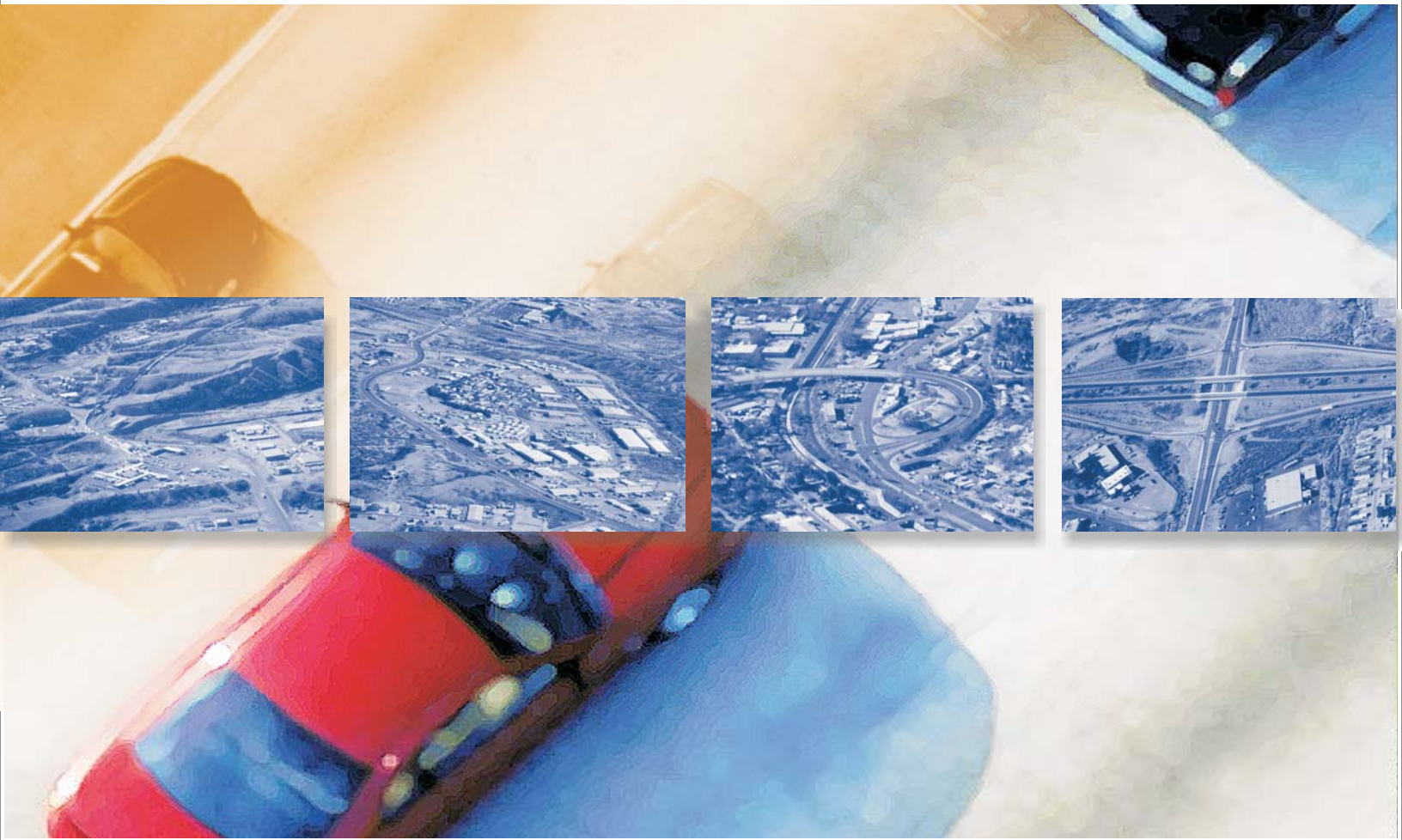


# Unified Nogales/ Santa Cruz County



## Transportation 2000 Plan

*Prepared for  
City of Nogales  
Santa Cruz County  
December 2000*

 Kimley-Horn  
and Associates, Inc.

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## 1.0 Study Overview

### 1.1 Background

The Nogales/Santa Cruz County region is part of the Ambos Nogales urbanized area with a binational population of approximately 400,000 people. In Arizona, the Nogales/Santa Cruz County region has experienced steady growth in population and economic development as a result of international trade, its location on the US/Mexico border, and its unique cultural and recreational resources. The Nogales/Santa Cruz County region serves as a center for international trade between the US and Mexico. This is evidenced by the transportation and distribution infrastructure that has emerged to meet the needs of local, regional, and global consumers and producers; the international port of entry which is the highest volume port for fresh produce between Mexico and the US; the growing maquiladora industry; and the designation of I-19 on the CANAMEX trade corridor.

Traffic, particularly commercial traffic, has experienced growth as a result of regional growth and economic development. Because transportation infrastructure has not kept pace with the growth in regional traffic, public agencies responsible for maintaining safe and efficient transportation systems face significant challenges associated with traffic congestion, safety, access, and adverse environmental impacts. While some transportation system improvements have been implemented on the State highway system and as a result of the *1991 Nogales Urban Area Transportation Study*, there is a need to provide additional improvements to ensure that the transportation system addresses the region's existing and future transportation needs. In addition, to ensure that needed transportation improvements are implemented, funding sources and strategies for obtaining new transportation funds must be identified as part of the overall transportation plan.

### 1.2 Study Process

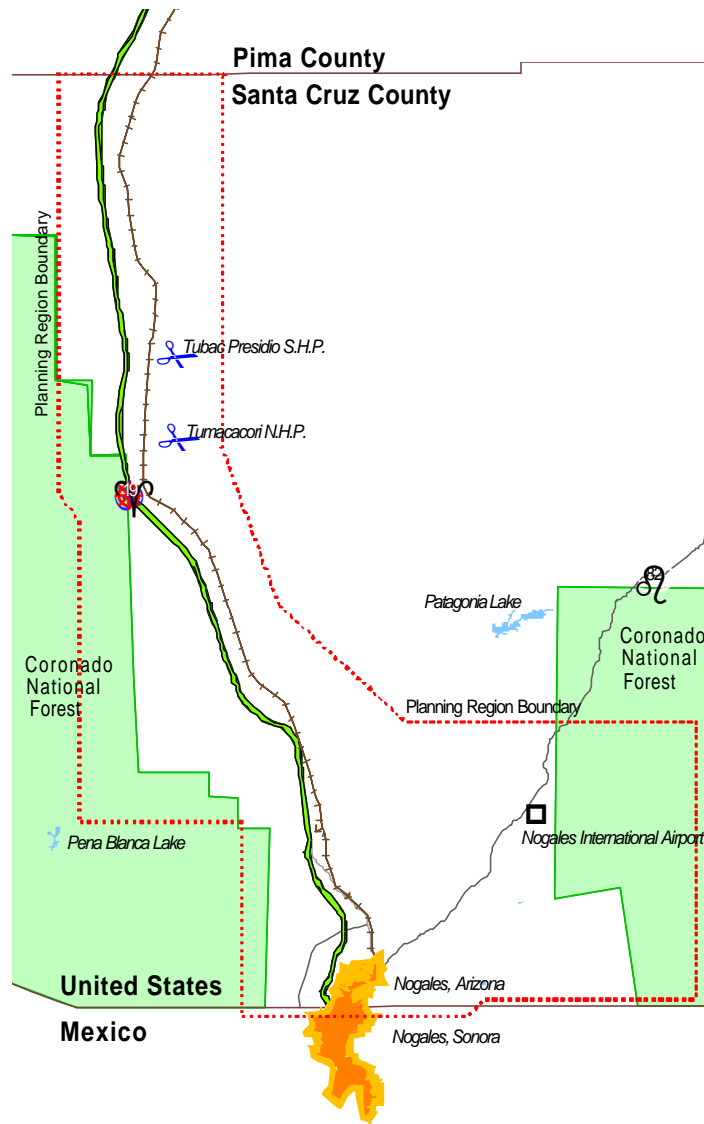
The primary purpose of the *Unified Nogales/Santa Cruz County Transportation 2000 Study* is to develop a transportation plan to address short-term (5-year), mid-term (10-year), and long-term (20-year) transportation needs for the Nogales/Santa Cruz County planning region. To accomplish this, the following tasks were completed:

- Define the limits of the Nogales/Santa Cruz County planning region.
- Document existing transportation system needs and deficiencies.
- Quantify existing land use and socio-economic characteristics.
- Project future land use and socio-economic characteristics for short-term, mid-term, and long-term planning horizons.
- Estimate regional travel demand for short-term, mid-term, and long-term planning horizons.
- Solicit and incorporate stakeholder and public input into the planning process.
- Identify regional needs and develop planning level cost estimates for projects to identify those needs.
- Develop revenue estimates for new and existing funding sources.
- Develop a transportation plan that balances transportation system needs with existing and new funding and resources.

Two working papers, prepared as part of this study, document the information and analysis used to develop the Unified Nogales/Santa Cruz County Transportation 2000 Plan. Working Paper Number 1, completed in July 2000, summarizes existing conditions. Working Paper Number 2, completed in November 2000, documents the process for projecting future regional travel demand and summarizes transportation needs in the region.

### 1.3 Planning Region Definition

The Nogales/Santa Cruz County planning region is shown in **Exhibit 1** and includes all of the City of Nogales and portions of Santa Cruz County. Along the international border, the region extends from the Coronado National Forest boundary west of Nogales to the Coronado National Forest boundary east of Nogales. The region extends northeast to include the Nogales International Airport and extends north along an approximately 5 mile wide corridor centered on I-19 to the Pima County line.



**Exhibit 1 – Planning Region**



## 2.0 Project Oversight and Public Involvement

### 2.1 Technical Advisory Committee

A Technical Advisory Committee (TAC) was organized by the City of Nogales and Santa Cruz County to provide oversight and technical direction during the development of the Unified Nogales/Santa Cruz County Transportation Plan. As shown in Exhibit 2, the TAC membership included regional public and private sector representatives, the Arizona Department of Transportation, and the Secretaria de Comunicaciones y Transportes (SCT). Four TAC meetings were conducted during the project to brief the TAC on progress and receive input at key decision points.

Name	Organization
Jim Barr	Mariposa Properties
Ignacio Barraza	City of Nogales
George Bays	ADOT Motor Vehicle Division
Geraldo Calza	City of Nogales
Kate Endersbee	USDA Forest Service
Simon Escalada	Mastick/Escalada Trust
Richard Gaar	SEAGO
Victor Gabilondo	Santa Cruz County
Paul Hathaway	H.S. Enterprises
Fred Johnson	Brasher Ross Real Estate
Michael Karam	Customcraft Builders
Ken Lilley	Xerox Corporation
Mark Mansfield	ADOT Transportation Planning Division
Ron Morriss	Santa Cruz County
Gregorio Ledesma Quirarte	Secretaria de Comunicaciones y Transportes
Kathy Vandervoet	Fresh Produce Assoc. of America
Emily Wilson	Mariposa Ranch
P.T. Wright	U.S. Customs Service
Ken Zehentner	Santa Cruz County

**Exhibit 2 – Technical Advisory Committee**

### 2.2 Stakeholder Interviews

Interviews were conducted to obtain input and perspectives from individuals, groups, and organizations with knowledge and interests in the region’s transportation issues. Public agencies and stakeholder organizations that were interviewed included:

- City of Nogales
- Santa Cruz County
- US Department of Agriculture/ US Forest Service
- Fresh Produce Association of the Americas
- US Customs Service
- Arizona Department of Transportation
- Private Landowners or their representatives
- Other Private Interests

These organizations provided a broad base of input on a wide range of transportation issues. A summary of the interviews is documented in Working Paper Number 1.



### **2.3 Public Open Houses**

Two public open houses were to present study findings and to receive public input on transportation needs. The Santa Cruz County open house was held on October 17, 2000 at the Rio Rico Properties Administrative Building between 6:00 PM and 8:00 PM. The City of Nogales open house was held on October 18, 2000 at the Nogales City Hall between 6:00 PM and 8:00 PM. Notification of the open houses was accomplished display advertisement published in the Nogales International newspaper on October 13 and 17, 2000 and through the distribution of flyers placed in public places. Public input received during the open houses is summarized in Working Paper Number 2.

### **2.4 Elected Official Study Sessions and Public Hearings**

The draft Executive Summary of the Unified Nogales/ Santa Cruz County Transportation 2000 Plan was presented and discussed in December 2000 during study sessions of the Nogales Mayor and Board of Aldermen and Santa Cruz County Board of Supervisors. Public hearings followed both study sessions.



### **3.0 Transportation Needs**

Existing transportation needs within the region were identified on the basis of public input and an analysis of the existing traffic volumes, traffic accidents, and physical conditions of transportation infrastructure. Future transportation needs were developed based on the anticipated ability of the transportation system to meet transportation needs over the next 20 years.

#### **3.1 Existing Transportation Needs**

##### **3.1.1 Traffic Operations**

Year 2000 traffic volumes in the region indicate that Grand Avenue (B-19) has the highest volume of traffic within the region. Immediately north of Mariposa Road, volumes on Grand Avenue are in excess of 25,000 vehicles per day. During the peak produce season, commercial truck and vehicular traffic on Grand Avenue experience periods of unacceptable delay and congestion. Sections of I-19 parallel to Grand Avenue have significantly less traffic than Grand Avenue, with volumes of approximately 15,000 vehicles per day. The Ruby Road and Rio Rico Road traffic interchanges with I-19 and the connecting frontage road, east of I-19 experience operational difficulties as a result of the magnitude of commercial truck traffic (the Arizona Department of Transportation Department is currently preparing a Design Concept Report and has funded a project to alleviate this situation). Roadways in downtown Nogales experience congestion and parking shortages and in the presence of a train, traffic circulation is halted. Baffert Drive and Country Club Drive traffic volumes are reported to be in excess of desirable volumes. Higher than desirable volumes of commercial truck traffic have been reported on State Route (SR) 82, northeast of the planning region.

##### **3.1.2 Maintenance**

City and County annual maintenance budgets are insufficient to meet the maintenance needs of aging transportation infrastructure. Because of resource constraints and an absence of comprehensive transportation system maintenance programs, City and County roadway maintenance activities are primarily reactive in nature. Maintenance needs are identified on an as-needed basis and prioritized based on perceived importance.

##### **3.1.3 Safety**

Using accident statistics published by the US Department of Transportation, National Highway Traffic Safety Administration, regional accident histories over a three-year period were analyzed. Segments of the following roadways have accident rates higher than the national average and warrant further study of traffic safety conditions.

- Arroyo Boulevard
- Grand Avenue
- Morley Avenue
- Patagonia Highway (SR 82)
- Ruby Road near I-19
- Sonoita Avenue
- Walnut Street

### 3.1.4 Environmental

The US Environmental Protection Agency currently designates the City of Nogales as a PM10 (particulate matter in excess of 10 microns in diameter) Non-Attainment Area. While it is recognized that a significant portion of this problem originates in Mexico, both the City of Nogales and Santa Cruz County have implemented measures to reduce PM10 concentrations. The measures implemented by the City of Nogales include the paving of all roadways under its jurisdictional control. Santa Cruz County has made contributions to reducing the concentration of PM10 with the implementation of regulations for commercial truck load covering, and implementation of environmental regulations at construction sites. While efforts on both the City of Nogales and Santa Cruz County can be expected to have a positive impact on this problem, an international effort will be necessary to fully address the problem.

### 3.1.5 Alternate Modes of Transportation

Alternate modes of transportation including pedestrian, bicycle, and public transportation are an important element of any transportation system. Annually, over 4.8 million pedestrian crossings are recorded at the DeConcini and Morley Avenue ports of entry in downtown Nogales. As a result, pedestrian, streetscape, and parking improvements are needed in the downtown area and a transportation enhancement project for streetscape improvements on Morley Avenue has been approved for funding. Regionally, pedestrian facilities are limited in number and in length and vary in quality. Sidewalks were found to exist along approximately 40 percent of those collector and arterial roadways reviewed within the City of Nogales. Along major state routes sidewalks were identified along SR 189 (Mariposa Road) from B-19 (Grand Avenue) to west of I-19 and along portions of SR 82 (Patagonia Highway). Marked crosswalks exist in various locations throughout the region.

There are no designated bicycle facilities located within the region on City, County, and State roadways. Along state routes, five significant sections of roadway were identified where bicycle use is facilitated through signage, wide paved shoulders, and/or wide curb lanes.

There are no fixed route public bus services within the region. There are several publicly funded transportation services for specified trip purposes including those provided by or through the Santa Cruz Council on Aging, the Santa Cruz Training Program, and the Santa Cruz Family Guidance Center. A private operator provides transit service between the International Border and the retail shops on Mariposa Road. Other private transit operators are available to provide similar services for shoppers within the region.

## **3.2 Future Transportation Needs**

Future transportation system needs and deficiencies were identified using the TransCAD travel demand forecasting model. The TransCAD transportation planning software packages provides transportation planning tools merged with geographical information system (GIS) technology.

The first step in forecasting future travel demand was to calibrate a base model using existing (year 2000) population, employment, and transportation system characteristics within the planning region. Existing population and employment estimates were developed using a combination of data sources including the Arizona Department of Economic Security, the US Census Bureau, the US Department of Labor, and aerial photography. Aerial photography was used as the primary source of information for locating population and employment data within the planning region. Traffic volumes generated by the model for year 2000 were validated using traffic volume data collected throughout the planning region.

The model was used to predict regional traffic volumes for 2005, 2010, and 2020 based on anticipated population and employment growth within the region. Predictions of future development location, type, and intensity were developed based on input from many sources including the City of Nogales, Santa

Cruz County, land owners, and developers. Future development was constrained by growth trends in the planning region over the last 5 years. **Exhibit 3** shows the estimated population and employment projections for the years 2000, 2005, 2010, and 2020 developed for the planning region based on these data sources. An in depth discussion on the development of the transportation model and its inputs is provided in Working Paper 2.

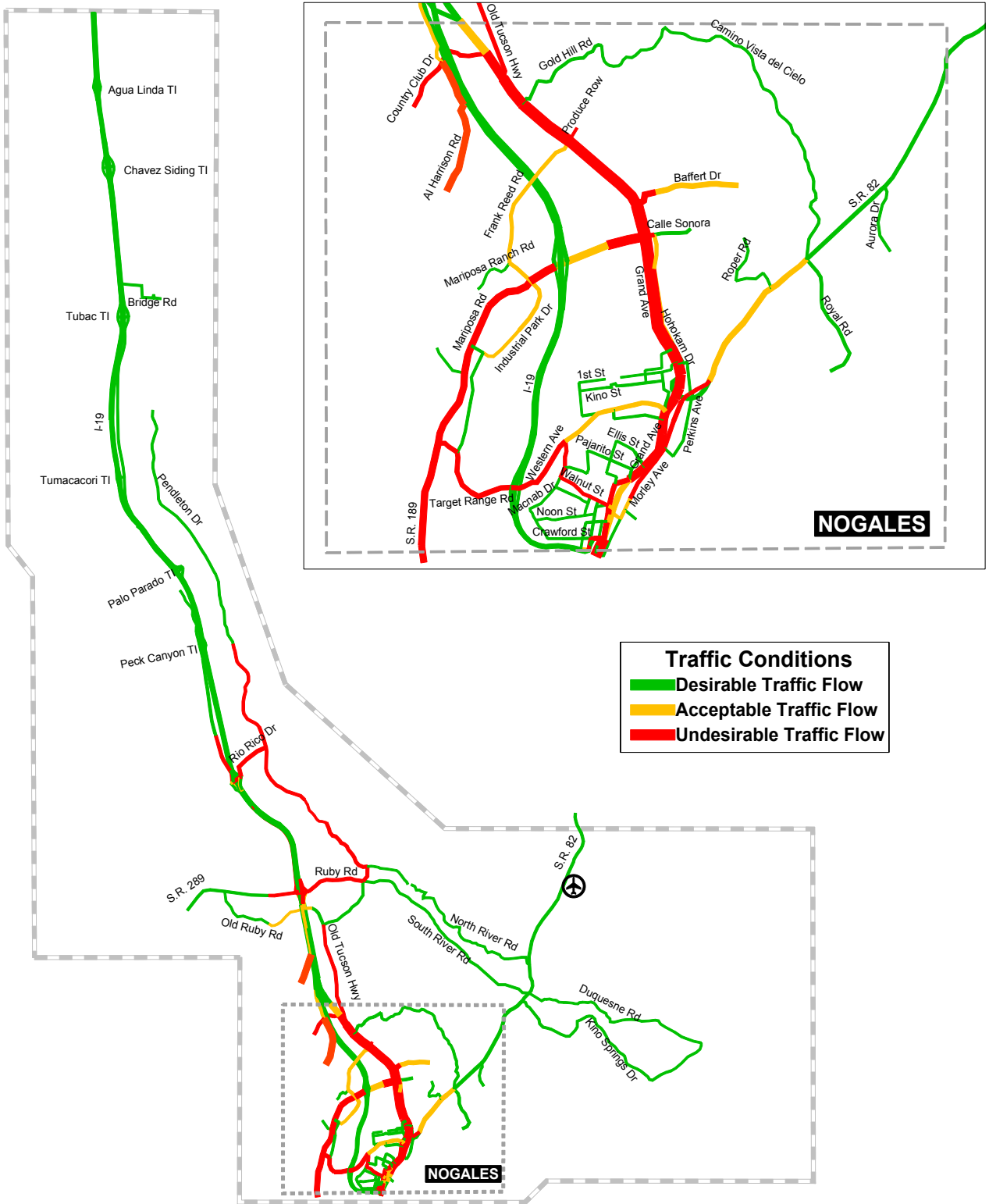
<b>Analysis Year</b>	<b>Population</b>	<b>Employment</b>
2000	34,200	13,500
2005	40,200	15,900
2010	46,500	18,400
2020	60,000	23,600

**Exhibit 3 – Population and Employment Estimate and Forecast**

Model-generated traffic volume projections for 2005, 2010, and 2020 from the transportation model were compared to traffic volume thresholds contained within local standards to identify roadway segments with desirable, acceptable and unacceptable traffic flow characteristics. **Exhibit 4** illustrates regional traffic flow conditions in 2020, assuming no improvements to the current transportation system are constructed (the “No Build Scenario”). As shown in Exhibit 4, by 2020 many roadways within the planning region, unless transportation improvements are constructed, will experience undesirable traffic operations.

**3.3 Transportation Needs and Existing Revenue Sources**

Based on an assessment of existing and 20-year transportation conditions within the region, an estimated \$510.2 million is needed to address regional transportation needs in the areas of roadway maintenance, capacity, safety, access, and alternate modes. Of the \$510.2 million in needs, \$25 million in regional projects have been programmed in the ADOT Five-Year Construction Program or included in the pending Southeast Arizona Governments Organization (SEAGO) 2001 Transportation Improvement Program. Over the next 20 years, the City and County is expected to receive an estimated \$93 million in revenue from present-day sources that fund regional transportation improvements plus an estimated \$37.2 million in revenues for improvements to the State Highway System within the region (i.e., ADOT projects within the region). A 20-year shortfall of approximately \$354 million is projected for needed transportation improvements in the region.



## Exhibit 4 - 2020 Deficiencies, No Build Scenario

Unified Nogales/Santa Cruz County Transportation 2000 Study

## 4.0 Goals, Objectives, and Policies

### 4.1 Regional Transportation Goal

The City of Nogales and Santa Cruz County shall work cooperatively and in conjunction with State and Federal agencies to plan, operate, maintain, and finance a regional multi-modal transportation system. Transportation system improvements shall promote safe and efficient travel, regional growth and development, local businesses, and international trade while recognizing the importance of quality of life and the environment.

### 4.2 Objectives and Policies

In order to achieve the regional transportation goal, transportation planning objectives and corresponding policies have been developed to support the Transportation 2000 Plan.

Planning Objectives	Policies
Multi-jurisdictional cooperation in transportation planning, programming, and investments	<ul style="list-style-type: none"> <li>▪ Cooperate in the preparation of long-range transportation plans</li> <li>▪ Coordinate jurisdictional programming and financing of transportation improvements</li> <li>▪ Maintain a transportation demand model as a tool for evaluating land use proposals and their impact on the regional transportation system</li> <li>▪ Update the Unified Nogales/Santa Cruz County Transportation Plan on a 3 to 5 year interval basis</li> </ul>
Maintain existing transportation infrastructure	<ul style="list-style-type: none"> <li>▪ Develop annual transportation system maintenance programs and budgets in both the City and County based on maintenance needs and priorities</li> <li>▪ Develop maintenance systems and databases to manage annual maintenance programs and budgets</li> <li>▪ Identify new transportation funding sources to finance maintenance of the transportation system</li> </ul>
Promote regional traffic safety and efficiency	<ul style="list-style-type: none"> <li>▪ Require traffic impact analysis and impact mitigation for proposed developments</li> <li>▪ Develop and enforce access control/management on arterial roadways</li> <li>▪ Develop and implement a regional traffic safety program and seek funding for safety improvements and hazard elimination</li> </ul>

**Exhibit 5 – Objectives and Policies**



Planning Objectives	Policies
Promote regional growth/development through improved circulation and accessibility	<ul style="list-style-type: none"> <li>▪ Plan and construct new transportation infrastructure through public/private partnerships in developing areas of the region</li> <li>▪ Identify and implement new transportation funding sources to finance new construction and maintenance of the transportation system</li> <li>▪ Identify and preserve rights-of-way for future transportation corridors</li> </ul>
Promote regional businesses	<ul style="list-style-type: none"> <li>▪ Improve parking, pedestrian and bicycle amenities, and circulation in downtown Nogales</li> <li>▪ Improve accessibility to existing business establishments</li> <li>▪ Develop and implement access management strategies to ensure safe and efficient access to new businesses</li> </ul>
Promote regional commercial vehicle flow, efficiency, and accessibility	<ul style="list-style-type: none"> <li>▪ Designate regional commercial truck routes to improve regional commercial truck circulation and minimize the adverse impacts of commercial trucks in residential areas</li> <li>▪ Develop and implement design standards for improved safety and operation of regional commercial truck routes</li> </ul>
Promote international trade and the flow of people and freight at international ports of entry	<ul style="list-style-type: none"> <li>▪ Participate in CANAMEX trade corridor planning and development and communicate regional issues and priorities</li> <li>▪ Form a public/private coalition to lead regional initiatives for planning and development of the CANAMEX trade corridor</li> <li>▪ Integrate infrastructure, communications, and intelligent transportation system design features into regional trade routes that are consistent with CANAMEX trade corridor planning concepts</li> <li>▪ Participate in planning and implementation of infrastructure, process, and intelligent transportation system improvements at DeConcini and Mariposa ports of entry</li> </ul>
Promote the use of alternate modes of transportation (bicycle, pedestrian, and transit)	<ul style="list-style-type: none"> <li>▪ Identify and upgrade existing roadway facilities that warrant facilities for alternate modes of travel</li> <li>▪ Develop and implement policies to accommodate alternate modes of travel in new construction</li> <li>▪ Utilize roadway standards that include pedestrian and bicycle facilities as part of all new and reconstructed roadways.</li> <li>▪ Establish a pedestrian and bicycle citizens advisory committee to help identify needs and improvement alternatives within the region.</li> </ul>

**Exhibit 5 – Objectives and Policies (Cont'd)**



<b>Planning Objectives</b>	<b>Policies</b>
Promote quality of life and mitigate environmental impacts of transportation improvements	<ul style="list-style-type: none"><li>▪ Develop and implement policies for neighborhood traffic mitigation</li><li>▪ Form a binational committee to address air quality and other environmental issues for the Ambos Nogales urban area</li></ul>

**Exhibit 5 – Objectives and Policies (Cont'd)**



## 5.0 Transportation 2000 Plan

### 5.1 Roadway Element

**Exhibits 6, 7, and 8** list the projects and corresponding costs that comprise the roadway element of the Transportation 2000 Plan. **Exhibit 9** shows future roadway capacity improvements graphically. The roadway element contains projects that address both existing and future roadway-related needs within the planning region. Projects include studies, design, right-of-way preservation and acquisition, construction, and maintenance. All roadway element projects should be implemented in association with the goals, objectives, and policies listed in Section 4 and deployed in accordance with adopted standards for roadway design, construction, and maintenance. New roadways recommended in the Transportation 2000 Plan are illustrative of planning-level corridors and not final roadway alignments. As a result, further study is required to determine a more precise roadway alignment using input from affected property owners and the general public.

Transportation projects may address one or more of the following needs: better define project details, capacity increases, safety enhancements and hazard elimination, maintenance of existing and newly constructed infrastructure, intelligent transportation system (ITS) strategies, and transportation enhancements. Both funded and unfunded projects are included in the roadway element.

The following sections provide a brief overview of the projects and project categories included in the roadway element of the Plan.

#### 5.1.1 Capacity

Capacity improvements included in the Transportation 2000 Plan include construction of new roadways and freeway interchanges, widening of existing roadways, reconstruction of freeway interchanges, and intersection improvements. Exhibit 9 illustrates the capacity improvements included in the Plan.

#### 5.1.2 Safety

Studies to determine the need for safety improvements and/or hazard elimination at locations with abnormal accident histories are included in the Plan. The use of locally adopted roadway design standards will ensure that safety is considered in the design and construction of all transportation projects included in the roadway element of the Plan.

#### 5.1.3 Access and Circulation

Several roadways have been included within the Transportation 2000 Plan to provide new roadway connections between existing and proposed transportation corridors. These linkages provide both accessibility and traffic circulation benefits to developing areas within the planning region that require improved access and circulation.

#### 5.1.4 Infrastructure Maintenance

Maintenance management and annual maintenance programs can significantly improve the efficiency, longevity, and cost-effectiveness of the transportation system. Stakeholder interviews indicated a need for increasing annual expenditures for transportation system maintenance, developing maintenance programs, and developing criteria for maintenance priorities. In recognition of the current condition of the region's aging transportation infrastructure and the benefits of maintenance programs, analysis was performed to estimate the cost of maintaining current infrastructure and maintaining infrastructure to be



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

**Exhibit 6 – 2001 through 2005 Transportation Improvement Plan**



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

**Exhibit 6 – 2001 through 2005 Transportation Improvement Plan (Cont'd)**



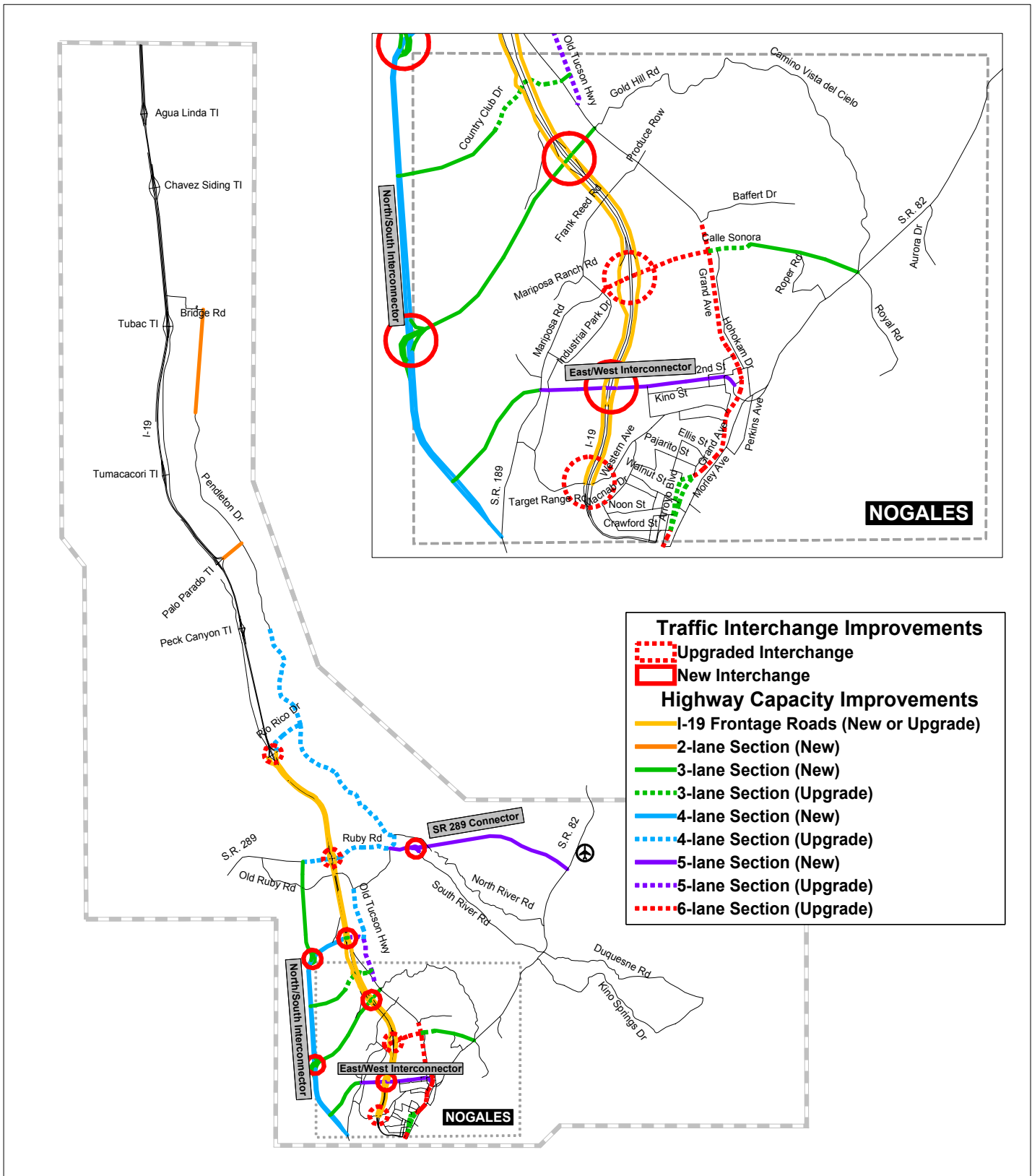
ID	<i>Project Location</i>	Jurisdiction	Cost (x \$1000)	Funded
	Project Description			
1	<i>Rio Rico Drive, I-19 to Pendleton Drive</i> Reconstruct existing cross-section to a 4 lane-section. Reconstruct existing bridge across Santa Cruz River.	Santa Cruz County	\$2,400	No
2	<i>SR289 Interconnector,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

**Exhibit 7 – 2006 through 2010 Transportation Improvement Plan**



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

**Exhibit 8 – 2011 through 2020 Transportation Improvement Plan**



## Exhibit 9 - Future System Improvements (2020)

Unified Nogales/Santa Cruz County Transportation 2000 Study



constructed as part of the Transportation 2000 Plan. Maintenance needs for State and local roadways in the region over the 20-year period are estimated at \$183 million.

### 5.1.5 Studies

The Transportation 2000 Plan includes recommendations for studies where uncertainty exists on infrastructure design details. For example, the Plan includes alignment and environmental studies for trade corridors, safety studies, a downtown land use and circulation study, and others.

### 5.1.6 Intelligent Transportation Systems

Several ITS strategies identified for the region within the ADOT *Strategic Plan for Statewide Deployment of Intelligent Transportation Systems in Arizona* (December 1998) are included in projects identified for the Transportation 2000 Plan. For example, ITS strategies recommended by ADOT on I-19 include weigh-in-motion, automatic traffic counters, variable message signs, and information centers/kiosks. Along Grand Avenue, ADOT recommends traffic signal synchronization. These and other ITS strategies will be deployed by ADOT as part of roadway improvements to the State Highway System. ITS strategies are also included in funded construction projects for the Federal/State Annex at the Mariposa Commercial Cargo Port of Entry. ITS elements of these project include variable message signs, weigh-in-motion, and video surveillance. Additional ITS strategies are expected to be recommended as part of individual design studies included within the Plan.

### 5.1.7 Commercial Vehicle Circulation

Commercial truck travel within the region is influenced by the location of warehouse facilities and weigh scales. Cross-border commercial truck traffic with regional warehouse destinations is concentrated on State Route 189 (Mariposa Road), Grand Avenue, Old Tucson Highway, and I-19 frontage road between Ruby Road and Rio Rico Road. Cross-border commercial truck traffic with destinations beyond the region travel directly to I-19 via State Route 189 or have intermediate destinations at one of the weigh scale facilities. Recent increases in commercial truck traffic on Target Range Road and Western Avenue have been observed and may be a result of increasing travel time delays and congestion on SR 189 between I-19 and Grand Avenue.

In order to encourage safety and efficiency, it is recommended that the following existing roadways be designated as commercial truck routes:

- SR 189 (Mariposa Road), International Border to Grand Avenue
- I-19
- I-19 Frontage Roads
- Grand Avenue, Doe Street to I-19

Roadways that should be considered as future commercial truck routes include:

- (Future) I-19 Frontage Roads
- (Future) North-South Interconnector, SR 189 to I-19
- (Future) New Roadway (south), North-South Interconnector to Grand Avenue
- (Future) New Roadway (north), North-South Interconnector to Grand Avenue
- (Future) New Roadway, North-South Interconnector to Ruby Road interchange
- (Future) East-West Interconnector, North-South Interconnector to SR 82/Grand Avenue
- (Future) SR 289 Interconnector, I-19 to SR 82



- SR 82, Grand Avenue to (future) SR 289
- (Future) Old Tucson Highway, Grand Avenue to I-19 Frontage Road

### 5.1.8 Trade Corridors

In January 2000, the City of Nogales initiated an engineering study to determine the cost and feasibility of developing three trade corridors within the region. As the study evolved, Santa Cruz County became a co-sponsor of the study and introduced an additional trade corridor to the planning analysis. The regional trade corridors included in the Transportation 2000 Plan are:

- North-South Interconnector
- East-West Interconnector
- I-19 Frontage Roads
- SR 289 Airport Interconnector

The Transportation 2000 Plan includes over \$234 million in trade corridor studies, design, right-of-way acquisition, and construction.

### 5.1.9 Port of Entry Improvements

The efficiency of the region's three international ports of entry has been studied and recommendations to improve the flow of vehicles, pedestrians, and commercial cargo are in progress. The Transportation 2000 Plan includes over \$5.7 million in programmed improvements to the Mariposa Commercial Cargo Facility. Stakeholder interviews indicated that expansion of the commercial cargo facility to meet long-term crossing demands might be necessary in the future. While the need for expansion and the means of expanding the commercial cargo facility is subject to further study, the alignment of the North-South Interconnector and the prospective location of its interchange with the East-West Interconnector provide an opportunity for expansion of the commercial port of entry.

## 5.2 Non-Highway Modes

### 5.2.1 Aviation

The Nogales International Airport is the only fully developed airfield in Santa Cruz County. The facility is a general aviation facility serving the planning region, southern Arizona, and the State of Sonora, Mexico. The facility does not provide scheduled air service.

At the time of preparation of the Nogales/Santa Cruz County Transportation 2000 Plan, an update of the *Nogales International Airport Master Plan* was in progress. Upon completion and adoption of the Master Plan, it should be included in the Transportation 2000 Plan by reference. Aviation-related recommendations and costs for aviation improvements are therefore not included in the Transportation 2000 Plan.

It is also recommended that the current ADOT *State Aviation Plan Update* be included in the Transportation 2000 Plan by reference.

### 5.2.2 Intermodal

Stakeholder interviews indicated interest in the development of an international intermodal facility in the planning region. The facility would serve international, national, and regional transfer of Maquiladora dry goods and fresh produce. Shipments by rail, air, and commercial truck would be served by the facility. The relocation of the Union Pacific Railroad from downtown Nogales to an intermodal facility is considered to be a positive aspect of the potential intermodal facility.

It is recommended that a private/public coalition involving representatives of international trade, Federal Inspection Services, regional elected officials, Nogales International Airport, Union Pacific railroad, and the proposed Puerto Nuevo intermodal facility in Tucson be developed to explore the feasibility of an international intermodal facility in the region. Costs for development of this coalition have not been included in the Transportation 2000 Plan.

### 5.2.3 Rail

The Nogales Branch of the Union Pacific Railroad crosses the international border in downtown Nogales, Arizona and Nogales, Sonora. At the international border, the Nogales Branch connects with the Mexico railroad system, Ferrocarriles Nacionales de Mexico (FNM). International freight-rail shipments are subject to inspections by the US Customs Service and Aduanas de Sonora. No passenger-rail service is provided on the Nogales Branch.

Because of the location of the railroad within Nogales and the region, freight-rail operations are disruptive to localized and regional transportation modes, especially vehicular and pedestrian circulation in downtown Nogales. The presence of rail operations in the downtown has received binational attention from the general public, local elected officials, and federal agencies operating at the port of entry. Over the years, a number of actions have been taken to improve rail operations in the downtown, including enhanced communications between inspection agencies and rail personnel and performing rail shipment inspections at Rio Rico (beyond the downtown area). Federal, state, local, and rail officials continue to explore ways of improving the system and have discussed strategies such as rail line relocation and deployment of improved rail shipment inspection technologies.

During the development of the Transportation 2000 Plan, stakeholder interviews indicated a strong desire to relocate the rail line out of the downtown area. Discussions involving federal, state, local, and rail officials should continue on rail line relocation with a focus on building a public/private coalition that explores the feasibility of rail relocation in conjunction with the development of a new international intermodal facility within the region.

It is also recommended that the *ADOT 2000 State Rail Plan Update* be included by reference into the Transportation 2000 Plan. It is also recommended that public agencies within the region monitor ADOT planning activities associated with providing passenger rail service between Phoenix, Tucson, and the international border in order to assess the feasibility of passenger rail service to the region and the State of Sonora.

## 6.0 Implementation and Financing

### 6.1 Implementation of Transportation Improvement Projects

The transportation improvement projects listed in Exhibits 6, 7, and 8 have been categorized to reflect the time period in which transportation projects are to be implemented. Short-term projects are designated for implementation during the period 2001 to 2005. Mid-term projects are designated for implementation during the period 2006 to 2010. Long-term projects are designated for implementation during the period 2011 to 2020. Projects were categorized on the basis of public input and on the basis of “need” as reflected by future traffic volumes and the ability of the existing transportation system to meet future travel demand.

### 6.2 Transportation Financing

#### 6.2.1 Anticipated Revenues from Existing Revenue Sources

Present-day funding sources for transportation revenues for Nogales and Santa Cruz County are expected to total approximately \$37.0 million and \$55.7 million, respectively, over the next 20-year period. The sources for these funds include:

- Highway User Revenue Funds
- Local Transportation Assistance Funds
- Federal Surface Transportation Program Fund

An additional \$37.2 million in revenues is anticipated from ADOT improvements to State highways within the region.

The total amount of regional transportation revenues from existing revenue sources is anticipated to be \$130 million over the next 20 years.

#### 6.2.2 Anticipated Revenues from New Revenue Sources

Potential new revenue sources were identified to meet the demand for regional transportation improvements that exceed anticipated revenues from existing sources. Potential new sources were identified using public input, stakeholder interviews, and other effective strategies used to fund regional transportation improvements. Potential new funding sources identified include:

- A 5-cent per gallon gas and diesel fuel (use fuel) tax increase, indexed to inflation
- Implementation of a transportation property tax of 15 cents per \$100 assessed property value
- Implementation of a \$2,500 development impact fee per new residential unit
- Implementation of a ¼-cent sales tax for transportation in the urbanized Nogales area

While the potential sources listed above are subject to further consideration by elected officials and the general public within the region, these sources are anticipated to generate an additional \$40.4 million in revenues for Nogales and an additional \$27.5 million in revenues for the County over the next 20 years.

Existing plus new revenue sources, assuming revenues from all potential new sources are realized, are projected to total approximately \$77.4 million for the Nogales urbanized area and approximately \$83.2 million for unincorporated Santa Cruz County through 2020. Including anticipated ADOT expenditures on the region’s State Highway System, total existing plus new revenue sources is estimated to total approximately \$215 million over the next 20 years. Based on the estimated \$510 million in needs identified, a shortfall of approximately \$295 million remains.



Other potential new revenue sources that should be considered include federal funds provided through the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). Under TEA-21, \$140 million is authorized for distribution annually under the National Corridor Planning and Development Program (Section 1118) and the Coordinated Border Infrastructure Program (Section 1119) for the period 1999 through 2003. These funds offer a potential source of revenues for the proposed trade corridor studies and construction of trade corridors that total approximately \$234 million.

Other potential new funding sources that were identified but not subjected to an analysis of revenue estimates include:

- Southwest Border Infrastructure Fund
- User fees for international traffic and port of entry users
- Tolls for use of regional trade corridors
- Other Federal Funds

In conclusion, existing plus potential new sources of revenue have been proposed which approximates the region's 20-year transportation needs and suggests that the Transportation 2000 Plan is financially feasible. However, regional commitment, development of action plans, and implementation of these action plans to accomplish the revenue potential from these new funding sources is required. If new revenue sources are not realized, consideration may be given to lowering the desired level of service for regional traffic operations and maintenance, thereby deferring the implementation of some projects.