

**Southwest Infrastructure Plan**  
**Amending Pima County Roadway Impact Fees**

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***REVISED***  
**ROADWAY DEVELOPMENT IMPACT FEE  
PROGRAM FOR THE SWIP AREA**

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Prepared By



Curtis Lueck & Associates

5460 West Four Barrel Ct

Tucson, AZ 85743

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Pima County Department of Transportation

**July 1, 2009**

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## **1.0 Overview**

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This report is a revision of the original report dated January 20, 2009. Based on written comments and meetings with stakeholders, Department of Transportation staff believes some revisions are warranted to the original information. The revisions presented in this report include updates to SWIP roadway cost estimates and impact fee calculations (beginning in section 2.3.2). These changes are fully documented in Revised Technical Memorandum #1.

Pima County has undertaken a rigorous analysis of the infrastructure needed to accommodate planned growth and development in the Southwest sector of the County. Development impact fees are currently used in the area for roadways, and the Board of Supervisors desires to update the roadway impact fees to support the findings of the Final Report of the Southwest Infrastructure Plan (SWIP Report), as accepted by the Board in December 2007. In this action, the Board directed that the SWIP Report be further refined into an implementation plan, which Curtis Lueck & Associates (CLA) has prepared in the SWIP Recommended Implementation Plan (SWIP Recommended Plan), which includes refinements to transportation elements in the SWIP Report. In this report, CLA uses the SWIP Recommended Plan to recommend a transportation development impact fee program for the SWIP area. CLA prepared this report so that Pima County could readily adapt it as the written “public report” documenting the fee, as required by Arizona Revised Statutes §11-1102(C)(2) and Pima County Code section 19.02.040.

All cost estimates and projected residential and non-residential impact fee schedules are in 2008 dollars. If the Board of Supervisors decides to approve the recommended SWIP transportation impact fee program, CLA recommends that the fees identified in this report be updated to reflect economic conditions when the fees do go into effect, such as by indexing the fees identified in this report to inflation, as provided for by Pima County Code section 19.003.010(D). This type of minor last minute adjustment is necessary because the implementation timeline is currently uncertain.

In its recommendations, CLA has proposed delineation of a new benefit area (SWIP), which requires the redrawing of two existing benefit area – San Xavier and Avra Valley. CLA makes no recommendations about how these existing areas should be redrawn, but assumes Pima County will accomplish these changes in any ordinance approved to implement the SWIP benefit area program.

In preparing this report, CLA relied on information in the SWIP Report accepted by the Board of Supervisors. That document included assumptions about the magnitude and timing of growth in the SWIP area that will not be realized in the early years of the forecast, as the economy and housing market react to and eventually come out of a pronounced slump. In preparing this report, CLA made no effort to adjust the county’s population projections in these early years. CLA believes that the county’s population projections are accurate in the aggregate and will be realized, but later than originally envisioned in the SWIP Report.

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## **2.0 Southwest Roadway Benefit Area Plan**

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This section presents an analysis of the Southwest Benefit Area; the Southwest Benefit Area Roadway Needs Assessment; and the Southwest Benefit Area Plan.

### **2.1 Southwest Benefit Area**

The Southwest Benefit Area is bounded by Sandario Road on the west; Tucson Mountain Park on the north; Mission Road on the east; and the Tohono O’odham-San Xavier District and Pascua Yaqui Pueblo on the south, an approximately seven-mile by twelve-mile rectangle of approximately eighty-four square miles (see Map 1). The Southwest Benefit Area is formed by merging portions of the current Avra Valley Benefit Area and San Xavier Benefit Area.

#### **2.1.1 Existing Conditions in the Southwest Benefit Area**

Sandario Road and Tucson Mountain Park form natural barriers to residential and non-residential growth to the west and north. Mission Road between Los Reales Road and Drexel Road is within the San Xavier District, while Mission Road from Drexel Road north marks the current Tucson city limits. The southern boundary delineates County authority and tribal sovereignty.

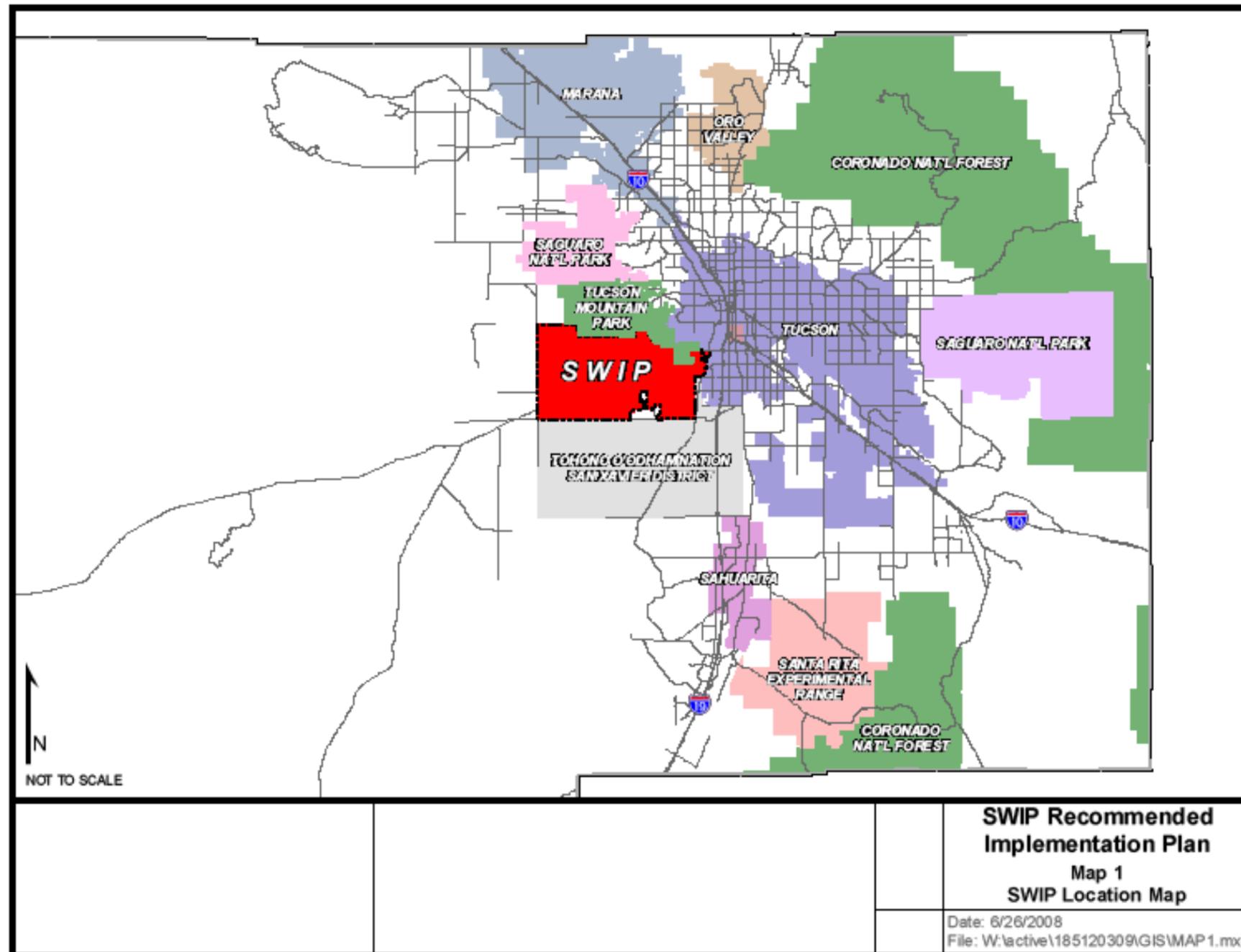
The Southwest Benefit Area is currently unincorporated Pima County. The City of Tucson, however, has included the area as defined in its “Draft Municipal Planning Area” (MPA). The MPA identifies areas of unincorporated Pima County the City sees as both influencing and in turn influencing the City, making them targets for annexation. The City’s current annexation priorities seem to focus to the northeast and southeast.

The Southwest Benefit Area lies outside of the County’s Conservation Land System. The SWIP Report states that “Existing land use maps confirm that many portions of the SWIP area are developed or otherwise committed” (see Map 2). The eastern portion of the area is largely built-out, but it does have opportunities for infill. The western portion of the area has larger areas of vacant, presumably developable land. Existing developments tends to be concentrated along the Valencia Road and Ajo Highway corridors and along Irvington Road, especially between Kinney Road and San Joaquin Road.

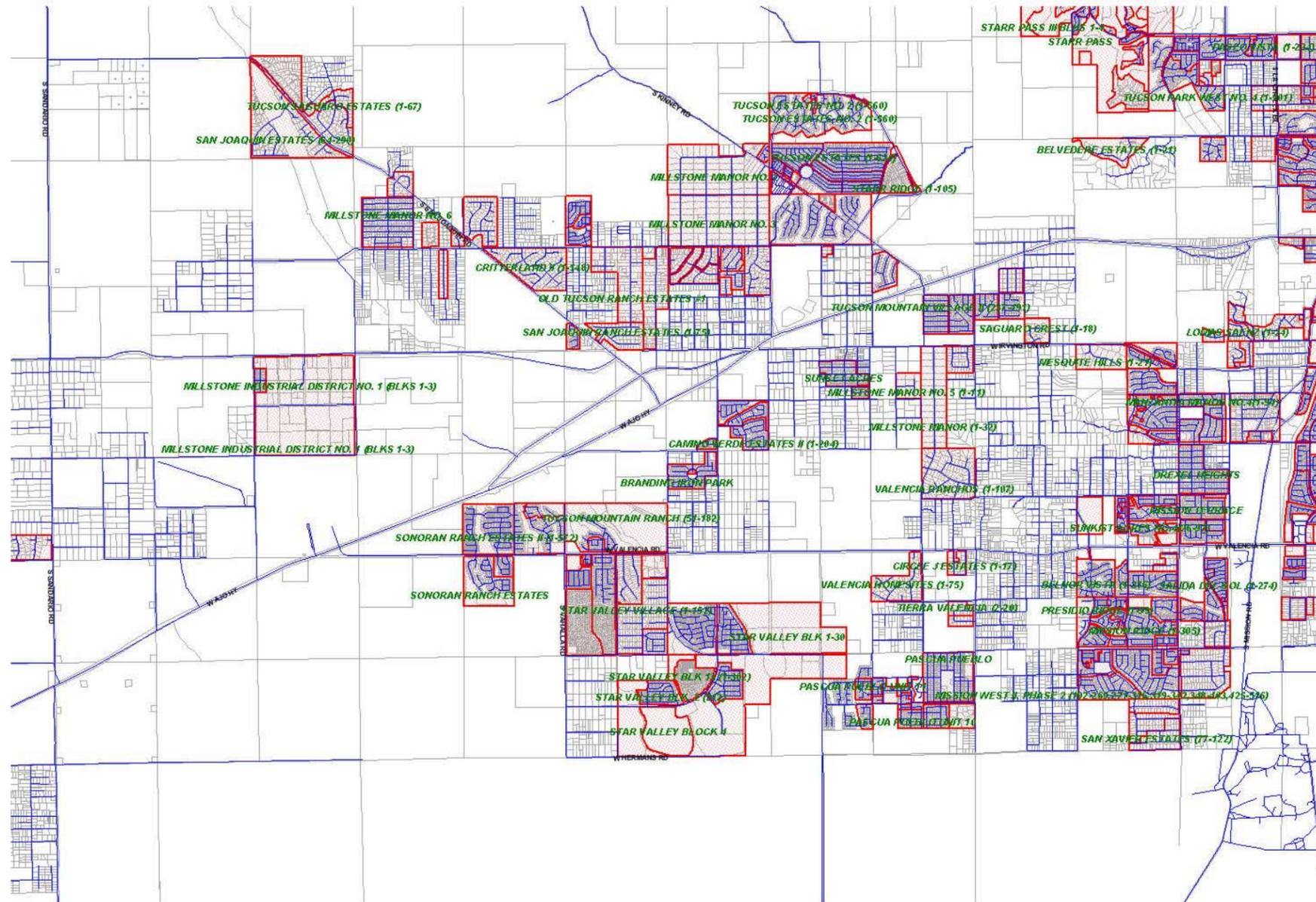
Most of the large undeveloped parcels are publicly owned, with ownership distributed among the federal government, the State of Arizona, Pima County, the Arizona Board of Regents, and Tribal Nations. Private ownership of large parcels of developable land is limited. Release of public lands for development is anticipated.

The SWIP Report used the County Geographic Information System (GIS) to identify 17,260 existing dwelling units in the Southwest Benefit Area. The SWIP Report assumed 2.7 persons per dwelling unit, which translates into an estimated population of 46,622 for the area. Overall, current densities in the SWIP are 0.32 residences per acre.

Map 1 - SWIP Planning Area



Map 2 - Existing Subdivisions in SWIP Area



Legend

See Labels Above

Pima County Public Works  
Southwest Infrastructure Plan

Figure No.

**EC-4**

Title

**Existing Subdivisions**

### 2.1.2 SWIP Approved Development Concept

During a Phase 2 of the SWIP planning process, several planning concepts were adopted that altered the original SWIP planning area boundaries and SWIP development concept. These new planning concepts included:

- Clarifying that Pascua Yaqui tribal lands are outside the SWIP;
- Concentrating on those SWIP areas with the greatest potential for implementing new urban form, which steered attention to Ajo Highway between San Joaquin Road and Sandario Road and the area directly south of Ryan Airfield;
- De-emphasizing the eastern portion, which has many pre-existing developments, and the northwest portion, which is more prone to flooding issues and less amendable to public sewer services;
- Placing a stronger emphasis on opportunities for alternate modes; and,
- Improving compatibilities with Ryan Airfield and the Tucson Trap and Skeet Club.

The net effects of these changes were to cluster and increase the proposed densities of areas identified for development. The three density scenarios from Phase 1 planning were replaced by a new preferred development concept, which projects a greater volume of residential dwelling units than in the Phase 1 Higher Density Scenario.

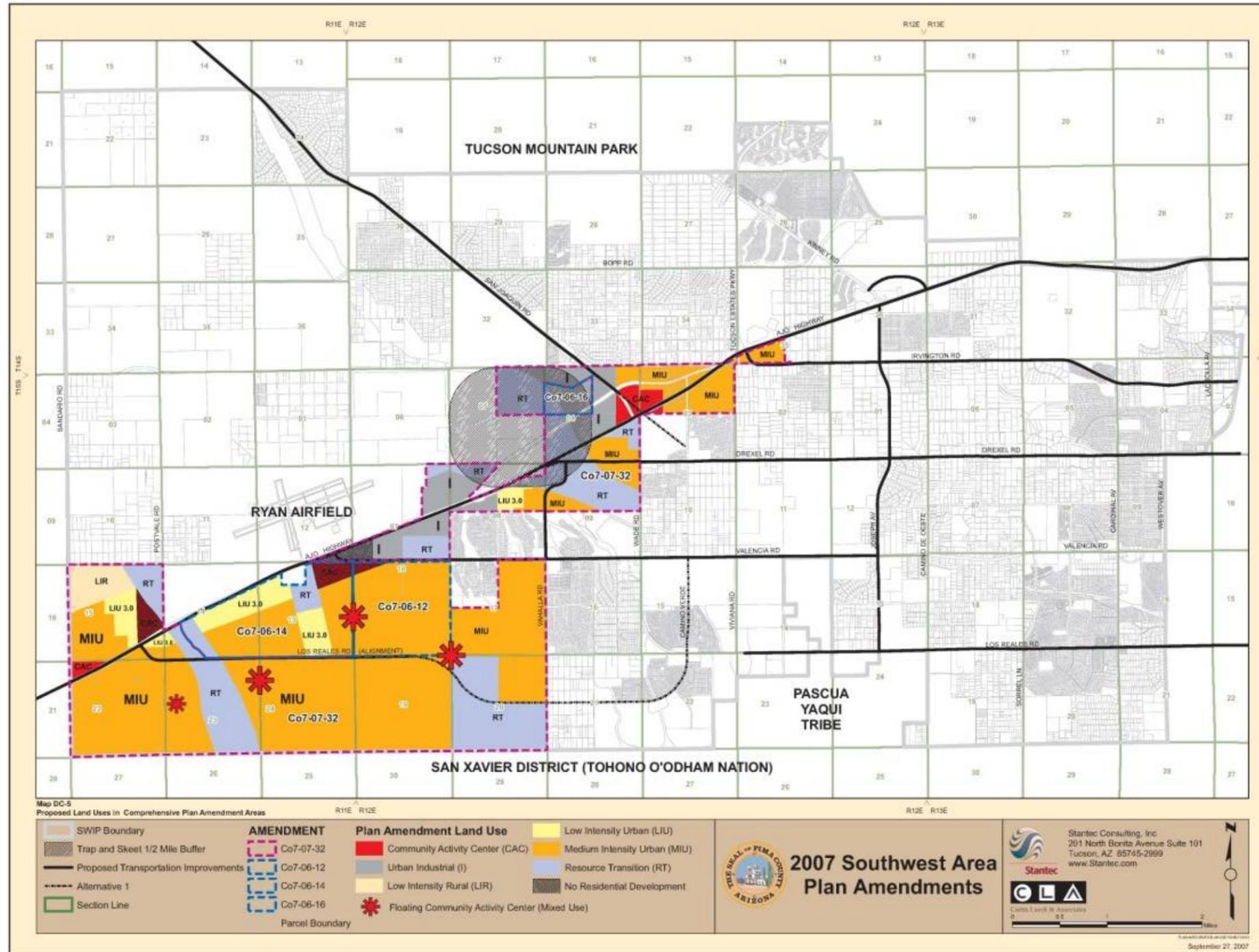
The Phase 2 preferred development concept identifies three sub-areas with significantly differing land uses – Comprehensive Plan Amendment Areas (CPA Areas), The Northwest Resource Transition Areas (Northwest RT Area), and Infill Areas (see Map – 3). The CPA Areas are located along either side of the Ajo Highway corridor, from Sandario Road to Tucson Estates Parkway/Irvington Road. The Northwest RT Area is located north of the Irvington Road alignment, between an area to the west of San Joaquin Road and Sandario Road. The Infill Areas make up the remainder of the SWIP planning area.

Exhibits 1 and 2 recreate Tables “DC-1 Proposed Land Uses in Comprehensive Plan Amendment Areas” and “DC-2 Proposed Land Uses in Southwest Infrastructure Plan Area” from the SWIP Report, after page 3.25. As Exhibit 1 shows, the Preferred Development Concept anticipates 58,840 residences in the SWIP area at build-out. At build-out, the largest number of residences will be located throughout the Infill Area (32,183), followed by Four CPA Areas (25,342). The Northwest RT Area will continue to be sparsely populated, at very low densities (0.24 RAC).

The four CPA Areas are projected at the highest densities in the SWIP Area – 3.17 RAC. The Infill Area is projected at 1.03 RAC, with the overall density for the SWIP Area at 1.32 RAC.

Medium Intensity Urban will be the predominant land use in the SWIP Area, at 37,535 (63.8 percent) of 58,840 total residences. In terms of acreage, Low Intensity Urban and Medium Intensity Urban will be the largest land uses, at 19,802 acres (44.4 percent). Resource Transition will account for 15,838 acres (35.6 percent).

Map 3 - SWIP Preferred Development Concept



In the four CPA Areas, residences at Medium Intensity Urban are projected at 19,984 (78.6 percent) of 25,342 total residences and 4,524 gross acres (56.6 percent) of 7,998 total gross acres.

Exhibit 2 projects existing and new residences in each of the three SWIP sub-areas at build-out. Table DC – 2 reports 14,218 existing residences in the adjusted SWIP Area and projects an addition of 44,622 new residences totaling 58,840 residences. The SWIP Report shows the 25,342 residences in the four CPA Areas as all new residences, with the remainder (19,280 new residences) distributed between Northwest RT Area and Infill Area. Exhibit 2 assumes that 14,218 existing residences and the 19,280 new residences are distributed between the Northwest RT Area and Infill Area by the same proportions they share in Exhibit 1: Northwest RT Area is 3.93 percent and the Infill Area at 96.07 percent.

Based on these assumptions, 25,352 (56.8 percent) of the new residences will be developed in the Four CPA Areas and 18,524 (41.5 percent) will be distributed throughout the Infill Area.

The SWIP Report assumes build-out of the SWIP Area will take place over the next forty-years, by 2052. Exhibits 3 and 4 reproduce figure “DC-3 Anticipated Timeline and Pace of Dwelling Unit Permits (Phase 2)” from the SWIP Report, which presents a revised timeline based on a revised new dwelling unit/year forecast and a cumulative percentage count of new dwelling units.

The pace of development was projected to accelerate from 887 new units per year in 2008 and 2009 to 1,440 units per year between 2010 and 2030. From 2031 to 2044, the projected pace of development drops to 664 new units per year and then to 305 units per year between 2045 and 2052.

By 2010, 9.2 percent of the projected new dwelling units will have been constructed. By 2020, 41.5 percent of the new dwelling units and by 2030 73.7 percent of the new dwelling units will have been constructed.

Subsequent to adoption of these population forecasts, the economy has experienced a deep slowdown in economic activity, including development of new housing. During this downturn, the early year projections in the adopted forecasts will not be met. The buildout assumptions probably will be achieved, but later than originally forecast.

The SWIP Report anticipates that an analysis of actual growth, infrastructure construction, and the rate of accumulation of dedicated funds be performed every three to five years. Since the general economy has also affected other funds, such as decreased sales tax revenue to the RTA, the first update to the SWIP will not likely occur until significant new development is underway and new trend lines can be established.

**Exhibit 1: Gross Acres and Total Projected Residences in Three SWIP Sub-Areas**

<b>Proposed Land Use Designation</b>	<b>Description</b>							
	<b>Major Southwest Infrastructure Plan Sub-Areas</b>						<b>SWIP Area Totals</b>	
	<b>Four CPA Areas</b>		<b>Northwest RT Area</b>		<b>Infill Area</b>			
	<b>Gross Acres</b>	<b>Residences</b>	<b>Gross Acres</b>	<b>Residences</b>	<b>Gross Acres</b>	<b>Residences</b>	<b>Gross Acres</b>	<b>Residences</b>
Community Activity Center	569	2,594	0	0	233	302	802	2,896
Industrial	604	0	0	0	1,931	0	2,535	0
Low Intensity Urban	401	1,002	0	0	9,384	9,657	9,785	10,659
Medium Intensity Urban	4,524	19,984	0	0	5,493	17,551	10,017	37,535
Low Intensity Rural	155	0	0	0	446	140	601	140
Resource Transition	1,503	1,762	5,393	1,315	8,942	3,409	15,838	6,486
OTHER	242	0	30	0	4,715	1,124	4,987	1,124
<b>TOTAL</b>	<b>7,998</b>	<b>25,342</b>	<b>5,423</b>	<b>1,315</b>	<b>31,144</b>	<b>32,183</b>	<b>44,565</b>	<b>58,840</b>
Gross RAC (Residences per Acre)	3.17		0.24		1.03		1.32	

**Exhibit 2: Existing and New Residences in Three SWIP Sub-Areas**

<b>SWIP Sub-Area</b>	<b>Existing Residences</b>	<b>New Residences</b>	<b>Total Residences</b>
Comprehensive Plan Amendment Area	0	25,342	25,342
Northwest Resource Transition Area	559	756	1,315
Infill Area	13,659	18,524	32,183
Totals	14,218	44,622	58,840

Exhibit 3: New Dwelling Units per Year

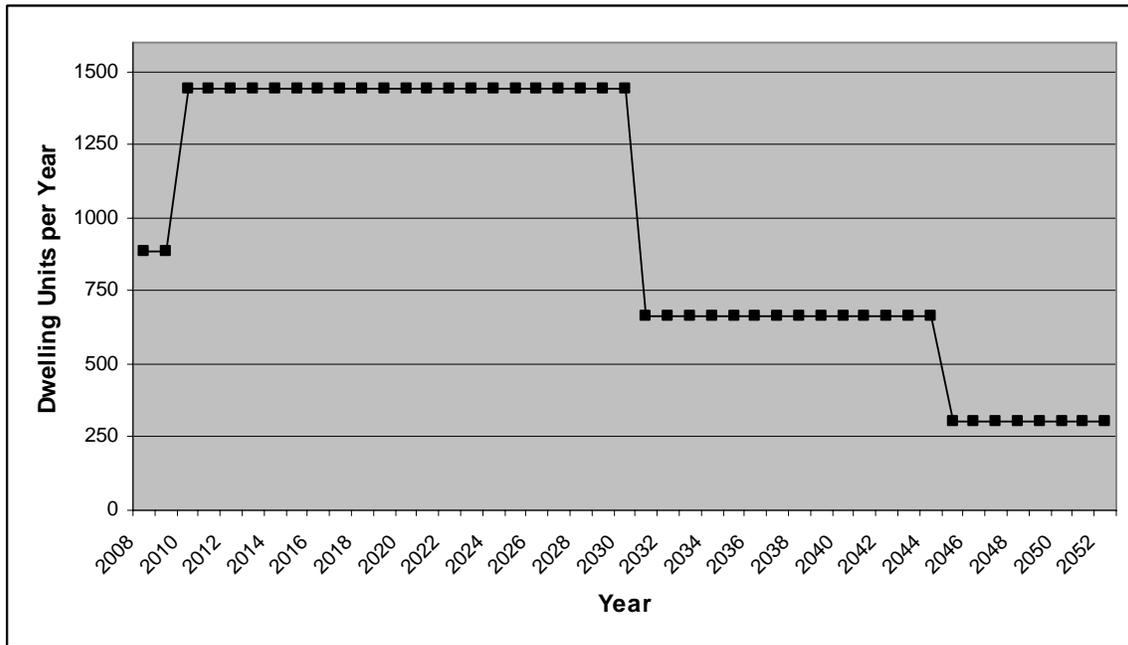
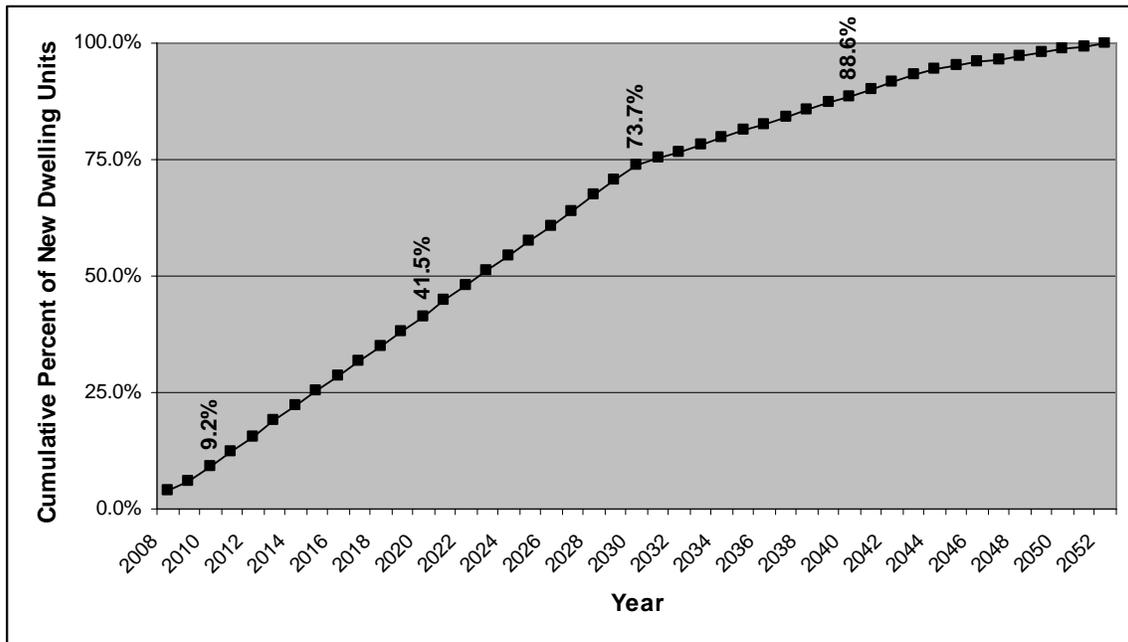


Exhibit 4: Cumulative Percent of New Dwelling Units



## **2.2 Southwest Benefit Area Roadway Needs Assessment**

The Transportation section of the SWIP Report emphasized major routes, including state corridors and arterial roadways crucial to new development in the study area. For purposes of this study, roads classified as local and collector streets were presumed to be built as part of the on-site improvements according to County standards, and neither planning nor funding considerations for these roadways are included in this analysis. There is an overall lack of all-weather access in the study area and hydrology and floodplain management have a direct relationship with roadway design, construction, and maintenance costs.

Map 4 shows the existing major routes in the SWIP area. The arterial grid network is based primarily on east-west travel. Ajo Highway (State Route – 86), Irvington Road and Valencia Road are the principal east-west corridors.

- Ajo Highway is a state route that provides continuous east-west access through and beyond the SWIP area. Ajo Highway is a two-lane facility from Sandario Road to Kinney Road and a four-lane facility from Kinney Road to Mission Road and beyond;
- Irvington Road is a two-lane facility from Sunset Boulevard to Mission Road, providing continued access to the east; and,
- Valencia Road provides continuous access from Ajo Highway to Mission Road, providing continuous access to the east. Valencia from Ajo Highway to Mark Road is a two-lane facility. When Pima County completes its road widening from Mark Road to Camino del Tierra, Valencia Road will be a four-lane facility from Mark Road to Mission Road, and a six-lane facility from Mission Road to Interstate-19, with continued access eastbound. Valencia Road has also been designated as a “high capacity transit corridor” in current regional plans. Certain facilities, such as bus pull-outs and larger pedestrian platforms will be incorporated into the design.

The two other east-west arterials are Drexel Road and Los Reales Road, both two-lane facilities that currently stop in the far eastern portion of the SWIP area. Drexel Road currently ends at Cardinal Avenue and Los Reales Road one mile further west at Sorrel lane.

Kinney Road and San Joaquin Road do provide access diagonally to the northwest from Ajo Highway. Both are currently two-lane facilities.

Exhibit 5 presents the existing annual average daily traffic (AADT) compared to the current roadway capacities at Level of Service D for the east-west routes, as well as for San Joaquin Road and Kinney Road.

Under existing conditions, annual average daily travel increases as it moves east along these routes: on Ajo Highway at San Joaquin Road; On Valencia at Camino Verde; and Drexel Road at Westover Road.

Exhibit 5 shows several segments of roadway that are over capacity (red), at between 50 percent to 75 percent of capacity (blue) or over 75 percent capacity (green). Under existing conditions, roadway segments in the eastern portion of SWIP are already over capacity, notable Ajo Highway from Kinney Road east and Valencia between cardinal and Mission. Additionally, Kinney Road from Ajo Highway to Bopp Road is over capacity as well.



Valencia Road from Camino de la Tierra is at or above 75 percent of capacity (except for the reach from Mark Road to Camino de Oeste, which shows at 63 percent capacity). Drexel Road from Westover Road to Mission Road is at 90 per cent capacity, and Kinney Road from Bopp Road to Tucson Estates Parkway is at 74 percent capacity.

Several segments in the area are between 50 percent to 75 percent capacity, including Ajo Highway from Sandario to San Joaquin; Irvington Road from Camino de Oeste to Mission Road; and Los Reales Road from Sorrel Lane to Mission Road.

Two major roadway projects are planned and funded for the SWIP area in the near term.

- Arizona Department of Transportation (ADOT) will widen Ajo Highway from Sandario Road to Kinney Road, with ADOT and Pima County cooperating on improvements to the Ajo Highway, Kinney Road, and Mark Rd/Joseph Rd intersection. The segment from Valencia Road to Kinney Road is in the FY 2008 to 2012 Transportation Improvement Plan for FY 2010. The segment from Sandario Road to Valencia Road is included in the Regional Transportation Plan, scheduled for the “Medium Period,” which is defined as approximately 2013 to 2023.
- Pursuant to the voter-approved Regional Transportation Plan from May 2006, the Regional Transportation Authority (RTA) will widen Valencia Road to four-lanes from Ajo Highway to Mark Road. This project is scheduled for the period FY 2012 to 2016.

These projects will add needed capacity to the east-west system in the SWIP area. Exhibit 6 analyzes the total east-west roadway volume to capacity ratios (for Ajo Highway, Irvington Road, Drexel Road, Valencia Road, and Los Reales Road) at three screen lines (Mission Road, Mark Road/Joseph Road, and Camino Verde). Current volumes were taken from the Pima Association of Government (PAG) “2007 Traffic Volumes in Metropolitan Tucson and Eastern Pima County” map. Capacity was evaluated using *Highway Capacity Manual* procedures, with level of service (LOS) D as the performance standard.

With the ADOT and RTA projects included, at 2007 base traffic volumes, capacity at Mission Road is not impacted. The V/C Ratio east of the Mark Rd/Joseph Rd screen line improves from 0.95 to 0.76 and west of this screen line from 0.75 to 0.45.

**Exhibit 5: Existing LOS D Capacities on East-West Routes**

<b>Roadway</b>	<b>Segment</b>	<b>Number of Lanes</b>	<b>AADT</b>	<b>LOS D Capacity</b>	<b>V/C Ratio</b>
Ajo Highway (SR 86)	Sandario - Valencia	2	8,600	15,500	<b>0.55</b>
	Valencia - San Joaquin	2	8,400	15,500	<b>0.54</b>
	San Joaquin- Kinney	2	15,700	15,500	<b>1.01</b>
	Kinney - La Cholla	4	34,500	34,200	<b>1.01</b>
	La Cholla- Mission	4	36,500	34,200	<b>1.07</b>
Irvington Road	Sunset - Joseph	2	2,900	13,600	<b>0.21</b>
	Joseph - Camino de Oeste	2	4,800	13,600	<b>0.35</b>
	Camino de Oeste - Cardinal	2	6,600	13,600	<b>0.49</b>
	Cardinal - Mission	2	7,400	13,600	<b>0.54</b>
Valencia Road	Ajo - Camino Verde	2	5,200	13,600	<b>0.38</b>
	Camino Verde - Mark	2	12,200	13,600	<b>0.90</b>
	Mark - Camino de Oeste	4	18,400	29,300	<b>0.63</b>
	Camino de Oeste - Caballo	4	23,000	29,300	<b>0.78</b>
	Caballo - Camino de la Tierra	4	24,800	29,300	<b>0.85</b>
	Camino de la Tierra- Cardinal	4	29,100	29,300	<b>0.99</b>
	Cardinal - Mission	4	41,000	29,300	<b>1.40</b>
Drexel Road	Cardinal - Westover	2	9,100	13,600	<b>0.67</b>
	Westover - Mission	2	12,300	13,600	<b>0.90</b>
Los Reales Road	Sorrel - Cardinal	2	9,300	13,600	<b>0.68</b>
	Cardinal - Mission	2	9,500	13,600	<b>0.70</b>
San Joaquin Road	Ajo - Bopp	2	3,000	13,600	<b>0.22</b>
	Bopp - Calle Anasazi	2	1,500	13,600	<b>0.11</b>
Kinney Road	Ajo Highway to Bopp Rd	2	15,200	13,600	<b>1.12</b>
	Bopp - Tucson Estates	2	10,000	13,600	<b>0.74</b>
	Tucson Estates - Gates Pass	2	2,300	13,600	<b>0.17</b>

*Highlighted cells indicate segments that are at/over capacity*

At the Camino Verde screen line, the V/C Ratio improves from 1.25 to 0.63 to the east and from 1.03 to 0.52 to the west.

Since these V/C Ratios were calculated at current traffic volumes, the last two columns in Exhibit 6 calculate the excess capacity if these improvements were in place with current volumes and how many new housing units would “absorb” this theoretical excess capacity. The number of new housing units range from a high of 9,167 to a low of 2,917. Based on the original growth assumptions for the SWIP area, this “excess capacity” would not endure for long and may not even exist when the improvements are actually constructed.

**Exhibit 6: Screen Lines for East-West Corridor Capacity, with ADOT and RTA Improvements Included (Current Volumes)**

				With ADOT Ajo Highway and RTA Valencia Road Improvements		
Road for Screen Line	Direction From Screen Line	Volume - Capacity Features	Current Conditions	Improved Conditions	Excess Capacity	New Units to Absorb Excess Capacity
Mission Road	East	Volume	132,000	132,000		
		Capacity	128,000	128,000	<b>None</b>	<b>None</b>
		VC ratio	<b>1.03</b>	<b>1.03</b>		
	West	Volume	98,000	98,000		
		Capacity	112,000	112,000	14,000	2,917
		VC ratio	<b>0.88</b>	<b>0.88</b>		
Mark Road / Joseph Road	East	Volume	61,000	61,000		
		Capacity	64,000	80,000	19,000	3,958
		VC ratio	<b>0.95</b>	<b>0.76</b>		
	West	Volume	36,000	36,000		
		Capacity	48,000	80,000	44,000	9,167
		VC ratio	<b>0.75</b>	0.45		
Camino Verde	East	Volume	40,000	40,000		
		Capacity	32,000	64,000	24,000	5,000
		VC ratio	<b>1.25</b>	0.63		
	West	Volume	33,000	33,000		
		Capacity	32,000	64,000	31,000	6,458
		VC ratio	<b>1.03</b>	0.52		

North-South Roadways

There are few north-south roadways internal to the SWIP area providing access through and out of the area. Sandario Road on the west boundary and Mission Road on the east boundary do provide access to locations well outside the SWIP area. Sandario Road is a two-lane facility; Mission Road is a two-lane facility from Los Reales Road to Drexel, widening to four-lanes from Drexel Avenue north.

Cardinal Road between Valencia Road and Drexel Road is approaching capacity at LOS D. Mission Road between Los Reales Road and Ajo Highway is also approaching its LOS D capacity.

**2.3 Southwest Benefit Area Roadway Benefit Area Plan**

2.3.1 Overview

The benefit area plan establishes the roadway improvements needed to support probable growth within the area, taking in to consideration through traffic from external areas and other considerations that adjust the calculated fee to reflect the impact created by new growth in the area.

**2.3.2 Estimating Costs of SWIP Roadway Development Impact Fee Projects**

CLA developed estimates of the costs of the SWIP Roadway Development Impact Fee projects for Design Costs, Construction, Construction Administration, and Right-of-Way. The methodology used for cost estimating is described in “Technical Memorandum #1, Estimating Costs of SWIP Roadway Capacity Improvement Projects and Roadway Life Cycle Costs,” dated July 1, 2009. SWIP projects refer to improvements that are (1) new projects identified in the SWIP planning process and (2) projects or project segments identified in the Regional Transportation Plan for which funding had not been identified previously.

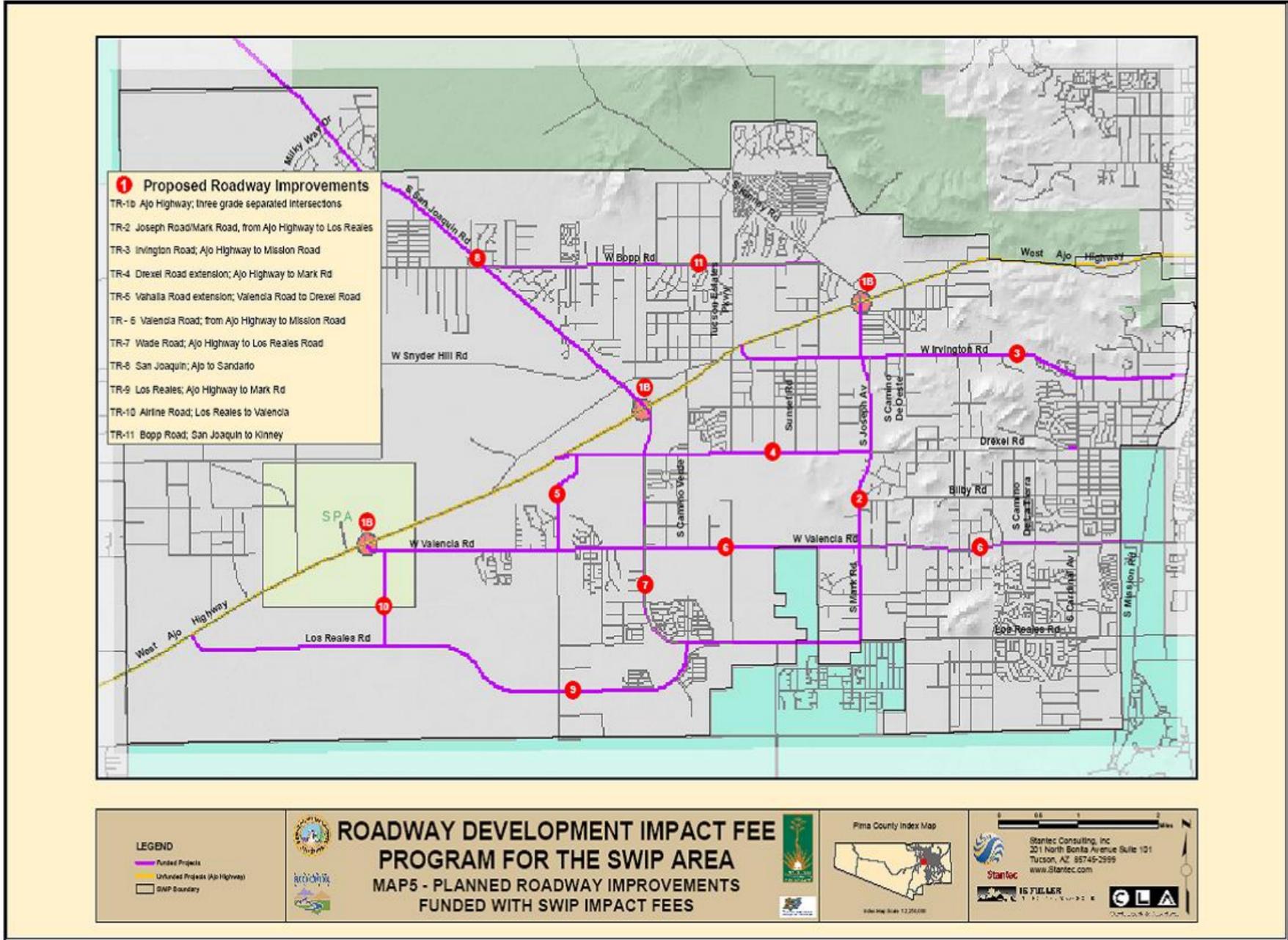
**2.3.3 SWIP Benefit Area Roadway Improvements**

Exhibit 7 summarizes the eleven Southwest Benefit Area roadway improvements, while Map 5 shows the locations of each project.

**Exhibit 7: Recommended Southwest Benefit Area Roadway Improvements  
(2008 Dollars)**

<b>Map I.D.</b>	<b>Project Description</b>	<b>Total Project Costs (Rounded)</b>
TR - 1b	Ajo Highway; three grade separated intersections	\$79,100,000
TR - 2	Joseph Road/Mark Road, from Ajo Highway to Los Reales	\$43,400,000
TR - 3	Irvington Road; Ajo Highway to Mission Road	\$48,100,000
TR - 4	Drexel Road extension; Ajo Highway to Mark Rd	\$37,600,000
TR - 5	Vahalla Road extension; Valencia Road to Drexel Road	\$17,700,000
TR - 6	Valencia Road; from Ajo Highway to Mission Road	\$94,500,000
TR - 7	Wade Road; Ajo Highway to Los Reales Road	\$18,300,000
TR-8	San Joaquin; Ajo to Sandario	\$48,300,000
TR - 9	Los Reales; Ajo Highway to Mark Rd	\$88,100,000
TR - 10	Airline Road; Los Reales to Valencia	\$8,500,000
TR-11	Bopp Road; San Joaquin to Kinney	\$20,300,000
<b>Grand Total</b>		<b>\$503,900,000</b>

Map 5 – Planned Roadway Improvements Funded with SWIP Impact Fees





**Project      TR-3 Irvington Road**

**Location:**      Ajo Highway to Mission Road

**Scope:**      The Recommended Implementation Plans calls for a 4-lane cross section on Irvington Road between Ajo Highway and Sunset Road and a 6-lane cross section from Sunset Road to Mission Road. The Recommended Implementation Plan calls for construction of two additional lanes between Ajo Highway and Sunset Road and four additional lanes between Sunset Road and Mission Road. This is a new project identified in the SWIP planning process.

Irvington Road is a two-lane facility between Sunset Boulevard and Mission Road. Between Ajo Highway and Sunset Boulevard, Irvington Road is approximately one-third mile of County maintained paved roadway west from Browning Lane that continues west approximately another two miles of County maintained unpaved road. There is no continuous access on Irvington Road between Ajo Highway and Sunset Boulevard. This project would construct a new four-lane facility from Ajo Highway to Mission Road. (Pima County's Avra Valley Benefit Area Plan includes a project to construct a new two-lane roadway between Ajo Highway and Joseph Road.) The project would tie into the existing Irvington Road east of Mission Road.

**Estimated Capital Costs:**      **\$48,100,000**

**Estimated Annual Life Cycle Costs:**      \$401,000

**Funding Source Options:**      SWIP Benefit Area Impact Fees

**Project Completion:**      This roadway is expected to exceed two-lane capacity beginning about 2021 and exceed four-lane capacity about 2035.

**Project      TR-4 Drexel Road Widening and Extension**

**Location:**      Ajo Highway to Mark Road

**Scope:**      The Recommended Implementation Plan calls for Drexel Road to be constructed as a 4-lane cross section between Ajo Highway and Mark Road. There is no current roadway in this alignment. This project would require two box culverts. This is a new project identified in the SWIP planning process.

The Regional Transportation Plan (RTP) includes improvements to Drexel Road, between Mission Road and Interstate-19. The RTP shows a project to widen Drexel Road from two-lanes to four-lanes between Mission Road and Interstate-19, which is scheduled for the FY 2022 and beyond time frame. Within this reach, the City of Tucson has a project to extend the two-lane facility between Midvale Park and Calle Santa Cruz, with a bridge over the Santa Cruz River. This project is scheduled for the FY 2012 to 2022 time frame, prior to the County's project.

**Estimated Capital Costs:**      **\$37,600,000**

**Estimated Annual Life Cycle Costs:**      \$280,000

**Funding Source Options:**      SWIP Benefit Area Impact Fees

**Project Completion:**      This roadway is expected to exceed two-lane capacity beginning about 2030.

**Project TR-5 Vahalla Road Extension**

**Location:** Valencia Road to Drexel Road

**Scope:** The Recommended Implementation Plans calls for a 4-lane cross-section between Valencia Road and Drexel Road. This segment of roadway currently does not exist. This project would require two bridge structures and one box culvert. This new north-south connection would provide access from future residential areas to both Drexel Road or Valencia Road. Because this would be near a high level of development, it would provide a “relief valve” for traffic on Valencia Road. This is a new project identified in the SWIP planning process.

**Estimated Capital Costs:** **\$17,700,000**

**Estimated Annual Life Cycle Costs:** \$165,000

**Funding Source Options:** SWIP Benefit Area Impact Fees

**Project Completion:** This roadway is expected to exceed two-lane capacity beginning about 2030.

**Project TR-6 Valencia Road**

**Location:** Ajo Highway to Mission Road

**Scope:** The Recommended Implementation Plan calls for Valencia Road to be a 4-lane cross section between Ajo Highway and Airline Road; 6-lanes between Airline Road and Vahalla Road; and 8-lanes from Vahalla Road to Mission Road.

The Regional Transportation Authority (RTA) will widen the reach from Ajo Highway to Mark Road from two-lanes to four-lanes in the FY 2012 to 2016 time frame. This project is not included in the calculation of SWIP costs or development impact fees.

The Pima Association of Government’s Regional Transportation Plan (RTP) includes widening Valencia Road to six-lanes from Mark Road to Mission Road in the FY 2022 and beyond time frame, but no funding has been identified for this project. SWIP will construct the following improvements, using development impact fee funding:

1. Airline Road to Vahalla, widen from 4-lanes to 6-lanes, an addition of 2 new lanes over a length of 2 miles; and,
2. Vahalla to Mission Road, widen from 4-lanes to 8-lanes, an addition of 4 new lanes over a length of 6.80 miles.

**Estimated Capital Costs:** **\$94,500,000**

**Estimated Annual Life Cycle Costs:** \$795,000

**Funding Source Options:** SWIP Benefit Area Impact Fees

**Project Completion:** This roadway is expected to exceed four-lane capacity in the eastern segments beginning about 2020, and exceed current two-lane capacity in the western segments about 2020.



**Project      TR-9 Los Reales Road Extension**

**Location:**      Ajo Highway to Mark Road

**Scope:**      This segment does not exist currently. This project would build a four-lane facility on the Los Reales Road alignment between Ajo Highway and Mark Road, a distance of 8.25 miles. The project would follow the Los Reales alignment from Ajo Highway for approximately four miles east, turn south to connect with the existing Yedra Road alignment for approximately three miles, before turning north again to intersect the Los Reales alignment at Camino Verde. This project would require six box culverts. This is a new project identified in the SWIP planning process.

The Recommended Implementation Plan suggests that this roadway be constructed as an Arizona Parkway, with access management. This configuration will allow Los Reales to be a 4-lane facility that handles higher volumes than normally associated with LOS D on a 4-lane facility.

**Estimated Capital Costs:**      **\$88,100,000**

**Estimated Annual Life Cycle Costs:**      \$798,000

**Funding Source Options:**      SWIP Benefit Area Impact Fees

**Project Completion:**      This roadway is expected to exceed two-lane capacity beginning about 2027 and exceed four-lane capacity about 2035.

**Project      TR-10 Airline Road**

**Location:**      Valencia Road to Los Reales Road Extension

**Scope:**      The Recommended Implementation Plan calls for a 4-lane cross section between Valencia Road and Los Reales Road. This roadway currently does not exist. This is a new project identified in the SWIP planning process.

**Estimated Capital Costs:**      **\$8,500,000**

**Estimated Annual Life Cycle Costs:**      \$75,000

**Funding Source Options:**      SWIP Benefit Area Impact Fees or could be developer funded

**Project Completion:**      This roadway is expected to exceed two-lane capacity beginning about 2029.

**Project** TR-11 Bopp Road, Kinney Road to San Joaquin Road

**Location:** Kinney Road to San Joaquin Road

**Scope:** The Recommended Implementation Plan calls for a 4-lane divided or 5-lane (two lanes in each direction and continuous center left turn lane) cross section between Kinney Road and San Joaquin Road. This roadway currently exists. The project would require seven box culverts. This is a new project identified in the SWIP planning process.

**Estimated Capital Costs:** **\$20,300,000**

**Estimated Annual Life Cycle Costs:** \$164,000

**Funding Source Options:** SWIP Benefit Area Impact Fees

**Project Completion:** This roadway is expected to exceed two-lane capacity beginning about 2033.

### 3.0 Calculation of SWIP-Area Roadway Fees

This section provides a calculation of the recommended residential and non-residential roadway impact fees for the SWIP area based on the roadway improvements identified in Exhibit 7 (see previous section). The residential and non-residential impact fees described below are tailored specifically for the SWIP Benefit Area, based on projections of roadway costs for this area. The fees are not being recommended for any other benefit areas or for use as countywide fees.

#### 3.1 Recommended Residential Impact Fees

The fee calculation, shown in Exhibit 8, is determined in terms of EDU and takes into consideration deductions for through traffic and non-County projects.

Through traffic is defined as vehicular trips with an origin and destination outside the SWIP area. The amount of through traffic was estimated at 10% using select-link analysis. The select link analysis was prepared by PAG staff for this project, along with the traffic forecasts.

The fees for non-residential uses within the SWIP area are expected to generate about 5.9% of the roadway impact fees collected in the area. This is the same proportion experienced in the rest of the County.

The adjusted project cost ascribed to residential development is \$503.9 million, and there are 44,622 new residences planned for the area. Accordingly, the base fee per residential EDU is \$9,497, which is rounded to \$9,500.

**Exhibit 8 Residential Fee Calculation, per EDU (2008 Dollars)**

<b>Item</b>	<b>Amount</b>	<b>Factors</b>	<b>Source of Data</b>
Total Project Costs	\$503,900,000		See Exhibit 7
Deduct for through traffic	\$50,390,000	10.0%	CLA select-link analysis
Deduct Non-Residential	\$29,730,100	5.9%	CLA Technical Memorandum #3
Project Costs Ascribed to Residential Uses	\$423,779,900		
Number of New DUs	44,622		See Exhibit 2
Transportation fee per EDU (Residential)	\$9,497		
<b>Transportation fee per EDU (Residential, Rounded)</b>	<b>\$9,500</b>		

Pima County imposes its residential impact fee based upon factors distinguishing between densities and whether the development is a retirement community. The base fee is collected for new residential units in standard developments with low to medium densities. For standard developments with high densities and for retirement communities with low to medium densities, the fee is 75 percent of the base fee. For retirement communities with high densities, the fee is 56 percent of the base fee (see Pima County Code, Chapter 19.03.010, Table 1).

Exhibit 9 shows the fees for each residential category, using the proposed base fee of \$9,500 for standard developments of low to medium densities and then applying the factors related to high density residential and retirement communities.

**Exhibit 9      SWIP Residential Impact Fee, By Residential Type (2008 Dollars)**

Land Use Type	Standard	Retirement Community
Low and Medium Density Residential	\$9,500	\$7,125
High Density Residential	\$7,125	\$5,320

### **3.2 Recommended Non-Residential Impact Fee Schedule**

The County’s impact fee rates for non-residential uses are based on several factors, including trip generation rates published by the Institute of Transportation Engineers and the cost to build roadway capacity. The current rates use outdated information that has been recently updated by ITE, and incorporated by CLA.

The impact fee rates for non-residential uses were calculated according to the following formula:

$$\text{Fee/unit of land use} = \text{Cost per unit of capacity} \times (\% \text{ of Primary Trips} \times \text{Average trip length} \times \% \text{ travel demand on the arterial network} \times \text{Daily Trip Rate} \times \text{peak hour reduction factor}).$$

The percentage of the primary trips (taken from the ITE Trip Generation Handbook), the average trip length (taken from the 2001 National Household Travel Survey) and the trip rates (taken from the ITE Trip Generation) vary by the land use. The travel demand on the arterial network is 80% of the total travel demand. The peak hour reduction factor is the result of dividing the sum of the AM and PM peak hour trip rates by the daily trip rate for the land use.

Since the implementation of the first non-residential development impact fees, some of the values of the factors have changed based on new studies and data in updates of the ITE documents. Also, the cost per unit of capacity on Pima County arterials was increased from \$154/unit of capacity to \$183/unit of capacity in 2006 based on a larger number of Pima County roadway projects from which we were able to gather project cost data.

The non-residential fee is based, in part, on the cost of a single lane mile of roadway capacity as determined from the review of past projects. The total cost for the SWIP projects as

documented in Revised Technical Memorandum #1 is \$503.9 million. The three Grade Separated Interchanges (GSI) along Ajo Way are included at a cost of \$79,100,000. However, there is no corresponding estimate of the capacity associated with these elements and therefore the project costs for the three Grade Separated Interchanges has been deducted for the purpose of calculating a per unit cost of capacity.

The estimated unit cost of capacity (cost per vehicle of one lane mile) for the SWIP area projects is \$348. This was calculated by using the revised SWIP project costs divided by the estimated vehicle miles of capacity (1,221,920) as shown below in Exhibit 10.

**Exhibit 10: Derivation of Unit Cost of Capacity for SWIP Non-Residential Impact Fees**

A	Total SWIP Project Costs	\$503,900,000	Exhibit 5, Technical Memo 1
B	3 GSI Project Costs deducted for the purpose of calculation per unit cost of capacity only	\$79,100,000	Exhibit 5, Technical Memo 1
C	Revised SWIP Project Costs	\$424,800,000	= A - B
D	Total SWIP Project Lane Miles	152.74	Exhibit 3, Technical Memo 1
E	Total Vehicle Miles of Capacity (Arterial Capacity assumed to be 8,000 vehicles/lane mile)	1,221,920	= D x 8000
F	<b>Unit Cost of Capacity</b> (cost per vehicle of one lane mile)	\$347.65 Rounded to <b>\$348</b>	= C/E

We applied this new SWIP unit cost of capacity to the equation along with the updated trip rate and primary trip percentage factors.

Other factors used in the fee calculation (such as trip length and percent primary trips) may be updated in the next year or so. Pima County should reevaluate the fees again at that time to keep them current.

Based upon this analysis, the recommended rates for non-residential land uses in the SWIP area are as shown in Exhibit 11.

**Exhibit 11: Recommended Non-residential Impact Fees (2008 dollars)**

<b>Land Use Category</b>	<b>Unit</b>	<b>Proposed Fee per Unit</b>
General Commercial/Retail	1000 sf	\$5,122
Shopping Center	1000 sf	\$3,478
Supermarket	1000 sf	\$8,332
Convenience Store w/Gas Pumps	1000 sf	\$18,893
Restaurant	1000 sf	\$15,489
Fast Food with Drive Thru	1000 sf	\$29,444
Fast Food without Drive Thru	1000 sf	\$24,997
Bank with Drive Thru	1000 sf	\$13,348
"Big Box" retail - freestanding, >100,000 sf	1000 sf	\$5,175
Home Improvement Superstore	1000 sf	\$1,959
General Office	1000 sf	\$2,901
Medical Office	1000 sf	\$6,367
Light Industrial	1000 sf	\$3,601
Heavy Industrial	1000 sf	\$2,268
Hotel/Motel	Rooms	\$2,189
Motor Vehicle Sales	1000 sf	\$2,797