Grand Avenue for safe pedestrian crossings to/from Food City store
- Need a frontage road or a connector road from Frank Reed Road north to Country Club Drive







- Would like to see on and off ramps at Country Club and I-19; wetland issues would need to be addressed and resolved; Meadow Hills development area
- Need sidewalks and pedestrian enhancements along Western Avenue from Grand to I-19 (and to Mariposa Road); possibly use Safer Routes to Schools program to help fund this initiative
- Consider western bypass of Nogales connecting the Mariposa Road to SR289 Ruby Road
- Mastick and White Park streets provide access to Wal-Mart in the Oasis Town Center area; need left turn arrows and phases for signals at these locations
- Need left turn signals and phasing for Frank Reed Road at Mariposa Road, Grand Ave. at Western Ave, Doe St. at Grand Ave., and Morley Ave. at Bankart Bridge
- New SEAGO Executive Director, Randy Heist, responsible for certification process for federal funds

#### 1:00 pm Meeting with United States Forest Service

- -Walt Keyes, Road Engineer, Coronado National Forest, USFS
- USFS has ATTPL funding for roads
- 57% of Santa Cruz County is USFS land
- An issue is the "edge effect" where roads end up on or against forest lands; the issue is legal access to forest land; only about 1/3 of all roads that access the Coronado Forest are legal roads
- Stimulus package has some money to secure easements
- Access preserve access or provide alternative access; obtain legal access where it doesn't currently exist
- ADOT Route 289 to Pena Blanca is the principal access route to the Coronado forest west of I-19; this route continues and ultimately connects back to I-19 at Arivaca Road
- Forest Road 39 is non-surfaced and primarily used by border patrol
- Recreational interests and forest road users include sightseers, hunters, birders (large contingent including international visitors), border patrol, private in-holdings, ranchers using grazing rights and open range land
- USFS Travel Management Rule and Motor Vehicle Use Map provided
- It is a closed forest, meaning vehicles can't go more thank 300 feet off of the roadway
- Key routes and access points for the Coronado National Forest: I-19, Ruby Road/I-19, SR 82, Chavez Siding Road, Arivaca Road and Peck Canyon Road
- Other modes consider bike lane from the Ruby Road Ranger Station to Pena Blanca Lake; will need a shoulder for this as the road is narrow as it exists now
- USFS Mission is (1) Watershed Protection, (2) Recreation, (3) Bio-diversity (fire restoration), (4) Grazing
- Allotments near border get cattle from Mexico







- Border Patrol uses USFS roads a lot; they pay some towards maintenance
- USFS builds roads on federal lands
- Project delivery teams meets with CBP
- Coronado National Forest will get \$2 million in stimulus funds for the Santa Cruz County portion of north access into forest on east side of I-19 at Madera Canyon, plus \$1 million in bridge money for 2-single lane bridges; \$3 million total to cooperate with Santa Cruz County to improve the road in Santa Cruz County
- Kino Springs Road by the county airport is a main access road to the forest
- Opportunities to partner with DHS on maintenance of roads; Forest Road 61 (Kino Springs); Forest Road 39 (Ruby Road);
- USFS can enter into an agreement with the County and DHS; USFS can provide material sites and sources for road borrow material
- USDOT can sponsor easements, can appropriate land; discretionary permission for local roads; could build on it, but highly likely permission would be granted; land swaps can occur
- Santa Cruz County is a poor County and it shows in the poor roads; reflects in liabilities;
- Passenger car roads by the highway safety act meet MUTCD maintenance level 3; maintenance level 2 roads do not have standards; they are not public roads but the public is allowed to use the roads
- West frontage road north of Country Club is a roller coaster with lots of dips

## 3:00 pm Meeting with Santa Cruz Valley Unified School District No. 35

- Daniel Fontes, Superintendent, Santa Cruz Valley Unified School District No. 35
- Brian F. Vandervoet, School Board President, Santa Cruz Valley Unified School District No. 35
- Need to complete the west frontage road from south of Rio Rico exit to Ruby Road, Yavapai to Ruby Road;
   by completing the frontage road system, it will allow school buses to circulate without having to get on I-19;
   also improves medical access and circulation
- Add shoulders for bike lanes
- West frontage road north to Peck Canyon, widen and put in a center left turn lane
- East frontage road needed from Rio Rico to Peck Canyon, and further if possible
- Frontage Roads needed to serve as detours for I-19 closures
- Palo Parado exit need bridge across river; new bridge will save and reduce gas, bus maintenance, global warming, time on bus, etc.







- Adding an elementary school to north on east side; plus a high school 4-5 years for the elementary and 7-8 for a high school
- SAFE ROUTES TO SCHOOL general problem is that we don't have the "in-kind" funds
- District encompasses 240 square miles
- 85% to 90% of students are bussed in; 3,600 students K thru 12
- Bussed in from Amado to Ruby Road; buses are mixed in with heavy freight trucks on I-10
- Need to expand the perimeter of students who can walk or bike to school and reduce the numbers that are bussed
- Need sidewalks or paths along west frontage road to provide an alternative to bussing
- Need a bike/ped path under the overpass to provide a safe route to school
- District priorities include:
  - o Provide ped/bike route alternatives for students to walk/bike to school; use enhancement grants and safe routes to school funding to construct ped/bike routes and paths
  - o Frontage road extensions and improvement on the west side between Rio Rico Road and Ruby Road
  - o Construct the Palo Parado bridge and connection road between I-19 and Pendleton Drive
  - o Frontage needed on east side from Peck Canyon to Rio Rico
- Schools are clustered on west side of Peck Canyon Rd; high school with 1200 students; elementary school with 550 students; and a 2<sup>nd</sup> elementary school with 600 students
- 4 miles south at Ruby Rd exit on the frontage road just north of Ruby Rd there is the Pena Blanca K-8 school with 1100 students and the Coatimundi middle school with 400 students; the Coatimundi school is to be converted to an elementary school to balance with 2 elementary schools on the west side of I-19 and two elementary schools on the east side
- Improve and widen Peck Canyon Road overpass structure when warranted to handle traffic
- Extend Palo Parado to Pendleton Rd from I-19
- Connect Pendleton to River Road Bridge at Tubac if possible; have to go through the Bailey (Sarah Bailey) property who are adamant about not giving right of way for this road connection
- There are a lot of vacant lots that can be developed adding more people and traffic
- Pendleton Drive needs to be improved
- Peck Canyon Road needs to be improved
- The frontage road south of Ruby Road on the west to Meadow Hills is a roller coaster
- Santa Cruz County is free range land; cattle present a real hazard to traffic
- Rio Rico does not have sidewalks; sidewalks are needed to promote bike/ped circulation; Rio Rico is spread out and needs walkways to connect neighborhood areas and to provide bike and ped opportunities
- Need a path along Pendleton to Rio Rico / Ruby Road to the lake







- Need east frontage road from Tubac to Chavez Siding with a center left turn lanes; there is a dangerous intersection on a curve at the Tubac deli
- Need frontage roads from Mariposa Rd to Ruby Road
- Transit would reduce congestion if it serves the schools at Peck Canyon and Tubac; transit would also allow students to go to Junior College classes in Nogales
- Top transportation priorities for the school district
  - o Improve traffic flows through the interchange area at Ruby Road it is felt to be dangerous and highly congested
  - o Sidewalks to increase perimeter for walking to schools
  - o Extension of the west frontage road from Ruby Road to Yavapai
  - o Palo Parado bridge and connector road between I-19 and Pendleton Drive
  - Widening of the west frontage road from Rio Rico to Peck Canyon with a center left turn lane and shoulders
  - o Improvement of Pendleton Drive for increased traffic and bike/ped route on shoulder
- Would be good if one could board a train in Nogales and travel to Tucson and on to LA or Phoenix

#### 4:00 pm Meeting with Juan Guerra, City Engineer, City of Nogales

- New POE being discussed east of Nogales
- Morley gate pedestrian crossing connectivity
- Target Range Road intersection at Mariposa Road needs improvements; have been 3 fatal accidents sight distance is affected by the road grade
- High priority projects for the City of Nogales:
  - o Fix the existing intersection at Target Range Road & Mariposa
  - o Improve the area of Hohokam and Calle Sonora to relieve traffic congestion; expand bridge as it needs more lanes
  - Grand Avenue pedestrian crossings; ADOT does not allow mid-block pedestrian crossings per Tom
     Martinez (e.g. in front of Food City); need pedestrian crossings on Grand Avenue; need sidewalks along
     Grand Avenue on the railroad side; no sidewalk in front of the Americana Hotel

# Wednesday, March 25, 2009

# 5:00 pm Meeting with the Tubac Chamber – Additional Representatives

- Met with the owner of the golf resort and the owner of the Barrio
- The County's comprehensive plan requires the Tubac area to maintain its rural characteristics







- Tourism drives the Tubac economy
- The Chamber does not want big box retail development; does not want truck stops; does not want high density development (like the Sopori development)
- There was a truck stop proposed on the west frontage road to the south; the grade goes uphill; would have put a lot of traffic on this frontage road and interchange; the economic slowdown has put the plans on hold
- One of the land owners controls the property on the east side of the river and south of the River Road Bridge (north of the Bailey property); land owner does not want Pendleton Drive to be extended to connect to the River Road bridge

#### 8:00 am Meeting with Tubac Fire District

- -Louis Chaboya, Special Projects and Emergency Manager, Tubac Fire District
- A commodity flow study is available from Kevin Irvine, Santa Cruz County Emergency Management
  Director; Sandra Erickson is the office manager; a new study is available along with the old one; study deals
  with hazardous material flows through the port by both truck and rail; study done by viewing materials
  placards on trucks and rail cars
- Palo Parado bridge is a high priority
- CANAMEX Corridor runs through Nogales; Mariposa POE has a lot of Mexican produce coming into the US
  with lots of truck traffic; Guaymas port in Mexico is becoming a deep port that will significantly increase the
  amount of trucks on the route; the Mariposa POE is being reconstructed; the POE has FAST lanes; the
  Mariposa POE is still a bottleneck and congested
- Railroad creates lots of traffic circulation issues in downtown Nogales
- SR 189 / Mariposa Road is congested with lots of accidents
- Downtown issues; backups into Mexico; drug trafficking; weapons flows into Mexico; will be doing vehicle inspections for weapons entering Mexico causing 8 second delays per vehicle
- Backups entering Mexico are extremely bad during Las Posada; a family event triggering a heavy migration into Mexico
- At peak times, traffic entering Mexico can get back to the library and school area
- West frontage road extension from Yavapai to Calle Calabasas is a priority
- There are two existing Tubac Fire Stations
- Rio Rico Drive has a 1-way northbound East Frontage Road to the south of Rio Rico Drive that is an issue of concern; would like to see 2-way traffic
- Ruby Road congestion is terrible







- Palo Parado bridge is a low water crossing and is only crossable if the river is low; the closest bridge crossing is at Rio Rico Drive is the river water is high
  - o The Fire department often has to rescue people from this location when they get stuck at this crossing
  - o If the river is running, this more than doubles the response time in areas east of the river
- Tubac Fire is building a station at Camino Josephine, 3 miles east of Pendleton, Station #3 is slated to come on line in 2010
- Fire Station #4, South of Palo Parado is about 200 yards east of Pendleton at 121 Ruta Camaron and is slated to cone on line in 2010
- Population growth is more on the east side of the interstate than on the west side
- Would like to see Pendleton Drive extended north to connect to the River Road Bridge at Tubac at possibly further
- Existing Pendleton Drive needs to be improved
- Railroad in town hauls lots of cars manufactured by Ford in Hermosillo; cars shipped into the US via rail through Nogales; 6 trains a day; could go to 12 trains a day; they are not short trains;
- Trains block traffic downtown
- Nogales, Sonora is building a lot of traffic bridges over the railroad
- Recommend more crossings over the railroad; locations include Rio Rico Dr., Court St., Calle Sonora, and at Palo Parado
- Ped overpass is needed in the downtown area
- Rio Rico area paved trail to Coatimundi is a good project and more are needed
- More sidewalks are needed in Nogales; especially downtown
- A lot of trucks are taking SR 82 to SR 90 to I-10 instead of taking I-19

## 9:00 am Meeting with United States Department of Homeland Security

- -Teen Klump, Assistant Director for Mission Support, United States Department of Homeland Security
- Eloy Cortez, Director
- Re-design of the Mariposa POE is underway; port will be constructed in 4 phases; phase 1 is the site preparation and fill
- New port will add additional traffic onto Mariposa Road during the busy seasons; there really is no slow season anymore; some 1500 commercial vehicles per day and another 7000 to 10000 vehicles per day; also lots of bus traffic
- The port also handles lots of pedestrian traffic; people who are working at the maquilladoras







- Relieving traffic on Mariposa Road needs to be a priority project as it is congested and operates at high speeds; people try to avoid using Mariposa Road because of the traffic
- Railroad crossing traffic has increased partly because of 24-7 shifts by Ford in Hermosillo; downtown Nogales becomes very congested when a train blocks the traffic circulation
- CBP inspects the trains outside of Nogales in the Rio Rico area; inspections are done where the trains are not blocking roads;
- There are 4 to 6 trains per day northbound and the same number going south
- There are no railroad crossovers in the Morley Avenue area; one has been proposed between Morley and Grand at the Basha's mall area (at Court St.) to the north by the library
- The DeConcini POE is very busy with pedestrian crossings; the Morley Gate crossing is also very busy with pedestrians
- Transit service to and from the Mariposa POE would be good; need park and rides for bus service within the City
- Lots of maguilladoras workers live in the Rio Rico area
- Tour buses come in from Mexico
  - o Currently they must use DeConcini POE to enter after 10:00pm because Mariposa POE closes
- POV's and buses will be able to use the Mariposa POE 24-7 once they change the hours for the port, which should happen in summer 2009; but commercial traffic hours are limited
- Ruby Road interchange area is heavily congested; you can't figure out which way you can go or when you can go
- Santa Gertuidus Lane is also in need of improvement
- Passenger rail service to Tucson would be good and a real tourist pleaser
- It would be nice to have some commercial air service connectors at the Nogales Airport
- Mariposa POE will have sidewalks to control ped traffic within the port property; they go to the end of the
  port; sidewalks will be needed to connect to the port sidewalks

# 10:00 am Meeting with Rio Rico Chamber of Commerce

- -Connie Rutherford, Executive Director, Rio Rico Chamber of Commerce
- Need sidewalks in the Rio Rico area as there are no sidewalks; no buses either
- There is a need for a bus route connecting Tubac to Nogales
- Nogales has a lack of sidewalks along Grand Avenue; they are needed there







- Buses that exist are private services and not well maintained; bus service runs from Penny's downtown to the Wal-Mart area
- Need a bus/transit service; need sidewalks for pedestrian circulation
- Need a continuous frontage road in Rio Rico along the west side of I-19 connecting to Yavapai
- General need for continuous frontage roads
- Need a stoplight at Yavapai Rd and the frontage road on the west side
- Need a stoplight at Rio Rico Drive at Pendleton; currently a two way stop with Pendleton stopping for Rio Rico Drive
- Pendleton is the main road and needs to be widened to 4-lane or at least a 3-lane section; there are no shoulders but there should be
- There is a trail that goes down Pendleton for a ways and turns down Coatimundi; need parking for the trail head; need trail extension to the Coatimundi school; need parking for parents to a the school for pick-ups; need a bus stop as well so buses can drop off students without blocking traffic; should also add a sign for no cars on the path
- Roads in need of widening and improvement:
  - Pendleton
  - Coatimundi
  - o Rio Rico Road & Overpass Bridge widen all the way to Garrett's market; when going south to make a left onto Rio Rico from the frontage road is difficult; need a stoplight with a left turn arrow and phase
- Ruby Road interchange area is very congested and confusing
- Support the Palo Parado bridge river crossing for public safety purposes
- Border patrol checkpoint belongs at the border; not on I-19; don't need a check point on I-19; need random checks at random locations
- Hunters charter flight at the airport; airport needs expansion; looks like they have space to do so
- Passenger rail would use it if available
- Rio Rico is not incorporated; has around 20,000 people
- A shopping center is proposed near the Chevron station at the corner of I-19 along the west frontage road near Yavapai
- Need a railroad overpass at Grand Avenue near Court in Nogales
- Rio Rico Drive needs to be widened
- Rio Rico Drive needs a railroad overpass
- Peck Canyon area frontage roads don't go through
- Minimum speed needed on a freeway; heavily loaded pickups travel very slowly and are hazardous
- Lots of uncovered trucks on I-19 traveling to the landfill also are a hazard to traffic







• An advocate for frontage roads

### Thursday, March 26, 2009

# 11:00 am Meeting with Fresh Produce Association

- -Allison Moore, Fresh Produce Association
- -Daniel J. Coogan, Fresh Produce Attorney, Coogan & Martin, P.C.
- Mariposa/I-19 Connector Route improvements a priority including the TI
- East frontage road northbound one-way portion near Rio Rico creates congestion and should be converted to a two-way frontage road
- Ruby Road on the east side needs signal timing and left turn lights and phasing
- Need a frontage road north of Mariposa to access Grand Avenue without going through the Mariposa/Grand intersection
- GSA may be taking the ADOT facility at the Mariposa POE
- Train traffic look at shipping more goods and freight via rail on trains with an intermodal station at Nogales for transfer onto US trucks; can bring US goods and load on trains as well
- Fuel cost increases could hurt the Nogales economy by impacting the produce traffic and making it more expensive to buy the produce in Nogales; more competition with Florida and other sea routes than by truck
- Recommend looking at a multimodal logistics center
- East side frontage road between Rio Rico and Ruby Road; existing speed limit is 25 mph at Pilot and 35 to the north; speed limit should be increased to 45
- The west side of I-19 south of Ruby Road where Country Club goes under I-19; the marsh area is a construction and environmental issue; residential area on west side; lots of school traffic; roller coaster vertical alignment; extend the frontage road to connect Ruby Road to Mariposa Road
- Tubac frontage road system on the east side of I-19 by the country club in the village area needs improving
- Plan and construct overpasses over the railroad at needed locations
- Pendleton Drive is in need of roadway improvements
- Palo Parado is important for traffic circulation;
- Need for development impact fees and improvement districts to help finance transportation improvements
- Not a lot of areas where trucks can be staged and not much of a requirement for these areas, so trucks back up
  on the road
  - This should be a POLICY CHANGE
- Swift Trucking contact on Calle Christina Manny Huerta







- Transloading; Port Authority is involved; contact Terry Shannon and JB Monson
- Recommend authority to toll roads; ADOT P3 would like to see this as an alternative funding means
- Visit with IEDA; Luis Ramirez

#### 1:00 pm Meeting with Nogales Community Development

- -Yvonne Delgadillo, Nogales Community Development
- Way-finding plans for tourists and visitors includes monuments and signing
- Mission of the Community Development Organization:
  - Commercial revitalization
  - o Business development
  - Asset Building
  - o Affordable Housing; currently a project on Grand Ave with 30-40 units mixed use (HUD financed)
- Train traffic is an issue and there is a need for ped and vehicular circulation; Kimley Horn did a study in 2005 or 2006 on overpasses of the railroad for pedestrians and vehicles
- An overpass was proposed that was close to the Museum at Park Street and a 2<sup>nd</sup> one located at Court Street
- The Community Development organization owns property adjacent to Morley and Court Streets (a long strip) that is now a food court and parking lot
- CD organization is redeveloping the Bowman and DeAnza hotel on Grand Avenue and Court Street
- Need a ped crosswalk and signal at the Circle K location along Grand for safety purposes
- Need crosswalks on Grand; most of the commerce traffic across the border is pedestrian
- Need a transit system; definitely continue the transit north to Rio Rico and the Tumacaccori/Carmen area, and maybe to Tubac; also serve the border area
- Great concern with the flood zone issue downtown with the new FEMA flood maps
- ADOT Connector Route improvements from the Mariposa POE to I-19; encourage traffic across the border though this port to go to downtown Nogales; signage and way-finding will help
- Enhancement funds have been used to make improvements at Terrace Avenue and Morley Avenue
- Terrace Avenue project included pathways and lighting improvements; expand sidewalks, improve lighting, undergrounding utilities, trees and landscaping, ramadas, etc.







- Shuttles park there; to make it a more friendly place, it would be good to move the shuttles to a different area of that purpose; it is difficult to keep the area clean and inviting with the shuttles parked there; police bike patrols are now monitoring the area to eliminate jaywalking and ensure parking turnover
- Need a transit facility near the border area
- Bi-national charrette is taking place April 23 26; would be good to attend if possible
- Need railroad crossover at Gold Hill Road which is heavily congested when a train is present
- Need to improve the Frank Reed Road intersection
- Address bottleneck areas and congested areas

#### 3:00 pm Meeting with Rio Rico Properties/Avatar Development

- -Sheila Vasquez, Assistant Project Manager, AZ Division, AVATAR/Rio Rico Properties
- -Liz Gutfahr, Assistant Vice President, The Villages of Rio Rico/Rio Rico Properties
- -Gary L. Grizzle, Manager of Landscape Architecture, The WLB Group
- Now re-master planning Rio Rico area, the Rio Rico TI, Sonoita Creek area
- There are 2500 to 3000 platted lots remaining that can be developed in Rio Rico
- No open space or common areas were in the original plan; now be re-planned to include both while keeping both the same density and number of units; smaller lots with more open space
- There are 75 to 100 acres of commercial/retail land in the master plan at Exit 17 along the west frontage road in the Garrett's market area
- Highest priority project for them is the extension of the west frontage road from Yavapai to Calle Calabasas where the fire station is located
- Need trails and walkways in Rio Rico
- Support the Palo Parado connection and river bridge
- Support the connection from the north end of Pendleton to Bridge Road at Tubac
- Would like to see the congestion and confusion addressed at the Ruby Road interchange
- Would like to see the one-way section of the western Frontage Rd. become a two-way road
- Interested in the idea of passenger rail from Nogales to Tucson with a Park and Ride
- Would like to see sidewalks along the west frontage road in support of safe routes to school
- Extend the west frontage road to the south from Meadow Hills south of Ruby Road
- Provide for park and ride lots in Nogales for people working in Tucson and Green Valley







- Widening of the Rio Rico Bridge over the Santa Cruz River
- Believe the Pendleton and Rio Rico intersection should have a 4-way stop or signalized intersection and left turn lanes are needed

# Friday, March 27, 2009

### 12:30 pm Stakeholder Meeting with Advisors Inter-National

#### Attendees:

- -Luis Ramirez, Advisors Inter-National
- Top priority projects
  - o SR 189/ I-19 Connector Route improvements
  - Push for improvements on the Mexican side to facilitate movements on both sides of the border at Mariposa POE after the reconfiguration
  - o More extensive frontage road system
- There are talks by developers to consider a port to the east side of Nogales
  - o This isn't a ridiculous thought, but everyone needs to be focused on the current ports at this time
  - o In addition, this port is being pushed by two developers, one Mexican and one American, that would profit from a port being built on their land
  - o This needs to be looked at from a government perspective
  - One of the significant items that will impact this decision is the proximity to the riparian area around Santa Cruz River that would have to be crossed for this new location of port to be feasible
- There are problems at the Ruby Road Interchange for traffic congestion as well
- It is important to begin looking at the downtown ports of Deconcini and Morley Gate and seeing what can be done to help the congestion in these areas
  - o Find ways to expand these ports and allow for a more efficient movement of people to and from Mexico
- Transit would be an interesting concept to bring to the Nogales area and could help some with the congestion downtown from people coming from Mexico to reach destinations further north than downtown

#### Friday, April 3, 2009

# 10:00 am Stakeholder Meeting with CANAMEX Parties

- -Eric Lee, ASU Trans-border School, via conference call
- -Marisa Walker, Director, CANAMEX Trade Corridor for the State of Arizona







- -Sylvia Grijalva, US/Mexico Border Planning Coordinator, Federal Highway Administration
- -Jermaine Hannon, Transportation Coordinator, Federal Highway Administration
- Top priority projects
  - SR 189/ I-19 Connector Route improvements
  - More extensive frontage road system
  - Mitigate rail line train traffic that disrupts traffic circulation rail line bifurcates Nogales; need pedestrian overpass in addition to vehicular traffic overpass
  - o Mitigate impacts on southbound border traffic inspections on downtown Nogales traffic circulation
- Vaccus machine to check for drugs on trains; trains have to stop in Nogales if persons are detected on the train for physical inspections;
- Not financially feasible or viable to relocate or move the railroad out of town or bury or elevate the line in Nogales
- Mariposa POE of entry will be reconfigured; DeConcini POE downtown is land locked;
- Proposed entrance inspection delays estimated at 8 seconds per vehicle; same time delay for exiting vehicles; need to inspect southbound border traffic for guns; location and size of area for vehicle inspection
- Look at the effects of these delays on traffic circulation downtown Nogales
- Address pedestrian and bus traffic at the Mariposa POE; walks and transit
- Border Traffic Study by ASU; traffic study with traffic forecasting; to be finalized in June/July; forecasts will not include delays caused by exit inspections since they were not in place at the time the data was collected
- Consider environmental impacts with trucks idling while waiting to cross
- Paving shoulders will enhance air quality and provide bike routes
- Infrastructure upgrades at the POEs will reduce congestion
- It takes 8 to 14 years to plan, design, construct and finance a new POE
- FHWA intends on undertaking a new Border Master Plan similar to ones done for California and Texas; will need a local match
- Reference the Mariposa / I-19 Connector Route Study in the transportation plan
- Consider land use patterns and where the commercial traffic is going
  - o Everything needs to be captured in local master plans
- Consider residential growth
- Consider the impacts of downtown floodway expansion with the new FEMA mapping
- Consider sidewalks, pedestrian circulation, transit, trains, rail and freight movements
- Top priority issues:







- o Impacts of southbound delays due to new inspections, including the environmental component
- o SR189 improvements
- Frontage road system completion
- Connectivity to the Mariposa POE
- See need for improvements to Ruby Road interchange
- UPRR/FRA can safety inspections be done in Mexico
- Update on CANAMEX
  - o Intent is to stimulate more trade traffic thru Nogales
  - o Reduce border wait times
  - o ADEQ truck electrification on the Mexico side so trucks don't have to idle while waiting
  - o Identify initiatives for greater sustainability and improved throughput
  - Make projects attractive to concessionaires
  - o CANAMEX also looks at the POEs in Douglas and Yuma
- Guaymas development
  - o Expected to play a more significant role as a niche/regional market
  - o No indication that it will develop into a mega port
  - o Sonora Ex-Governor Boors is from the party not in power
  - o Will serve a "regional" purpose
- Punta Colonet is currently on hold with respect to the capital markets
  - o Project is expected to proceed at a later date
  - O What does the future market look like?
  - o Improvements in the Panama Canal will have an impact
  - o Will it develop within the footprint anticipated as it relates to Arizona?
- Major goods shipped into the US include cars manufactured in Sonora (Ford plant in Hermosillo); CEMEX (cement);

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# Friday, April 3, 2009

#### 10:00 am Stakeholder Meeting with Arizona Department of Commerce

- -Lisa Henderson, State Director, Main Street Program, Arizona Department of Commerce
- -Jessica Smotherton, Director, Research and Population Statistics, Arizona Department of Commerce
- Rio Rico Bi-national Program







- Railroad impacts on Grand and Morley area; train issue has a huge impact on downtown Nogales; causes gridlock in CBD; creates real safety concerns
- Ped crossings of the rail line are needed
- Nogales is a community that has been "studied to death"
- Have received USDA grants: \$197K for Terrace; \$197K for Morley Streetscape and Parking; \$600k for a 2<sup>nd</sup> parking lot on Nelson for employee parking
- Nogales has been a certified Main Street program since 1999; a national approach is applied and utilized in a local area such as Nogales
- There are 15 Main Street communities in the State of Arizona
- The program is for revitalizing communities and the preservation of commercial downtown districts
- Identify the clientele: tourists, daily workers, diverse population (Mexican Hispanics, American Hispanics, Korean merchants)
- ADOT signage restrictions come into play
- bqAZ transit study has information that can be gleaned for this study; southern area transit focus group meets on April 16
- UPRR Double Tracking in Progress in Arizona
- Contact Steve Burkis with the UPRR; moving switching yards further north
- Contact Alberta Charney, U of A Eller School, Study for Border Towns and migration plans; people bringing relatives across the border to attend school in the US; workers/day laborers; ped movements, Port Authority,
- Need good signage and wayfinding

\*\*\* End of Stakeholder Meeting Notes \*\*\*

# Unified Nogales Santa Cruz County Transportation Plan 2010 *Final Report*

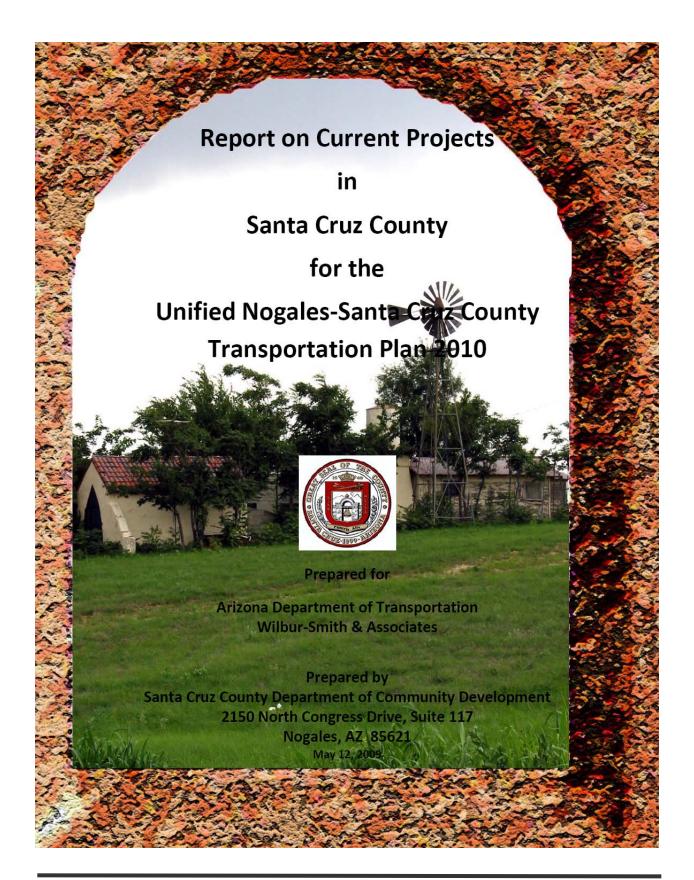


# Appendix C

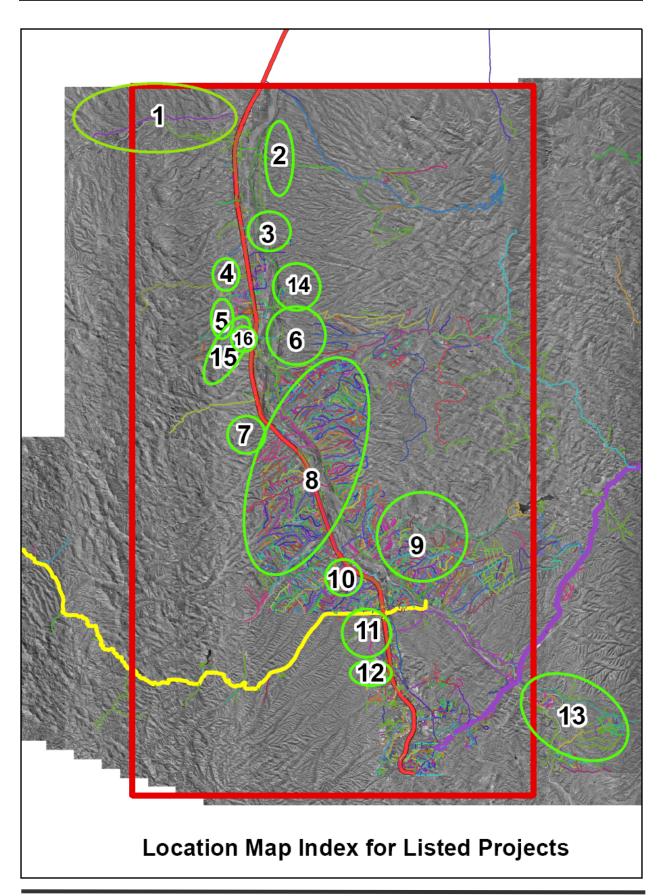
# a. Report on Current Projects in Santa Cruz County

Mary Dahl, Director of Community Development for Santa Cruz County, prepared this report on current development projects within the County that are of importance to this study. This report is included herein due to its relevance to this study. The document is inserted on the following pages.







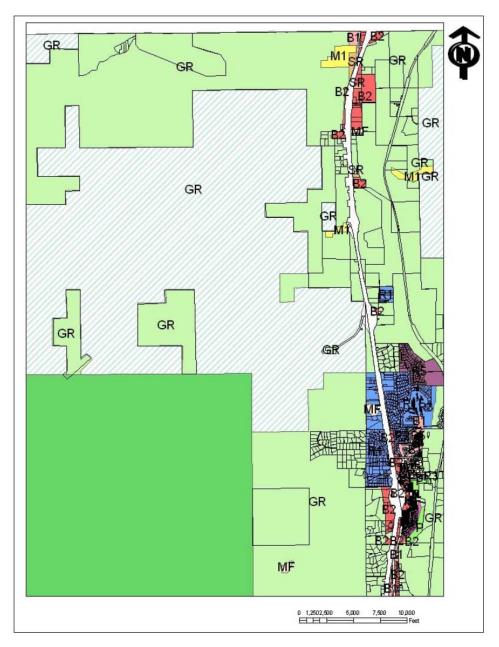




1. <u>Sopori</u> – Subject of a successful referendum in November of 2008. Board approved a Comprehensive Plan amendment in December of 2007 which was referred to the voters. Overwhelming opposition to the amendment and the Board's decision was overturned.

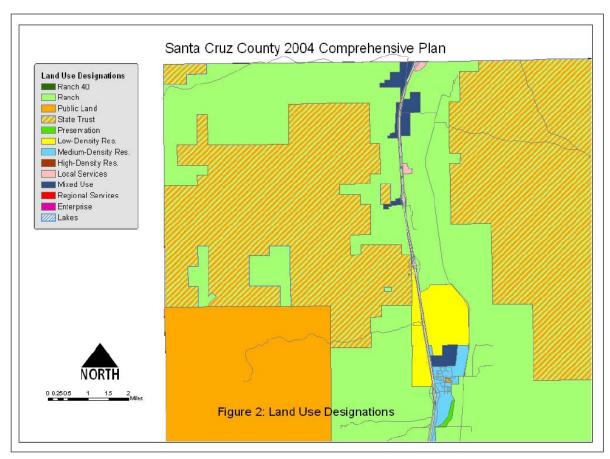
Acreage - 6,076

Zoning – Mostly General Rural with some industrial and commercial and higher density residential near the interstate.



Current zoning permits a range of 1,475 to 1,700 new residential units along with the commercial/industrial uses. Current Land Use Plan designation in the Comprehensive Plant allows for rezoning and planned area development of up to about 3,100 to 3,600 residential units along with some non-residential development.





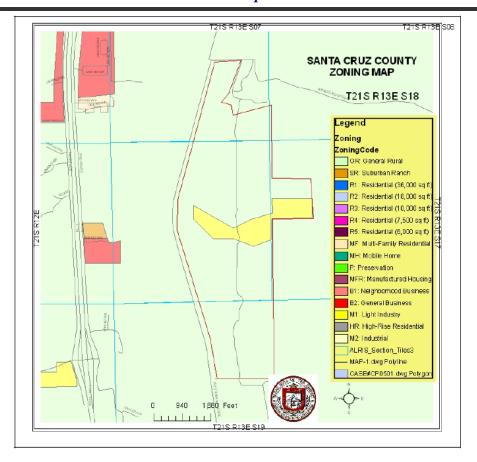
Future plans are unknown at this time.

2. <u>Montosa Ranch</u> – This property was the subject of two attempts to amend the Comprehensive Plan in 2005 and 2006. Both failed at the Board of Supervisors after recommendations of denial from the Planning Commission. The entire property is located on the east side of the Santa Cruz River and east of the Union Pacific Railroad tracks. The river does not have a bridge in this location and all-weather access would have to be provided either with a new bridge or from the north in Pima County using the Elephant Head Bridge. Right of access across State Trust land to the property from the north is unknown. A new improved railroad crossing would also be required.

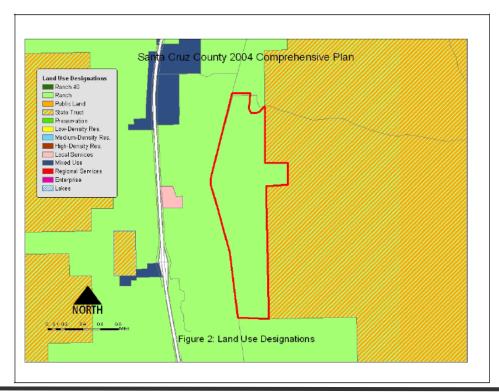
Acreage - 624

Zoning – Mostly General Rural with industrial in the wash area – entitled to about 150 homes plus some industrial/commercial.





Comprehensive Plan shows the entire property as Ranch.

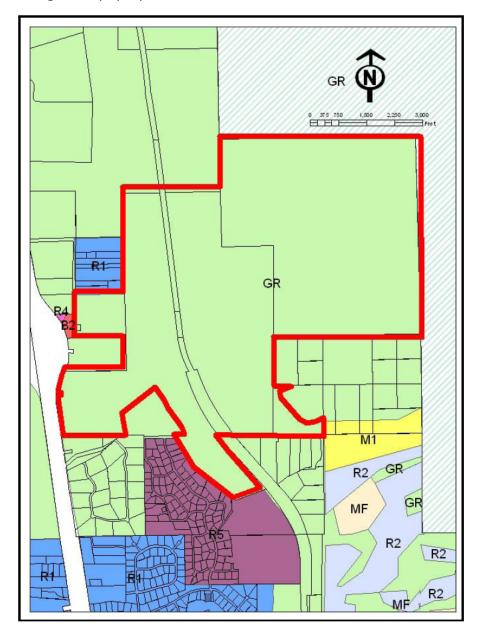




3. <u>Las Mesas</u> – Subject of a successful referendum in November of 2008. Board approved a Comprehensive Plan amendment in December of 2007 which was referred to the voters. Overwhelming opposition to the amendment and the Board's decision was overturned. Most of this property is situated east of the railroad and the Santa Cruz River. A new bridge would be required to access it. There is an existing low water crossing at Chavez Siding Road and an unimproved railroad crossing.

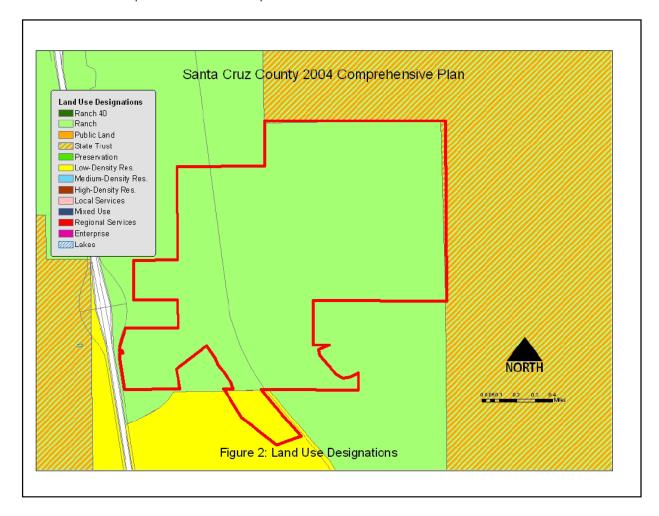
Acreage - 1,244

Zoning – Entire property is zoned General Rural. That makes the entitlement about 300-350 homes.





The Comprehensive Plan shows Ranch and Low Density Residential on this property. With rezoning consistent with those designations, there could be up to 400 residential units. The Low Density Residential lands, however, are in the Santa Cruz River floodplain and in the floodway in some cases.

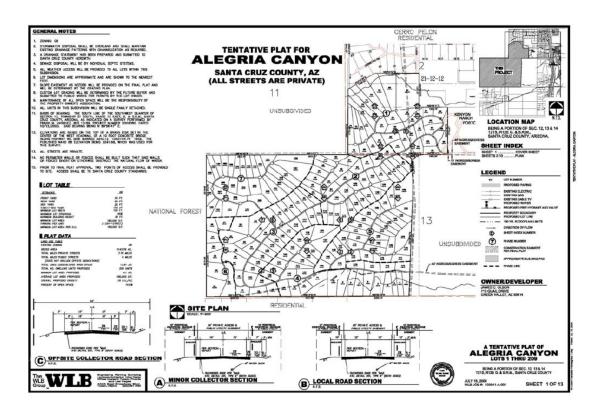


4. <u>Alegria Canyon</u> – This residential project received tentative plat approval for 209 large (4-8 acre) lots. It is accessed along the West Frontage Road of Interstate 19 along Kenyon Drive. This project slowed for lack of a second all weather access point back to the Frontage Road system. Developer purchased the project to the South (see number 5) in order to establish the second access over Aliso Wash to Aliso Springs Road. Project number 5 benefited as explained below.

Acreage: 1,143

Zoning: The entire property is zoned General Rural and therefore has entitlement to about 275 units plus or minus. As mentioned, they platted 209 units in 2004.





The Comprehensive Plan for this site shows all Ranch designation. Therefore, no additional entitlements would be forthcoming from any Plan-consistent rezoning.

5. <u>The Ranch at Aliso Springs</u> – This is a large lot (4.13 acres) subdivision with Phase 1 approved on the south side of Aliso Springs Road. It consists of 25 lots. Infrastructure is complete. Shared wells provide water to the project. Phase 2 was planned to be on the north side of Aliso Springs Road, but the assured water supply could not be proven for those lots. The Alegria Canyon developer bought out Phase 2 to secure the second access point for Alegria. Phase 2 of Aliso

Springs is not approved at this point. The total number of new lots proposed

for Phase 2 is 40.

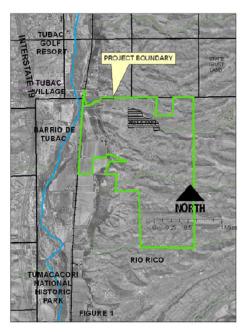
Acreage: 286 (Phase 1 and 2)

Zoning: All General Rural.

Comprehensive Plan is Ranch. No new entitlements possible without amending the Plan.





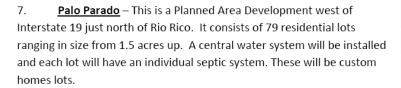


6. <u>Presidio de Tubac</u> - This is a mixed lot size high-end subdivision. It has a total of 475 residential units and is situated on the east side of the river. The Planned Area Development map and guidelines have been approved. This project will be a Block Final Plat with large tracts sold to homebuilders who will be responsible along with the master developers to design and bring in final plats. Access is across the Wingfield Bridge in Tubac. They will have central water and some central sewer on the development on the west side. Larger lots to the east will be custom homes on large lots.

Acreage: 1,712

Zoning: All General Rural with PAD overlay.

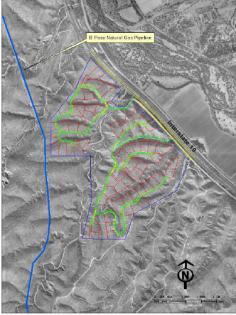
Comprehensive Plan is Ranch.



Acreage: 345

Zoning: All General Rural with PAD overlay

Comprehensive Plan is Ranch.

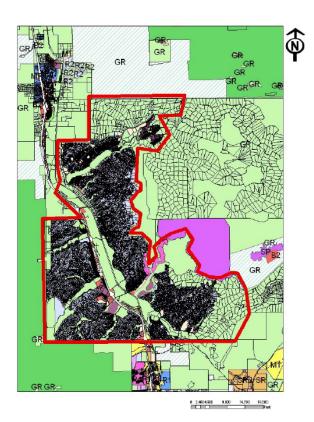


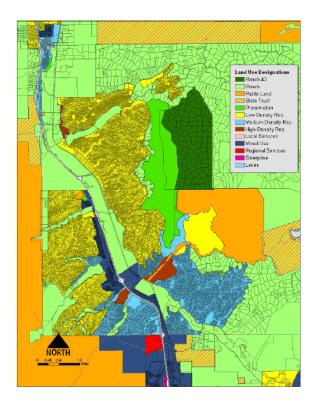
8. <u>Rio Rico</u> – Rio Rico is a large old subdivision platted on both sides of the interstate back in the late 1960s and early 1970s. It consists of as many as 30,000 lots not all of which are buildable. Currently there are over 6,000 residential water connections and more than 200 commercial water connections in the Rio Rico Utilities service area. In 2005 the percent increase in water service connections was 11%. In 2007, it was 1%. Land is relatively affordable in Rio Rico because there is so much of it. Items 9 and 10 that follow are large platted areas of Rio Rico that are being replatted by the master developer.

Acreage: Originally 50,000.

Comprehensive Plan is shown on map below.



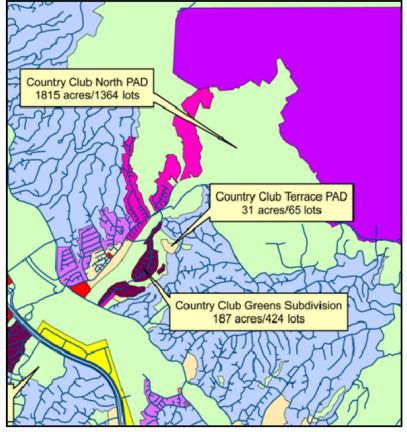




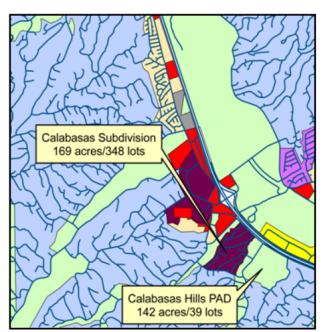
9. Country Club at Rio Rico - There are three different Country Club projects all in the same area in Rio Rico. These represent one of the areas where the master developer is redeveloping large tracts of land that either were platted long ago or were platted as large tracts originally. The Country Club projects include County Club North (1,364 lots -1,815 acres), Country Club Greens (424 lots - 187 lots) and Country Club Terrace (65 lots - 31 acres). All of these neighborhoods are 100% residential, although obviously the Greens has a golf course component.

Zoning: CC North: R-4 and GR CC Terrace: GR and MF CC Greens: R-5 and R-4

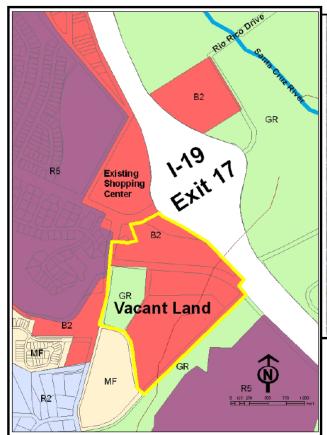
Comprehensive Plan: See map above for the Comprehensive Plan designations.

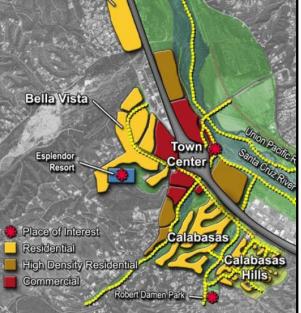






Calabasas/Calabasas Hills/Commercial Core -These new redevelopment projects are all on the west side of Interstate 19. They include a re-plat of Unit 4 as Calabasas consisting of 348 lots on 169 acres, platting of Calabasas Hills which is 39 lots on 142 acres and the development of a commercial core. The commercial core consists of about 70 acres on both sides of Yavapai Drive. The current shopping center leases space and may be "redeveloped" in the future. The area depicted on the map below as vacant may be subdivided in the near future to establish new commercials pads. The Rio Rico master plan also envisions commercial uses east of Interstate 19, although their emphasis shifted to the west when talk of having to expand the Santa Cruz River Bridge arose in discussions with the County. The maps below show the zoning of the commercial core and Rio Rico's master plan for the Exit 17 area.

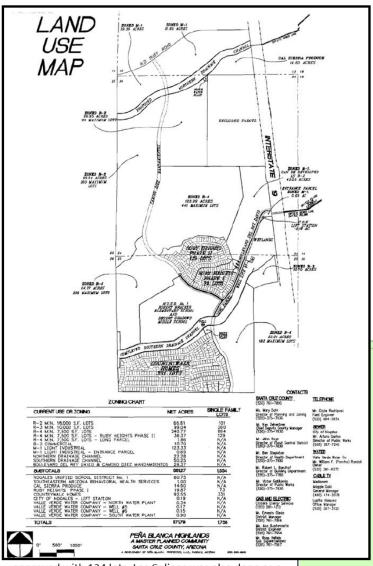




Zoning: Calabasas: R-5 and GR (for open space)
Calabasas Hills: GR
Commercial Core: B-2 (GR shown was rezoned to
B-2 on 2-11-2009)

Comprehensive Plan: see map above

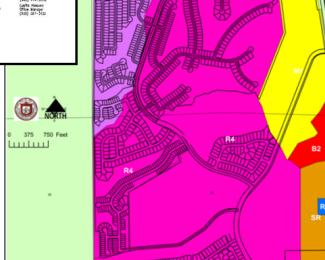




Peña Blanca Highlands - This is a master planned area south of Exit 12 on the west side of Interstate 19. It is accessed off the West Frontage Road. There are currently about 668 platted lots in Peña Blanca including Coronado Estates (73 lots), Los Paseos (331 lots - shown as CountryWalk Homes below) and Las Colinas Sagrada Phase 1 (264 lots). Future phases of Las Colinas call for an additional 772 residential lots. The entire master plan has changed over time so that the industrial zoning is concentrated to the north and would, presumably, have access from SR 286 (Ruby Road), due to the north drainage channel that cuts through the property west to east (see master land use map). Ruby Heights II (Coronado Estates was originally called Ruby Heights) Planned area Development and Tentative Plat were

approved with 124 lots. Las Colinas was also done as a Planned Area Development. A condition of approval for Las Colinas is that Camino Diez Mandamientos will have to be built as a loop road curving back to intersect with the Frontage Road (see colored map to right) and the connection to the north across the north drainage channel has been eliminated.

Zoning: The zoning in Peña Blanca is generally residential to the south and industrial to the north, with the exception of industrial zoning either side of the main entrance road.



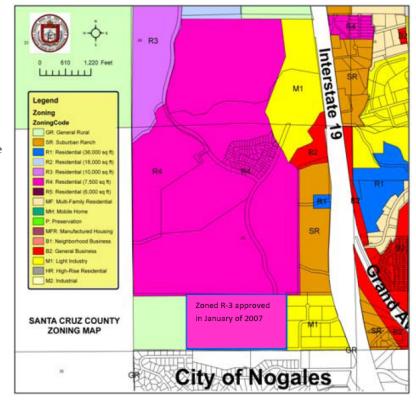
Comprehensive Plan: The area south of the north drainage channel is designated Mixed Use. North of the Channel is designated for Regional Services.

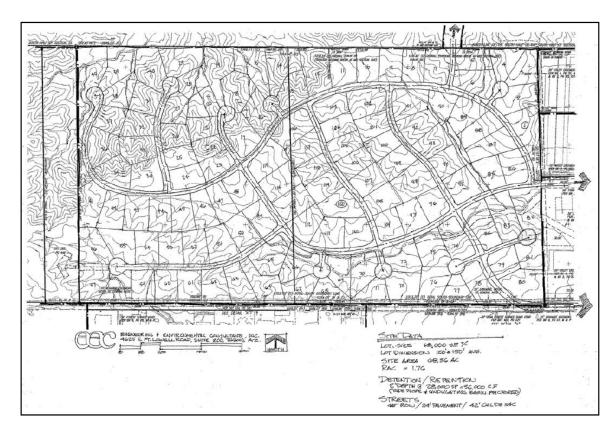


12. Lopez Legacy Estates – This is a small subdivision south of Peña Blanca and just north of the Nogales City Limits. The proposal is for 120 lots on this 67 acre piece of property. Access will be primarily through Peña Blanca Highlands along Boulevard del Rey David. Access also exists through the Lopez Industrial Park and along an easement abutting the City Limits. This project is in the tentative plat. A preliminary lot layout, prepared for the rezoning case, is below.

Zoning: R-3 (Approved January of 2007)

Comprehensive Plan: Medium-Density Residential





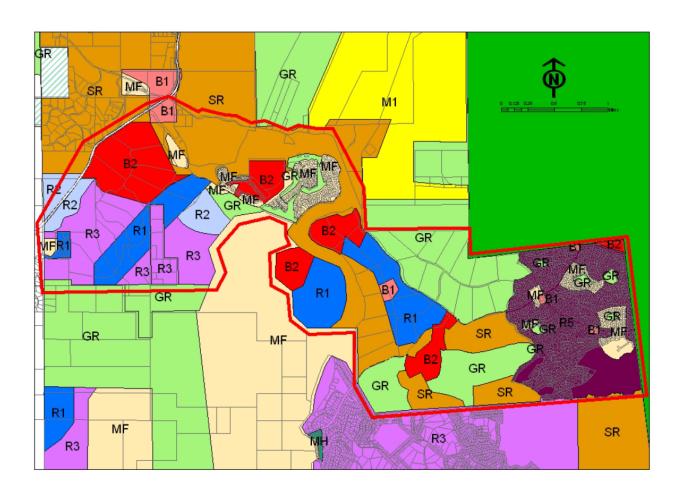


13. <u>Kino Springs</u> – This is a large scale development has been on-going for a few decades. It is situated along the Santa Cruz River south of State Route 82. It is entitled for a a large number of lots and also platted for hundreds of lots. Development has been very slow, however, due to many factors including, water/wastewater issues with the City of Nogales (which is the provider), infrastructure needs, etc. The Zoning Map is depicted below with the approximate boundaries of Kino Springs.

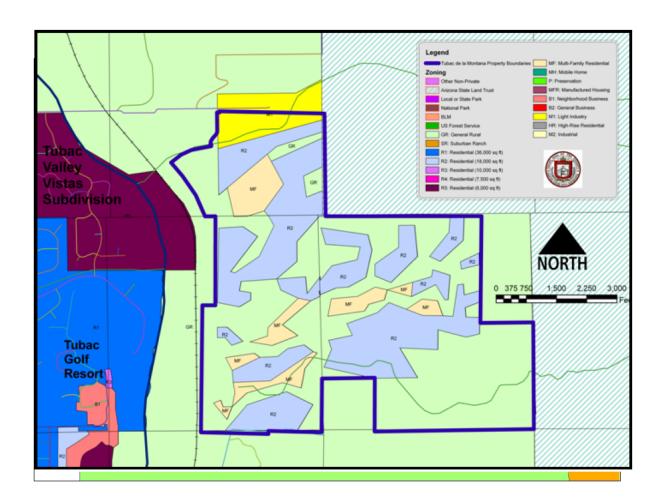
As can be seen, Kino Springs has the potential to be a real mixed use development with significant commercial zoning in place. It is difficult to project, however, when the population there would warrant any sort of sizeable commercial development. Most of the existing homes are either in the area around the golf course or in the area known as the village nearly 5 miles from the entrance on SR 82 as shown above. With some of the water/wastewater issues resolved, Kino Springs may be prepared to move ahead with additional platting, but what that might look like is not known at this time.

Zoning: Varies – see above (Kino Springs boundaries approximate).

Comprehensive Plan – see below (Kino Springs boundaries approximate).







14. <u>Tubac de la Montaña</u> – This is a Planned Area Development across the river from Tubac. It consists of about 1,027 acres and is approved for 1,400 units along with a resort and golf course amenity. The property was zoned back in the mid-80s for a similar use, but was never developed. Access across the river is along Bridge Road in Tubac and using the Wingfield Bridge.

Plans moving forward for this project and the timing thereof are not known at this time. It would most certainly be developed in phases over a period of time. At one point there were discussions between this developer and the Las Mesas developer over sharing the cost for a new bridge on the Las Mesas property. Obviously, those discussions ended when the referendum succeeded at the polls on November 4, 2008 (see item 3 above).

Zoning: See the map above.

Comprehensive Plan: All Ranch

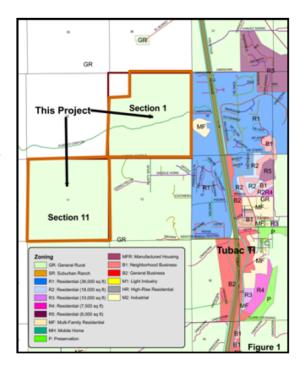


15. <u>Vistas at Sopori Ranch</u> – The Vistas is part of the overall Sopori Ranch, but was developed as a separate Planned Area Development prior to the Comprehensive Plan amendment referendum (see item 1 above). It consists of about 1, 670- acres and is approved for 322 residential units. The Final Plat was approved and construction started on Phase 1 in fall of 2008. These will be lot sales only so that build-out will probably be slow even without the economic downturn of 2008-2009. The project location is shown on the map to the right.

Most of the density is in Section 1 with most of the topography and steep slopes in Section 11. Access is through the road shown in the middle of the section to the east along the frontage road.

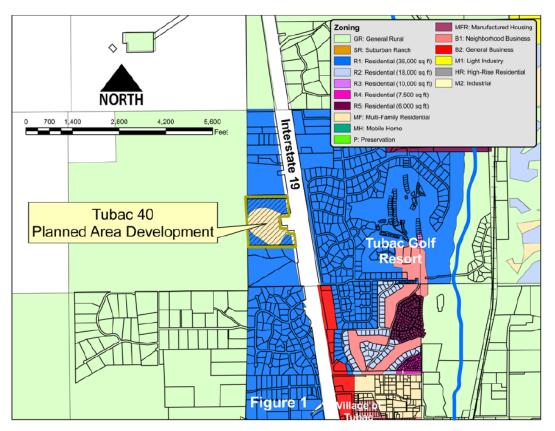
Zoning: GR with PAD overlay

Comprehensive Plan: All Ranch



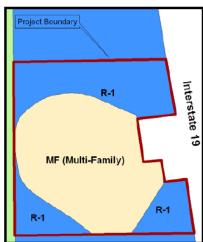


16. <u>Tubac 40</u> – This project is situated directly east of the Vistas at Sopori Ranch subdivision. It is a Planned Area Development with 82 residential units on 40.7 acres. There will be two access points on the West Frontage Road to serve the subdivision. These will be situated on either side of an existing drainageway. Internal small lots will be surrounded by larger lots providing a buffer to adjacent properties. This will be a higher end product with the develope being the homebuilder as well. A small wetlands system will be built to treat wastewater.



Zoning: R-1 around the perimeter and MF in the middle.

Comprehensive Plan: Ranch





# **Appendix D**

Unified Nogales Santa Cruz County Transportation Plan 2010

### Project Prioritization Listing

	Site	Project Location	Cost
Ranking	No.*	Project Description	(x \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Roadwa	ay Pr	ojects - Eligible for Federal Aid	
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	5	Ruby Road at UP Railroad, Rio Rico	\$7,800
	5	Vehicular Overpass of Railroad	\$7,800
	O A	Palo Parado Road at UP Railroad and Santa Cruz River, Rio Rico	Φ <b>7</b> 750
	6A	Bridge crossing for vehicular and pedestrian traffic - Alternative A - Preferred Alignment 1	\$7,750
	6 D	Palo Parado Road at UP Railroad and Santa Cruz River, Rio Rico	040.700
	6B	Bridge crossing for vehicular and pedestrian traffic - Alternative B - Railroad Overpass bridge	\$10,700
	074	Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico	400 700
	27A	Roadway Reconstruction - Alternative A - Two-Lane Roadway Reconstruction	\$26,700
	070	Pendleton Drive, Rio Rico Drive to Palo Parado Drive, Rio Rico	<b>#40.500</b>
	27B	Roadway Reconstruction - Alternative B - Roadway Reconstruction with Paved Shoulders	\$42,500
	28	Pendleton Drive, North Terminus to Bridge Rd, Tubac	\$29,720
	20	Roadway Construction	Ψ20,720



### Project Prioritization Listing

	Site	Project Location	Cost
Ranking	No.*	Project Description	(x \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Roadwa	ay Pr	ojects - Local Funding	
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	51	Bridge Road, I-19 Frontage Rd to Calle Iglesia, Tubac	\$3,300
	51	Roadway and Intersection Improvements	\$3,300
		Pendleton Drive, Bridge Rd to Pima County line, Amado	
	52A	Roadway Construction - Alternative A - Two Lane Roadway with No Shoulders or Center Turn Lane	\$49,000
		Pendleton Drive, Bridge Rd to Pima County line, Amado	
	52B	Roadway Construction - Alternative B - Two Lanes Roadway with a Center Turn Lane and Shoulders	\$77,200
	54	Bridge Road, Calle Iglesia to Proposed Pendleton Dr Extension, Tubac	\$4.600
	54	Roadway Improvements, Bridge Construction, and At-Grade Railroad Crossing Improvements	\$4,600
	55	Chavez Siding Rd, I-19 Frontage to Proposed Pendleton Dr. Extension, Tubac	\$10,030
	55	Roadway Improvements, Bridge Construction, and At- Grade Railroad Crossing Improvements	Φ10,030
	58	Yavapai Drive from Rio Rico Drive to W. Frontage Road, Rio Rico	\$5,300
		Roadway Improvements for Future Capacity	



### Project Prioritization Listing

	Site	Project Location	Cost
Ranking	No.*	Project Description	(x \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Transit	Proj	ects - Eligible for Federal Funding	
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
		Santa Cruz County	
	40A	Expanded Transit System - Phase One - Daily Express Service to Rio Rico - Capital Costs	\$402
		Santa Cruz County	_
	40A	Expanded Transit System- Phase One - Daily Express Service to Rio Rico - <b>Annualized Operating Costs</b>	\$123
		Santa Cruz County	
	40B	Expanded Transit System - Phase Two - Daily Express Service to Rio Rico and Tubac - Capital Costs	\$802
		Santa Cruz County	
	40B	Expanded Transit System - Phase Two - Daily Express Service to Rio Rico and Tubac - <b>Annualized Operating Costs</b>	\$243
	41A	Santa Cruz County - Park and Ride Lot at Rio Rico	\$870
		Park and Ride Lots	φοιο
	41B	Santa Cruz County - Park and Ride Lot at Tubac	\$870
	טוד	Park and Ride Lots	ΨΟΙΟ



### Project Prioritization Listing

	Site	Project Location	Cost
Ranking	No.*	Project Description	(x \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Bicycle	& Pe	edestrian Projects - Eligible for Federal Fundir	ng
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	42	Rio Rico area	#220 (annual)
	43	Sidewalk Improvements	\$220 (annual)
	80	Coatimundi Trail Extension, Avenida Coatimundi, Rio Rico	\$400
	80	Multi-Purpose Trail	Ψ400
	78	Santa Cruz County (Countywide)	\$200
	10	Pedestrian Plan	φ200
	70	Santa Cruz County (Countywide)	\$200
	79	Bicycle Plan	ΨΖΟΟ



# **Appendix E**

Unified Nogales Santa Cruz County Transportation Plan 2010

### **Project Prioritization Listing**

	Site	Project Location	Cost (x \$1,000)
Ranking	No.*	Project Description	
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Roadwa	ay Pr	ojects - Eligible for Federal Aid	
	-	projects in this category by inserting a ranking in the "1" being the highest priority	space
	45A	Frank Reed Rd/Masonic St Intersection, Nogales	\$115
	45A	Intersection Improvement - Alternative A - Access Reconfigure	\$115
	450	Frank Reed Rd/Masonic St Intersection, Nogales	<b>#</b> 400
	45B	Intersection Improvement - Alternative B - Traffic Signal Install	\$400
		Frank Reed Rd/Masonic St Intersection, Nogales	
	45C	Intersection Improvement - Alternative C - Intersection Redesign	\$2,820
	455	Frank Reed Rd/Masonic St Intersection, Nogales	<b>#</b> 4.000
	45D	Intersection Improvement - Alternative D - Roundabout	\$1,260
		Old Tucson Road, Nogales	4.7.22
	59	Roadway Improvements for Future Capacity	\$17,250
	63	Industrial Park Drive Loop, Nogales	\$7,000
	03	Roadway Improvements for Future Capacity	\$7,000
	65	Doe Street, Grand Avenue to Banderd Avenue, Nogales	\$1,130
	- 55	Roadway Improvements for Future Capacity	Ψ1,130
	66	Bankerd Avenue, Doe Street to Morley Avenue, Nogales	\$1,800
	- 50	Roadway Improvements for Future Capacity	Ψ1,000
	68	N. Santa Cruz Street, Grand Avenue to Bejarano Street, Nogales	\$115
		Roadway Improvements for Future Capacity	ΨΠΟ
	69	Western Avenue, Grand Avenue to Interstate 19, Nogales	\$3,800
	- 50	Roadway Improvements for Future Capacity	Ψ0,000
	70	Perkins Avenue, Morley Avenue to Jackson Street, Nogales	\$1,450
	. 0	Roadway Improvements for Future Capacity	Ψ1,100
	72	Banks Bridge, Grand Avenue to Morley Avenue, Nogales	\$820
		Roadway Improvements for Future Capacity	<b>4020</b>
	73	Morley Avenue, Banks Bridge to Park Street, Nogales	\$3,570
	, 5	Roadway Improvements for Future Capacity	ψ5,570



Unified Nogales Santa Cruz County Transportation Plan 2010

### **Project Prioritization Listing**

	Site	Project Location	Cost
Ranking	No.*	Project Description	(x \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Roadwa	ay Pr	ojects - Local Funding	
Prioritize	e the r	projects in this category by inserting a ranking in the	space
	-	"1" being the highest priority	
	_	Public Library Vicinity, Nogales	¢40,200
	3	Vehicular Overpass of Railroad	\$10,300
	4	Gold Hill Road at UP Railroad, Nogales	ФО СОО
	4	Vehicular Overpass of Railroad	\$9,600
	8	Calle Sonora & N Hohokam Dr, Nogales	¢5 200
	°	Widen Roadway and Bridge and Improve Intersection	\$5,300
	27	City-wide traffic signal system upgrades	<b>\$50</b>
	37	Traffic Signal Timing Plan Upgrades & Progression Improvements	\$50
		Monte Carlo Neighborhood to SR 82, Nogales	44.454
	38	Connector Road	\$2,850
		White Park Dr west to Mariposa Road, Nogales	
	44A	Extend Connector Route - Alternative A - Two Lane w/ Overpass	\$75,200
		White Park Dr west to Mariposa Road, Nogales	
	44B	Extend Connector Route - Alternative B - Two Lane w/ Underpass	\$36,425
	57A	Western Nogales, West of I-19	\$8,100 (per mile
	317	Street Construction - Alternative A - Minor Collector	φο, του (per time
	57B	Western Nogales, West of I-19	\$10,900 (nor mile
	3/6	Street Construction - Alternative B - Major Collector	\$10,800 (per mile
		W. Country Club Drive, Grand Avenue to I-19, Nogales	¢5.750
	60	Roadway Improvements for Future Capacity	\$5,750
	0.4	Gold Hill Road, Grand Avenue to Edith Place, Nogales	<b>#4.000</b>
	61	Roadway Improvements for Future Capacity	\$1,380
	60	Apache Blvd, Grand Avenue to Mariposa Hills Drive, Nogales	¢4.550
	62	Roadway Improvements for Future Capacity	\$4,550
	C 4	Baffert Drive, Grand Avenue to Monte Carlo Place, Nogales	¢4.570
	64	Roadway Improvements for Future Capacity	\$1,570
	74	Monroe Street, Morley Avenue to Tyler Avenue, Nogales	0070
	71	Roadway Improvements for Future Capacity	\$870



### **Project Prioritization Listing**

	Site No.*	Project Location	Cost (x \$1,000)
Ranking		Project Description	(X \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Transit	Proje	ects - Eligible for Federal Funding	
	•	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	39A	City of Nogales  City Transit System - Phase One - Expand "Nogales Rides" Capital Costs	\$195
	39A	City of Nogales City Transit System - Phase One - Expand "Nogales Rides" Annualized Operating Costs	\$650
	39B	City of Nogales City Transit System - Phase Two - Citywide Fixed Route Capital Costs	\$860
	39B	City of Nogales City Transit System - Phase Two - Citywide Fixed Route Annualized Operating Costs	\$1,440
	41A	City of Nogales Downtown Park and Ride  Park and Ride Lots	\$870
	41B	City of Nogales Walmart & Mariposa Rd Area Park and Ride Park and Ride Lots	\$870
	41C	City of Nogales Mariposa Port of Entry Park and Ride Park and Ride Lots	\$870



### Project Prioritization Listing

	Site No.*	Project Location	Cost (x \$1,000)
Ranking		Project Description	(X \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Bicycle	& Pe	edestrian Projects - Eligible for Federal Fundir	ng
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	1	Crawford Street at UP Railroad, Nogales	\$5,000
	'	Pedestrian Overpass of Railroad	\$5,000
	2	Court Street at UP Railroad, Nogales	\$5,000
		Pedestrian Overpass of Railroad	ψ3,000
	10A	Western Avenue, I-19 to Grand Ave, Nogales	\$120
	10/1	Sidewalk Improvements - Alternative A	ψ125
	10B	Western Avenue, I-19 to Grand Ave, Nogales	\$400
	100	Sidewalk Improvements - Alternative B	ΨΨΟΟ
	11	Target Range Rd, Mariposa Road to I-19, Nogales	\$450
		Sidewalk Improvements	Ψ-30
	42	City of Nogales	\$220 (annual)
	72	Sidewalk Improvements - (Citywide)	φ220 (dilitidal)
	78	Nogales (Citywide)	\$200
	70	Pedestrian Plan	Ψ200
	79	Nogales (Citywide)	\$200
	13	Bicycle Plan	ΨΖΟΟ



### Project Prioritization Listing

	Site	Project Location	Cost (x \$1,000)
Ranking	No.*	Project Description	(X \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Enhand	eme	nt Projects - Eligible for Federal Funding	
	-	projects in this category by inserting a ranking in the s "1" being the highest priority	space
	31A	Grand Avenue and Crawford Street vicinity, Nogales	\$50
	317	Nogales Gateway Enhancements - Alternative A - Public Art	Ψ30
		Grand Avenue and Crawford Street vicinity, Nogales	
	31B	Nogales Gateway Enhancements - Alternative B -Landscaped Median Island	\$230
		Grand Avenue and Crawford Street vicinity, Nogales	
	31C	Nogales Gateway Enhancements - Alternative C - Roundabout or Plaza	\$575
		Grand Avenue and Crawford Street vicinity, Nogales	
	31D	Nogales Gateway Enhancements - Alternative D - Monument Sign	\$15
	32A	Mariposa Rd and Target Range Rd vicinity, Nogales	\$50
	32A	Nogales Gateway Enhancements - Alternative A - Sculpture	\$50
		Mariposa Rd and Target Range Rd vicinity, Nogales	
	32B	Nogales Gateway Enhancements - Alternative B - Landscaped Median	\$230
		Mariposa Rd and Target Range Rd vicinity, Nogales	
	32C	Nogales Gateway Enhancements - Alternative C - Roundabout or Plaza	\$575
		Mariposa Rd and Target Range Rd vicinity, Nogales	1
	32D	Nogales Gateway Enhancements - Alternative D - Monument Sign	\$15
		I-19/Grand Avenue vicinity, Nogales	
	33A	Nogales Gateway Enhancements - Alternative A - Monument Sign	<b>\$1</b> 5
		I-19/Grand Avenue vicinity, Nogales	
	33B	Nogales Gateway Enhancements - Alternative B - Landscaped Median	\$230
	33C	I-19/Grand Avenue vicinity, Nogales	\$50
	330	Nogales Gateway Enhancements - Alternative C - Sculpture	ΨΟΟ



# **Appendix F**

Unified Nogales Santa Cruz County Transportation Plan 2010

### **Project Prioritization Listing**

	No.*	Project Location	Cost (x \$1,000)
Ranking		Project Description	(X \$1,000)
	* Site I	No. refers to site location numbers in exhibits shown in Working	Paper #2
Roadwa	ay Pr	ojects - Eligible for Federal Aid	
	-	projects in this category by inserting a ranking in the subjects in the highest priority	space
	9	Mariposa Rd & Grand Avenue, Nogales	\$3,640
	,	Intersection Improvement	ψ5,040
	12	Target Range Rd & Mariposa Rd, Nogales	\$2,500
	12	Intersection Improvement	\$2,300
		Mariposa Rd/l-19 Interchange, Nogales	
	13A	Traffic Interchange Improvements - Alternative A - Diverging Diamond Interchange	\$8,600
		Mariposa Rd/l-19 Interchange, Nogales	
	13B	Traffic Interchange Improvements - Alternative B - Flyover	\$25,100
		Mariposa Rd/l-19 Interchange, Nogales	
	13C	Traffic Interchange Improvements - Alternative C - Diverging Diamond/Flyover Combination	\$33,700
	14A	Mariposa Rd & Frank Reed Rd, Nogales	\$28,450
	1471	Intersection Improvement - Alternative A - Grade Separation	Ψ20,400
	14B	Mariposa Rd & Frank Reed Rd, Nogales	\$10,450
	140	Intersection Improvement - Alternative B - Arizona Parkway	Ψ10,400
		Mariposa Rd/SR 189, POE to I-19	*****
	15A	Roadway Widening and Improvement - Alternative A - Traditional Roadway Widening	\$31,450
		Mariposa Rd/SR 189, POE to I-19	
	15B	Roadway Widening and Improvement - Alternative B - Arizona Parkway	\$53,650
		Mariposa Rd/SR 189, POE to I-19	
	15C	Roadway Widening and Improvement - Alternative C - Enhanced Arterial Roadway with Jughandle Intersections	\$46,750
	16	W Frontage Rd, Calle Calabasas to Yavapai Dr, Rio Rico	\$4,900
		Frontage Road Extension	<b>4</b> 1,000



### **Project Prioritization Listing**

17A	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico Roadway Overlay & Shoulder Improvement for Bike - Alternative A - Overlay existing road with shoulder stabilization	\$1,380
17B	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico Roadway Overlay & Shoulder Improvement for Bike - Alternative B - Widen existing road with new shoulders	\$15,180
17C	W Frontage Rd, Rio Rico Dr to Peck Canyon Rd, Rio Rico  Roadway Overlay & Shoulder Improvement for Bike - Alternative C - Overlay both existing roadway and new shoulders.	\$16,445
18A	Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico Widen I-19 Overpass and Approach Roads - Alternative A - Widen bridge for turn lanes with intersection improvements	\$1,750
18B	Peck Canyon Rd, W Frontage Rd to E Frontage Rd, Rio Rico Widen I-19 Overpass and Approach Roads - Alternative B - Widen bridge for turn lanes plus sidewalks and bike lanes with intersection improvements	\$3,700
19A	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico Intersection Improvement - Phase One - Turn Lanes, signing, striping, SRTS improvements	\$50
19B	W Frontage Rd/Camino Lito Galindo Intersection, Rio Rico Intersection Improvement - Phase Two - Approach Roadway Improvements	\$750
20	W Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado Frontage Road Improvement	\$3,500
21	E Frontage Rd, W Chavez Siding Rd to Agua Linda Rd, Amado Frontage Road Improvement	\$4,500
22A	E Frontage Rd & Tumacacori Rd, Tubac Intersection Improvement - Alternative A - Northbound Turn Lane	\$460
22B	E Frontage Rd & Tumacacori Rd, Tubac Intersection Improvement - Alternative B - Future Traffic Signal	\$285
23A	E Frontage Rd & Tubac Rd, Tubac  Intersection Improvement - Alternative A - Northbound and Southbound Left Turn Lanes	\$575
23B	E Frontage Rd & Tubac Rd, Tubac Intersection Improvement - Alternative B - Future Traffic Signal	\$285
24	E Frontage Rd, Avenida Goya to Bridge Rd, Tubac  Roadway and Intersection Improvements	\$2,030



### Project Prioritization Listing

25	E Frontage Rd & Avenida de Otero, Tubac	¢245
25	Intersection Improvement	\$245
26	Connector Road, Mariposa Rd to Country Club Rd, Nogales	\$250
26	Frontage Road Connection	\$250
30A	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico	\$400
30, 1	Interchange Improvements - Alternative A - Minor Improvements	Ψ.00
30B	Ruby Road/SR 289, W Frontage Rd to Santa Cruz River, Rio Rico	\$3,000
	Interchange Improvements - Alternative B - Roundabout	
34	I-19 "The Curve" area between Ruby Rd & Rio Rico Dr, Rio Rico	\$375
34	Safety Corridor Improvement	\$373
35A	I-19/Grand Avenue Partial Interchange, Nogales	¢5 400
33A	Interchange Improvement - Alternative A - Underpass	\$5,400
250	I-19/Grand Avenue Partial Interchange, Nogales	¢22.550
35B	Interchange Improvement - Alternative B - Overpass	\$22,550
	I-19/Grand Avenue Partial Interchange, Nogales	
35C	Interchange Improvement - Alternative C - Reconstruct to a full movement interchange	\$35,000
	Connector Road, I-19 to SR 82, Nogales	
36A	Roadway Corridor Improvements - Alternative A -Use South River Road Alignment	\$36,550
	Connector Road, I-19 to SR 82, Nogales	
36B	Roadway Corridor Improvements - Alternative B - Create New Alignment	\$59,000
47	New Route, Mariposa Rd TI to Grand Ave, Nogales	\$6,200
77	Connector Route	ψ0,200
48A	Grand Ave/Mesa Verde Dr Intersection, Nogales	\$125
407	Intersection Improvement - Alternative A - Upgrade Traffic Signal	\$123
	Grand Ave/Mesa Verde Dr Intersection, Nogales	
48B	Intersection Improvement - Alternative B - Intersection Capacity and Traffic Signal Improvements	\$690
46.5	Grand Ave/Mesa Verde Dr Intersection, Nogales	04.405
48C	Intersection Improvement - Alternative C - Widen Bridge, Intersection Capacity and Traffic Signal Improvments	\$1,165
49	Grand Ave/Old Tucson Rd Intersection, Nogales	\$525
 70	Intersection Improvement	Ψ525



### **Project Prioritization Listing**

		Grand Ave/Country Club Rd Intersection, Nogales	
	50A	Intersection Improvement - Alternative A - Widen Western Leg and	\$400
		Signal Improvements	
		Grand Ave/Country Club Rd Intersection, Nogales	
	50B	Intersection Improvement - Alternative B - Widen Western Leg	\$1,050
		Improve Intersection Capacity and Signal I-19, Exit 22 (Peck Canyon Rd) to Exit 48 (Arivaca Rd), Santa Cruz	
	53	County	\$23,500 (each)
		Interchange Improvements	
	56	I-19 East Frontage Road, Ruby Road to Rio Rico Dr, Rio Rico	\$150
		Traffic Study and Evaluation	Ψ130
		SR 82, Grand Avenue Terminus to Thelma Street, Nogales	\$3,400
	67A	Roadway Improvements for Future Capacity - Alternative A - Widening with no bridge improvements	
		SR 82, Grand Avenue Terminus to Thelma Street, Nogales	
	67B	Roadway Improvements for Future Capacity - Alternative B - Widening with bridge improvements	\$12,150
		Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry,	\$3,000
	74A	Nogales  Roadway Improvements for Future Capacity - Alternative A - Signal	
		Upgrades and Interconnect	
	74B	Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry, Nogales	\$15,850
		Roadway Improvements for Future Capacity - Alternative B -	
	74C	Roadway and Intersection Improvements  Grand Avenue & Arroyo Blvd, I-19 to DeConcini Point of Entry,	\$18,850
		Nogales	
		Roadway Improvements for Future Capacity - Alternative C - Both	
		Signal and Roadway Improvements  Interstate 19, Interstate 19 B Terminus to West Street, Nogales	
	75A	Roadway Improvements for Future Capacity - Alternative A -	\$375
		Access Management and One-Way Routes	· 
	75B	Interstate 19, Interstate 19 B Terminus to West Street, Nogales	\$1,170
		Roadway Improvements for Future Capacity - Alternative B - Route Widening and Intersection Improvements	
	76	Interstate 19, Tumacacori Interchange to SR 189/Mariposa Road	\$529,000
		Interchange, Santa Cruz County	
		Roadway Improvements for Future Capacity	
	77	East and West Interstate 19 Frontage Roads, Rio Rico Drive	\$29,375
		Traffic Interchange to Grand Avenue Traffic Interchange, Rio Rico	
		Roadway Improvements for Future Capacity	



### **Project Prioritization Listing**

# **Federal and State Transportation System**

Ranking	Site No.*	Project Location	Cost (x \$1,000)		
		Project Description	(X \$ 1,000)		
	* Site No. refers to site location numbers in exhibits shown in Working				
Bicycle & Pedestrian Projects - Eligible for Federal Funding					
Prioritize the projects in this category by inserting a ranking in the space provided with "1" being the highest priority					
	7	Grand Avenue, Park St to Arroyo Blvd, Nogales	\$1,020		
		Crosswalk Installation			
	46A	Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico	\$3,115		
		Bike Lane Improvement - Alternative A - Overlay Existing Roadway with Stabilized Earthen Shoulder			
	46B	Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico	\$32,950		
		Bike Lane Improvement - Alternative B - Widen Existing Roadway with New Paved Shoulders	Ψ02,000		
	46C	Ruby Road (SR 289), Ranger Station to Pina Blanca Lake, Rio Rico	\$35,720		
		Bike Lane Improvement - Alternative C - Overlay Existing Roadway with New Paved Shoulders	ψ00,120		

Unified Nogales Santa Cruz County Transportation Plan 2010

### **Project Prioritization Listing**

# **Federal and State Transportation System**

Ranking	Site No.*	Project Location	Cost (x \$1,000)			
		Project Description	(X \$1,000)			
	* Site No. refers to site location numbers in exhibits shown in Working Paper #2					
Enhancement Projects - Eligible for Federal Funding						
Prioritize the projects in this category by inserting a ranking in the space provided with "1" being the highest priority						
	29	I-19 Tumacacori to Tubac	\$4.050 (l-)			
		Wildlife Preservation Crossings	\$1,250 (each)			

April 30, 2010



### Appendix G

### **Arizona Functional Classification Guidelines**

These guidelines summarize what one should consider when functionally classifying roadways once one has defined the major traffic generators to be served by a roadway network. These are broad guidelines that are to be applied with full adherence to the Federal Highway Administration's (FHWA) direction regarding the relative proportion of arterial, collector and local mileage within a state's urban and rural road systems

#### **Background**

The 1991 Intermodal Surface Transportation Act required each state to functionally reclassify its public roads and streets; ADOT was assigned to lead Arizona's effort. The initial step in this process was to update urban area boundaries for urbanized and small urban areas by mid-1992. The new functional classification of Arizona's public roadways was completed in December 1992. Arizona's submission was reviewed and approved by the Federal Highway Administration (FHWA) and the Secretary of Transportation, and reported to Congress in 1993.

Extensive coordination with other entities was essential throughout the process of updating urban boundaries and the functional reclassification. ADOT worked with Colorado, New Mexico, and Utah to assure continuity of arterial routes across state lines. The Phoenix, Tucson, and Yuma metropolitan planning organizations (MPOs) were fully involved in the reclassification. ADOT worked closely with the MPOs to ensure continuity at the urban boundaries and provide assistance as needed. Arizona's rural councils of governments (COGs) were consulted to provide input on functional reclassification within their jurisdiction. ADOT and the COGs coordinated with Indian reservations to reclassify roads on their lands. The Bureau of Indian Affairs provided considerable assistance with these efforts. ADOT coordinated with the U.S. Forest Service and the National Park Service, including officials at regional offices and individual parks and forests. Close coordination with the FHWA continued throughout the effort.

The Federal Highway Administration's <u>Highway Functional Classification</u>: <u>Concepts, Criteria, and Procedures</u> (revised March 1989) was the principal reference for Arizona's reclassification. ADOT employed the procedures suggested in this document. While differences exist between the procedures for rural, small urban and urbanized area classification, all adopt a "top down" approach that delineates the highest functionally classified roadways first and then works progressively down the hierarchy of functional systems to conclude with the classification of local roads and streets. ADOT started this "top down" approach by identifying the most important internal and external traffic generators for Arizona. The procedure enabled ADOT to functionally classify the State Highway System and share that information to facilitate efforts by the MPOs and COGs.

Using the "top down" functional classification method worked well in conjunction with FHWA limitations on the distribution of roadways to arterial and collector systems. Once ADOT functionally classified Arizona's rural arterial system, the principal tasks remaining were to identify the rural collector system and distinguish major and minor collectors. Once these tasks were accomplished the local road system was identified as all roads not assigned to a higher system.

The ADOT functional classification of urban state highways provides a starting point for the classification of roads and streets in urban clusters and urbanized areas. Using the guidelines presented here, the "top down" approach assigns urban arterial mileage until exhausting legitimate arterial candidates or reaching the arterial system mileage limit. Urban collector system assignments continue in a similar fashion. Once urban collector candidates are exhausted or achieve the urban collector system mileage limitation, the urban collector system is defined. This, in turn, also identifies the local street system defined as all urban streets not classified as arterial or collector.

### **Future Roadway Use and Future Routes**

In general, the functional classification assigned a road or street remains a stable characteristic, particularly in the



short term. For the 1992 functional reclassification, only proposed roads and streets that were in an approved short range improvement program and expected to be under construction by 1998 were to be functionally classified.

What Roads Are a Part of the Functional Classification Process?

All roads that are a part of the public road system are to be functionally classified as an integral system regardless of jurisdictional control of those roads. In other words, state highways, county roads, city streets, National Forest Service roads, BIA roads, etc. are all part of the public road system. The classification process does not consider administrative or jurisdictional systems. The only way roads are separated into different functional classification systems is by their geographic location in rural, small urban, or urban areas.

### **Rural Functional Classification**

What Territory is included in the Rural Functional Classification?

The rural area of the state consists of all territory outside of the urban (FHWA-adjusted) boundaries for urban clusters (e.g., Kingman, Payson, Nogales) and urbanized areas (Flagstaff, Phoenix, Tucson, and Yuma).

Do the COGs Functionally Classify all roads in the rural areas?

No. Note the following significant exceptions:

- ADOT is responsible for classifying state highways in rural areas. The COGs do not classify the State Highway System.
- Federal agencies classify federal roads within their jurisdictions.
- The Bureau of Indian Affairs (BIA) classifies roads for some of the American Indian Reservations. The COG needs to seek guidance from the BIA, with input from the respective Tribe if necessary, for any roads it wishes to reclassify/classify in these areas. During the 1992 Functional Classification for Arizona the BIA classified the roads in the following jurisdictions: Navajo Nation, Hopi, San Carlos Apache, White Mountain Apache, Tohono O'ohdam, and Gila River. In most cases the COG will be responsible for classifying the roads on the American Indian Reservations.

What is the FHWA Guidance Regarding the Proportion of Total Rural Mileage Assigned Each rural Functional Classification System?

The guidelines are presented in the following table. Note that the rural collector and local road systems combined should account for between 85% and 95% of total rural mileage. The total rural arterial mileage is to fall between 6% and 12 %. However, the FHWA guidelines add that this mileage total should fall in the 7% - 10% range for most states.

FHWA Guidelines Regarding the Extent of Rural Systems			
Rural System	Percentage of Total Rural Mileage		
Principal arterial system	2% -4%		
Principal plus minor arterial system	6% - 12%		
Collector street system	20% - 25%		
Local street system	65% - 75%		

Do the COGs Need to be Concerned with Every Rural Functional Classification Category?



Because direction from the FHWA limits the amount of mileage that can be classified in certain categories, the COGs are highly unlikely to classify rural roads as anything other than major collectors, minor collectors, and local roads. Remember that the rural arterial mileage should account for 6% to 12% of all rural public road mileage. This is equivalent to 2,213 -4,427 miles out of a total of 36,889 (CY2000 data) rural public roads in the state. Just the rural portion of the State Highway System consists of 5,819 highway miles, well over the limit. This means that many of the State Highway System miles have to be classified as arterials on Arizona's rural collector system. As of CY2000, 2,216 miles of state highways are designated either major or minor collector facilities. Given the restrictions on total rural arterial mileage, rural public roads off the State Highway System will find it extremely difficult to achieve arterial status.

### Criteria Used to Functionally Classify Rural Arizona Roads

#### **Rural Principal Arterial Highways**

Arizona's principal arterial highways are identified as follows:

- All Interstate highway mileage is included.
- Principal arterials serve:<sup>1</sup>
  - $\Diamond$  all urban areas with a population of  $\geq 50,000$ ;
  - $\Diamond$  a large majority of urban areas with a population of  $\geq 25,000$ ;
  - ♦ the principal corridors of interstate travel. There are relative few corridors used by travelers when journeying to and from neighboring states and Mexico.
  - ♦ the principal corridors for statewide travel. That is principal arterials serve the very highest volume, long distance trips within Arizona.
- In addition, the rural principal arterial system forms an integrated network without stub connections, except where unusual geographic or traffic flow conditions dictate otherwise (for example, international boundaries, connections to coastal cities).

#### **Principal arterials:**

- provide high speed travel.
- provide minimal interference to through movement.
- are to be appropriately spaced apart.
- constitute no more than 4% of rural mileage statewide.
- are the most traveled, long-distance rural roads. They should account for 30%-55% of rural VMT
- The non-Interstate routes identified as principal arterials ranked highest in terms of the following combination of factors:
- Access to very important traffic generators not currently served by Arizona's Interstate Highways (e.g., Las Vegas and Salt Lake City).
- Volume of commercial traffic, particularly heavy truck traffic. (This measure is indicative of major trade corridors not served by the Arizona's Interstate highways.)
- Total traffic volume.
- Vehicle miles of travel.

#### **Rural Minor Arterial Roads**

MPD #13-09- Purchase Order No. TD0251

- serve most of the larger communities not served by the principal arterial system. 2
- serve other traffic generators capable of attracting travel over long distances as do the larger communities.
- form an integrated network.



- provide interstate and intercounty service.
- provide trip length and travel density greater than those served by collector systems.
- provide relatively high travel speeds.
- minimize interference to through movement.
- FHWA guidelines restrict the combined total principal arterial and minor arterial mileage to the 6-12 percent range, with most states falling in the 7-10 percent range.

Following rural principal arterials, minor arterials are the most heavily traveled rural highways. Minor and principal arterial mileage should account for 45%-75% of all rural VMT.

### Arizona's Rural Collector System

- Serve travel of intracounty and regional importance, rather than statewide importance.
- Regardless of traffic volume, travel distances are shorter than on arterial routes.
- Posted speed limits tend to be more moderate than those on arterial highways.
- All rural state highways that are not arterial highways will be on the rural collector system.

#### **Rural Major Collector Roads**

- Provide service to any county seat not on an arterial route.
- Provide service to the larger communities not directly served by the higher systems.
- Serve other traffic generators of the greatest intracounty importance equivalent to towns, Examples are: consolidated schools, shipping points, regional parks, important mining and agricultural areas, etc.
- Serve the principal business area or a concentration of community facilities in rural communities with a population of between 500 and 5000.
- Rural major collectors tend to connect to rural arterials.

#### **Rural Minor Collector Roads**

- Are spaced at intervals consistent with population density.
- Collect traffic from local roads. Tend to feed predominantly residential traffic from side streets into major collectors or arterials.
- Bring all developed areas within a reasonable distance of a major collector or higher classification road.
- Tend to have lower traffic volumes than major collectors.
- When a minor collector carries as much traffic volume as a major collector, it tends to:
  - ♦ carry traffic over a shorter distance than a major collector;
  - ♦ carry traffic on trips to less important intracounty traffic generators; or
  - \$\display\$ the route parallels a route of higher classification. 3

### **Rural Local Roads**

- Rural local roads will comprise all rural roads that do not meet the criteria for arterial and collector systems.
- According to the FHWA manual the local road system should account for 65%-75% of all rural miles statewide and between 5%-20% of all rural VMT.
- Rural local roads serve primarily to provide access to land uses adjacent collector and arterial roadways.
- The main function of most local roads is to get to and from residences.
- Rural local roads may also serve some scattered business and industry, and land uses generating modest
- Tend to have lower traffic speed limits.

MPD #13-09- Purchase Order No. TD0251



- Tend to have lower traffic volumes.
- Cul-de-sacs are usually local roads.
- Most, but not all, unpaved roads tend to be local roads.<sup>4</sup>

#### **Additional Considerations**

- The more important traffic generators typically generate more traffic. Thus, current ADT and VMT are potential indicators of the importance of the roadway for the county, region, or state.
- Arterial highways roads should be connected to routes of the same or higher functional classification at both termini.
- All collector routes should be connected to routes of the same or higher functional classification at one or both termini.<sup>5</sup>
- By definition, collector status implies a level of traffic greater than neighboring local roads since the collector gathers traffic from these roads.
- A very short road may function as a major collector if it is serving one of a county's major traffic generators.
- A rural, non-arterial road that is at least a mile in length and which carries a high volume of commercial vehicles (i.e., >10 percent) is likely to be a major collector.
- A road whose principal function is to provide residential access can be said to be a collector when the both size and density of the residential development served is more characteristic of urban areas.
- In rural Arizona we would expect the minimum ADT for major collectors to range from 600800 vehicles per day. In unique circumstances (i.e., the central business area of a town) it may be somewhat lower.
- We would expect the minimum ADT for minor collectors to be 300-500 in most cases. For longer roads (e.g., 5 or more miles in length), the minimum may be 200.
- One very typical characteristic of a local road is that the road is not the preferred route by travelers to traffic generator roads of intracounty or greater importance.
- A long road carrying little traffic (e.g., less than 200 vehicles per day) is not a collector route. Generally these roads are forest service roads, jeep trails, or access to low-use recreation areas, scattered farms, ranches, or other residences in very rural areas. They function to link minor traffic generators with the collector and arterial systems. They are not serving the more important county-level or higher traffic generators.
- The classification of a rural non-arterial road crossing the Arizona border must take into account the nature of traffic generators in the adjacent state and the functional classification assigned by the neighboring state.

#### Some Final Suggestions for Classifying Rural Roads

- Remember, the higher the functional classification, the lower the percentage of mileage. For instance, principal arterials account for 2-4 percent of all mileage in most states. In contrast, local roads account for 65-75 of all mileage in most states.
- As a general rule, minor collectors should account for more mileage than major collectors, while the total local roadway mileage should be triple the combined mileage of minor and major collector roads.
- The FHWA requires that a route should be connected to routes of the same or higher classification at both ends. This rule should be followed to the greatest extent possible.

However, in hilly terrain, some minor collectors may connect at one end of the route to a local road, especially if many local roads feed into the minor collector for access to roads of higher classification. Exceptions to the rule should be due to geographical limitations only.

### **Urban Functional Classification**

What roads are part of the urban functional classification process?



All public roads that are within an urban area. An "urban area" is defined as an urban cluster and/or urbanized area.

What direction does the FHWA provide regarding the distribution of Urban Roadway Mileage Distributed to each Urban Functional Classification System?

The guidelines are presented in the following table. Note that the urban collector and local street systems combined should account for between 70% and 90% of total urban mileage, with the collector system contributing no more than 10% of this total.

FHWA Guidelines Regarding the Extent of Urban Systems				
Urban System	Percentage of Total Urban Mileage			
Principal arterial system	5% - 10%			
Principal plus minor arterial system	15% - 25%			
Collector street system	5% - 10%			
Local street system	65% - 80%			

Do the COGs Need to Functionally Classify All Roads in the Urban Areas?

No, there are some exceptions:

- The COGs do not need to classify the State Highway System in urban areas.
- The incidence of federal roads within urban boundaries is likely to be rare. However, as with rural functional classification, ADOT will work with the federal agencies to classify federal roads within their jurisdictions.
- Functional Classification changes for urban clusters on any of the American Indian Reservations will be coordinated with the BIA and the respective Tribe.

Does each urban area have to meet the percentage guidelines for urban functional classification?

The two larger urbanized areas (Phoenix and Tucson) are each sufficiently large enough to be able to conform to the guidelines individually. The small urban clusters are to strive to meet the guidelines as much as possible. Ultimately all urban areas - both urbanized and urban clusters - should meet the guidelines. Remember, the percentages must be maintained for on a statewide basis.

#### Criteria Used to Functionally Classify Urban Arizona Roads and Streets

#### **Urban Principal Arterials**

- • There are three types of urban principal arterials:
  - ♦ Interstate:
  - ♦ other freeways and expressways; and
  - ♦ other principal arterials with no or little control of access
- The primary function of these roads is to provide the greatest mobility for through movement. Any direct access to adjacent land is purely incidental.
- The higher mobility associated with these facilities are associated with higher posted speed limits.
- Partially or fully controlled access facilities are generally urban principal arterials.
- In larger urban areas the spacing of principal arterials may vary from less than one mile in the highly



developed central business areas to five or more miles in the sparsely developed urban fringes.

### In both urban clusters and urbanized areas, the principal arterial system should:

- serve the highest traffic volume generators;
- carry trips of longer length (The principal arterial system distributes traffic to the greatest geographic area);
- have a high proportion of the urban area travel on a minimum of mileage.
- be integrated, internally and between major rural connections.
- carry the major portion of the trips entering and leaving the urban area.
- provide continuity for all rural arterials that intercept the urban boundary (of both urban clusters and urbanized areas).

### For urbanized areas, urban principal arterials should also:

- serve the major centers of activity of a metropolitan area;
- provide connections between central business districts, between major inner city communities, and major suburban centers.
- carry the major portion of traffic seeking to bypass the central city.
- frequently carry important intraurban and intercity bus routes.



#### **Urban Minor Arterials**

- If an urban connection to a rural collector road is not classified as an urban principal arterial, it should be classified as an urban minor arterial.
- The spacing of minor arterial streets can vary from less than a half mile in the central business district of large cities to 2-3 miles in the suburban fringe. In fully developed areas, minor arterials should be no more than one mile apart.

#### In urban clusters and urbanized areas, the minor arterial system should:

- provide trips of moderate length
- provide trips of lower travel mobility than urban principal arterials
- consequently, the speed limit is lower on these roads than on urban principal arterials.

#### In urbanized areas, urban minor arterials:

- are likely to carry local bus routes;
- serve to accommodate longer trips within the community; and
- do not usually penetrate identifiable neighborhoods.

#### **Urban Collectors**

- distribute traffic from arterials.
- funnel traffic collected from local streets into the arterial system.
- Collector systems may penetrate residential neighborhoods.
- Frontage roads should be classified as collector or local roads. (Frontage roads are to classified independently of the controlled access facility they abut.)

#### **Urban Local Streets**

- The primary function of the urban local street system is provide direct access to abutting land
- Urban local streets provide access to higher functional systems.
- Typically, service to through traffic movement is deliberately discouraged via the low posted speed limit, the use of stop signs, etc.
- Thus, urban local streets provide the lowest travel mobility.
- These streets have the lowest posted speed limits
- Generally, bus routes do not use urban local streets.
- Urban local streets comprise all streets not on one of the higher systems.

#### **Continuity for Rural Routes Through Urban Areas**

- <u>Urban principal arterials</u> provide continuity for rural principal and minor arterial routes.
- The routing of the urban link connecting a rural principal arterial should normally be fairly direct.
- The routing of the urban link connecting a rural minor arterial may be somewhat less direct.
- Urban Interstate routes provide continuity for the rural Interstate system.
- Other freeways and expressways provide connecting links for either non-Interstate rural principal arterials or rural minor arterials.
- Other urban principal arterials provide connecting links for either non-Interstate rural principal arterials or rural minor arterials.



<sup>1</sup> The FHWA manual, Highway Functional Classification: Concepts, Criteria and Procedures offers as a guide the following definition of rural principal arterial service: the rural principal arterial system may be considered to "serve" an urban area if the system either penetrates the urban boundary or comes within 10 miles of the center of the place and is within 20 minutes travel time via a minor arterial highway.

<sup>&</sup>lt;sup>2</sup> Rural minor arterial service is provided when the minor arterial system either penetrates or comes within two miles of the urban boundary

<sup>&</sup>lt;sup>3</sup> ADOT distinguishes the functional classification of parallel routes. The convention employed is that the more important route is assigned a higher functional classification.

<sup>&</sup>lt;sup>4</sup> See text discussing rural minor collectors for notable exceptions

<sup>&</sup>lt;sup>5</sup> In certain instances, unusual geographic or traffic flow conditions may dictate a stub route.



### Appendix H

# Process for Modifying Routes on Arizona's Approved Functional Classification System FEDERAL GUIDANCE

- 1. Section 1006 of the 1991 Intermodal Surface Transportation Act (ISTEA) requires that each State establish urban area boundaries and functionally reclassify its public roads and streets.
- 2. Functional classification is the process by which the State's streets and highways are grouped into classes, or systems, according to the character of service they are intended to provide. The Urban Area Boundary System is a fundamental part of the Functional Classification System.
- 3. All pertinent criteria should be explicitly addressed when requesting modifications to Urban Area Boundary System or the Functional Classification System. Criteria for urban area boundaries and functional classification are summarized in ADOT's Rural and Urban Functional Classification Guidelines.
- 4. Requests for modifications must include evidence that the proposal was developed in cooperation with State, local and regional officials.
- 5. Proposed modifications must be consistent with the statewide and metropolitan transportation plans.
- 6. Proposed modifications must be submitted by the State through the appropriate FHWA division and regional office.
- 7. The submission must include discussion of pertinent criteria, descriptions of modifications, maps, average daily traffic (ADT) on the proposed route, changes in rural and urban mileage reported to the nearest one-tenth of a mile, and a mileage summary table of the statewide Functional Classification System.
- 8. Projects must be on the Functional Classification system (classified as "Collector" or above) in order to be in the TIP
- 9. Projects that are already on the TIP that do not have a Functional Classification must submit the appropriate paperwork and documentation for Functional Classification
- 10. Projects may be submitted for the 5th year of the TIP without a Functional Classification provided they meet the following criteria:
  - A request for Functional Classification of "Collector" or above must be submitted. The route must meet the minimum requirements for the Functional Classification being requested (i.e. it must be a reasonable request with a high potential for FHWA approval).
  - If the route does not receive approved Functional Classification within the 5<sup>th</sup> year, it will be removed from the TIP. (it may be resubmitted at a later date)



### **ADOT PROCESS**

The following process has been developed to ensure that the preceding federal guidance is met when modifications to Arizona's approved Urban Area Boundary System and Functional Classification System are considered.

- The public agency (city or county) requesting a modification to Arizona's approved Urban Area Boundary
  System or Functional Classification System must send a written request to the regional planning body (MPO, or
  COG). Modifications to an urban boundary must include maps showing current and proposed boundaries.
  Requests for changes in functional classification must identify the following:
  - a. any and all routes to be added and/or deleted from the approved Functional Classification System;
  - b. the reasons and purpose for the modification of the routes to be added or deleted;
  - c. all pertinent data regarding the transportation uses of the routes: Route name, termini, mileage, and average daily traffic (ADT) must be included.
- 2. The regional planning body should consider the request and decide whether or not to support it. Because there are statewide mileage limitations and percentage restrictions on the statewide Functional Classification System, especially on Principal Arterials, the regional planning body should address how mileage increases can be offset by mileage decreases within that planning region to maintain its mileage limitations.
- 3. If the regional planning body supports the requested modifications it sends the approval in one of the following forms: (a) an adopted resolution passed by the regional planning body; or (b) an approved motion shown in the minutes from an official meeting of the regional planning body.
- 4. If the regional planning body does not support the requested modification the requester may still send the proposed modification to ADOT for consideration (although its probability of final approval will be greatly lessened).
- 5. The Transportation Planning Division of ADOT will assess the impacts of proposed urban area or functional classification modifications to the following:
  - a. the statewide Functional Classification System;
  - b. National Highway System (NHS);
  - c. the Highway Performance Monitoring System (HPMS);
  - d. level of development (LOD);
  - e. the statewide transportation plan:
  - f. the State and Local 5-Year Construction Programs;
  - g. future highway development corridors;
  - h. other transportation planning criteria on a case-by-case basis.



The Transportation Planning Division will normally take into account the opinions and views of local officials, regional planning bodies, and ADOT District Engineers when deciding whether or not to support a request.

- If the Transportation Planning Division supports a request for modification(s) to the Urban Area Boundary System or Functional Classification System, it will transmit that request to the Division Office of the Federal Highway Administration along with a complete discussion of the rationale for ADOT's support of the modification.
- If the Transportation Planning Division does not support a request, a copy of the rationale for denial will be sent to the regional planning body and to the original requester.

NOTE: Final decisions regarding modifications to urban area boundaries and the functional classification system are made by the federal highway administration in Washington, D.C.



# Appendix I

Public Outreach Summary, March 2010









# Unified Nogales/Santa Cruz County Transportation Plan Update 2010 Planning Assistance for Rural Areas (PARA) Public Outreach Summary March 2010

Prepared by



For the Arizona Department of Transportation Communication and Community Partnerships









# Unified Nogales/Santa Cruz County Transportation Plan Update 2010 Public Outreach Summary

The Arizona Department of Transportation (ADOT), in coordination with Santa Cruz County and the City of Nogales, conducted a study to update the 2000 transportation plan. The Transportation Plan Update 2010 was sponsored under the Planning Assistance for Rural Areas (PARA) program. The PARA program is sponsored by the ADOT Multimodal Planning Division and provides federal funds to non-metropolitan communities for the purpose of conducting transportation planning studies.

Taking into consideration the significant growth and economic development that has occurred in the area over the past ten years, this study was conducted to address the current and future demands placed on the street, highways, transit, and bicycle and pedestrian facilities within the study area. The Transportation Plan Update 2010 built on the components of the 2000 Transportation Plan, and was developed to prepare a plan for community development, project funding applications, and project implementation.

Two public open houses for the Unified Nogales/Santa Cruz County Transportation Plan Update 2010 were held over the course of the project. The first open house was held on July 22, 2009 and the second was held on February 3, 2010. Both were held at the Santa Cruz County Board of Supervisors Board Room located at 2150 N. Congress Drive in Nogales, Arizona from 5:30 to 7:30 p.m. There were 47 people, including citizens, technical advisory committee (TAC) members, identified stakeholders and members of the study team in attendance at the first public open house. At the second open house, 18 TAC members, stakeholders, citizens, and members of the study team were in attendance. Each meeting featured introductions, a brief presentation, and a question/answer period. Proceedings of these meetings are included in this document.

Notice of the meetings was provided to the community, agency representatives, and the media in a number of ways. Display advertising was placed in the Nogales International News to announce the meetings. Each advertisement appeared twice prior to the meeting (July 7 and 17, 2009 and January 19 and 29, 2010, respectively). Press releases were also issued prior to both









open house meetings. Stakeholders and TAC members were sent personal letters inviting them to participate and provide input at both of the meetings. Residents of the City of Nogales were notified of the public meetings with a flyer included in their water bills. E-mail notification of the public open house meetings was sent to those on the mailing list for whom we had e-mail addresses. Newspaper articles also appeared reporting on the proceedings of the meetings.

The focus of the first public open house held on July 22, 2009 was to define the study area and identify the purpose and need for the study. It was explained that the ultimate goal for the study would be to create a workable transportation plan that could reasonably be implemented. Crash data, traffic volume data, and multi-modal considerations, such as bike, pedestrian, transit, freight, and airport issues were presented.

At the second public open house held in February 2010, a summary of the work done to date was presented, including existing conditions showing the result of a "no Build" scenario and identification of 80 needed projects for the city, county and state systems. Planning level cost estimates were also provided for these projects. It was explained that the project priority lists were submitted to Santa Cruz County and City of Nogales staff for review. These local agencies ranked their priority projects for within short term (five year), medium term (ten year) and long term (twenty year) time frames. These rankings were presented and discussed. Various potential funding sources were also reviewed.

Public input was encouraged during both of the open house meetings. Comment forms were provided and returned at both of the open house meetings, and comments were also submitted after the meetings via U.S. mail, e-mail, and telephone. Ten comments were submitted at or after the first public open house, and there were seven submittals after the second open house. Meeting summaries including completed sign-in sheets and completed comment forms, letters, and summaries of other means of communication were posted on the ADOT website and are attached to this document.









## July 22, 2009 Nogales Public Open House Meeting







MEMO To: Arnold Burnam, ADOT Project Manager

Rudy Perez, ADOT Deputy Project Manager Juan Guerra, City of Nogales City Engineer

Scott Altherr, Santa Cruz County Public Works Director

Date: 22 July 2009 Public Open House Meeting

From: Dale E. Miller, WSA Project Manager

Subject: Public Open House - Meeting #1

Unified Nogales/Santa Cruz County Transportation Plan Update 2010

ADOT Contract No. T0849AQ001; Purchase Order No. TD0251

Notice to Proceed Date: 10 December 2008

### Agenda:

5:30 pm: Public Open House convened with open discussion between attendees and project team members

The following project team members were in attendance:

- Charlene FitzGerald, ADOT ADOT Project Manager
- Linda Ritter, ADOT ADOT Communications and Community Partnerships Public Information Officer
- Katherine "Sunny" Bush, URS Consultant to ADOT Communications & Community Partnership Div.
- Dale Miller, Wilbur Smith; Project Manager Consultant to ADOT
- Kate Hedden, Wilbur Smith; Project Engineer Consultant to ADOT

Technical Advisory Committee Members, Project Stakeholders and members of the general public in attendance are listed on the "sign in" sheets attached to these minutes.

- 5:30 pm: Open House Start Time
- 5:45 pm: Welcome and Introductions by Charlene FitzGerald, ADOT and Juan Guerra, City of Nogales
- 5:50 pm: Presentation of the Current and Future Conditions Analysis by Dale Miller, Wilbur Smith
- 6:15 pm: Question and Answer Session Call to the Public
- 6:45 pm: Open House with open discussion between attendees and project team members
- 7:30 pm: Adjournment

The following paragraphs summarize the various areas of discussion and information exchanged.

Page 1 of 5

1475 North Scottsdale Road, Suite 480, Scottsdale, AZ 85257 480.477.8652 f 480.477.8653 www.WilburSmith.com



Unified Nogales/Santa Cruz County Transportation Plan Update 2010 July 22, 2009 Page 2 of 5



Public Meeting Minutes Nogales, AZ 7/22/2009

Dale Miller, Wilbur Smith, began the presentation by explaining that this first public open house is being held to define the study area, and identify the purpose and need for the study. He explained that the goal of the study is to create a workable and implementable Transportation Plan. Current data examined included crash data, traffic volumes, and multi-modal considerations, such as bike, pedestrian, transit, freight, and airport issues. Data on projected population growth, housing growth, and employment growth were used to project future traffic conditions. Future multi-modal needs were also considered in the analysis

Preliminary findings identified a number of issues that will need to be addressed in the updated transportation plan:

- · Improve Mariposa Road and traffic interchange
- · Complete the frontage road system, planning for four lanes
- Widen I-19
- Increase Grand Avenue capacity
- · Extend Pendleton Drive
- Construct needed River and Railroad crossings
- Provide for alternate transportation modes such as public transit, bike and pedestrian routes
- · Address project funding
- · Plan for infrastructure in targeted growth areas
- Mitigate Ruby Road congestion
- Improve connectivity in Nogales

Mr. Miller concluded the presentation by explaining that the next step will be the alternatives analysis where potential improvements and solutions will be identified. Mr. Miller emphasized that funding is an issue for all potential future projects.

After the formal presentation, a question and answer period was held. Where possible, the names of the persons posing the questions are included.

- Q: (Kip Martin) Are you considering a transfer station or bus route at Mariposa Road?
- A: That is a valid point and will be considered in our next transit section.
- Q: (Joe Barr, Mariposa Properties) The bus route slide shows a connection at Apache Boulevard from I-19 that is not really there.
- A: That line represents a census block line, not a route.
- Q: (Kip Martin) Are pedestrian paths linked in with the new port improvements?
- A: Not for this study, that information is not yet available. When the report is prepared, it will be important to consider projections for pedestrian traffic.
- Q/C: (Terry Shannon) Additional pedestrian traffic at the Mariposa Port will mean there will be more vehicles for people who want to park on one side and walk. Some of the roads that are already congested now will only get worse.
- A: We agree. A loop route to relieve this traffic may be included in the transit study. The City of Nogales should take this into consideration before their transit plans are implemented.





Unified Nogales/Santa Cruz County Transportation Plan Update 2010 July 22, 2009 Page 3 of 5



- C: (JB Manson, Port Authority) The projections for pedestrian crossings at the Mariposa Port when it is improved are 1.5 million people.
- Q: (John Maynard, County Board of Supervisors) Are "pedestrians" physically walking or in cars?
- A: The pedestrians are crossing on foot.
- C: (John Maynard) It is crucial to have a complete link on at least the west or east of the interstate if not both. The frontage roads are of high priority to our community.
- Q: (John Maynard) Does this study look at passenger rail service from Nogales to Phoenix?
- A: The passenger rail possibility is mentioned in Working Paper #1. ADOT has funded a high speed rail connectivity study to include routes from Phoenix to Tucson, Tucson to Nogales, and Tucson to Sierra Vista. In this project, we are working with a 20 year planning horizon and the demand projections are outside of that time frame.
- C: (JB Manson) Double track would have to be installed (it is only single track now) for passenger rail.
- Q: A light rail system from Rio Rico to Nogales is needed.
- A: The study is looking at Nogales transit first in a fixed route format.
- Q: (Marcelino Verona) Regarding the green circles on the pedestrian overpass slide, does this mean that you are recommending overpasses in all of these locations?
- A: Many pedestrian overpasses were recommended in the prior study. This study concurs with that basic recommendation. Not all will be constructed, but the ones that make the most sense would be selected for construction. The City of Nogales needs better connectivity.
- C: (Marcelino Verona) It seems like bigger cargo trailers are being used recently. This would need to be taken into account for the overpass heights.
- Q: (Rich Pullman) Will you be prioritizing projects?
- A: Project priorities will be determined by the project team with the help of the Technical Advisory Committee. Wilbur Smith's job is to conduct this study to identify the needs and what can potentially be funded. The study is a planning tool that is intended for planning how the money for transportation will be spent in the future. We present all of the information to the Technical Advisory committee to help them make the most educated decision.
- C: (John Kissinger, Nogales City Manager) The new Mariposa Port improvement project provides no facilities for pedestrians beyond the port. Pedestrians are already using the current port that has no designated pedestrian lanes and the new reconfiguration does provide those lanes. However, there are no public parking facilities planned, nor are there drop off/pick up locations for pedestrians. This is an important need that should be emphasized in the transportation plan update.
- C: (Mr. Bonoran, City Councilman) The east frontage road is too busy, residents can barely get out of driveways or side streets. There need to be more alternative routes including complete frontage road connections on the east and west sides of I-19.





Unified Nogales/Santa Cruz County Transportation Plan Update 2010 July 22, 2009 Page 5 of 5



\*\*\* End of Public Open House Minutes \*\*\*

### Attachments:

- Agenda
- Sign In sheets (3 pages)
- · Handout of power point presentation made
- Comment Forms provided at the meeting (English and Spanish)
- Public Open House Advertisement













### Agenda Unified Nogales/Santa Cruz County **Transportation Plan Update 2010 Public Open House** Wednesday, July 22, 2009 5:30 - 7:30 p.m. Santa Cruz County Board of Supervisors Board Room 2150 North Congress Drive Nogales, AZ 85621

5:30	Open House

5:45 Welcome and Introductions Charlene Fitzgerald, ADOT

5:50 Presentation Dale Miller, Wilbur Smith Associates

6:15 Q&A/Call to Public

6:45 Open House

7:30 Adjourn



# **PUBLIC OPEN HOUSE - JULY 22, 2009**

Unified Nogales/Santa Cruz County Transportation Plan Update 2010





Please Print Clearly) Name	Agency and Title (If applicable)	Address	City	Zip Code	Phone	E-Mail
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Completion of this sign-in sheet is completely voluntary and helps the project team keep an accurate record of meeting attendees. Under state law, any identifying information provided will become part of the public record and, as such, must be released to any individual upon request.



# **PUBLIC OPEN HOUSE - JULY 22, 2009**

Unified Nogales/Santa Cruz County Transportation Plan Update 2010



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# PUBLIC OPEN HOUSE - JULY 22, 2009

Unified Nogales/Santa Cruz County Transportation Plan Update 2010



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# PUBLIC OPEN HOUSE - JULY 22, 2009



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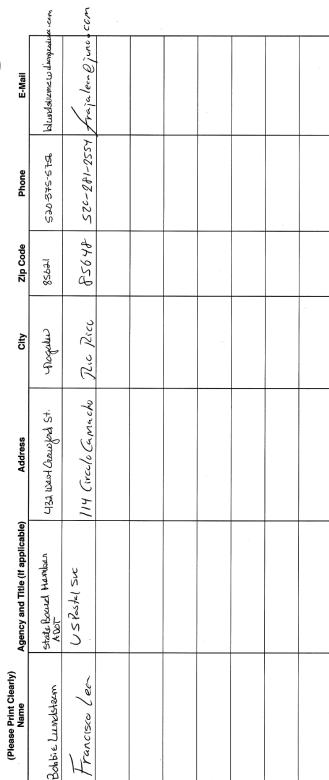
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# Unified Nogales/Santa Cruz County Transportation Plan Update 2010 PUBLIC OPEN HOUSE - JULY 22, 2009





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### **PUBLIC OPEN HOUSE**

**JULY 22, 2009** 

### Unified Nogales/Santa Cruz County Transportation Plan Update 2010





A public open house will be held on Wednesday, July 22, 2009 at the following location:

### Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

Name:	A R I Z O N A 0 1 2 3 4 Scale in Miles
Address:	Tubac Santa Cruz
City, State, Zip:	_ ( <del>**</del>
Telephone:	Rio Rico
PLEASE GIVE US YOUR THOUGHTS	SR 82 MP 10
1. What are the top three priority projects in your opinion?	SR 289 MP 10 U.S./Mexico Bonder Nogales
Tell us if you think that public transportation options such as bus transit service community and why.	e are important to you and the
<ul> <li>SEE REVERSE SIDE FOR ADDITIONAL QU</li> </ul>	JESTIONS –



3.	Do you support facilities for walking and biking? If so, describe what facilities you would like to see.
4.	It is likely that additional revenue sources will be needed to build your priority projects. Would you support this and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)
5.	What is the number one traffic problem in the community that you feel needs to be addressed?
6.	What are the major regional influences that need to be addressed for the study area?

### THANK YOU FOR COMING!

You may leave your comments at the registration table or send them to:

Sunny Bush – Public Involvement Specialist

7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020

Phone: 1-602-861-7440 • Fax: 1-602-371-1615

katherine\_bush@urscorp.com

http://mpd.azdot.gov/planning/nogales\_santacruz.php

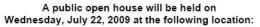
Please provide your comments by July 31, 2009





### PUBLIC OPEN HOUSE Your Input is Needed

Unified Nogales/Santa Cruz County Transportation Plan Update 2010





Santa Cruz County Board of Supervisors Board Room 2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

You are invited to attend a Public Open House for the Unified Nogales/Santa Cruz County Transportation Plan 2010. The Arizona Department of Transportation (ADOT), in cooperation with the City of Nogales and Santa Cruz County, is updating their 2000 Transportation Plan. Significant growth and economic development have occurred in the area since the 2000 Transportation Plan was initially prepared, requiring a new vision for multimodal transportation planning. The new Plan, the Unified Nogales/Santa Cruz County Transportation Plan 2010, is being developed to address the current and future demands placed on the streets, highways, transit, and bicycle and pedestrian facilities within the study area.

The study team is seeking public input to assist with development of this transportation plan. Your comments are needed to help assess both the constraints and possibilities for inture transportation infrastructure in the study area. Solutions to mitigate congestion and improve traffic circulation will be sought and all of the transportation modes within the study area will be considered. The identification of potential funding sources will be part of the study.

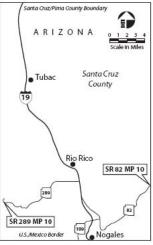
For additional information regarding the project or to submit comments, please contact Sunny Bush at Katherine\_bush@urscorp.com or 602-861-7440. All comments should be received by August 10, 2009.

People with disabilities may request reasonable accommodations in accordance with the Americans with Disabilities ACT by contacting Sunny Bush at 602-861-7440. Requests should be made as early as possible to allow time to arrange the accommodations.

> CHARLENE FITZGERALD ADOT Project Manager 602-712-6196

JAMES ZUMPF PARA Manager 602-712-7477

 $This notice and other project information can be found on the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the ADOT website at: http://mpd.azdot.gov/planning/nogales_santacruz.php. and the adoption of the adoption o$ 







### **PUBLIC OPEN HOUSE**

**JULY 22, 2009** 



### Unified Nogales/Santa Cruz County Transportation Plan Update 2010



A public open house will be held on Wednesday, July 22, 2009 at the following location:

### **Santa Cruz County Board of Supervisors Board Room**

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621

5:30 to 7:30 p.m.	Santa Cruz/Pima County Boundary
Name: STATE REPRESENTATIVE PAT FLEMING	A R I Z O N A 0 1 2 3 4
Address: P.O. Box 2702	Tubac Santa Cruz County
City, State, Zip: SIEPRA VISTA 8536	199
Telephone: CAPITOL: 602-926-5836 HOME: 520-378-4386	Rio Rico
Email: pfleming @ asleg.gor	SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS  1. What are the top three priority projects in your opinion?	SR 289 MP 10 U.S./Mexico Border
	U.S.Mexico Border To Nogales
Rublis transit in city of Nogales	
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2. Tell us if you think that public transportation options such as bus transit service are community and why.	·
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Community and accessible, low-cost tran	set within
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- SEE REVERSE SIDE FOR ADDITIONAL QUEST	TIONS –



3.	Do you support facilities for walking and biking? If so, describe what facilities you would like to see.
4.	It is likely that additional revenue sources will be needed to build your priority projects. Would you support this and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)
5.	What is the number one traffic problem in the community that you feel needs to be addressed?
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katherine\_bush@urscorp.com
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Please provide your comments by July 31, 2009





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**JULY 22, 2009** 



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Santa Cruz County Board of Supervisors Board Room 2150 N. Congress Drive, Room 120 • Nogales, AZ 85621

Sign to 7:30 p.m.

Name: Cliff Marsom

ARIZONA

Tubac Sonio Cruz

County

City, State, Zip: I) MacCacori AZ 85646

Telephone:

Email: Signstrum-ch le Santacroz a [we Com

PLEASE GIVE US YOUR THOUGHTS

1. What are the top three priority projects in your opinion?

I. Public transpit County wide, Bus or Rob L

2. Complete Frontage road connectivity up to 4 lawe.

3. Timprove Ruby Road Interchange west bound

to Northpound to the on ramp requires

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2. Tell us if you think that public transportation options such as bus transit service are important to you and the community and why.

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Support a diverse working and

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Communities and state and the community and why.

ARIZONA

- SEE REVERSE SIDE FOR ADDITIONAL QUESTIONS -



3.	Do you support facilities for walking and biking? If so, describe what facilities you would like to see.
	else
	It is likely that additional revenue sources will be needed to build your priority projects. Would you support this
٦.	and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)
	Federal Stimulos Rand 2.  Toll roads fees.
	Development fees Transit (Bos & Rai) Improvement District
5.	What is the number one traffic problem in the community that you feel needs to be addressed?  Cack of Funding in the county
	to make Improvements to the system instead of Patch and Prey's
6.	What are the major regional influences that need to be addressed for the study area?  Ivan set to 50ppert a 50sfainable
	workforce to support a sustainable
	economic environment and
_	diverse employment bases

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**JULY 22, 2009** 



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### **Santa Cruz County Board of Supervisors Board Room**

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621

5:30 to 7:30 p.m.	Santa Cruz/Pima County Boundary
Name: Linda Ellinor	ARIZONA 0 1 2 3 4 Scale in Miles
Address: PO Box 1463	Tubac Santa Cruz County
City, State, Zip: TUBAC AZ 85646	19
Telephone: 707 217-6678	
Email: 12/1/norag.com	Rio Rico SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS  1. What are the top three priority projects in your opinion?	SR 289 MP 10 U.S.Merico Border Nogales
Tiked Rock Public Transit	
Light Rail fim Nogales to Tucson	
2. Tell us if you think that public transportation options such as bus transit service are in community and why.  Essantial: Living in Tubac, if travel via	
cost prohibition, then are No options-	
- SEE REVERSE SIDE FOR ADDITIONAL QUEST	IONS –



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Nogales to Tuesm	to see biking lones up adown the I-19, from
•	e sources will be needed to build your priority projects. Would you support this ad ideas on what may be good options to raise additional revenue (e.g. sales tax, districts, property tax, other)
	L local savings into local investment
5. What is the number one traffic p  mostly  Lt 15 all single	roblem in the community that you feel needs to be addressed?  vehicle, petroteom based. This is NOT  the face of Peak oil & Climate change issue.
	ences that need to be addressed for the study area?
will take a subs	tendial investment of time energy. So, it we
You may	ry like general Can Ketp going on, we will fine System of the moral for the system of the moral for the system of the moral for the moral fore
	Phone: 1-602-861-7440 • Fax: 1-602-371-1615 katherine_bush@urscorp.com  Shift to alternatives http://mpd.azdot.gov/planning/nogales_santacruz.php  Forms & Transport  Please provide your comments by July 31, 2009  Petrole un haria
Completion of this form is of Under state law, any identifying inform	completely voluntary and helps the project team keep an accurate record of the meeting and comments.  ation provided will become part of the public record, and as such, must be released to any individual upon request.

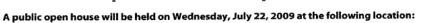




### **PUBLIC OPEN HOUSE**

**JULY 22, 2009** 

### Unified Nogales/Santa Cruz County Transportation Plan Update 2010





Santa Cruz/Pima County Boundary

**Santa Cruz County Board of Supervisors Board Room** 

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

Name: SHELLA VASQUEZ RID RICO PROPERTIES	ARIZONA 0 1 2 3 4 Scale in Miles
Address: 275 RIO RILO DRIVE	■ Tubac Santa Cruz County
City, State, Zip: R10 R100, AZ 85648	19
Telephone: 381-8457	
Email: Shella-VASQUEZ@AVATER HOLDINGS, COM	Rio Rico SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS	SR 289 MP 10
1. What are the top three priority projects in your opinion?	U.S./Mexico Border Nogales
WEST FRONTAGE ROAD AL EXIT IT FROM	YAVAPAI DRIVE
TO FIRE DEPT.	
EAST FRONTAGE ROAD GREEN VALLEY	
EAST FRONTAGE ROAD-RID RID NORTH OF	PECK CANYON
Tell us if you think that public transportation options such as bus transit service are im community and why.	portant to you and the
	,
- SEE REVERSE SIDE FOR ADDITIONAL QUESTION	ONS –



3.	Do you support facilities for walking and biking? If so, describe what facilities you would like to see.
4.	It is likely that additional revenue sources will be needed to build your priority projects. Would you support this and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)
_	
5.	What is the number one traffic problem in the community that you feel needs to be addressed?
6.	What are the major regional influences that need to be addressed for the study area?
	•

### THANK YOU FOR COMING!

You may leave your comments at the registration table or send them to:
Sunny Bush – Public Involvement Specialist
7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020
Phone: 1-602-861-7440 • Fax: 1-602-371-1615
katherine\_bush@urscorp.com
http://mpd.azdot.gov/planning/nogales\_santacruz.php

Please provide your comments by July 31, 2009





### **PUBLIC OPEN HOUSE**

**JULY 22, 2009** 

### Unified Nogales/Santa Cruz County Transportation Plan Update 2010

A public open house will be held on Wednesday, July 22, 2009 at the following location:

### **Santa Cruz County Board of Supervisors Board Room**

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

	Santa Cruz/Pima County Boundary
Name: Joe Barr	ARIZONA 0 1 2 3 4
Address: 855 W Bell Rd #100	Tubac Santa Cruz
City, State, Zip: Nogales, AZ 85621	County
Telephone: 520 – 761 – 3616	
Email: Joe 9 @ Barrtrust. com	Rio Rico SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS  1. What are the ten three priority prejects in your enjoint?	5R 289 MP 10
1. What are the top three priority projects in your opinion?  • Rail & River Crossings	U.S./Mexico Border Nogales
· Connection Between Mariposa & DeConcin' Ports (Fairly	Divert)
Complete Frontige Rd Network - In Nogales I-19 is a significances circuitors Rockes & Hita Timber Louds	
2. Tell us if you think that public transportation options such as bus transit service are im community and why.  Culture Influence from Mexico couses higher 70 of frotic which would benefit from public Tronget Partweler Foursed in Southern South Cong County	f Redestrion
– SEE REVERSE SIDE FOR ADDITIONAL QUESTION	DNS –



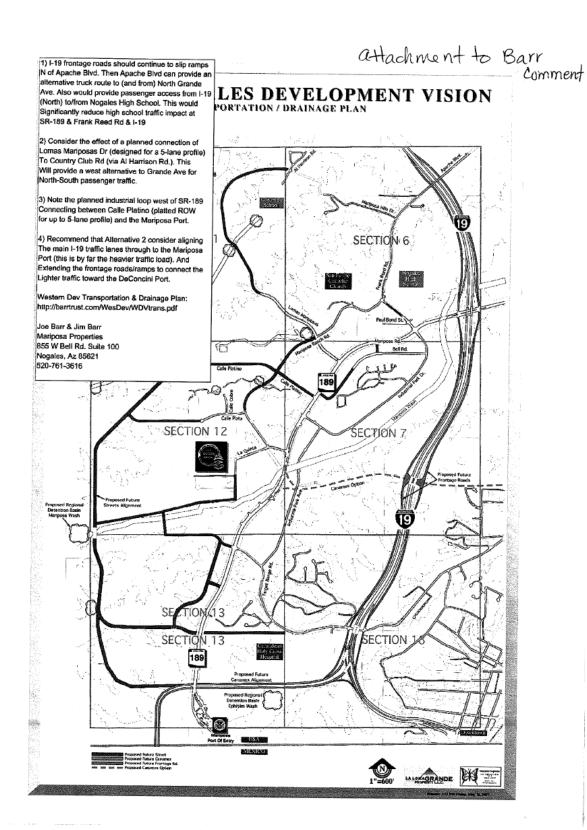
3. Do you support facilities for walking and biking? If so, describe what facilities you would like to see.	
in Nogoles - Not some how much bike troffix we would see but	
expect ledes frigen facilities would get heavy use_	
4. It is likely that additional revenue sources will be needed to build your priority projects. Would you support this and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)	
No, I Believe the Tox Birder is for higher ston it should be-	
I know it is not popular, but we need to deallocate Programs that are	
not Critical (Just Like we all must do with our home/business	
budgets)_	
5. What is the number one traffic problem in the community that you feel needs to be addressed?	
East west barriers (UPRR, South Nogoles work, Sonta (ng River, I+19)	
•	
6. What are the major regional influences that need to be addressed for the study area?	
Maxico - Currently the Port Copocity may limit Inpoch, But	
expect expanded Post capacity to cause step function Increase	
Attached are western Nagalos transportation Plan that go have son before Keep this Planned infrastructure in mind, and we welcome input to	
Improve this Plan (available in Electroniz Form)	
THANK YOU FOR COMING! You may leave your comments at the registration table or send them to:	

Sunny Bush – Public Involvement Specialist 7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020 Phone: 1-602-861-7440 • Fax: 1-602-371-1615 katherine\_bush@urscorp.com

http://mpd.azdot.gov/planning/nogales\_santacruz.php

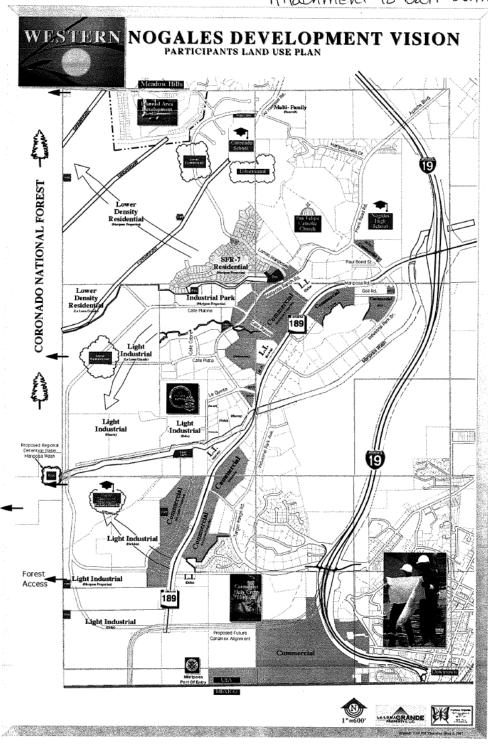
Please provide your comments by July 31, 2009



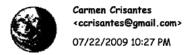




# Attachment to Barr comment







To Katherine\_bush@urscorp.com

cc

bcc

Subject comment on ADOT Santa Cruz County Plan

Dear Sunny Bush,

My name is Carmen Crisantes and I am a resident of Rio Rico. I could not attend the meeting but wanted to submit my comments on the new plan.

I believe the new plan needs to focus on pedestrian and bicycle modes of transportation for Nogales, Rio Rico and Santa Cruz County. We could reduce traffic, make our roads safer and make our citizens healthier all at the same time.

By utilizing sidewalks and bike lanes, many people would keep their cars off the roads. There are many residential neighborhoods in Rio Rico and Nogales that are within walking and biking distance of schools and stores. Many of these people would choose to walk or bike and leave their car at home thus reducing traffic on our already crowded roads.

Often, people can be seen walking along busy two lane roads in Rio Rico and Nogales creating danger for themselves and motorists. Installing sidewalks and or bike lanes would greatly reduce the danger to pedestrians, bike riders and motorists as well.

Having sidewalks and bike lanes, would allow many more people to walk or bike to their destinations. This would add desperately needed exercise into the lives of many people. Our health care system would benefit from less obesity and all the many health conditions that go along with lack of exercise.

Citizens could save money on gas, wear and tear on the cars, loose weight, be healthier, feel happier and help save the planet, all by walking or biking safely to their destinations!! All we need are more sidewalks and bike lanes.

As a personal example, I frequently walk from my home to Garrett's IGA to buy our groceries. After having children, I had to buy a special all terrain stroller to be able to make the trip. I also have to walk along Yavapai road. It is dangerous for me, my children and the cars that drive by us. However, we save gas, our car, the planet, and get the joy of a pleasant walk, some exercise and fresh air. I would love to bike my children to school as well, but feel it is just too dangerous with the traffic as it is now. I know many other people in my neighborhood that feel the same way about walking or biking to our nearby shops and schools.

I think a great example of how successful sidewalks and bike lanes would be is the new sidewalk constructed along Pendleton Road in East Rio Rico. Every morning, afternoon and evening scores people can be seen walking and riding along this new route. People are thrilled to have a safe place to exercise, and spend a little time outdoors.

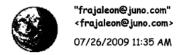
I hope you will consider the the health and safety of our citizens and the quality of our environment when making the transportation plan for



Santa Cruz County, by adding sidewalks and bike lanes to every major road.

Thank you for your time, Carmen Crisantes 345 Via de la Santa Cruz Ct Rio Rico, AZ 85648





To Katherine\_bush@urscorp.com

cc

bcc

Subject Nogales/Rio Rico Area comments

Hi! My name is Francisco Leon, I live in Rio Rico, AZ. I went to the public meeting on 7/22/09 in Nogales. I only went to tell you that in fact there are not any bike paths in the whole area and to tell you about the problem that we have on the intersection of Ruby Rd and I-19 along with the whole Ruby Rd, where any kind of shoulders are not existent. I'm glad that you are aware of all this and more, I hope that you consider this concerns one of your top priorities on your long list. Thank you for your interest in the area.

Turn life into a beach with a new sandbox. Click now!





### PUBLIC OPEN HOUSE Sent via

**JULY 22, 2009** 



### Unified Nogales/Santa Cruz County Transportation Plan Update 2010

A public open house will be held on Wednesday, July 22, 2009 at the following location:

### **Santa Cruz County Board of Supervisors Board Room**

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621

5:30 to 7:30 p.m.	Santa Cruz/Pima County Boundary
Name: Francisco I Leon	ARIZONA 0 1 2 3 4 Scale in Miles
Address: 114 Circulo Camacho	Tubac Santa Cruz County
City, State, Zip: Rio Rico, AZ, 85648	19
Telephone: (SZC) 281-2554	Rio Rico
Email: frajaleano juna.com	SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS	
What are the top three priority projects in your opinion?	U.S./Mexico Border Nogales
- Ruby Rd and 1-19 Traffic lights	
- Ruly Rd lack of shoulders and too much	
traffic for such a small rd, plu	us we need
a bridge over railroad tracks on Ruby	, Rd.
- Bike paths!!	
<ol><li>Tell us if you think that public transportation options such as bus transit service are im community and why.</li></ol>	portant to you and the
Yes they are important, but we don't	treed them
locally, it would be better if we	e get some
locally, it would be better if we kind of transportation Nogales-Too	rson - Plaenix
· · · · · · · · · · · · · · · · · · ·	<u> </u>
- SEE REVERSE SIDE FOR ADDITIONAL QUESTION	ONS –



### THANK YOU FOR COMING!

You may leave your comments at the registration table or send them to:
Sunny Bush – Public Involvement Specialist
7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020
Phone: 1-602-861-7440 • Fax: 1-602-371-1615
katherine\_bush@urscorp.com
http://mpd.azdot.gov/planning/nogales\_santacruz.php

Please provide your comments by July 31, 2009



RECORD OF CONVERSATION
DATE: 7 30 09 TIME: JOB NO.: 2344 SSS3
RECORDED BY: 5. Bush OWNER/CLIENT:
TALKED WITH: Irene Valdez of RIO RICO
NATURE OF CALL: INCOMING OUTGOING VISIT MEETING PHONE: # 520-3
ROUTE TO: INFORMATION ACTION 468
Ivaldez @nusd. K12.az.us
MAIN SUBJECT: Nogales PARA - Comment
ITEMS DISCUSSED:
Lives in Rio Rico off of Basil Mexico
during Monsoon Cal't get home
because of flooding in washes -no
access - solution contern
dors Patagona lake open up to dump
water when it round there?
she will email her comments to me
(never received her email
comments)





### **PUBLIC OPEN HOUSE**

**JULY 22, 2009** 





### Unified Nogales/Santa Cruz County Transportation Plan Update 2010

A public open house will be held on Wednesday, July 22, 2009 at the following location:

### Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

3.50 to 7.50 p.m.	Santa Cruz/Pima County Boundary
Name: NOHE GARCIA	A R I Z O N A 0 1 2 3 4 Scale in Milles
Address: 383 LOON CT.	Tubac Santa Cruz County
City, State, Zip: RLO RLCO AZ. 85648	9
Telephone: (520) 6/9-1/86	Río Rico
Email: NOHE GARCIA @ HOTMAIL. COM	SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS  1. What are the top three priority projects in your opinion?	SR 289 MP 10  U.S./Medico Border 100 Nogales
1: I-19 and manyon interection.	upgrøde.
2- manjara od. widen it to light 3: bicycle and roalking pathways	capacity.
Tell us if you think that public transportation options such as bus transit service are im community and why.	
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economy and also below the envisonment, with lesser can on the road.	
with lesser can on the road.	
– SEE REVERSE SIDE FOR ADDITIONAL QUESTI	ONS –



·
3. Do you support facilities for walking and biking? If so, describe what facilities you would like to see.
abrabally, its healthy, non-palleeting,
fulli enterteinment, way of transportation
and more.
4. It is likely that additional revenue sources will be needed to build your priority projects. Would you support this and do you have any opinions and ideas on what may be good options to raise additional revenue (e.g. sales tax, development fees, improvement districts, property tax, other)
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to the area.
State and ADOT need to support a grapet
the onl, we provide 24 BILLION a year in tros they need to unest in the future of anyona. 5. What is the number one traffic problem in the community that you feel needs to be addressed?
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4: mortich way and manipora
V .
6. What are the major regional influences that need to be addressed for the study area?
the Border Craning (Commercial)

### THANK YOU FOR COMING!

You may leave your comments at the registration table or send them to:
Sunny Bush – Public Involvement Specialist
7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020
Phone: 1-602-861-7440 • Fax: 1-602-371-1615
katherine\_bush@urscorp.com
http://mpd.azdot.gov/planning/nogales\_santacruz.php

Please provide your comments by July 31, 2009









### February 3, 2010 Nogales Public Open House Meeting







MEMO To: Mark Hoffman, ADOT Project Manager

Juan Guerra, City of Nogales City Engineer

Scott Altherr, Santa Cruz County Public Works Director

Date: February 3, 2010 Public Open House Meeting

From: Dale E. Miller, WSA Project Manager

Subject: Public Open House – Meeting #2

Unified Nogales/Santa Cruz County Transportation Plan Update 2010

ADOT Contract No. T0849AQ001; Purchase Order No. TD0251

Notice to Proceed Date: 10 December 2008

## Agenda:

7:30 pm Adjournment

5:30 pm:	Public Open House convened with open discussion between attendees and project team members
5:45 pm:	Welcome and Introductions by Mark Hoffman, ADOT Project Manager
5:55 pm:	Explanation of Public Involvement Process by Linda Ritter, ADOT Communications and Community
	Partnerships
6:00 pm:	Presentation of Implementation Plan by Dale Miller, Wilbur Smith
7:00 pm	Question and Answer Session - Call to the Public
7:15 pm	Open House discussion

The following project team members were in attendance:

- Mark Hoffman, ADOT ADOT Project Manager
- Linda Ritter, ADOT ADOT Communications and Community Partnerships Public Information Officer
- Katherine "Sunny" Bush, URS Consultant to ADOT Communications & Community Partnership Div.
- Dale Miller, Wilbur Smith; Project Manager Consultant to ADOT
- Randall Overmyer, Wilbur Smith; Project Planner

   Consultant to ADOT

Page 1 of 4

1475 North Scottsdale Road, Suite 480, Scottsdale, AZ 85257 480.477.8652 f 480.477.8653 www.WilburSmith.com



Unified Nogales/Santa Cruz County Transportation Plan Update 2010 February 3, 2010 Page 2 of 4



Public Meeting Minutes Nogales, AZ 02/03/2010

TAC members, stakeholders and general public attending the meeting are listed on the sign in sheet accompanying these minutes.

The meeting began at 5:45pm. Mark Hoffman, ADOT Multimodal Planning Division Project Manager began the meeting with a description of the ADOT Planning Assistance for Rural Arizona (PARA) program which provided funding for this project. Mr. Hoffman then introduced the project study team members in attendance.

Linda Ritter gave the attendees a summary of public involvement needs, including the comment forms on the table and the linkage to the ADOT website. She stressed the importance of getting comments in to the team prior to February 19th.

Dale Miller summarized the work done on the project to date with a PowerPoint presentation. Working Paper #1 reported on existing conditions in the study area, and projected future conditions under a "No Build" scenario. This illustrated what traffic conditions would be in 2030 if no additional roadway capacity were added to the system. Working Paper #2 identified 80 needed projects for the city, county and state systems. It also provided planning level cost estimates for these projects. Mr. Miller explained that the estimates were based on current unit costs, and that more specific costs would need to follow initial engineering work on the projects.

Mr. Miller explained that while I-19 had sufficient capacity today, predicted future traffic levels indicate that additional lanes are warranted by 2030.

Mr. Miller continued by explaining project priority lists which were submitted to Santa Cruz County and City of Nogales staff for their respective projects. These local agencies ranked their priority projects for within short term (five year), medium term (ten year) and long term (twenty year) time frames. Projects identified in Working Paper #2 and ranked as short term high priority needs included:

- Mariposa Road/I-19 traffic interchange
- Traffic Interchange Redesign at Ruby Road and I-19
- Extension of frontage roads along I-19
- Grand Avenue Capacity
- Extension of Pendleton Road
- Additional crossings of the Santa Cruz River and the UPRR
- Widening of I-19
- Alternate Modes improvements including transit and extension of the Coatimundi Trail.

Continuing with the PowerPoint presentation, Mr. Miller reviewed medium term priority projects and long term priorities. He acknowledged that not all projects identified in Working Paper #2 were included within the twenty year horizon, and that due to financial constraints, some projects would fall beyond the twenty year horizon. Mr. Miller showed the audience copies of Working Paper #2, and suggested that these were available for review, and contain more specific descriptions of the projects identified. Working Paper #3 contains the priority ranking, by time frame, of city, county and state system projects. ADOT staff did not undertake the rankings of state system projects, wanting to see what the local priorities were for these projects.

Mr. Miller continued the PowerPoint presentation, summarizing the various funding sources currently used for local transportation needs. Some of these, such as gasoline tax, vehicle license tax, and state lottery funds have





Unified Nogales/Santa Cruz County Transportation Plan Update 2010 February 3<sup>,2</sup>010 Page 3 of 4



diminished or are in danger of being "swept" by the state legislature due to the current financial situation. Mr. Miller explained that current revenues were not adequate to address needs identified during this planning process. Scott Altherr, Santa Cruz County Public Works Director, further clarified that no part of the plan could be implemented without additional revenues, and that existing revenue sources were barely adequate to cover staffing, operations, and maintenance costs at the county and the city. Juan Guerra, City of Nogales City Engineer, concurred. J.B. Manson, Nogales Port Authority, stated that they are working with ADOT to increase the percentage of funds allocated to the area that generates them. Specifically, he referred to fees charged from cross border traffic which are supposed to be used in areas within 100 miles of the border. Mr. Miller responded that the WSA team would investigate that source further. Mr. Miller went on to summarize recommended new revenue sources and financing measures also reported on in Working Paper #3. These include development impact fees, dedicated sales tax increases, improvement districts and community facilities districts.

A one half cent sales tax increase dedicated to transportation would generate approximately \$3.4 million annually if imposed on the entire county, including the City of Nogales. It is recommended that such a tax should be imposed county wide to avoid retail business locating outside of the city limits to avoid a city only tax, thereby encouraging "leapfrog" development.

Cities and counties throughout Arizona impose development impact fees on new construction to pay for regional roadway capacity needed to accommodate the traffic generated by new growth. Roadway impacts fees in Arizona are currently as high as \$7,000 per home in some jurisdictions. A \$3,000 per unit fee is recommended in Working Paper #3 to help address some of the needs which will be generated by new residential development in the County. This would generate about \$2.2 million annually county wide, given the amount of development pending in the area.

Improvement Districts are created to provide specific improvements for a defined area. Districts are approved by property owners voting to impose a special assessment against properties in the district to provide improvements such as road paving, street lights, or sanitary sewers. These are typically used to address deficiencies in currently developed areas. The assessments are imposed over a 15 year period with bonds being issued up front to make the improvements.

Community Facilities Districts employ a similar approach, and are typically used to fund infrastructure needs prior to new development. The costs are then passed on to the individual lot or home purchasers. These can be undertaken by either private developers or public agencies.

Mr. Miller presented a couple of mounted graphics showing potential locations for districts to address a number of the projects identified in Working Paper #2 and prioritized in Working Paper #3.

A member of the audience asked about bicycle facility funding and expressed a concern that more needed to be done in that area. He also suggested a higher priority for planning for bicycle and pedestrian facilities to provide direction to upcoming design efforts.

Mr. Miller urged the audience to fill out the comment forms, contact the Wilbur Smith Associates team directly or to share comments with local public agency participants. He concluded the presentation portion of the meeting with an invitation for those present to come up, ask questions and view the materials. The meeting concluded at 7:30pm





Unified Nogales/Santa Cruz County Transportation Plan Update 2010 February 3: 2010 Page 4 of 4



\*\*\* End of Public Open House Minutes \*\*\*

# Attachments:

- Agenda
- Sign In sheets
- · Handout of power point presentation made
- Comment Forms provided at the meeting
- Public Open House Advertisement

— Wilpursi	mith	
ASSOCIA	TES	











# Agenda Unified Nogales/Santa Cruz County Transportation Plan Update 2010 Public Open House Wednesday, February 3, 2010 5:30 – 7:30 p.m. Santa Cruz County Board of Supervisors Board Room 2150 North Congress Drive Nogales, AZ 85621

5:30	Open House	
5:45	Welcome and Introductions	Mark Hoffman, ADOT
5:55	Explanation of Public Involvement Process	Linda Ritter, ADOT CCP
6:00	Presentation	Dale Miller, Wilbur Smith Associates
6:30	Q&A/Call to Public	
7:00	Open House	
7:30	Adjourn	



# PUBLIC OPEN HOUSE – FEBRUARY 3, 2010



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Completion of this sign-in sheet is completely voluntary and helps the project team keep an accurate record of meeting attendees. Under state law, any identifying information provided will become part of the public record and, as such, must be released to any individual upon request.



# ZI-25IS

# Unified Nogales/Santa Cruz County Transportation Plan Update 2010 **PUBLIC OPEN HOUSE - FEBRUARY 3, 2010**



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Zip Code	85646	85614	52			-	
City	TUBAC	GRBEN VALLET	Tueso				
Address	PO Box 4027	973 WGAMING GLOSKING GREEN VALLET 85614	12215 2nd Ame				
Agency and Title (If applicable)		SANTA CRUZ VOLLET BICTCLE ADVOCATE	ADOV THEOU DE				
(Please Print Clearly) Name	EE BLACKWELL	IM JORDAN	TODO A. GMENY				

Completion of this sign-in sheet is completely voluntary and helps the project team keep an accurate record of meeting attendees. Under state law, any identifying information provided will become part of the public record and, as such, must be released to any individual upon request.

MPD #13-09- Purchase Order No. TD0251



# ZI-Z5IS

# Unified Nogales/Santa Cruz County Transportation Plan Update 2010 **PUBLIC OPEN HOUSE - FEBRUARY 3, 2010**



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Phone	GREEN VALLEY 85614 520 6486340 BILADAMSON BOOK.NET	1025-135 055	£18-606-209		·	·
Zip Code	41952 -	82953	57558			
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ddress	W CALLE	1.0. 30x 848 Nosales, A3 84538	11740 W BOR 10.			
Agency and Title (If applicable)	BILL ADAMSON BICKUE ADVOCATE COMM.	FPAA				
(Please Print Clearly) Name	BILL ADAMSON	Allism Moore	Jose Rivero			





# **PUBLIC OPEN HOUSE**

# **FEBRUARY 3, 2010**

# Unified Nogales/Santa Cruz County Transportation Plan Update 2010





A public open house will be held on Wednesday, February 3, 2010 at the following location:

# Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

Name:	A R I Z O N A 0 1 2 3 4 Scale in Miles
Address:	Tubac Santa Cruz
City, State, Zip:	STUDY
Telephone:	Rio Rico
Email:	SR 82 MP 10
	5R 289 MP 10
PLEASE GIVE US YOUR THOUGHTS	U.S./Mexico Border Nogales
<ol> <li>Additional money will be needed to build priority projects in your community, as current to enough money to maintain the existing roadways. The report recommends several ways to rai be earmarked for these projects: (1) an additional one-half cent sales tax in Santa Cruz County and (2) a development impact fee that would add \$3,000 to the purchase price of a new home (including the City of Nogales).</li> </ol>	se additional money that would (including the City of Nogales),
Both methods of raising funds are needed to build the new transportation projects presented in method would approximately double the time needed to construct the projects. If neither optive result in few, if any, projects being constructed without state or federal grant money being section.	ion is adopted, this would
Would you be willing to pay an additional one-half cent sales tax to build new transportation p	rojects?
Would you be willing to support a new development impact fee on new home construction?	
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- SEE REVERSE SIDE FOR ADDITIONAL QUESTIONS -



2. Please provide any additional information or suggestions that you believe would help to finalize the transportation improvement program and implementation plan.

# THANK YOU FOR COMING!

You may leave your comments at the registration table or send them to:

Sunny Bush – Public Involvement Specialist

7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020

Phone: 1-602-861-7440 • Fax: 1-602-371-1615

katherine\_bush@urscorp.com

http://www.azdot.gov/mpd/systems\_planning/nogales\_santacruz.asp

Please provide your comments by February 19, 2010





# PUBLIC OPEN HOUSE Your Input is Needed

Unified Nogales/Santa Cruz County Transportation Plan Update 2010

A public open house will be held on Wednesday, February 3, 2010 at the following location:





Santa Cruz County Board of Supervisors Board Room 2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

You are invited to attend a Public Open House to discuss and provide your input on the Unified Nogales/Santa Cruz County Transportation Plan 2010.

The Arizona Department of Transportation (ADOT), in conjunction with the City of Nogales and Santa Cruz County, is nearing completion of the Unified Nogales/Santa Cruz County Transportation Plan 2010. The Plan, building on the components of the 2000 Transportation Plan and considering the significant growth and economic development that has occurred in the area ower the past ten years, is being developed to address the current and future demands placed on the streets, highways, transit, and bicycle and pedestrian facilities within the study area.

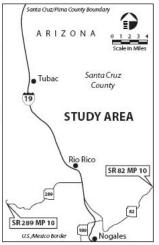
A number of potential solutions to mitigate congestion and improve traffic circulation that includes all of the transportation modes within the project study area have been developed and prioritized. The identification of potential funding sources has also been studied as part of this effort. ADOT, the City of Nogales, and Santa Cruz County welcome your input to assist them in finalizing this significant transportation update.

For additional information regarding the project or to submit comments, please contact Sunny Bush at Katherine\_bush@urscorp.com or 602-861-7440. All comments should be received by February 19, 2010.

People with disabilities may request reasonable accommodations in accordance with the Americans with Disabilities ACT by contacting Sunny Bush at 602-861-7440. Interpreter services will also be provided upon request. Requests should be made as early as possible to allow time to arrange the accommodations.

MARK HOFFMAN TODD EMERY
ADOT Project Manager ADOT Tucson District Engineer

 $This \ notice \ and \ other \ project \ information \ can \ be \ found \ on \ the \ ADOT \ website \ at: http://www.azdot.gov/mpd/systems_planning/nogales_santacruz.asparents \ and \ other \ project \ information \ can \ be \ found \ on \ the \ ADOT \ website \ at: http://www.azdot.gov/mpd/systems_planning/nogales_santacruz.asparents \ and \ other \ project \ information \ can \ be \ found \ on \ the \ ADOT \ website \ at: http://www.azdot.gov/mpd/systems_planning/nogales_santacruz.asparents \ at: http://www.azdot.gov/$ 







# **PUBLIC OPEN HOUSE**

# **FEBRUARY 3, 2010**

# Unified Nogales/Santa Cruz County Transportation Plan Update 2010



A public open house will be held on Wednesday, February 3, 2010 at the following location:

Santa Cruz County Board of Supervisors Boa	
2150 N. Congress Drive, Room 120 • Nogales, AZ 8	5621
5:30 to 7:30 p.m.	Santa Cruz/Pima County Boundary
Name: MATHI AMPANA	ARIZONA 0 1 2 3 4
Address: 1520 PENDLETON	Tubac Santa Cruz
City, State, Zip: Rothico, Az 8564P	STUDY
Telephone: 520-313-4291	AREA
Email: Kathidangana@gahoo, com	Rio Rico SR 82 MP 10
	SR 289 MP 10
PLEASE GIVE US YOUR THOUGHTS	U.S./Mexico Border \ \ \ \ \ \ Nogales
<ol> <li>Additional money will be needed to build priority projects in your community, as current to enough money to maintain the existing roadways. The report recommends several ways to rai be earmarked for these projects: (1) an additional one-half cent sales tax in Santa Cruz County and (2) a development impact fee that would add \$3,000 to the purchase price of a new home (including the City of Nogales).</li> </ol>	se additional money that would (including the City of Nogales),
Both methods of raising funds are needed to build the new transportation projects presented method would approximately double the time needed to construct the projects. If neither oppose result in few, if any, projects being constructed without state or federal grant money being sec	tion is adopted, this would
Would you be willing to pay an additional one-half cent sales tax to build new transportation	projects?
YES-17 DEDICATED ONLY TO * ROAD PROJECTS	DIRANSPORTATO
Would you be willing to support a new development impact fee on new home construction?	
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PRESENTATIONS	NAME OF THE OWNER
- SEE REVERSE SIDE FOR ADDITIONAL OLIESTIC	ONS -



2. Please provide any additional information or suggestions that you believe would help to finalize the transportation improvement program and implementation plan.
#2 WEST FRONTAGE Pd, YAVAPAI SOUTH
NEEDS TO BE COMPLETED
#5 73 LO PARADO/18 FRONTAGE Rd &
EMERCROSSING DEROS PEALIGNMENT,
#3 IMPROVE I-19 EXITS RUBY Rd & FRONTA
PD TRAFFIC CIRCLELATION.
TRATTICLE FRONTAGE
RD. @ RoRico DR.
* CONSTRUCT BRIDGE & IMPRODE PRAD-TALOTARADO E. FRONTAGE RUL TENDLETON DR.
COM SCROBATION
#6 UPRR SYERCEROSSING, RIOPICO DRIVE
These are my priorities I agree a sales tax DEDICATED Would be beneficial to fund these.
THANK YOU FOR COMING!
You may leave your comments at the registration table or send them to:  Sunny Bush – Public Involvement Specialist

Please provide your comments by February 19, 2010

7720 N. 16th Street, Suite 100 • Phoenix, Arizona 85020 Phone: 1-602-861-7440 • Fax: 1-602-371-1615 katherine\_bush@urscorp.com http://www.azdot.gov/mpd/systems\_planning/nogales\_santacruz.asp





# **PUBLIC OPEN HOUSE**

**FEBRUARY 3, 2010** 

# **Unified Nogales/Santa Cruz County**



**Transportation Plan Update 2010** A public open house will be held on Wednesday, February 3, 2010 at the following location:

# Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

	Santa Cruz/Pima County Boundary
Name: LEE BLACKWELL	ARIZONA 0 1 2 3 4
Address: 10 Box 4027	Tubac Santa Cruz County
City, State, Zip: 7 UBAC A 2 8 5646	STUDY AREA
Telephone: 520 398 2268	
PLEASE GIVE US YOUR THOUGHTS	SR 289 MP 10  SSR 289 MP 10  U.S.Mexico Bonder  U.S.Mexico Bonder  U.S.Mexico Bonder
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Would you be willing to pay an additional one-half cent sales tax to build new transportation p	projects?
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Would you be willing to support a new development impact fee on new home construction?	•
- SEE REVERSE SIDE FOR ADDITIONAL QUESTION	ONS –



ease provide any additional infor ovement program and implemen	mation or suggesti tation plan.	ons that you believ	e would help to fin	alize the transpor	tátion
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# **PUBLIC OPEN HOUSE**

# **FEBRUARY 3, 2010**



# Unified Nogales/Santa Cruz County Transportation Plan Update 2010



A public open house will be held on Wednesday, February 3, 2010 at the following location:

# Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

	Santa Cruz/Pirna County Boundary
Name: Scat Alther (resident)	A R I Z O N A 0 1 2 3 4 Soile in Miles
Address: PO BOX 2	Tubac Santa Cruz County
City, State, Zip: SONOITA, AZ 85637	STUDY AREA
Telephone:	
Email: origcabfan@yahoo.com	Rio Rico   SR 82 MP 10   SR 289 MP 10
PLEASE GIVE US YOUR THOUGHTS	U.S./Mexico Border Nogales
<ol> <li>Additional money will be needed to build priority projects in your community, as current ta enough money to maintain the existing roadways. The report recommends several ways to rai be earmarked for these projects: (1) an additional one-half cent sales tax in Santa Cruz County and (2) a development impact fee that would add \$3,000 to the purchase price of a new home (including the City of Nogales).</li> </ol>	se additional money that would (including the City of Nogales),
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<ol><li>Please provide any additional information or suggestions that you believe would help to finalize the transportation mprovement program and implementation plan.</li></ol>		
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http://www.azdot.gov/mpd/systems\_planning/nogales\_santacruz.asp

Please provide your comments by February 19, 2010





"Miller, Dale E."
<DEMiller@wilbursmith.com>
02/04/2010 10:00 AM

- To "Ron Campana There is no limits to what you can accomplish if you don't care who gets the credit. R Reagon" <ru conc1247@yahoo.com>
- cc "Overmyer, Randall Lee" <rovermyer@wilbursmith.com>, "Hedden, Kate" <LHEDDEN@wilbursmith.com>, "Mhoffman@azdot.gov" <Mhoffman@azdot.gov>,

Subject RE: Transportation Plan Update Open House Santa Cruz
County

Thanks, Ron. We will digest these comments and get back to you in the near future. Dale

Dale E. Miller, PE, RLS
Associate in Charge - Arizona
Wilbur Smith Associates
1475 North Scottsdale Road, Suite 480
Scottsdale, AZ 85257
w: 480.477.8652 m: 480.522.0330 f: 480.477.8653
DEMiller@WilburSmith.com
www.WilburSmith.com

From: Ron Campana - There is no limits to what you can accomplish if you don't care who gets the

credit. R Reagon [mailto:ronc1247@yahoo.com] **Sent:** Thursday, February 04, 2010 9:52 AM

To: Miller, Dale E.

Subject: Transportation Plan Update Open House Santa Cruz County

## Hi Dale

Lam sending these comments (rants) to you, because there was not enough room on the comment form for my thoughts. I attended the Transportation Plan Update last night in Nogales. I agree with your statement, if you want improvements in transportation needs in the county you need find a way to pay for it. I support all the recommendations for funding future transportation improvements in Santa Cruz County. But, with the current budget issues there may not be support to take any action to raise funds by an assessment or tax.

I have been asking the supervisors to adopt development impact fees for the past two years and guess what the answer is. "If we adopt impact fees it will hurt future development in the county." I don't believe that. I have asked that the supervisors to consider and adopt a county wide assessment for road improvements and guess what the answer is. They don't believe there would be any support for such a fee", I would support a 1/2 cent increase in sales tax, but this is Santa Cruz County and my friends and neighbors are against raising any tax.

So, where does that leave us. Applying for federal funding and grants for eligible projects in the county. The problem with this county is that most federal funding and grants require a match and the county will say in most cases that funds are not there for a match. The county does receive some funding, but it never seems enough to fund a full project.

We have been writing letters to our state and federal representatives asking for funding support for Palo Parado,



as an example. I think by now they are sending my letters and e-mails to the round file. It is very difficult for a small county to get our representatives to take our needs and request serious.

What we have done in Rio Rico is went out and raised private donations from residents, community organizations and developers to help with the current Palo Parado Road improvements that are now underway. I have attached a copy of the results of that effort. The challenge is that there are more than ten thousand residents living east of the Santa Cruz River in the northeast areas of Rio Rico and not many found it important enough to donate. Most say it is a county responsibility. How do you argue with that view.

When the federal government sends funds to this state, it seems that most of the funding is use in the larger counties for transportation projects. The formula used by the state for distribution of funds is population based and the smaller counties loose almost every time. It would be great, if ADOT would do a study on changing the funding distribution formula, so it would help the smaller counties share in federal funding opportunities at least some of the time.

I suspect that almost all of the 80 proposed projects listed in the study will remain proposed projects unless something can be done to change the mind set of the residents that are impacted. This county is divided into communities and each believes that their needs are the most important and are not willing to pay for projects in others area of the county. This makes it very difficult to address issues with a broad county wide view.

Great presentation. Sorry about the cynical view of my county.

Ron Campana Rio Rico

There is no limit to what you can accomplish, If you don't care who gets the credit RReagan





# **PUBLIC OPEN HOUSE**

# **FEBRUARY 3, 2010**







A public open house will be held on Wednesday, February 3, 2010 at the following location:

# Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621

5:30 to 7:30 p.m.	
\_ () \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Santa Cruz/Pirna County Boundary
Name: Joan Van Derlos	ARIZONA 0 1 2 3 4
Address: PD BOK 4027	Tubac Santa Cruz
City, State, Zip: Thac, AZ 85646	STUDY
Telephone: (520) 348-2268	AREA
Email: anza jo ance yahoo.com	Rio Rico SR 82 MP 10
	239
PLEASE GIVE US YOUR THOUGHTS	U.S./Mexico Border Nogales
<ol> <li>Additional money will be needed to build priority projects in your community, as current tenough money to maintain the existing roadways. The report recommends several ways to rabe earmarked for these projects: (1) an additional one-half cent sales tax in Santa Cruz County and (2) a development impact fee that would add \$3,000 to the purchase price of a new home (including the City of Nogales).</li> </ol>	aise additional money that would (including the City of Nogales),
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	Managara ang di Anton (anton (
Would you be willing to support a new development impact fee on new home construction?	
- SEE REVERSE SIDE FOR ADDITIONAL QUESTI	ONS –



2. Please provide any additional information or suggestions that you believe would help to finalize the transportation improvement program and implementation plan.
· Install "Share the road" signage on Huy 289
· LOOK into SETIF Situation to keep such funds close to the border
· Be sure that bicycle : pedestrian infrastructure is incorporated into any project.

# THANK YOU FOR COMING!

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Phone: 1-602-861-7440 • Fax: 1-602-371-1615
katherine\_bush@urscorp.com
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Please provide your comments by February 19, 2010





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# **FEBRUARY 3, 2010**







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# Santa Cruz County Board of Supervisors Board Room

2150 N. Congress Drive, Room 120 • Nogales, AZ 85621 5:30 to 7:30 p.m.

	Santa Cruz/Pima County Boundary
Name: JIM JORDAIN	A R I Z O N A 0 1 2 3 4
Address: 973 W CAMINO GUARINA	■ Tubac Santa Cruz     County
City, State, Zip: GRBBN VALLEY, AZ 85614	STUDY
Telephone:	AREA
Email: JAMA JORDAN @ JUNO, COM	Rio Rico SR 82 MP 10
PLEASE GIVE US YOUR THOUGHTS	U.S./Mexico Border tes Nogales
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Would you be willing to pay an additional one-half cent sales tax to build new transportation p	projects?
AM NOT A RESIDENT OF S, C, COUNTY BUT	<u>r</u>
WOULD SUPPORT THIS AS WE DID FOR RTA	
IN PIMA COUNTY,	
Would you be willing to support a new development impact fee on new home construction?	
YES	
- SEE REVERSE SIDE FOR ADDITIONAL QUESTION	ONS –



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Please provide your comments by February 19, 2010





Sherry Sass <sushi4334@gmail.com> 02/10/2010 02:27 PM To katherine\_bush@urscorp.com

cc Tony Sedgwick <johnasedgwick@surfglobal.net>, Arlyn Johnson <santaferanch@theriver.com>, Cate Bradley <Cate\_Bradley@nps.gov>, Mary Dahl

bcc

Subject comments on public open house Nog/Santa Cruz County
AZ transport plan update 2010

Dear Ms. Bush,

This is my written commentary from the ADOT public meeting on 2/3/10 re the Nogales/Santa Cruz County transportation plan update. I represent Friends of the Santa Cruz River (FOSCR), a local volunteer group dedicated to protecting the flow, water quality and riparian habitat of the Santa Cruz River (I'm currently President). More information about our organization can be found at <a href="https://www.friendsofsantacruzriver.org">www.friendsofsantacruzriver.org</a>.

Two proposed projects in your Working Paper 2 (#50 and #60) involve Country Club Road, which runs west from Grand Avenue just north of the Nogales city limits. This road cuts across one of the last remaining natural marshes ("cienega") in the upper Santa Cruz River watershed. This marsh, "Las Lagunas", is not only an ecologically significant and rare habitat for birds and other wildlife; it is also of historical importance, as it is a documented bivouac location for Colonel Juan Bautista de Anza's expedition in 1776 to found the Spanish settlement of San Francisco.

Currently, FOSCR is involved with several other groups (including Santa Cruz County, the City of Nogales, the Santa Fe Ranch Foundation, the county school superintendent's office, and historical societies) in planning to make this marsh area into an environmental education/historical education/outdoor recreation site, in cooperation with the landowner. The Potrero Canyon hydrology which is responsible for this natural marsh continues to supply groundwater from its western sources, and should be carefully considered in any plans to change road configurations (especially widening) so as not to interfere with flows into or out of the wetland. Mitigation may be required, depending on the impacts of construction from the two transportation projects noted above, to ameliorate damage to the wetland.



Furthermore, if mitigation is required from other transportation project environmental damage, either from these two projects or from others in this regional plan, Las Lagunas would be an excellent site in which to direct mitigation resources.

Finally, contiguous lands to the west of Las Lagunas which run to and along (under) Interstate 19 may be available to extend walking paths being planned for Las Lagunas into 40+ acres of recreational trails. The City of Nogales offers few outdoor recreational opportunities to its citizens. It is hoped that development of a trail system in this area will provide a sorely-needed service to this underserved, largely poor and Hispanic, population. Again, mitigation funds and/or trail development funds that may be available in association with this regional transportation process would be well-spent on development of a Country Club Road/I-19 wetlands/trail system.

Thank you for incorporating the above comments into your concept plans for proposed projects #50 and #60 as much as possible.

Please contact me if you need further information on the above. Sincerely,

Sherry L. Sass Friends of the Santa Cruz River





