

City of Bisbee Comprehensive Transportation Plan

Task Assignment
MPD 34-10



Working Paper # 2

Future Conditions

Final – June 17, 2011

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1.0 Introduction

1.1 Background Information

The City's current *City of Bisbee General Plan 2003* calls for the creation of a Comprehensive Transportation Master Plan. This transportation plan addresses that need and is to include an assessment of the City's streets, bridges, sidewalks, public stairs, shared-use pathways, transit, public parking, airport, and transportation-related drainage facilities. The transportation plan will also include an implementation plan that sets forth a comprehensive capital improvement program to bring the transportation infrastructure up to current standards and to provide an acceptable level of service for current and forecast travel demands. This effort is funded through the Arizona Department of Transportation's (ADOT) Planning Assistance for Rural Areas (PARA) program. Wilbur Smith Associates (WSA) was retained to assist in the effort. This second working paper in the project focuses on projected future conditions in the study area. It will be followed by a third working paper on evaluation criteria and an implementation plan prior to a draft and final report incorporating the information in the working papers and the public involvement process for the study.

1.2 Previous Working Paper

Working Paper #1, *Current Conditions*, provided existing land use and population data for the area. To supplement traffic data available from ADOT and Cochise County, additional traffic count data was collected specifically for this study at twenty-nine locations within the study area. At nine of these locations, vehicle classification counts were also taken. Classification counts show the breakout of traffic by vehicle type and are used to gauge commercial (truck) volumes as a percentage of total traffic. From this data, current traffic levels of service within the study area were calculated and reported. Data for recent crashes within the study area was obtained, analyzed and presented.

Stakeholder meetings were held during the development of that working paper. These meetings were used to solicit and receive input from individuals, groups or entities that were not members of the study technical advisory committee, but who were major stakeholders for the study. The study team conducted twelve of 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. These interview findings were included in the working paper.

Since the condition of bridges and structures, roadways, sidewalks, stairs and retaining walls is of primary concern, previous city and ADOT field inspection reports were scrutinized. In October of 2010, a field survey was conducted by WSA engineers and City of Bisbee staff, to more completely identify and document deficiencies.

Current operations of the Bisbee Bus system were evaluated along with plans for that service. The above infrastructure evaluation included pedestrian and bicycle facilities.

2.0 Future Conditions and Deficiencies Inventory

2.1 Future Land Use

The *City of Bisbee General Plan 2003* covers an area much larger than the current corporate limits. This larger area, an ultimate growth area for the community, describes five specific planning areas. Three of these, the Old Bisbee, Saginaw, and Warren areas, are primarily historic and will have little new development activity. They will, however, have redevelopment activities focused on the renovation of existing structures. As much of these areas is historic, redevelopment activities will be done while following the City's *Design Guidelines for the Bisbee Historic Districts*, and guidelines of the National Register of Historic Places.

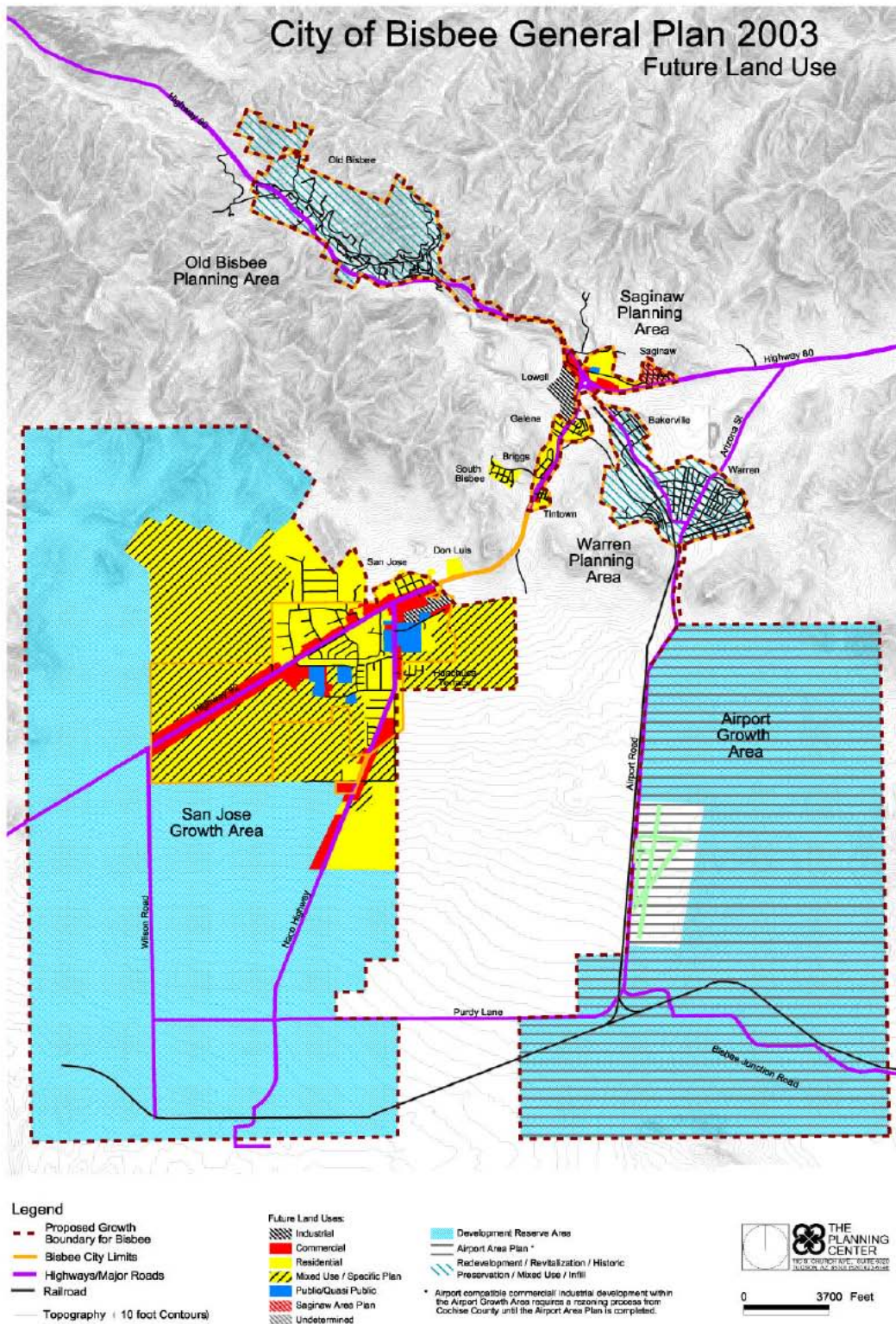
The General Plan does address two specific planning areas with significant growth potential. These are the Bisbee Municipal Airport Area and the San Jose Area. These areas were previously identified as growth areas for Bisbee in the *Cochise County Comprehensive Plan*. The Bisbee Municipal Airport Area is totally outside of the current city limits. This is an area of 6,373 acres, or just under 10 square miles. The San Jose Area is partially within the current city limits. This planning area is 11,453 acres in size, or just under 18 square miles. Of this area, 2,376 acres is currently within the city. The area is bisected by SR 92, and includes the Naco Highway, the community of Naco and the international Port of Entry. Almost all of the future new development potential for Bisbee is within these two growth areas.

The Bisbee Municipal Airport Area is a target for airport compatible uses, which includes industrial and commercial uses. The noise contours established in the Bisbee Municipal Airport Master Plan identify areas where future residential uses would not be suitable. Runway approach/departure and transition zones also protect both the flying public and adjacent property owners. Airport Road, Bisbee Junction Road and Purdy Lane are the existing roadways that serve the airport. It is important to consider upgrades to these facilities that can direct traffic generated by future airport compatible uses away from residential areas.

Most of the future growth in Bisbee will occur in the San Jose and Airport Growth Areas identified in the General Plan. Vehicular and pedestrian traffic entering the area through the nearby Naco Port of Entry will likely stimulate future retail activity in this area. It should be noted that there are no plans to increase capacity at this POE, and traffic is most likely to remain at levels that are generated by the Naco, Sonora area. The General Plan envisions new residential uses occurring adjacent to existing residential areas and highway commercial, retail and commercial uses locating along the Naco Highway and SR 92 corridors. Other areas will develop as mixed use following specific plans or master plans to be developed. Redevelopment of vacant buildings may occur in the Old Bisbee and Warren areas. Seventy percent of the land in the growth area is designated as a "development reserve area" to be developed in the future in a master planned fashion. Figure 1, Future Land Use from the *City of Bisbee General Plan 2003*, shows the anticipated uses summarized in this section.

Growth in nearby Sierra Vista is somewhat constrained from extending east along SR 90 due to public open space lands along the San Pedro River. It is likely to continue moving south along SR 92, towards the Bisbee study area.

Figure 1 Future Land Use



2.2 Population Projections

Official population projections are developed by the Arizona Department of Commerce. These projections currently extend to the year 2055. Projections are done for incorporated communities, counties, and for geographical unincorporated areas adjacent to cities and towns that are referred to as *Census County Divisions* (CCDs). The Bisbee CCD includes areas located within the City of Sierra Vista, with a current population of just over 19,000. Because of this, the entire Bisbee CCD data is not included in the following table, which excludes those portions of the CCD now within Sierra Vista. The table includes only the City of Bisbee proper, Naco, and some outlying areas to the southwest along SR 92 not a part of Sierra Vista. Cochise County and Arizona projections are included for comparison.

Table 1 Official Arizona Department of Commerce Population Projections

Location	2011	2015	2020	2025	2030
City of Bisbee	7,147	7,489	7,867	8,195	8,483
Naco	899	920	943	964	982
Bisbee CCD (Remainder)	3,886	4,028	4,340	4,424	4,585
Area Total	11,932	12,437	13,050	13,583	14,050
Cochise County	148,672	158,650	169,717	179,317	187,725
Total Arizona Population	7,186,070	7,915,629	8,779,567	9,588,745	10,347,543

The three local areas in the table above are projected to grow by just under 18% by 2030. During the same period, total State of Arizona population is projected to grow by 44%. Since tourism is a significant component of Bisbee’s economy, the higher overall state growth rate suggests that tourism may well grow at a rate faster than local population growth.

Initial data from the 2010 Census indicates that Bisbee did not grow as projected. In fact, the 2010 Census reports that the City of Bisbee had a population of 5,575, down from the 2000 Census count of 6,090. There are a number of possible explanations for this drop. The comparison between Department of Commerce estimates and actual Census counts can be misleading. Projections and estimates produced throughout the decade are primarily developed from issued building permits, and then multiplied by the average persons per household, taking into account the vacancy rate from the last decennial census. Areas that have a very high seasonal or vacation home population typically see this type of discrepancy when the actual census numbers come in. The Census only counts permanent year round residents so homes built or purchased as for investment, seasonal second homes or as Bed and Breakfast businesses do not translate into a census count population increase. The Department of Commerce typically revises population projections following census counts, but this has not been done yet.

The 2010 Census reports that Bisbee had 664 vacant housing units; if these had the average persons per household number in them (2.05), the total population of Bisbee would have been 6,930 at the time of the Census count that Bisbee was carrying about three times as many housing units on the market than had been previously typical in the market. This was also the case in many other communities due to the rising number of residential foreclosures.

Although the economy may have had some impact on the population count in Bisbee, the primary reason for the change has to do with the changing demographics of the city. The 2000 Census reported that Bisbee had a household size averaging 2.20 with a median age of 43.2 and with 19.6% of the population over the age of 65. In 2010, the average household size dropped to 2.05, median age rose to 48.8 and the percentage of the population over 65 rose to 20.7%.

Another telling factor is the number of 10-19 year olds in the 2000 Census (721) who do not carry over in place (as 20-29 year olds) into 2010. A drop of 177 people in this category suggests that, once graduated from high school, a notable percentage of Bisbee young people leave for college, military or other locations rather than remain here.

If persons per household had remained the same, Bisbee would have had a count closer to 5,633, an increase of 58 people. If the vacancy rate has remained the same (15.3% instead of 20.2%), there would have been an additional 162 houses with people in them, an increase, at current occupancy rates, of 348 people. However, what happened during the decade is that an increase of 5.1% in the number of vacant houses (more rentals, more seasonal homes, more homes on the market) combined with a decline in the number of people living in each housing unit resulted in the count in the 2010 that was lower than what had been projected.

Because of this data, a revised population projection for the City of Bisbee and surrounding areas within the study area was developed using a 1 percent annual growth rate from 2010 to 2030, with the 2010 Census count as a starting point. Actual census data for Bisbee and Naco are shown, while the population for the remainder area of the Bisbee CCD was extrapolated from the difference between the 2010 Arizona official projections and the census counts for the other portions of the study area. Table 2 shows these projections.

Table 2 Unofficial Population Projections for the City of Bisbee based on Initial 2010 Census Data

Location	2010	2015	2020	2025	2030
City of Bisbee	5,575	5,854	6,147	6,454	6,777
Naco	1,046	1,098	1,153	1,211	1,271
Bisbee CCD (Remainder)	2,990	3,140	3,297	3,462	3,635
Total Study Area	9,611	10,092	10,597	11,127	11,683

It should be noted that occupants of seasonal residences still require utilities, services and transportation infrastructure while in town, so reduced population counts should not necessarily suggest reduced demand for transportation infrastructure.

Note: Cochise County staff has spent considerable effort evaluating the data from the 2010 Census, and reaching conclusions on the impacts. Development of the above section was greatly facilitated by the work done by Karen Lamberton, AICP, Cochise County Transportation Planner.

2.3 Projected Employment Characteristics

Because there is no known source for future employment data, the magnitude and distribution of future employment was estimated by WSA. The Arizona Department of Commerce reports that the 2008 civilian labor force (population 16 years and older) in the City of Bisbee totaled 3,497. Assuming that the employment rate (0.627 jobs per capita) remains constant, 2030 employment would be about 4,249 using the revised growth projections in Table 2. According to the above Department of Commerce data, the Cochise County projected growth rate from 2011 to 2030 in Table 1 above is 26.3%, exceeding the Bisbee area projected growth rate over the same period. The 2010 census data indicates that all area communities failed to meet the official projections, so the area growth rate is likely optimistic. Since Bisbee is the county seat, it would still be expected that growth in county government service jobs to meet the demand of county population growth (albeit lower than the projections) would, in part, support employment growth in Bisbee.

2.4 Traffic Projections

A computer travel demand model was developed for use in this study. Existing traffic volumes, percent trucks, and level of service (LOS) in the model are based on the Cochise County travel demand model and traffic count data collected for this study. The existing 2007 base year and the 2020 and 2040 forecast years for the Cochise County travel demand model were used to extrapolate demographics to the traffic analysis zone (TAZ) level for the years 2010, 2015, and 2030 to support this study.

A subarea for the Bisbee study area was defined and extracted from the county model for the years 2010, 2015, 2020, and 2030. The subarea model for each year was iteratively adjusted to match projected volumes at each of the newly-defined external stations. While the TAZ-level demographics and external station volumes were grown for each analysis year, no changes were made to the 2007 Cochise County network; it was used as a no-build network for each of the analysis years.

Level of service is a measure of the average service level of a roadway based on its 24-hour volume and saturation flow capacity. A simple ratio of the assigned model volume to the link capacity was used to define the LOS. On a previous PARA study (Unified Nogales/Santa Cruz County Transportation Plan 2010), WSA worked closely with Reza Karimvand and Greg Wisecaver from ADOT Southern Regional Traffic Engineering to develop a reasonable V/C Ratio table for various functional classifications for use on PARA type planning studies for rural and small urban areas.

The customary standard planning level determination for LOS is typically done using such a table. In this case, the Functional Class categories and daily capacities for the network were pre-defined based on the tables in Appendix A. Southern Regional Traffic Engineering approved this table for use in such studies and we were directed to use this accordingly. The intent was that this table could be consistently applied for all PARA studies in the state, so that results are comparable across all studies. This previous exercise to determine the V/C Ratio calculations that were used for this study is included in this paper as Appendix A.

Daily capacities and the ranges of the volume to capacity ratio which were used to define LOS for each functional class are shown in Table 3.

Table 3 Ranges of the V/C Ratio Used to Define LOS

Roadway Type	Daily Per Lane Capacity	Max LOS A V/C Ratio	Max LOS B V/C Ratio	Max LOS C V/C Ratio	Max LOS D V/C Ratio	Max LOS E V/C Ratio
Freeway	20,000	0.29	0.47	0.68	0.88	1.00
Multilane Arterial	8,000	0.29	0.47	0.70	0.95	1.00
2-Lane Arterial	7,000	0.29	0.47	0.50	0.90	1.00
2-Lane Collector	5,000	0.29	0.47	0.50	0.90	1.00

Assigned volumes from the 2015 Bisbee subarea travel demand model were used to calculate LOS, using the 2007 no-build network. LOS for 2015 is shown in Figure 2. An inset of the Bisbee / Warren area is shown in Figure 3. Compared to 2010, the forecast volumes for 2015 generally show a moderate increase. However, while volumes on links have increased, the increase is generally within the range of the same defined LOS category. The LOS map for 2015 is virtually identical to that for 2010. The summary table shows that just 0.2 miles of roadway have moved from operating at LOS A to LOS B.

Forecasting demographic conditions five years further to the year 2020, while still using the no-build network, some LOS degradation can be seen. LOS for 2020 for the study area is shown in Figure 4, with the inset area shown in Figure 5. Overall, the length of roadways operating at LOS D is forecast to remain the same for 2020. However, the amount of roadway at LOS A decreases, with a corresponding increase in roadways at LOS B and LOS C.

For the 2030 forecast of twenty year's worth of demographic growth on the no-build network, decreased levels of service can be seen more extensively throughout the study area. The study area LOS for 2030 is shown in Figure 6, and the inset area LOS is in Figure 7. The trend of degradation of performance on SR 92 as it approaches the traffic circle continues in 2030. A two-lane section immediately south of School Terrace Rd is forecast to drop to LOS E. This is severe congestion. SR 80 to the east of Warren is forecast to drop to LOS D, as is a part of the northern section of the Naco Highway as it approaches SR 92. Some sections of the Highway 80 ramps on the east side of Bisbee are also projected to drop to LOS D.

Figure 2 Forecast LOS for 2015

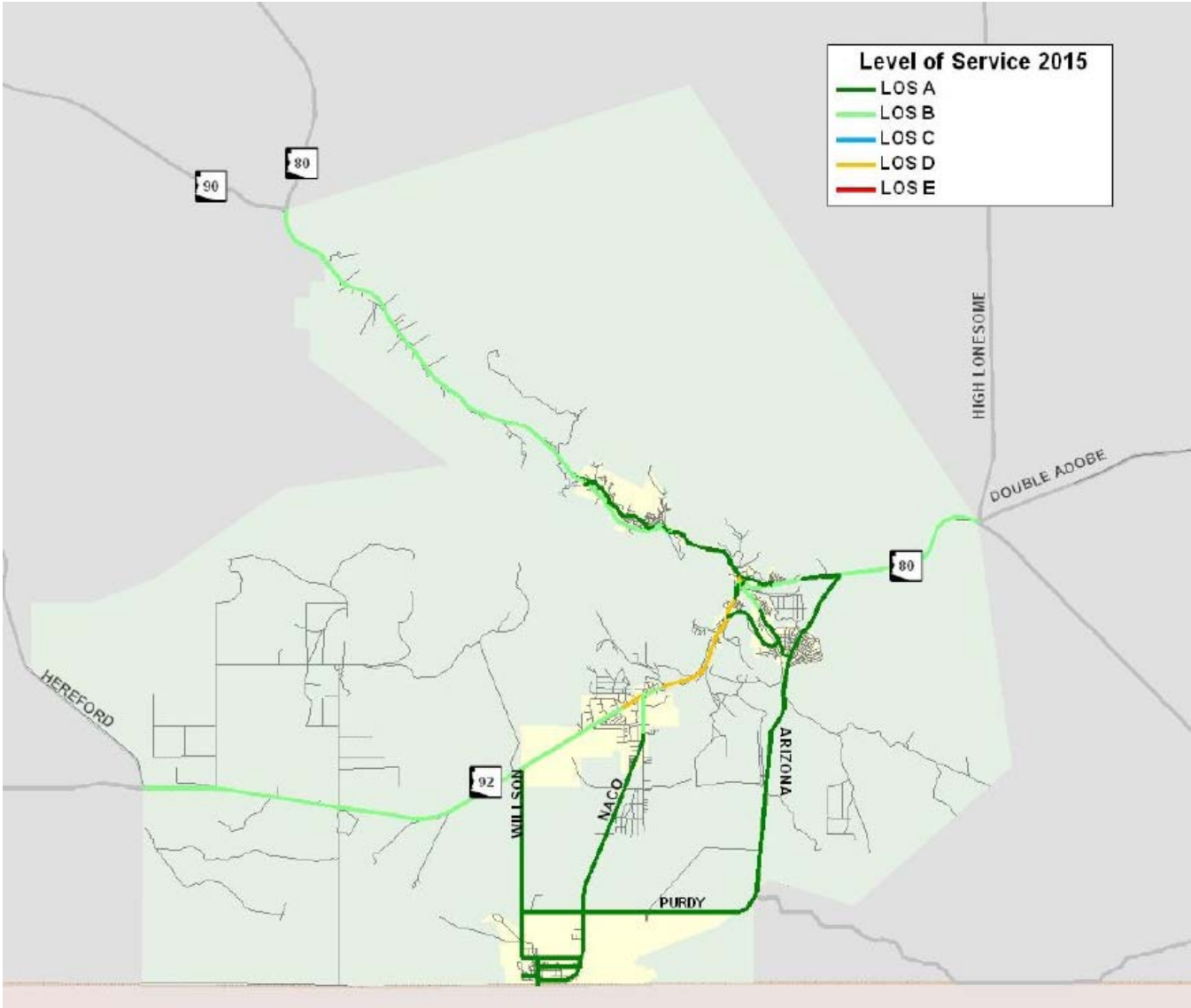


Figure 3 Old Bisbee/Warren Inset Area Forecast LOS for 2015

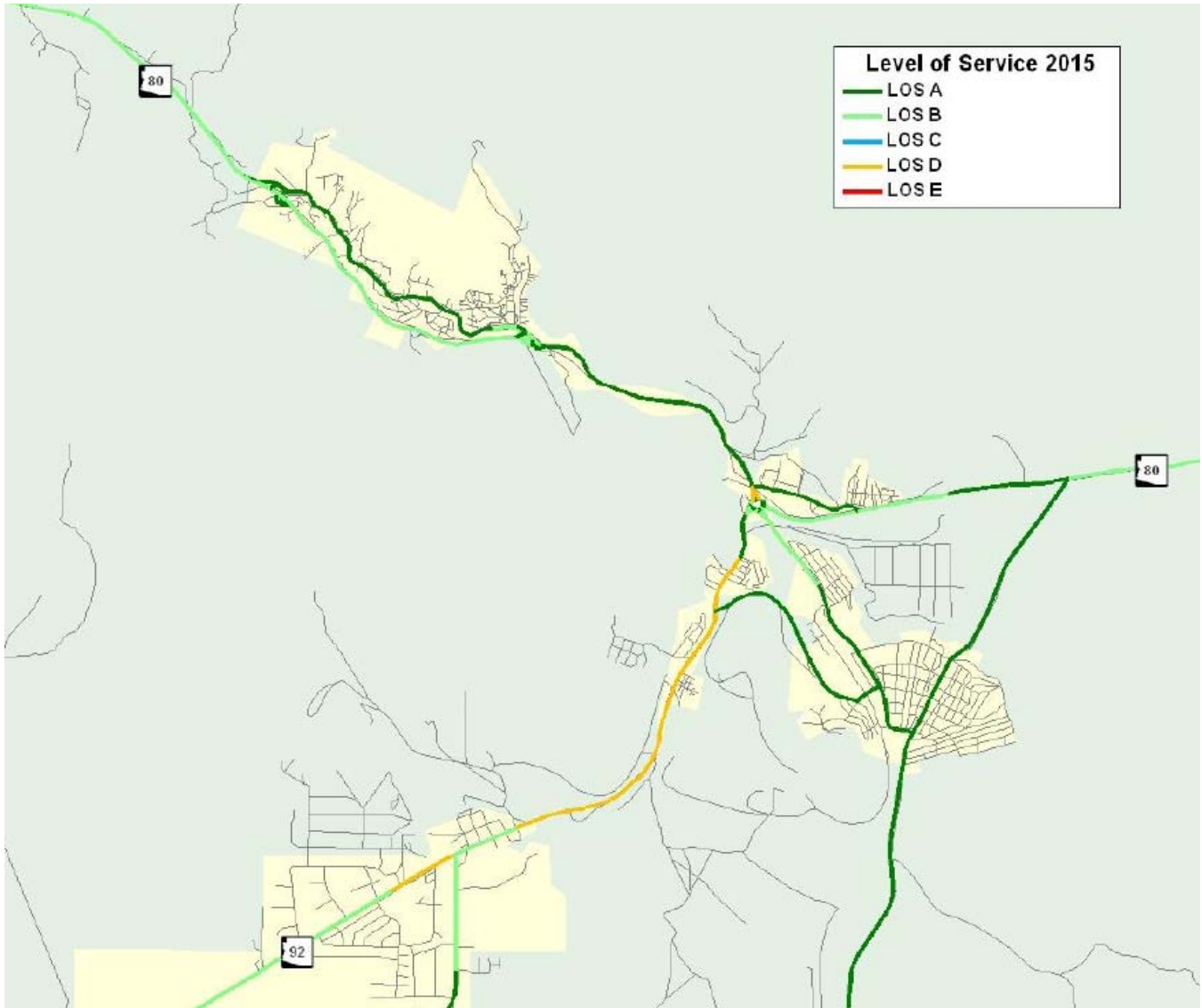


Figure 4 Forecast LOS for 2020

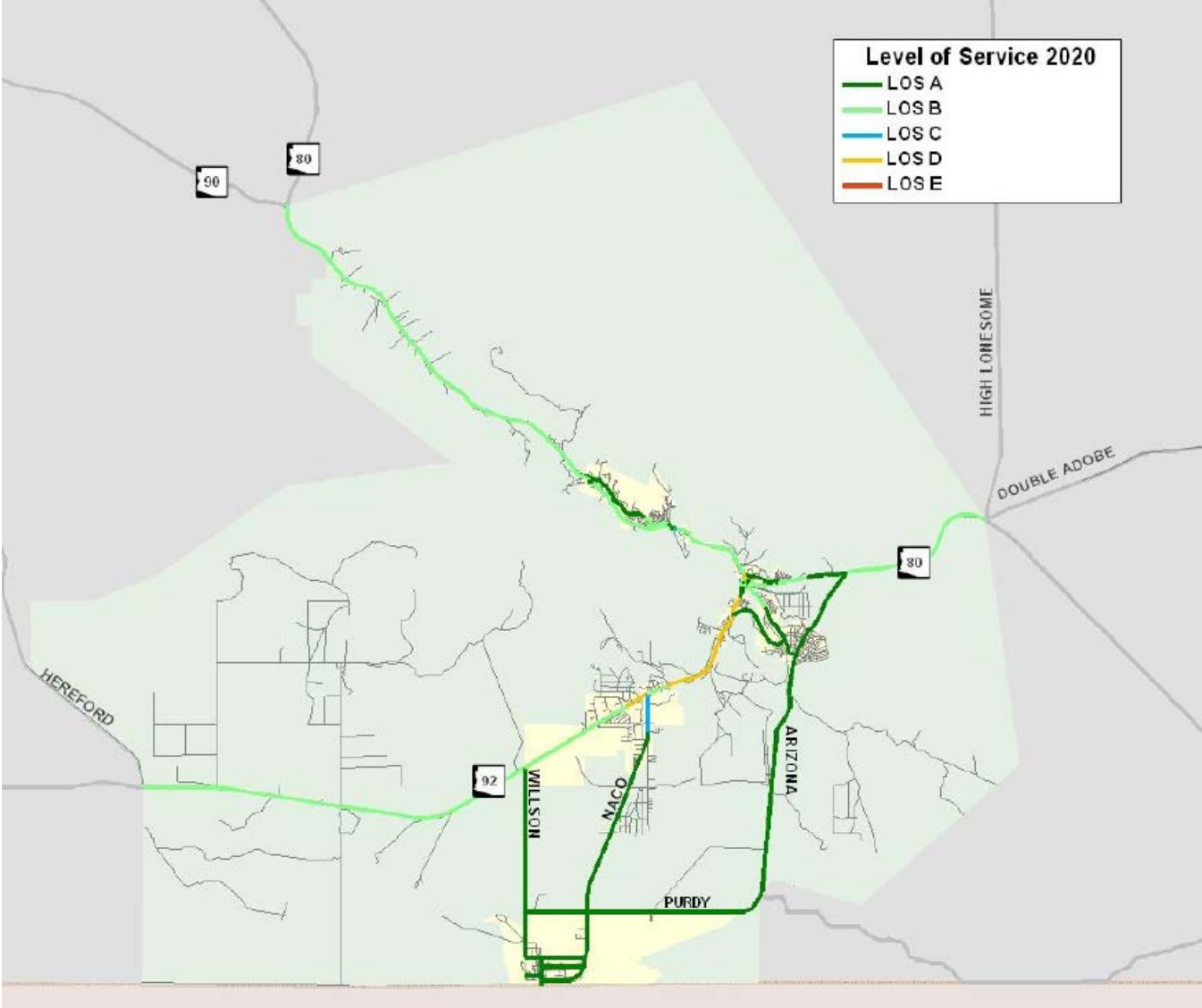


Figure 5 Old Bisbee/Warren Inset Area Forecast LOS for 2020



Figure 6 Forecast 2030 LOS

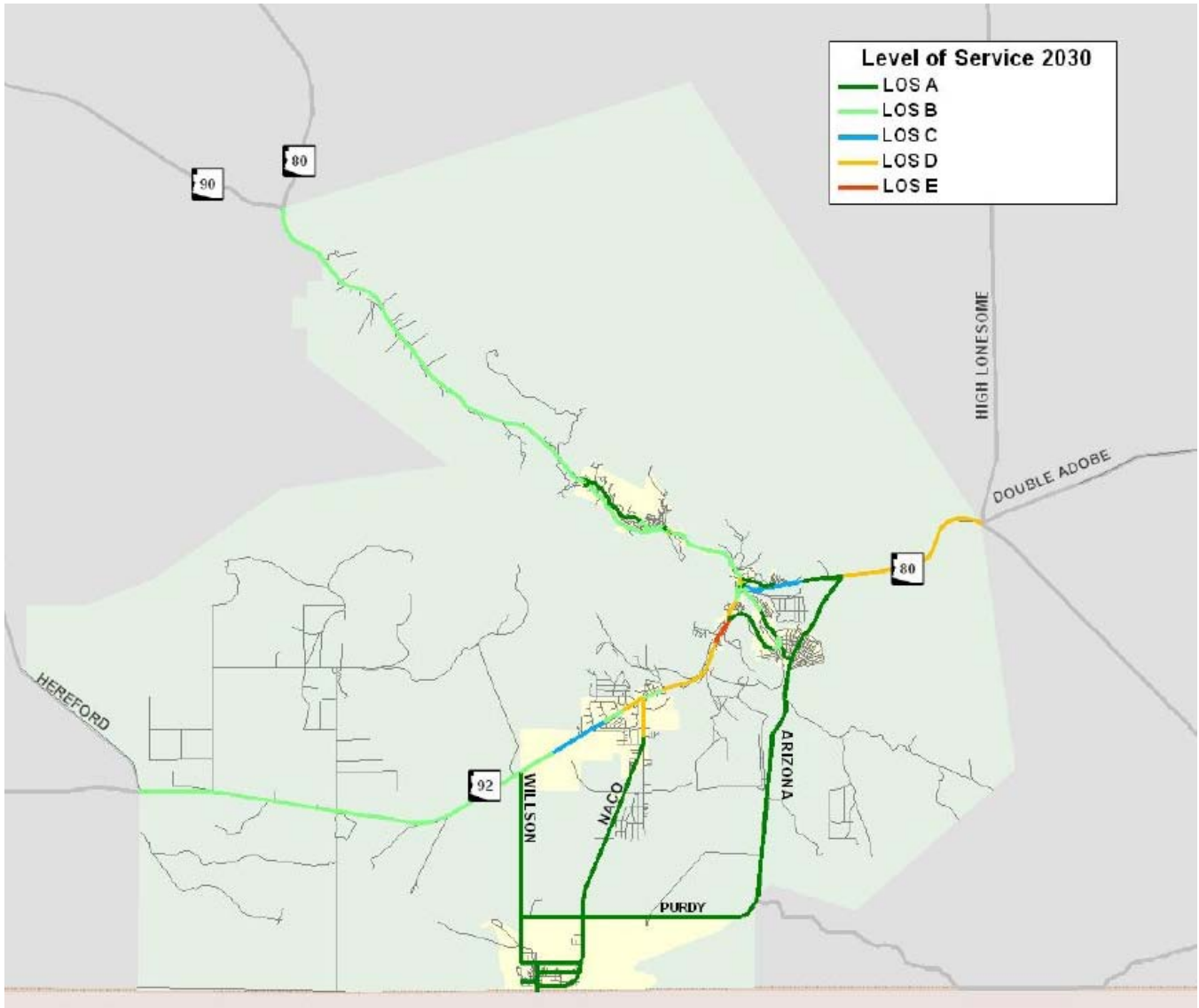


Figure 7 Old Bisbee/Warren Inset Area Forecast 2030 LOS



In general, the local roads serving the urban areas of Old Bisbee, Warren, and San Jose that are at LOS A under existing conditions in 2010 are forecast to have sufficient capacity to maintain their performance through the year 2030. In contrast, the higher-level facilities such as SR 80 and SR 92 are forecast to show declines in their levels of service. Some explanation is in order here. The modeling done was based on a no-build network. The local street system between the various neighborhoods is not well connected. As a result most inter-neighborhood trips must use the state facilities. This lack of local neighborhood connections, paired with a lack of excess capacity on these local roads likely sheds trips onto the state system. Some of the more urban sections of regionally significant arterials like Naco Highway, Main Street, and ramps are forecast to show some noticeable but less dramatic declines in their levels of service.

Table 4 shows the percentage of the total mileage within the study area which is at each defined LOS category for the existing conditions and the three forecast years.

Table 4 Percent of Study Area Mileage by LOS Category

Percent of Mileage Per LOS Category						
	LOS A	LOS B	LOS C	LOS D	LOS E	LOS F
2010	52.1	43.0	0.0	4.8	0.0	0.0
2015	51.9	43.3	0.0	4.8	0.0	0.0
2020	48.3	45.7	1.2	4.8	0.0	0.0
2030	47.3	37.9	3.7	10.3	0.8	0.0

Table 4 shows that the roadways at LOS A show a slow and steady decline throughout the twenty-year forecast period. Much of the LOS A decrease is taken to LOS B through the year 2020. By that year, a trend of dropping from LOS B to LOS C is also seen. The amount of roadways at LOS D is steady until the year 2030, when volume increases sufficiently to drive it into the LOS D range. It should be noted that LOS is defined by ranges, so a road’s volume can increase by a fairly significant amount without tripping into the next category.

Additionally, average volumes over a stretch of roadway vary with the traffic loading points and with turning movements at intersections. As Table 5 shows, the average volumes over the larger stretches of road segments increase for the twenty-year forecast period, with an average increase of 24%. This compares to forecast population growth of approximately 22%, indicating the vast majority of the traffic growth is coming from local population growth while increased trip making per household and increased regional transportation growth likely account for the additional 2% traffic growth.

Table 5 Average Volumes for Selected Road Segments

Average Volumes of Selected Road Segments					Pct Increase
	2010	2015	2020	2030	2010 - 2030
Highway 80 from boundary to north ramps	4,870	5,200	5,460	6,250	28.3%
Highway 80 from north ramps to south ramps	4,600	4,870	5,190	5,710	24.1%
Highway 80 from south ramps to the Circle	8,590	9,050	9,560	10,510	22.4%
Highway 80 from Arizona to the Circle	3,920	4,160	4,310	4,800	22.4%
Highway 80 from boundary to Arizona	5,690	6,090	6,400	7,450	30.9%
Highway 92 from School Terrace to the Circle	8,020	8,370	8,870	9,670	20.6%
Highway 92 from Naco to School Terrace	10,490	10,930	11,270	12,470	18.9%
Highway 92 from Willson to Naco	5,880	6,230	6,550	7,040	19.7%
Highway 92 from Hereford to Willson	4,620	4,840	5,070	5,570	20.6%
Highway 80 from Arizona to the Circle	3,920	4,160	4,310	4,800	22.4%
Bisbee from Arizona to the Circle	2,900	3,140	3,300	3,590	23.8%
Arizona from Bisbee to Highway 80	1,130	1,220	1,320	1,460	29.2%
Arizona from Naco to Bisbee	700	750	800	910	30.0%
School Terrace from Highway 92 to Bisbee	3,300	3,600	3,880	4,150	25.8%
Naco from Towner to Highway 92	2,010	2,130	2,230	2,430	20.9%

2.5 Future Condition of Roadways

Working Paper # 1 Current Conditions, reported that over half the street segments were rated poor to failed condition; meaning they have deteriorated to the point that major rehabilitation or complete reconstruction of the street would be the best remedy. To paraphrase the remarks made by several stakeholders, *“the streets are in bad condition, but the residents are used to it and drive more slowly over the roughest areas”*. The San Jose/Don Luis neighborhood streets are overall in better condition than the Warren area streets. This is logical since these neighborhoods are newer. Also as expected, the streets in Old Bisbee, as a whole, are in the poorest condition of the three major neighborhoods since this is the original, and the oldest part of town with the steepest terrain. From Working Paper #1, Table 6 summarized the current conditions of study area roadways. Without active rehabilitation steps, the conditions will certainly deteriorate further in the future. A priority should be to maintain the roadways that are in good condition so that they do not deteriorate as well, and secondarily to improve the condition of those facilities in poor condition.

Table 6 Street Condition Summary by Street Segment

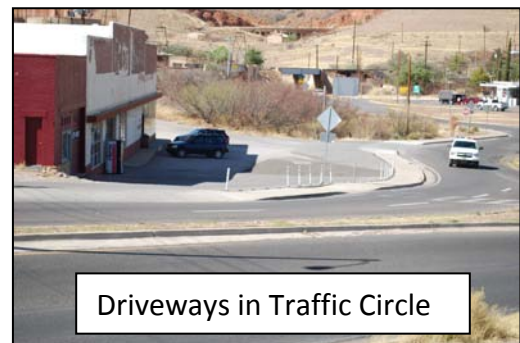
Neighborhood → Condition Rating ↓	San Jose & Don Luis	Warren, Briggs, Bakerville, Galena, Lowell, Tin Town & Saginaw	Old Bisbee	Totals	
Excellent	1	2	0	3	1%
Good	18	26	2	46	17%
Fair	17	33	23	73	27%
Poor	23	18	28	69	25%
Failed	7	50	24	81	30%
Totals	66	129	77	272	100%

Note: The table does not include SR 80 or SR 92

2.5.1 Roadway Operational Issues

A field review was conducted in April 2011 focusing on high accident locations and segments where Level of Service is forecast to worsen in the future. Priority concerns are SR 80 and SR 92 from Melody Lane to the traffic circle at that roadway’s intersection with SR 80. Following are summary comments on these segments:

- SR 80 has limited problems. Working Paper #1 reported and listed a number of crashes in this segment, however. Accidents may be due to driver inattention or impairment. Stakeholder interviews raised the issues of access to the Copper Queen mine tour and the scenic pullout at the Lavender Pit as well as prior signage informing drivers of those locations.
- The traffic circle has eight driveway openings within or immediately adjacent. While businesses depend on access, there may be opportunities to close some of these access points.
- SR 92 has an excessive number of driveway access points in the vicinity of the Naco Highway intersection. Twelve of these are within 700 feet of the intersection and seven are within 100 feet, including one at the direct north side of this “T” intersection.
- Naco Highway has fourteen driveway access points within 700 feet of the intersection. Two of these are for a small parcel with a masonry sign that poses sight distance problems.



- The lack of turn lanes on SR 92 exacerbates this high number of conflict points. There appears to be adequate physical space (although additional right of way may be required) to add a center turn lane or a four lane cross section with a median and turn lanes in the segment from Melody Lane to School Terrace Road.

- At the southwest corner of Taylor Lane and SR 92, there are four driveway openings in a space of less than 100 feet.



- A connection to the Safeway Center from Collins Road to the south will help alleviate conflicts at the entrance on SR 92.

Figure 8 below provides the locations of access points in close proximity to the intersection of SR 92 and Naco Highway. Working Paper #3, Evaluation Criteria and Improvements Plan, will include more detail on access management options and project for this area.

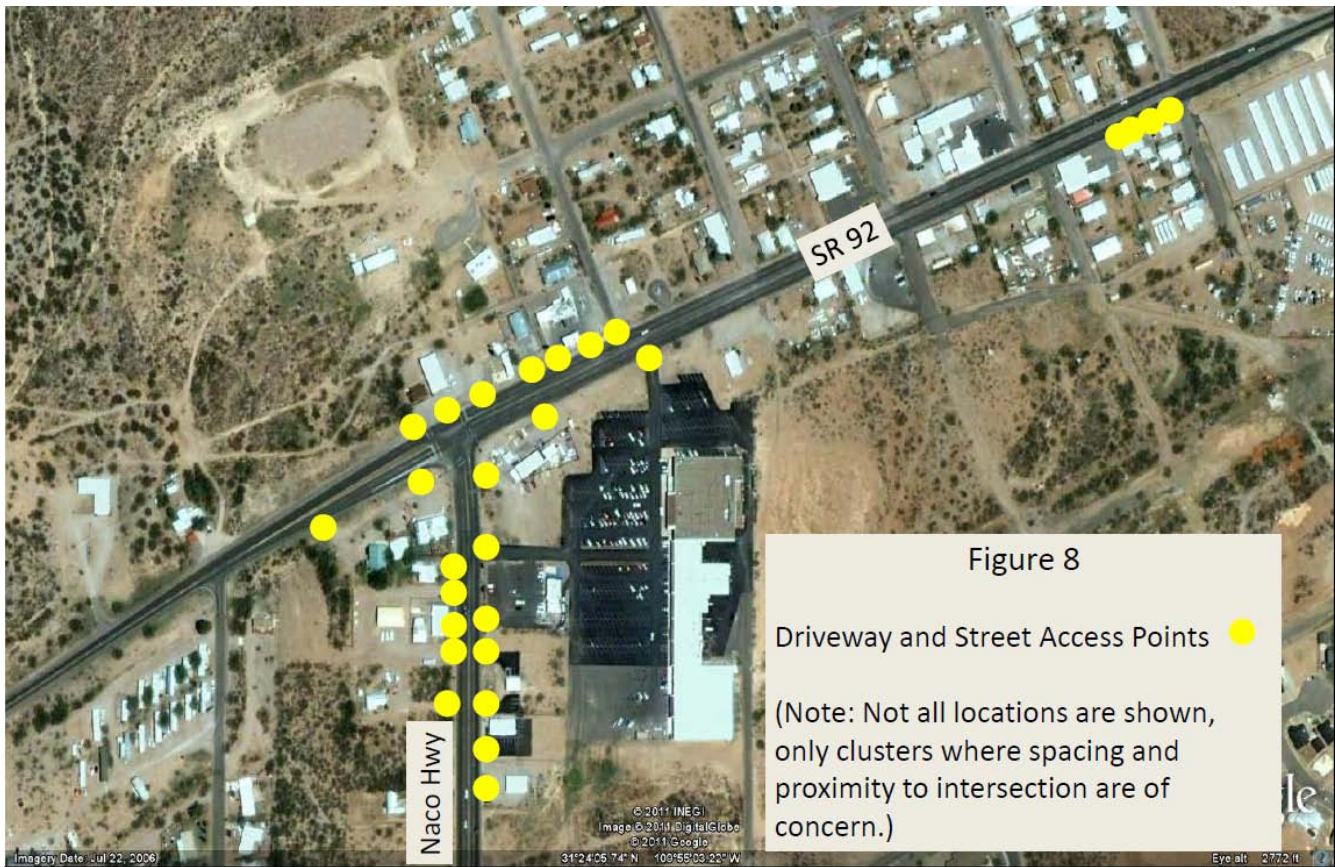
2.5.2 New Roadways

In the next deliverable, Working Paper #3, Evaluation Criteria and Improvements Plan, attention will be given to potential locations for new roadway facilities or extensions that might help to depressurize the segments of Naco Highway and SR 92 near their intersection.

2.6 Future Condition of Bridges, Culverts and Walls

A comprehensive review of the condition of bridges, culverts and walls was conducted as part of Working Paper #1, Current Conditions. These conditions will not improve, and will continue to deteriorate if repairs are not undertaken. Some of the bridges and culverts are part of the state highway system and are the responsibility of ADOT. Others are part of the local roadway network, and are the responsibility of the City of Bisbee. A priority should be to maintain the infrastructure that is in good condition so that it does not deteriorate as well, and secondarily to improve the condition of those facilities in poor condition.

Figure 8 SR 92 and Naco Highway Access Points



2.7 Naco Port of Entry

Plans are underway for capacity expansions for the Douglas Port of Entry and the three ports of entry in Nogales. In discussions with Customs and Border Protection (CBP) officials in Tucson, they indicated that there are no plans under consideration for capacity improvements to the Naco Port of Entry. Predicted traffic volumes on SR 80 at the eastern edge of the study area (growing from 5,690 ADT today to 7,450 ADT in 2030) suggest the increased traffic from the Douglas POE is not a concern in this area. The planned improvement of Davis Road from SR 191 to SR 80 will provide an enhanced alternative for westbound I-10 destined traffic than traveling through Bisbee on SR 80.

2.8 Future Transit Service

The Bisbee Bus is an important component of the Bisbee transportation network. Under the current economic conditions, state funding used to support public transit operations (the Local Transportation Assistance Fund) has been curtailed. The Cochise Commuter program, which extended intercity connector service between Bisbee, Douglas, and Sierra Vista was discontinued. In the future, resumption of this service should be re-evaluated, along with service expansion within the Bisbee area. The Cochise College Campus on SR 80 east of Bisbee and



regional medical services in Sierra Vista are both destinations warranting service both now and in the future. The 2008 *Rural Transit Needs Study* prepared for ADOT stated that Cochise County in general had the fourth highest rural transit demand of all Arizona counties. The report also noted that the Bisbee Bus had the second highest ridership per service hour (8.94 per hour) of all fourteen rural public transit operations in Arizona. That report identified the need for intercity bus service between Bisbee, Sierra Vista, and Benson as well.

The 2008 *Rural Transit Needs Study* predicted a transit demand in Cochise County of 930,000 passenger trips per year by 2016. The Bisbee study area (including Naco and some unincorporated neighborhoods within the Bisbee Bus service area) is about 7% of the Cochise County population. Therefore, according to the 2008 study, the transit demand in the study area by 2016 would be about 65,100 trips per year. The *Rural Transit Needs Study* used an estimation technique called the Arkansas Public Transit Needs Assessment method, or APTNA. This estimating tool focuses on populations below the poverty level, populations with disabilities and the elderly. These populations are typically referred to as “transit dependent”. The Bisbee Bus currently provides just under 24,000 trips per year, or about 37% of the year 2016 demand. This observation can be supported by looking at some relevant local socioeconomic data. Recent 2010 Census data reports that 21% of Bisbee’s population is over 65. Economic data from the 2010 Census is not yet available, but data from preceding years identified that 23% of the community is below the poverty level, and 29% have a disability (*American Fact Finder* 2005-2009). This data is shown in Table 7 below, and projected out to 2030 using the one percent per year unofficial growth rate used previously in the population projections section of this report. The projections shown assume that these groups percentage of the total population will remain unchanged. (In fact, the percentage of elderly has risen over the last decade. Future conditions will depend largely on employment in the study area.) Based on population growth, transit demand will increase by an additional 9,700 annual trips between 2016 and 2030.

Table 7 Projected Growth in Transit Dependent Populations

	2010	2015	2020	2025	2030
Over Age 65 (20.7%)	1,989	2,089	2,194	2,303	2,418
Disabled (29.5%)	2,835	2,977	3,126	3,282	3,446
Below Poverty Level (23.5%)	2,259	2,372	2,490	2,615	2,745
Total Study Area Population	9,611	10,092	10,597	11,127	11,683

This approach may exclude demand from “elective riders” who have access to a vehicle, but choose to use transit for a given trip due to a lack of parking at the destination, the cost of fuel, or the convenience of not driving if transit schedules for their trip are acceptable. No Arizona communities are currently meeting nearly all of their transit demand. Bisbee is not unique in this. Still, the above information strongly suggests that expanded service would fill a demand if revenues could be found to underwrite the cost.

A shortage of parking for both retail and residential use is a concern, especially in Old Bisbee. New surface parking and perhaps parking structures could be served by expanded bus operations with higher frequency of service. This would encourage tourists to use remote parking and utilize the bus to reach retail destinations. Parking locations should include bus access as well as seating and shelters at these key stops. Bus pullout bays should be considered at stop locations with significant passenger boardings and alightings, where space is available.

2.9 Future Pedestrian and Bicycle Infrastructure

There are no developed bicycle facilities in the study area. While there is bicycle use in the community, there are no developed facilities such as bike lanes or bike paths. Riders can and do share the public rights of way with vehicles. Due to the historic nature of the community, and the proximity of structures to the existing roadways, it would be impossible to obtain additional rights of way for bike lanes to be built in most of Old Bisbee and Warren. ADOT does not include bike lanes in their cross section design standards, but bicycles are allowed to use these facilities consistent with state traffic laws, unless specifically prohibited by the State Engineer. Currently the only State Highway System facilities closed to bicycles are the Valley Freeway System in Maricopa County and I-10 between Phoenix and Tucson.

Sidewalks are especially needed along portions of SR 92 and along Naco Highway. The Safeway center is a major destination for pedestrians crossing through the Naco Port of Entry (over 6,800 per month). Locations for multipurpose paths not immediately adjacent to roadways are a solution to right-of-way constraints, and one that can provide enhanced connectivity between the areas various neighborhoods.

2.10 Future Airport Conditions and Needs

The most recent Airport Master Plan was done in 1999. The plan evaluated a number of alternatives for improvement of the airfield. The preferred alternative was to widen and improve the primary runway (17-35), extend and pave the secondary runway (2-20), and provide aviation, support facilities, and utility improvements. The Airport Master Plan noted that, except for the local share of the airport capital improvement program, projected revenues should offset expenses during the twenty year (1999-2020) planning period. These future improvements are primarily dependent on the availability of state and federal aviation funding. Future improvements are also dependent on a demonstrated need, area growth and demand.

3.0 Future Conditions Findings and Summary

The most concerning future condition is the continuing deterioration of bridges, culverts, roadways stairs, and retaining walls. Much of this aging infrastructure is in poor condition. While these are current needs previously described and evaluated, they are also future condition issues if not addressed. Achieving a balance between preservation of historic character and current engineering design standards will be a challenge, as will finding the funding to address the magnitude of current needs.

As traffic increases in the future along SR 92 between Melody Lane and the intersection with SR 80, a number of steps to be considered will be more fully explored in Working Paper #3, Evaluation Criteria and Implementation Plan. These will include:

- Installation of a center turn lane, or a narrow median with specific turn lane locations, could be considered for as much of this segment as space (both existing right-of-way and potential additional right-of-way that can be acquired without major disruption) will allow. This will reduce the number of conflict points along the roadway, at the expense of some access restriction. This tradeoff would need to be further investigated in an engineering study and discussed with local businesses and land owners.
- If space is available, the segment of SR 92 in question could be widened to a four lane facility in addition to turn lane improvements above, including sidewalks. This would allow through traffic to pass vehicles turning into businesses without also requiring deceleration turn lanes for right hand turns.
- Consideration should be given to shared access along the segment, effectively eliminating a number of excessive and redundant driveways. Opportunities realized over time through redevelopment plan agreements or goodwill should be explored before considering formal access permit processes.
- Additional signage in the segment could be added, warning incoming traffic (some of which may not be familiar with the area) that they are approaching a congested area with pedestrian and bicycle traffic.
- Consolidation of access points in and immediately surrounding the traffic circle should be considered.
- Speed limits may be excessive, with some portions reduced from 45 miles per hour to 40.

All of these possibilities will be discussed further in Working Paper #3. Considerable traffic engineering analysis also will be required prior to implementing any design changes to the facility. In addition to this study, a speed and safety study and access management assessment for the segment should be strongly considered, under the supervision of appropriate ADOT traffic engineering staff.

Naco Highway has similar issues. Access management strategies that seek to consolidate access should be considered, especially in the area north of the Ace Hardware. There are driveways into vacant properties with no current need. These can be directly served from cross streets. If space is available, or as development occurs, sidewalks should be added to this facility.

All of these possibilities will be explored further in the next working paper. To further depressurize the area surrounding the intersection of Naco Highway and SR 92, the possibility of some additional

roadway connections will be examined in the next working paper. These could include a connection from Naco Highway to Willson Road, and connections from the airport area to SR 92 and SR 80 to the north.

New bicycle and pedestrian connections that are not immediately adjacent to roadways with right-of-way constraints are needed to better connect the neighborhoods.

Improved signage and wayfinding along SR 80 might help to address identified traffic concerns. Visitors need advance notice of destinations, facilities, parking and scenic vistas. Additional traveler information can help to reduce weaving and rapid vehicular movements when an attraction is spotted by drivers at the last moment.

Transit is an expensive but often needed public service. No public system in this country comes close to breaking even. The recent loss of state funding due to the current budgetary problems hampers the ability of all transit programs to expand or even continue current services. Bisbee Bus fares are quite affordable. Many rural transit operators charge \$1.00 per ride, as the Bisbee Bus does. A number of other agencies, however, charge \$1.25, including Flagstaff, Sierra Vista, and Coolidge. A modest fare increase to \$1.25 might be considered with appropriate rider feedback prior to implementation.

Increased marketing should be undertaken prior to resumption of the Cochise Commuter program. Need for this service is likely to increase with predicted Cochise County growth.

4.0 Working Paper #3 Upcoming

In the next working paper, specific projects to address concerns raised in this document will be identified. Planning level cost estimates will be developed for all projects. These projects, with input from the Technical Advisory Committee, will be positioned into short term (five year), medium term (ten year) and long term (twenty year) time frames. This exercise will assist the City of Bisbee in refining and updating their Capital Improvements Plan and will focus on local streets with FHWA approved functional classifications as well as state highways. Revenue and financing alternatives will also be investigated and reported.

Appendix A: Roadway Segment Capacity and Level of Service Criteria for ADOT Small Urban Area Planning Studies

Long range transportation planning studies typically use generalized roadway segment daily capacity and daily volume-to-capacity (V/C) based level of service (LOS) criteria as screening tools to help identify and quantify existing and future roadway deficiencies. The primary advantage of the planning level generalized criteria is that it requires relatively little data to generate reasonable results for a large number of roadway locations. Depending on the nature and scope of the study, more detailed capacity and LOS analyses may or may not be warranted. More detailed analyses require substantial additional data collection, analysis time and costs.

The purpose of this paper is to offer a reasonable set of generalized planning-level roadway segment capacity and V/C based LOS criteria for consistent use in ADOT small urban area transportation planning studies. As much as possible these criteria are based upon the Highway Capacity Manual 2000 (HCM2000). However, the HCM2000 does not explicitly define capacity or V/C based LOS criteria for all types of roadways. For example, HCM2000 uses average travel speed, not V/C, to measure LOS on urban streets. Consequently, the capacity and LOS criteria suggested below for urban streets are not directly attributable to the HCM2000, but are reasonable approximations. The HCM2000 does provide somewhat more explicit guidance for freeway V/C based LOS (HCM2000 Exhibit 23-2), as well as for free-flowing rural multilane roadways (HCM2000 Exhibit 21-2). But even for these, the information reflects “ideal design and conditions”, which may not exist at all locations being analyzed. Table 1 below presents a proposed set of HCM2000 based planning level roadway segment per-lane capacities and V/C based level of service criteria suitable for use in small urban and suburban areas. Based upon Table 1, Table 2 presents the maximum service volumes by level of service for the most common roadway types found in small urban and suburban areas.

Table 1: Planning Level Roadway Segment Capacities & Level of Service Criteria for Small Urban Areas

Roadway Type	Daily	Max LOS A	Max LOS B	Max LOS C	Max LOS D	Max LOS E
	Per Lane Capacity	V/C Ratio	V/C Ratio	V/C Ratio	V/C Ratio	V/C Ratio
Freeway	20,000	0.29	0.47	0.68	0.88	1.00
Multilane Arterial	8,000	n/a	n/a	0.70	0.95	1.00
2-Lane Arterial	7,000	n/a	n/a	0.50	0.90	1.00
2-Lane Collector	5,000	n/a	n/a	0.50	0.90	1.00

Table 2: Planning Level Roadway Segment Service Volumes for Small Urban Areas

Roadway Type	Daily	Max LOS A	Max LOS B	Max LOS C	Max LOS D	Max LOS E
	Per Lane Capacity	Service Volume	Service Volume	Service Volume	Service Volume	Service Volume
4-Lane Freeway	20,000	23,000	38,000	54,000	70,000	80,000
4-Lane Arterial	8,000	n/a	n/a	22,000	30,000	32,000
2-Lane Arterial	7,000	n/a	n/a	7,000	13,000	14,000
2-Lane Collector	5,000	n/a	n/a	5,000	9,000	10,000

Notes: Service volumes have been rounded to the nearest 1,000

