

**AGENDA
SPECIAL JOINT MEETING
BANNING CITY COUNCIL AND
BANNING PLANNING COMMISSION
CITY OF BANNING
BANNING, CALIFORNIA**

January 8, 2013
3:00 p.m.

Banning Civic Center
Council Chambers
99 E. Ramsey St.

I. CALL TO ORDER

- . Roll Call - Councilmembers Botts, Miller, Peterson, Welch, Mayor Franklin
- Commissioners Arterberry, Briant, Hawkins, Siva, Chairman Barsh

II. STUDY SESSION ITEM

- 1. General Plan Amendment to the Circulation Element 1

III. ADJOURNMENT

Pursuant to amended Government Code Section 54957.5(b) staff reports and other public records related to open session agenda items are available at City Hall, 99 E. Ramsey St., at the office of the City Clerk during regular business hours, Monday through Thursday, 8 a.m. to 5 p.m.

The City of Banning promotes and supports a high quality of life that ensures a safe and friendly environment, fosters new opportunities and provides responsive, fair treatment to all and is the pride of its citizens

**JOINT MEETING
CITY COUNCIL AND PLANNING COMMISSION**

DATE: January 8, 2013

TO: City Council

FROM: Zai Abu Bakar, Community Development Director
Duane Burk, Director of Public Works

SUBJECT: General Plan Amendment to the Circulation Element

PURPOSE OF THE WORKSHOP: The purpose of the joint study session is to present information and provide an opportunity for the City Council and Planning Commission to ask questions relative to the proposed General Plan Amendment to the City's Circulation Element.

BACKGROUND: The California state law requires that each city and county adopt a comprehensive, long-term General Plan to guide development in their city and land outside its boundaries that has relation to its city planning (Govt. Code §65300). The California Supreme Court has called the General Plan the "constitution for future development." The General Plan expresses the community's development goals and embodies public policy relative to the distribution of future land uses, both public and private. The purpose of the General Plan is to guide development and to improve the quality of life of the City's residents as land development continues to occur.

Required Elements: State law requires that the General Plan include seven (7) mandated elements. The elements are land use, housing, traffic circulation, safety, parks and recreation, conservation, and noise. Each of these elements must have goals, policies, and objectives that would contribute to the overall quality of life for the community's residents. Non-mandated elements can be included in the General Plan; however, once the element is adopted, the goals, policies, and objectives in the non-mandated element have equal status. For example, the land use policies are not any superior to the open space element or economic development element. Each of the element goals, policies, and objectives shall be internally consistent in texts, maps, and diagrams in that they cannot conflict with each other.

The Traffic Circulation Element is an infrastructure plan that addresses the needs for streets and roads but also addresses the circulation of people, goods, energy, water, sewage, storm drainage, and communications. By statute, the circulation element correlates directly with the land use element, housing, open space, noise, and safety elements. Consequently, any changes to the circulation element could affect the goals, policies, and objectives in any of these other elements mentioned. Attached is a copy of the current General Plan Circulation Element.

Amendment to the General Plan: State law allows cities to update or amend their General Plan as needed. A comprehensive update to the General Plan usually occurs within a 10-15 year time frame. An amendment can occur at any time; however, the number of amendments is limited to

four (4) amendments per calendar year. If two or more elements are considered or approved at one meeting, they are considered one General Plan amendment. Therefore, the City should be strategic in processing the amendments. This is to ensure that the City has not exhausted all of the amendments in case it needs to accommodate an amendment to address important/unique policy issues that arise which require a General Plan amendment. Once the number of amendments is exhausted per year, the City will have to wait until the following calendar year to do an amendment.

THE PROPOSED GENERAL PLAN CIRCULATION ELEMENT AMENDMENT:

The proposed General Plan Amendment is to address two (2) policies in the General Plan:

1. To change the citywide policy for the performance and adequacy of roadway or Level-of-Service (LOS) from C to D.
2. To remove Highland Home Road interchange from the City's General plan of roadways.

DISCUSSION AND ANALYSIS:

1. Changing the citywide policy for the performance and adequacy of roadway from the Level-of-Service from C to D.

The County of Riverside and the majority of cities in the County including the City of Beaumont maintain a level of service D as standard for roadway performance and adequacy. The City of Banning in its General Plan establishes two (2) Level-of-Services. One Level-of-Service is LOS D for all intersections at Ramsey Street and at all I-10 interchange intersections. The second Level-of-Service is LOS C for the remaining intersections in the City. LOS C is a higher standard for road performance and efficiency. To accommodate LOS C standard, the road is required to be wider than the LOS D; therefore, more rights-of-way or land is required.

Highland Springs Avenue is located in the cities of Banning and Beaumont. The City of Banning maintains LOS C on Highland Springs Avenue. The City of Beaumont maintains a LOS D on its side of Highland Springs Avenue. Since there are two different Level-of-Services in both cities, intersection configurations are different in both cities. Wider rights-of-ways are needed to improve intersections in Banning which means that any development is required to pay higher costs when developing in the City.

The following are the benefits of changing the citywide LOS from C to D:

1. The City's LOS will be consistent with the City of Beaumont and the County of Riverside LOS. This provides benefits so that traffic impact evaluation and improvement are consistent among jurisdictions and the County. The intersection configurations especially on Highland Springs will be consistent between Beaumont and Banning.
2. The amount of right-of-ways required to meet the LOS D is less than the right-of-ways needed for LOS C, thereby reducing the capital improvement and maintenance costs and the need for right-of-way acquisition or taking of right-of-way.
3. The reduction in the capital improvement costs will result in competitive incentives for the developer to develop in the City of Banning.

4. Drivers will experience consistent LOS when traveling between Banning and Beaumont and across jurisdictions in the County.

2. Removal of Highland Home Road interchange from the City's Master Plan of Roadway

Future interchange at Highland Home Road and I-10 is currently included in the City's General Plan Circulation. The I-10/Highland Home Road interchange is currently **not** included in the State Transportation Improvement Plan. Furthermore, this interchange is **not** included or recommended in the 2010 Caltrans study titled the "Pass Area Regional Transportation Needs Assessment Report (PARTNAR)". According to PARTNAR, the I-10/Highland Home Road interchange does not meet the interstate spacing criteria; therefore it is not included in any long-range freeway planning studies for the various agencies that have jurisdictions in transportation which include County of Riverside, the Southern California Association of Governments, or Caltrans.

In 2008, the City of Banning conducted a feasibility study to determine if the interchange could be built at Highland Home Road and I-10 to alleviate traffic congestion either at Highland Springs Avenue/10 or Sunset/I-10 interchanges. The study reviews various viable built alternatives. All of the alternatives require new right-of-ways. The construction costs (alone) for each of the alternative range from \$60.5 million to \$69 million. These costs do not include preliminary design and engineering, right-of-way acquisition, and construction administration.

Attached are two (2) Traffic Impact Analyses for the General Plan Amendment to the Circulation Element. One Analysis pertains to the proposed change in the LOS policy from C to D. The other Analysis pertains to the removal of the Highland Home Road from the General Plan. Please note that the Analysis for the Highland Home Road reviews the impacts related to the deletion of the Highland Home Road interchange at the I-10 which is replaced it with the overcrossing.

The reason that the overcrossing is analyzed is due to the following:

1. The County of Riverside Circulation Element (Master Plan of Roadway) currently shows Highland Home Road as an overcrossing at the I-10.
2. The City utilizes the County Traffic Model for analysis of its transportation improvements or new road projects; the overcrossing is required to be analyzed in addition to analyzing other alternatives including the ultimate removal of the interchange at Highland Home Road. The existing Highland Home Road on the north and future Highland Home Road on the south side of the I-10 will remain.


CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA):

Based on the CEQA Guidelines an amendment to the City's General Plan requires that the City prepares an Environmental Impact Report (EIR). A Draft Environmental Impact Report has been prepared and made available for a 45-day public review from September 21 to November 5, 2012.

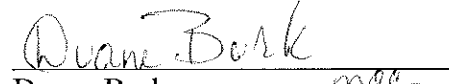
The DEIR analyzes the policy change for changing the Level-of-Service from C to D with removal of the interchange at Highland Home Road/I-10 and replacing the interchange with overcrossing.

Staff and the consultant will be providing a detail PowerPoint presentation at the meeting and will answer questions from the City Council and the Planning Commission.

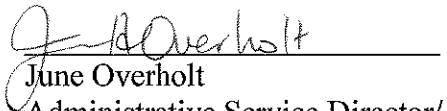
PREPARED BY:


Zai Abu Bakar
Community Development Director

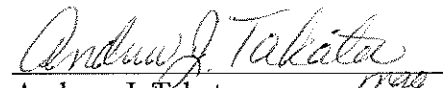
REVIEWED BY:


Duane Burk *mac*
Director of Public Works

REVIEWED BY:


June Overholt
Administrative Service Director/
Deputy City Manager

APPROVED BY:


Andrew J. Takata *mac*
City Manager

Attachments:

1. Current General Plan Circulation Element
2. Traffic Impact Analysis for the Banning General Plan Amendment Change in Level of Service Policy
3. Traffic Impact Analysis for the Banning General Plan Amendment Redesignation of the Highland Home Road at Interstate 10 from an Interchange to an Overcrossing

ATTACHMENT 1

Current General Plan Circulation Element

CIRCULATION ELEMENT

PURPOSE

The purpose of the Circulation Element is to provide goals, policies, programs and standards that correlate the City's transportation system with the types, intensities and locations of land uses within the City. It addresses those segments of the local transportation system that interface with and serve as extensions of the regional system connecting the City of Banning with the broader Pass Region and other communities in Southern California. The Circulation Element also serves as the blueprint for future land use policy decisions and social and economic development efforts.

BACKGROUND

Due to its close interrelatedness, the Circulation Element is an outgrowth of City and regional land use planning. In addition to its effects on the physical, social and economic environment of the City, the Circulation Element also has a direct relationship with the Housing, Open Space, Noise and Air Quality elements. Being integrally tied to the Land Use Element, the Circulation Element is predictably influenced by the types, intensities and distribution of land uses within the community and surrounding area.

Local and regional air quality issues are closely related to the efficiency of the local and regional transportation system. As the City of Banning and the Pass Region continue to grow, vehicle miles will increase, and travel speeds will be reduced, resulting in higher emissions per mile traveled. The policies and programs established by the Circulation Element can play an important role in maintaining and enhancing the flow of traffic and preserving air quality in the community.

The Circulation Element has been developed to serve as a comprehensive transportation management strategy, incorporating analysis of existing conditions within the City, as well as projected future development based on the buildout of the General Plan Land Use Map (see Land Use Element). It sets forth specific goals, policies and programs, which are based upon an engineering and computer modeling analysis of existing and projected future traffic conditions. Future traffic conditions have been forecasted utilizing the Pass Area Model (PAM), anticipated buildout land use patterns and intensities, projected regional growth expected to impact City streets and roadways, and a wide range of socioeconomic data and assumptions.

In addition to vehicular traffic, other modes of transportation important to the City are included in the Circulation Element: air traffic and the Banning Municipal Airport; rail traffic; public transportation; and alternative transportation.

California Government Code sets forth the information and data analysis requirements of the Circulation Element. Government Code Section 65302(b) requires that the element describe

major thoroughfares and that their planned development be closely coordinated with the Land Use Element of the General Plan.

It is also required that the Circulation Element include development or improvement standards that are responsive to changes in demand for capacity created by implementation of the Plan. Government Code Sections 65103 (f) and 65080, et seq., require that the City coordinate Circulation Element provisions with applicable regional and state transportation plans. In the Banning General Plan Planning Area, the following agencies are responsible for preparing these transportation plans: County of Riverside, Morongo Band of Mission Indians, Southern California Association of Governments (SCAG) and California Department of Transportation (CalTrans). The state is also required to coordinate its planning efforts with those of local jurisdictions (§65080(a)), with the federal government being under a similar mandate (§134, Title 23 of the U.S. Code).

Indicators Of Roadway Efficiency

The efficient movement of vehicular and non-vehicular traffic on local and regional roadways is critical to the normal day-to-day functioning of a community. Consequences resulting from obstructions in traffic flow may include economic loss due to delays in transporting goods, increased psychological stress for the traveling public, and increased risk for motor vehicle accidents. The efficiency of a particular roadway can be determined by assessing the roadway's capacity, level-of-service, and average daily traffic volume, each of which is described below.

Level-of-Service

Roadway capacity is defined as the number of vehicles that may pass over a section of roadway in a given time period under prevailing conditions. Roadway capacity is most restricted by intersection design and operation. The capacity of a roadway and the degree to which that capacity is being utilized is typically described as the roadway's "Level-of-Service" (LOS). Level-of-Service is a qualitative measure of the efficiency of traffic flow and is defined by alphabetical connotations, ranging from "A" through "F," that characterize roadway operating conditions.

LOS A represents an optimum or free-flowing condition, and LOS F indicates extremely slow speeds and system failure. Levels-of-Service are represented as volume-to-capacity (V/C) ratios, or vehicle demand divided by roadway capacity. V/C ratios smaller than 1.00 imply better operational characteristics and levels-of-service. V/C ratios that exceed 1.00 imply worse operating conditions and LOS F, where traffic demand exceeds roadway capacity. The table below defines the various LOS classifications.

Table III-14

Roadway Level Of Service Description	
Level of Service	Quality of Traffic Flow
A	Primarily free-flow operations at average travel speeds usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalised intersections is minimal.
B	Reasonably unimpeded operations at average travel speeds usually about 70% of the free-flow speed of the arterial classification. Ability to maneuver within the traffic stream is only slightly restricted. Stopped delays are not bothersome, and drivers generally are not subject to appreciable tension.
C	Traffic operations are stable. However, mid-block maneuverability may be more restricted than in LOS B. Longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the average free-flow speed for the arterial classification. Motorists will experience some appreciable tension while driving.
D	Borders on a range where small increases in flow may cause substantial increases in approach delay and decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these factors. Average travel speeds are about 40% of the free-flow speed. For planning purposes, this level-of-service is the lowest that is considered acceptable.
E	Characterized by significant approach delays and average travel speeds of one-third or less of the free-flow speed. Typically caused by some combination of adverse progression, high signal density (more than two signalised intersections per mile), high volumes, extensive queuing, delays at critical intersections, and/or inappropriate signal timing.
F	Arterial flow at extremely slow speeds, below one-third to one-fourth of the free-flow speed. Intersection congestion is likely at critical signalised intersections, with high approach delays and extensive queuing. Adverse progression is frequently a contributor to this condition.

Source: p. 11-4, Highway Capacity Manual, Special Report 209, Transportation Research Board, 1994.

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Traffic engineers and transportation planners are involved in on-going efforts to strike a balance between providing ideal roadway operating conditions and controlling the costs of infrastructure and right-of-way needed to assure those conditions. For General Plan purposes, LOS C is assumed to be the “acceptable” level-of-service for all General Plan roadways within the City, and LOS D at Freeway interchanges. CalTrans’ policy for State Highway 243 and Interstate 10 is that LOS D will be maintained.

Typically, capacity can be increased by adding travel or turning lanes, constructing raised medians, alternative means of transportation, and/or restricting vehicle access to a roadway. By reducing the number of vehicle conflict points, traffic flow on a roadway can be substantially improved, avoiding the loss of capacity caused by disruptions to traffic flow resulting from vehicles entering or leaving the roadway (see Section III-B-3, Draft General Plan EIR for more information about mitigating traffic impacts).

Average Daily Traffic Volumes

Average Daily Trips (ADT) is the total number of vehicles that travel a defined segment of roadway over a twenty-four hour period. ADT is a useful benchmark number for determining various roadway configurations and design aspects. The peak hour ADT, which is the highest volume of traffic to pass over a segment of roadway during an hour period, is also a useful means of determining a roadway’s capacity and level-of-service. Traffic counts at intersections can provide an even more detailed picture of existing and future operating conditions at intersections.

Roadways are generally classified in a hierarchical manner, according to the number of vehicle lanes provided. Table III-15, below, lists the various roadway types/cross-sections found in the planning area and the maximum daily traffic volumes each type of roadway can accommodate at various levels-of-service. For example, for a Major Highway to operate at LOS C, it should accommodate no more than 30,400 vehicle trips per day, with a design capacity of 24,000 vehicle trips per day. These roadway capacities are “rule-of-thumb” estimates, which may vary depending upon site-specific factors, such as the number and configurations of intersections, roadway grades, sight distance, percentage of truck and bus traffic, and degree of access control.

Table III-15
Level-of-Service Volumes/Capacity Values
For Various Roadway Classifications

Classification	Roadway Width (Ft.)	Number of Lanes	Maximum Two-Way Average Daily Traffic Volume Level of Service		
			C	D	E
Collector	60	2	12,800	14,400	16,000
Secondary Highway	80	4	24,000	27,000	30,000
Major Highway	100	4	30,400	34,200	38,000
Major Highway	110	4	30,400	34,200	38,000
Major Highway	134	6	47,200	53,100	59,000

^c Source: City of Banning General Plan Update Traffic Study 2004

CURRENT CONDITIONS

The City of Banning and other communities in the Pass Region form a continuous and interconnected suburban development pattern, tied together by U.S. Interstate-10 and a network of arterial roadways. A variety of physical influences and constraints, including the geography of the City and the region, and the existing roadway network, affect traffic flows and the impacts of development on local roadways. The existing roadway network is further described in the General Plan EIR and its traffic study.

Major Regional Roadways

Two major regional roadways provide primary access to the City: State Highway 243 and U.S. Interstate-10. U.S. Interstate-10 connects the Los Angeles region with Arizona and other cities and states to the east. State Highway 243 connects Banning and U.S. I-10 to the mountain community of Idyllwild, State Route 79, and the San Bernardino National Forest.

U.S. Interstate-10

U.S. Interstate-10 is the major transportation route through the City of Banning. It is a critical part of the local road network, moving people and goods into and through the Pass region. Where it passes through the City, it is an eight-lane divided freeway. U.S. I-10 disrupts the internal circulation of the City as it bisects the City into distinct north and south communities. Currently, there are six access points to the City from I-10, via interchanges at the following streets (from east to west):

- Fields Road
- Ramsey Street
- Hargrave Street
- 8th Street
- 22nd Street
- Sunset Avenue
- Highland Springs Avenue

The eastern portion of the Highland Springs Avenue interchange is in the City limits; the western portion is in the City of Beaumont.

Although CalTrans is responsible for development and maintenance of this facility, I-10 has been designated as a component of the Riverside County Congestion Management Plan (CMP) System.

State Highway 243

The designated State Highway begins on 8th Street south of I-10 and runs south to Lincoln Street. It continues east on Lincoln Street to San Geronio Avenue to the City limits, where it becomes the Banning-Idyllwild Panoramic Highway. State Highway 243 is designated a State Scenic Highway from the Banning City limits to State Route 74, 28.2 miles south, near the community of Idyllwild.

Major Local Roadways

The City has facilitated the construction and maintenance of a variety of major roadways of local importance. These roadways have been built along a north-south grid that interconnects with major arterials, some of which also pass through adjacent jurisdictions, primarily to the west.

A variety of traffic data was collected to evaluate existing traffic conditions in the planning area, including traffic counts and estimations from studies conducted for the cities of Banning and Beaumont, CalTrans, and special site-specific traffic studies conducted for development projects in the planning area.

As defined in the City's existing (1994) Circulation Element, the street system is projected to include the following roadways. It is important to note that the 1994 Circulation Element did not use the street classification system used in much of Riverside County today.

Major Highways

The General Plan defines Major Highways, or arterial streets, as those primarily for through traffic with limited access. These roadways are planned for 4 to 6 lanes in width at buildout. Arterials should connect residential, shopping, employment and recreational activities, but should not encroach upon neighborhoods. Roadways designated as arterial streets in the adopted General Plan include:

- Highland Springs Avenue - North and South of U.S. Interstate-10
- Highland Home Road -Cherry Valley Boulevard to southerly City limits
- Sunset Avenue - Gilman Avenue to Interstate 10

- 8th Street – Ramsey Street to State Route 243
- San Gorgonio – Lincoln to State Route 243
- Hathaway Street – Ramsey Street to Morongo Road
- 18th Street – Highland Springs Avenue to Highland Home Road
- Wilson Street – Highland Springs Avenue to Hathaway
- Ramsey Street – Highland Springs Avenue to Hathaway
- Sun lakes Boulevard – Highland Springs Avenue to Highland Home Road
- Lincoln Street – Highland Home Road to Hathaway

Secondary Highways

Secondary Highways are those that primarily receive traffic from arterials and distribute the movement within residential, commercial and industrial land use designations. These streets are planned for 4 lanes. The 1994 General Plan designates the following roadways as Secondary Highways:

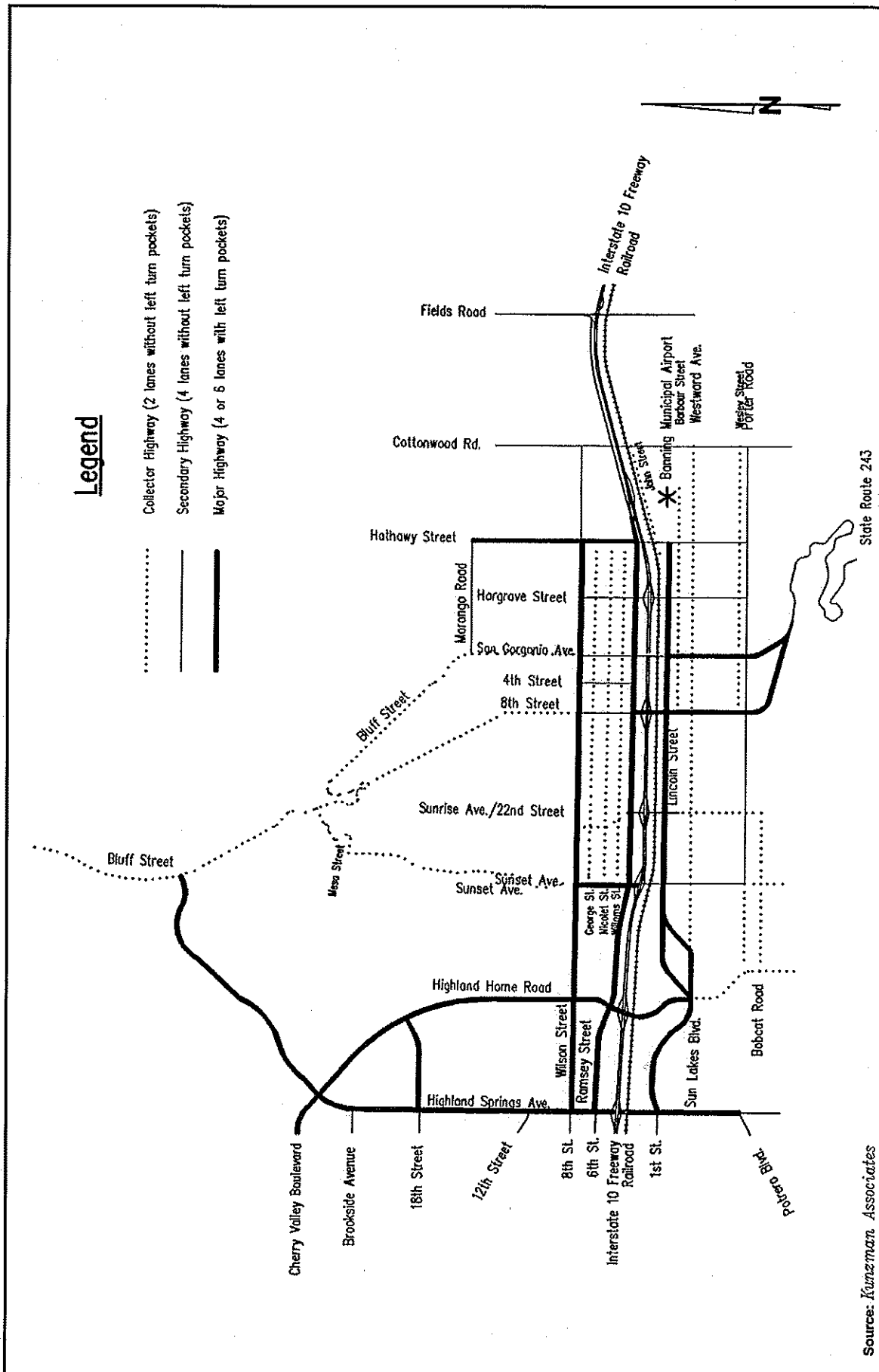
- Sunset Avenue – Interstate 10 to Porter
- 8th Street - Wilson Street to Ramsey Street
- 4th Street – Wilson Street to Ramsey Street
- San Gorgonio Avenue - Wilson Street to Lincoln Street
- Hargrave Street – Wilson Street to Porter Road
- Cottonwood Road (North - South) – North of Ramsey to Porter Road
- Fields Road
- Porter Road – Sunset Avenue to Cottonwood Road (North - South)

Collector Streets

Finally, the General Plan identifies Collector streets. Collectors are planned as 2 lane roads. The 1994 General Plan Collector streets are:

- Highland Home Road – Westward Avenue to southern City limits
- Sunset Avenue – Wilson Street to Bluff Street
- Bluff Street – Northern City limits to San Gorgonio Avenue
- 22nd Street – Lincoln Street to Bobcat Road
- 8th Street – Bluff Street to Wilson Street
- San Gorgonio Avenue – Morongo Road to Wilson Street
- George Street – Sunset Avenue to Hathaway Street
- Nicolet Street - Sunset Avenue to Hathaway Street
- Williams Street - Sunset Avenue to Hathaway Street
- Westward Avenue - Sunset Avenue to Cottonwood Road (North - South)
- Barbour Street – 8th Street to Airport
- Wesley Street – 8th Street to Cottonwood Road (North - South)
- Porter Road – Highland Home Road to Sunset Avenue
- Bobcat Road – Highland Home Road to 22nd Street

The existing General Plan arterials are shown on Exhibit III-4, Existing General Plan Street System.



Exhibit

III-4

Banning General Plan Existing General Plan Street System

TERRA NOVA®
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TRAFFIC AND CIRCULATION PLANNING FOR GENERAL PLAN BUILDOUT

In integral part of the General Plan is the City's roadway system. In order to assure that traffic is efficiently transported through the City in the future, a traffic study and associated model were prepared to analyze the impacts of the land use map on the City's street system. This traffic model identified deficiencies in the City's network of roadways, and led the City's traffic consultant to a series of recommendations for future improvements to assure the smooth flow of traffic. The traffic analysis summarized below is described fully in the General Plan EIR, and included in its entirety as an appendix to that document.

The traffic model utilized for this General Plan was a TRANPLAN model, which is utilized throughout the County for transportation planning. Since Banning is part of the Pass region, it was important to standardize the traffic analysis to conform to regional standards.

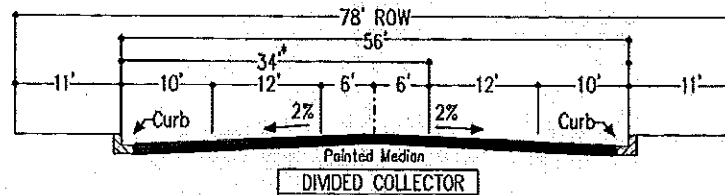
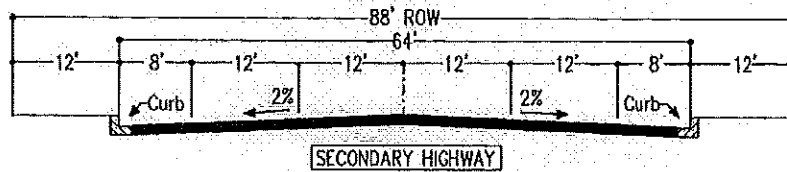
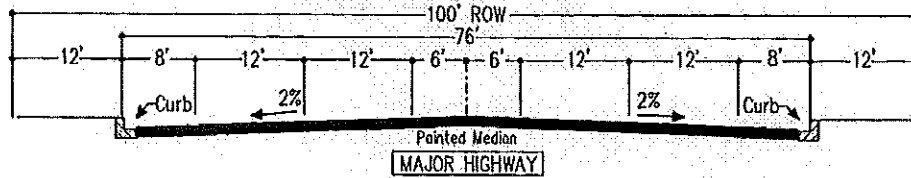
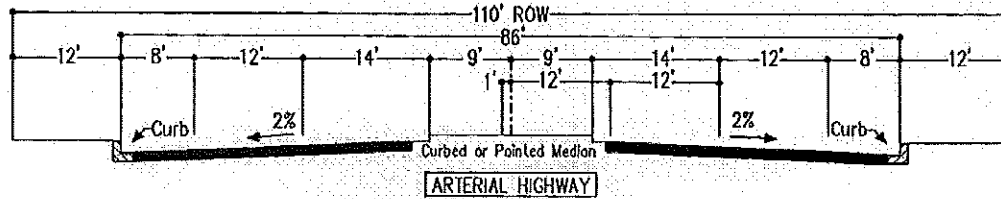
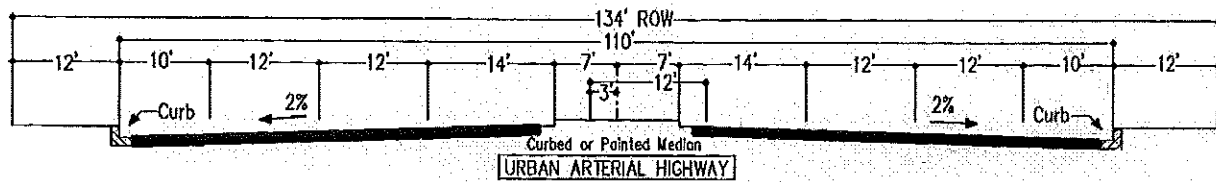
The traffic model divided the City into Traffic Analysis Zones (TAZs), which contained data on the land use in that zone, and the traffic which that land use would generate. It is important to note that some land uses are producers of traffic, while others are attractors for traffic. For example, residential land uses *produce* traffic, while retail commercial land uses *attract* traffic. Once the traffic model TAZs were assigned and their land use trip generation calculated, the trips were distributed on the roadway system.

The traffic modeling considered two issues: street segment impacts, and intersection impacts. Street segments were analyzed for average daily trips (ADT), while intersection impacts were analyzed for morning and evening peak hours (the hour in the morning or evening when the highest concentration of trips occurs, primarily controlled by commuter trips). A total of 23 intersections were analyzed.

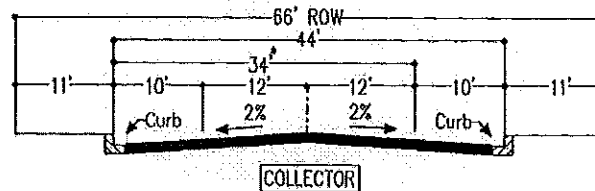
This led to conclusions on the needed size of streets, the areas where the street system would not function properly, and the types of improvements that would be necessary to make the street system work properly.

Street Cross Sections

As previously stated, the 1994 Circulation Element street classification system is not consistent with the street classification system used in Riverside County. Because of the interconnectedness of roadways, and the City's location as one of a chain of cities in the County, the street cross sections described in this Circulation Element have been made consistent with County standards (see Exhibit III-5). In this way, the City can better integrate into regional transportation programs and plans, including the Transportation Uniform Mitigation Fee program and state and federal programs in the future. The new street classifications result in the following standards:



*Part-width street section for on interior commercial or industrial street.



*Part-width street section for all collector streets-34' Improvements on 48' R/W.

Source: Kunzman Associates

Collector: 66 feet of right of way, with a 44-foot street section from curb to curb. This represents two lanes of traffic, with parking lanes on each side, and a parkway on each side.

Divided Collector: 78 feet of right of way, with a 66-foot street section from curb to curb. This represents two travel lanes, with parking lanes on each side, a center median, and a parkway on each side.

Secondary Highway: 88 feet of right of way, with a 64-foot street section from curb to curb. This represents four travel lanes, with parking lanes on each side, and a parkway on each side.

Major Highway: 100 feet of right of way, with a 76-foot street section from curb to curb. This represents four travel lanes, with parking lanes on each side, a center median, and a parkway on each side.

Arterial Highway: 110 feet of right of way, with an 86-foot street section from curb to curb. This represents four travel lanes, with parking lanes on each side, a center median, and a parkway on each side.

Urban Arterial Highway: 134 feet of right of way, with a 110-foot street section from curb to curb. This represents six travel lanes, with parking lanes on each side, a center median, and a parkway on each side.

Local Streets (those streets not shown on the General Plan Recommended Street System): 60 feet of right of way, with a 40-foot street section from curb to curb. This represents two travel lanes, with parking lanes on each side, and a parkway on each side. Local street standards may vary as described in the Policies and Programs of this Element.

Future Traffic Volumes

The traffic model was used to estimate the number of trips which would be generated on the City's principal roadways. These estimates, and the current (2004) trips on these roadways are shown in Table III-16, below.

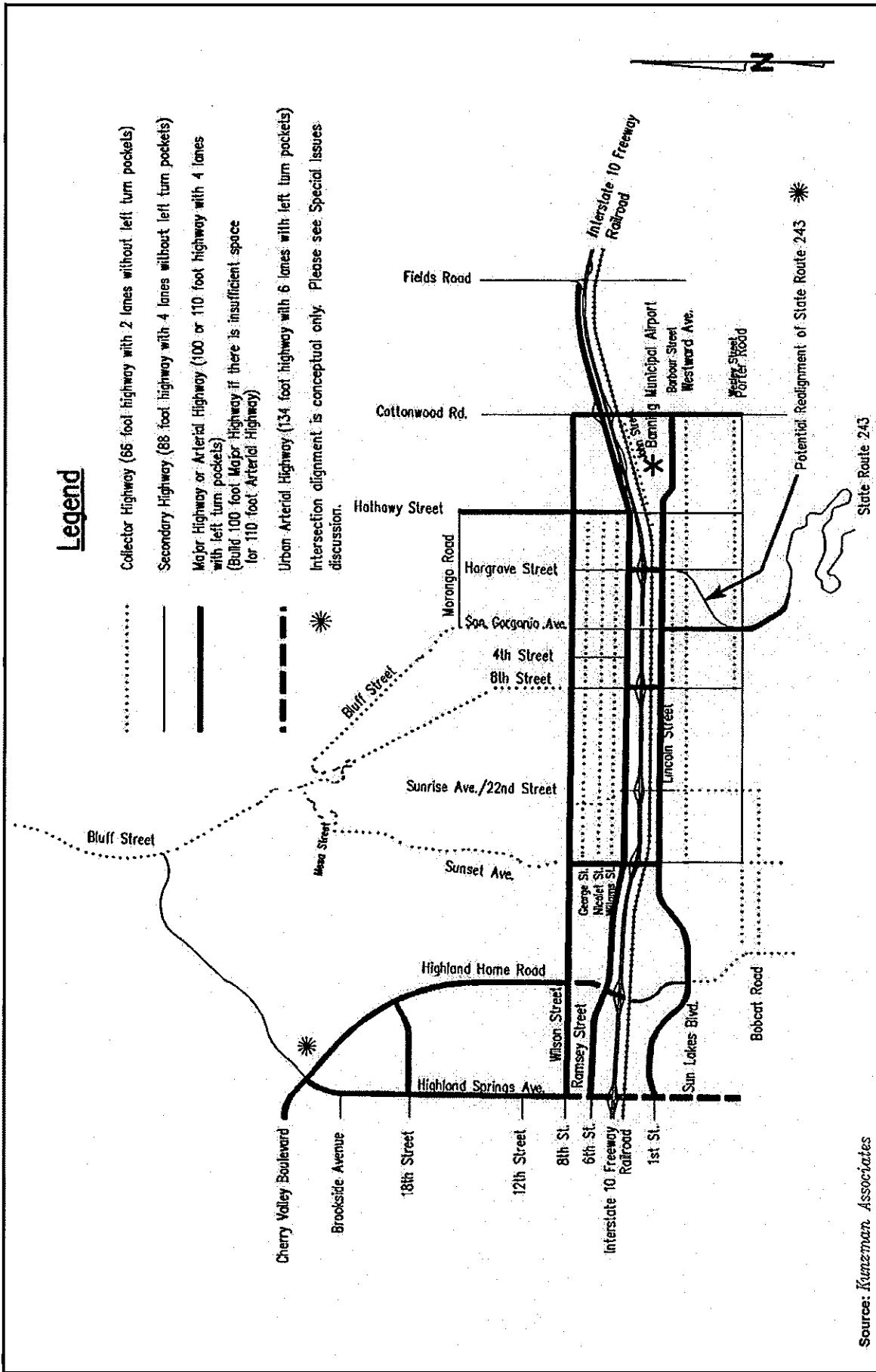
Table III-16
Existing Conditions Summary
for Major Roadways in the Planning Area

Roadway Link	Existing ADT	General Plan Buildout (ADT)
8th Street		
N of Wilson St.	7,494	7,494
S of Wilson St.	10,513	10,513
N of Ramsey	16,320	16,320
S of Ramsey	23,321	34,566
N of I-10 WB Ramps	21,232	34,566
S of I-10 WB Ramps	16,561	28,612
N of I-10 EB Ramps	17,261	28,612
S of I-10 EB Ramps	12,097	24,740
N of Lincoln	12,016	23,042
S of Lincoln	4,315	8,452
Hargrave St.		
N of Ramsey	10,823	19,930
S of Ramsey	15,046	43,562
N of I-10 WB Ramps	14,564	43,562
S of I-10 WB Ramps	10,433	34,038
N of I-10 EB Ramps	10,214	34,038
S of I-10 EB Ramps	5,325	39,082
N of Lincoln	5,325	36,487
S of Lincoln	3,214	36,487
Lincoln St.		
W of Hargrave	2,797	25,914
E of Hargrave	2,513	25,478
E. of 22 nd St.	2,300	
W. of 22 nd St.	1,700	
W of Sunset	--	25,290
E of Sunset	3,018	29,416
W of 8 th	3,730	30,458
E of 8 th	5,516	35,531
Ramsey St.		
W of Hargrave	9,009	9,009
E of Hargrave	9,423	22,418
W of 8 th	23,011	23,011
E of 8 th	22,460	26,294
W of Sunset Avenue	16,378	25,650
E of Sunset Avenue	16,435	24,430
W of Highland Home	12,544	32,083
E of Highland Home	12,303	25,238

W of Highland Springs Ave.	22,082	23,862
E of Highland Springs Ave.	19,201	28,398
Wilson St.		
W. of Sunset Ave.	12,303	28,211
E. of Sunset Ave.	10,915	22,350
E of 8 th	8,631	20,298
W. of Highland Springs Ave.	6,427	12,489
E. of Highland Springs Ave.	12,544	25,318
Sunset Ave.		
N of Wilson	677	22,452
S of Wilson	7,345	19,637
N of Ramsey	14,782	29,603
S of Ramsey	16,171	34,204
N of I-10 WB Ramps	16,022	34,204
S of I-10 WB Ramps	11,190	29,346
N of I-10 EB Ramps	11,454	29,346
S of I-10 EB Ramps	3,896	36,375
N of Lincoln	3,896	29,284
S of Lincoln	2,984	10,696
Highland Springs Ave.		
N of Wilson	8,633	40,378
S of Wilson	15,804	36,691
N of Ramsey	19,740	43,593
S of Ramsey	31,930	50,565
N of I-10 WB Ramps	31,930	50,565
S of I-10 WB Ramps	28,600	49,384
N of I-10 EB Ramps	28,635	45,062
S of I-10 EB Ramps	24,503	42,362
N of Sun Lakes	24,503	25,210
S of Sun Lakes	3,600	25,648
Sun Lakes Blvd./First St.		
W of Highland Springs	--	20,214
Highland Home Rd.		
N of Wilson	--	31,332
S of Wilson	--	29,575
N of I-10 WB Ramps	--	39,045
S of I-10 WB Ramps	--	24,283
N of I-10 EB Ramps	--	24,283
S of I-10 EB Ramps	--	12,242
Fields Road		
N of I-10 WB Ramps	3,994	15,736
S of I-10 WB Ramps	10,490	15,736
Interstate 10 WB Ramps		
W of Highland Springs	10,983	13,372
E of Highland Springs	5,715	14,710
W of Highland Home	--	11,475
W of Sunset	3,982	15,832
W of 8 th	8,734	16,982
E of Sunset	2,869	7,158

E of 8 th	2,709	10,511
W of Hargrave	6,450	24,614
E of Hargrave	2,066	10,847
W of Fields	57	13,138
E of Fields	11,397	11,397
Interstate 10 EB Ramps		
W of Highland Springs	10,972	12,951
E of Highland Springs	--	8,304
W of Highland Home	--	9,622
W of Sunset	4,832	20,859
E of Sunset	2,995	6,034
W of 8 th	7,758	15,873
E of 8 th	2,525	9,006
W of Hargrave	5,153	24,451
E of Hargrave	2,582	14,725

Based on the trips generated on the roadway, recommendations have been made on the street classifications for these streets, as shown in the following Table. The roadway classifications are also depicted on Exhibit III-6, Proposed General Plan Street System.



Source: Kunzman Associates

Exhibit

III-6



**Banning General Plan
Proposed General Plan Street System**

**Table III-17
Buildout Roadway Classifications**

Roadway Classification	Roadway
<u>Urban Arterial Highway</u> (6 lanes with left turn pockets)	Highland Springs from Cherry Valley to Potrero Blvd.
<u>Major or Arterial Highway</u> (4 lanes with left turn pockets)	Highland Home from Cherry Valley Blvd. To Sun Lakes Blvd. Highland Springs from Cherry Valley Blvd. to Wilson Street Hathaway from Morongo St. to I-10 Sunset from Wilson to Lincoln 8 th Street from Ramsey to Lincoln San Gorgonio from Lincoln to south City Limit Hargrave from Ramsey to Lincoln Cottonwood (North – South) from Ramsey to Porter Wilson from Highland Springs to Cottonwood (North – South) Ramsey from Highland Springs to Fields Rd. Sun Lakes/Lincoln from Highland Springs to Cottonwood (North – South)
<u>Secondary Highway</u> (4 lanes without left turn pockets)	Porter from Sunset to Cottonwood (North – South) Sunset from Wilson to Mesa Sunset from Lincoln to Porter 22 nd Street from Ramsey to south of Lincoln 8 th Street from Wilson to Ramsey 8 th Street from Lincoln to Porter 4 th Street from Wilson to Ramsey San Gorgonio from Wilson to Lincoln Hargrave from Wilson to Porter Hathaway from Ramsey to Porter Cottonwood (North – South) from Ramsey northward Cottonwood (North – South) from Porter southward Fields Road from end to end

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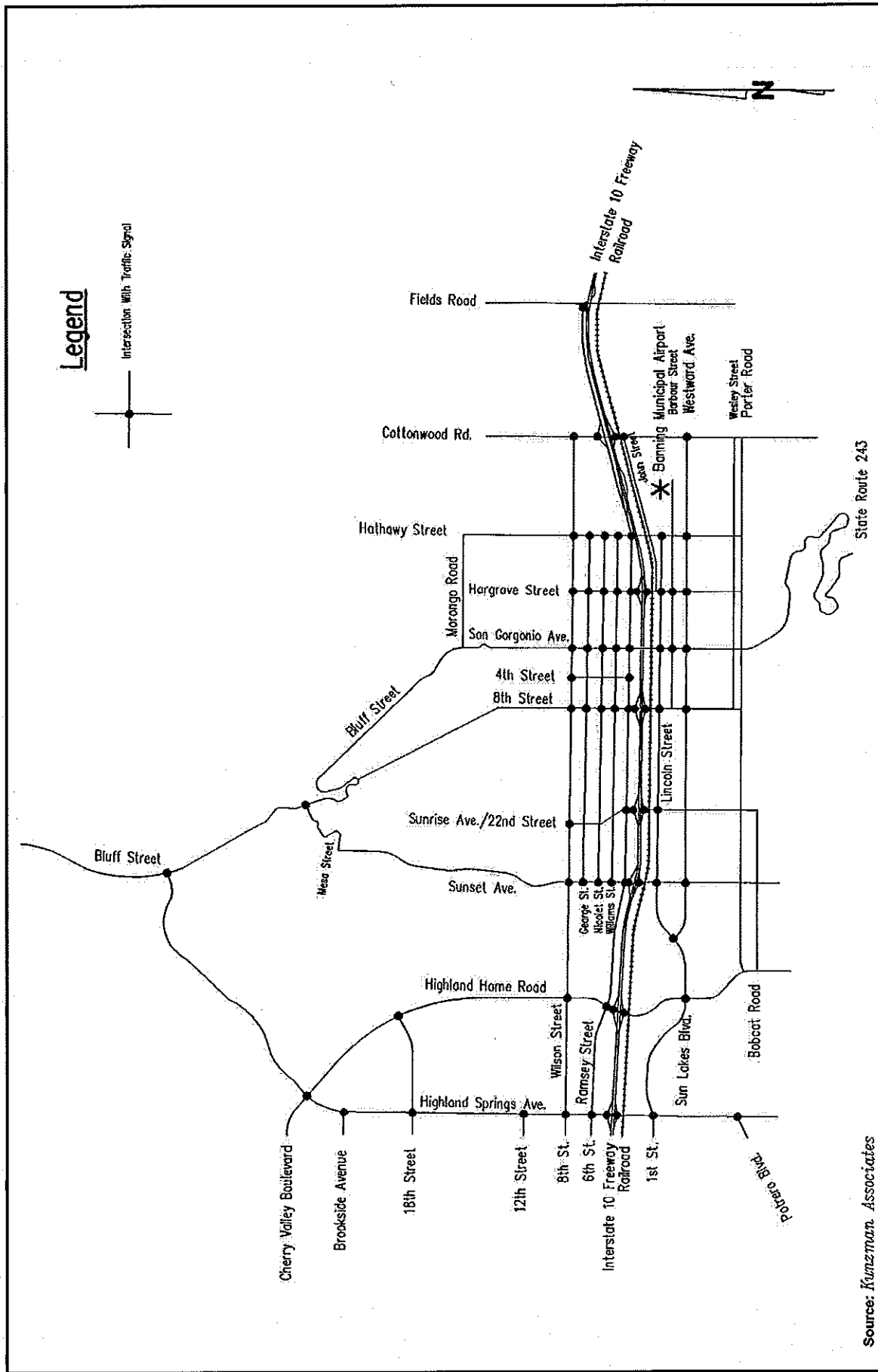
Intersection Analysis

Intersections are the most impacted component of the traffic system. If there are delays, they will occur at intersections, rather than in roadway segments, simply because traffic signals and stop signs increase delays, whereas roadway segments are always “green lights.” The City has strived for a level of service (LOS) of C at intersections. This standard, although desirable, is generally unattainable in most of southern California, especially during peak hours.

A total of 23 intersections in the City were analyzed to determine whether they would operate at LOS C during peak hours. The analysis found that all street intersections would operate at LOS C, except Highland Springs at Ramsey, Sunset at Ramsey and 8th Street at Ramsey, which would each operate at LOS D. At freeway ramp intersections, a LOS D condition would occur at General Plan buildout, except at 8th Street at I-10 westbound, which would operate at LOS E; and 8th Street at I-10 eastbound, Hargrave at I-10 westbound, and Hargrave at I-10 eastbound, which will operate at LOS F. In order to improve the level of service at these locations, additional interchanges with Interstate 10 are required, as discussed under “Special Issues,” below.

Traffic Signals

An analysis of the needed traffic signals for General Plan buildout was also conducted. The locations of traffic signal warrants at buildout are depicted on Exhibit III-7.



Exhibit

III-7

Banning General Plan Traffic Signal Warrants at Buildout

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All Weather Crossings

All weather crossings include bridges and culverted streets that allow natural drainages to flow under the roadway during major storms. All weather crossings in the City are described in the following Table.

**Table III-18
Buildout Bridges**

Location	Needed Improvement
Sunset Ave. at Pershing Channel	1 Bridge
8 th Street at Montgomery Creek	1 Bridge
Wilson Street at Smith Creek	1 Bridge
Sun Lakes Boulevard at Smith Creek	1 Bridge
Westward Avenue at Pershing Channel	1 Bridge
Wesley Street at Smith Creek	1 Bridge
Porter Road at Smith Creek	1 Bridge
Porter Road at Pershing Channel, and in two locations at Montgomery Creek	3 Bridges
Ramsey Street at Smith Creek and Pershing Channel	2 Bridges
Lincoln Avenue at east fork of Smith Creek, at west fork of Smith Creek, at Pershing Channel and at Montgomery Creek	4 Bridges

These facilities are needed both to allow the smooth flow of traffic in these areas, and to assure public safety in emergency situations. Construction of these facilities is particularly critical to the development of the south side of the City.

Transportation Demand Management

The continued urbanization and growth of the Pass Region will necessitate transportation demand and systems management to preserve and increase available roadway capacity. Transportation Demand Management (TDM) requires the development and implementation of policies, plans and programs that result in the use of a wider range of transportation alternatives, including public transit and bicycles.

TDM can include alternative travel modes, such as carpooling, van pooling and mass transit. In addition, employee flex-time work schedules that reduce peak hour travel and associated traffic congestion may also be considered. The Riverside County Transportation Commission (RCTC), in response to state mandates, has prepared a regional Congestion Management Program. This program required the City of Banning and other cities to prepare TDM ordinances or risk the loss of federal transportation funds. The City has adopted a TDM ordinance.

Traffic Calming

Traffic calming is a useful tool available to the City to slow traffic in residential neighborhoods, and discourage shortcuts through these neighborhoods. The advantages of traffic calming must always be balanced, however, with the requirements of emergency vehicles.

Traffic calming can include such design features as curvilinear streets, speed humps and raised intersections, traffic circles or roundabouts, stop signs on through streets, and narrowed intersections. Using these design features improves safety by slowing traffic to 30 miles per hour or less. The restriction or blocking of turning movements can also be used effectively in traffic calming, particularly to reduce cut-through, or short cut traffic in neighborhoods.

ALTERNATIVE TRANSPORTATION

Pedestrian, Equestrian, Bicycle and Golf Cart Circulation

The General Plan and associated documents support planning that allows and enhances access to commercial services and places of employment and recreation without the essential use of motorized vehicles. In this regard, master planning sidewalks, bike lanes, off-street trails and golf cart routes is especially important along major roadways in the community.

Pedestrian and Equestrian Trails and Bike Paths

The City's adopted Parks and Recreation Master Plan includes a proposed trails system that would provide access from parks, city streets, and the surrounding community via urban, foothill and wash/hill trails. Two short, minimally developed urban trail segments currently exist in the City and are associated with the proposed trail system. The City has also approved, or is currently reviewing, several equestrian trails within and adjacent to private subdivisions.

There are currently no bikeways within the planning area. Several Class II and III bikeways have been proposed along City streets. However, development of a network of bikeways is constrained by the existing condition of street right-of-ways. Future bike routes should be planned to provide safe routes for intra-City bicycle traffic and should be clearly marked and striped. Where possible, they should be designed as one-way bike routes, which flow in the same direction as adjacent automobile traffic. Combination sidewalks/bikeways require an eight-foot width. These multi-use lanes will also serve as links to recreational facilities throughout the community. Policies and programs specifically addressing the need for trails and bicycle lanes are included in the Parks and Recreation Element.

Sidewalks

Within some portions of the City, sidewalks are non-existent or discontinuous, limiting their usefulness as safe alternatives to vehicle travel. As previously noted, rights-of-way along City roadways are inconsistent, limiting the potential for bikeway development. When considering future development, pedestrian and bicycle accommodation and safety should be given emphasis equal to that currently given to automobile access. This is particularly true of collector and arterial roadways, where more traffic increases the hazards to pedestrians.

Another area where sidewalks are an important asset is in the historic Downtown of the City (between the I-10 right of way and Williams, and between 8th Street and Alessandro). Pedestrian access in this area is a function of economic development for this area, and should be considered in all future development and redevelopment plans.

Conversely, sidewalks on local, neighborhood roadways may not be necessary, particularly in established neighborhoods where roadways have been developed to their ultimate right-of-way,

and the addition of sidewalks would impact front yards and affect the character of the neighborhood.

Finally, sidewalks in proximity to schools provide children with a safe route to school. They are not currently available at all City schools.

Golf Cart Facilities

Golf cart use on public rights of way is controlled by state regulations, and provides a convenient, low impact alternative to access convenient commercial development, as well as parks and public services. Golf carts to be used on the public golf cart routes must meet specific physical requirements set forth in the City golf cart plan, must be certified as “road ready” by the City and carry an appropriate permit sticker. Golf cart operators must carry a valid California Driver’s license, have proof of insurance, be equipped with seatbelts and appropriate child safety equipment, and be properly maintained. In order to implement a golf cart route system, the City is required to prepare and adopt a Golf Cart Plan and associated implementing ordinances.

Currently there are no existing golf cart facilities in the planning area, outside of private golf development in the Sun Lakes Country Club. Issues related to development of golf cart facilities are similar to those for trail and bikeway development, in that existing facilities that would accommodate development of cart paths do not exist or are discontinuous in some areas.

Public Transportation

Banning Transit Services

Currently (2004) the Banning Municipal Transit System provides fixed route bus service along three routes, two of which are in Banning and one east to Cabazon. There are five City-owned vehicles, three of which are in revenue service and two of which are in reserve. All are powered by compressed natural gas (CNG), and are equipped with bicycle racks. All are ADA compliant, with wheelchair lifts and tie-down stations.

The transit system also operates a Dial-A-Ride service that provides elderly and disabled persons in Banning with curb-to-curb transit services. In addition, Dial-A-Ride is the ADA complementary para-transit provider for the City's fixed route bus service. The Dial-A-Ride program operates two vehicles in revenue service, and one in reserve, all gasoline powered. All Dial-A-Ride vehicles are ADA compliant, with wheelchair lifts and tie-down stations.

In May 2002, the Banning City Council approved the final Pass Area Transit Plan. The Transit Plan establishes the Pass Transit System, which consists of two independent transit systems, the Banning Municipal Transit System and the Beaumont Municipal Transit System. The Plan provides for a coordinated service area including the cities of Banning and Beaumont, the unincorporated areas of Cabazon and Cherry Valley, and the commercial area of the Morongo Band of Mission Indians Reservation. The Plan provides fixed route and dial-a-ride services.

The transit-needs study conducted for the Plan identified service related issues associated with the existing transit systems. It also identified areas not addressed in the Transit Plan requiring additional study or resources. These needs will be addressed in future transit plans, and include

service for non-traditional work shifts in the region, students, elimination of one-way loops to reduce ride time on local routes, adjusting route schedules to provide timed transfers between routes, relocation of transfer points and development of a transit center.

Regional bus service is provided by the Riverside Transit Agency (RTA), which provides services to Hemet/San Jacinto (Route 31), Moreno Valley (Route 35), and Calimesa/Redlands (Route 36), from the bus stop at Kmart on Highland Springs.

Railroad

Rail service facilities through the Pass area, and the City of Banning, can carry approximately 60 trains per day, most of which are freight. Regional freight transfer facilities are located in West Colton. Local facilities carry approximately 60 trains per day, most of which are freight. Trains average approximately 7,000 feet in length and generally travel up to 60 miles per hour (mph) in the planning area. UPRR is expanding rail facilities between Los Angeles and Houston, Texas to facilitate increases in rail traffic. Rail lines in the planning area are designated Centralized Track Control (CTC).

There are currently no passenger services available in Banning, although a passenger rail station did operate in the past.

There are currently (2004) four at-grade railroad crossings in the City. These occur at Hargrave Street, San Geronio Avenue, 22nd Street, and Sunset Avenue. Grade separated crossings occur at 8th Street and Highland Springs Avenue. The City should explore federal, state, City and UPRR cost sharing arrangements for grade separation of at-grade crossings in conjunction with the California Public Utilities Commission.

Construction of drill spurs is possible to provide rail access to adjoining passenger or industrial uses. Sidings, switches, and additional track linkage would also be required to provide this access. Additional costs would also be associated with any special engineering requirements and potential engineering constraints.

Banning Municipal Airport

The Banning Municipal Airport is classified by the National Plan of Integrated Airport Systems (NPIAS) as a General Aviation airport. The airport includes 65 hangars and 32 tie downs, with a 5,200 foot runway.

The airport is capable of accommodating most private single-engine and corporate jet aircraft, as well as helicopters. It averages approximately 10 to 15 takeoffs and landings daily and about 12,000 operations per year. Air traffic is primarily comprised of private, two-engine fixed-wing aircraft. There is no control tower at the airport, so all operations operate under Visual Flight Rules (VFR). Unicom service is provided from 8 a.m. to 5 p.m., every day. Fueling service is also available.

An approximately \$750,000 improvement asphalt overlay project is planned, and will be funded from Federal Aviation Administration grant monies.

Major Utility Corridors

Major corridors and easements for the transport of natural gas, electricity, communications, domestic water and sewage, and storm drainage are also important components of the Circulation Element. Generally, the need for utility corridors is met through the provision of easements in or adjacent to City streets and along common lot lines.

A major electric corridor occurs immediately south of the Banning Bench. The right of way for the two 220 kV transmission lines in this area is approximately 500 feet in width. Additional 115 kV transmission lines occur in the southern end of the City, and along the San Bernardino Mountains.

Two major high-pressure natural gas pipelines traverse the City, and transport natural gas far beyond the City's boundaries. A 30 inch line occurs under Lincoln Street through the City. Another 30-inch pipeline transects the City in a northwesterly direction from Hargrave and Wilson to Highland Springs Avenue. Two crude oil (16") or petroleum (12") lines occur on the south side of the City, from the airport southwesterly to Wesley, then westerly to the western City limits. Please see Exhibit V-11, Natural Gas and Fuel Lines.

Future land use planning, including the development of subdivisions and the processing of development applications, will require coordination between the City, developers, utility companies, and other service providers to assure the availability and provision of easements and rights of way for the extension of roads, utility lines, and public services.

FUTURE DIRECTIONS

Special Issues

In the development of the traffic study for this General Plan, six issues were identified which required particular attention. These are individually described below.

State Route 243

The City's 1994 Circulation Element included a connection from 8th Street to State Route (SR) 243. This connection does not currently (2004) exist, but was proposed as a future roadway. 8th Street from Interstate 10 to SR 243 was required to be a Major Highway. The current connection between I-10 and SR 243 is south on 8th Street from I-10 to Lincoln, east on Lincoln to San Geronio, and south on San Geronio to SR 243. Current volumes on SR 243 are approximately 4,000 vehicles per day. At buildout, it is expected that SR 243 will carry approximately 8,000 trips per day. The buildout trips, although double the current trips generated by SR 243, will not impact the City's street system, and can be absorbed on the streets currently used to make this connection, as described above. It was therefore determined that 8th Street south of I-10 was required to be a Secondary Highway, not a Major Highway, at buildout of the General Plan, and that the connection to SR 243 was not required for traffic flow.

A direct connection from a State Highway to an Interstate Highway is always preferred by CalTrans. In consultation with CalTrans (California Department of Transportation), the City has considered alternative alignments for SR 243, which are included in the General Plan traffic

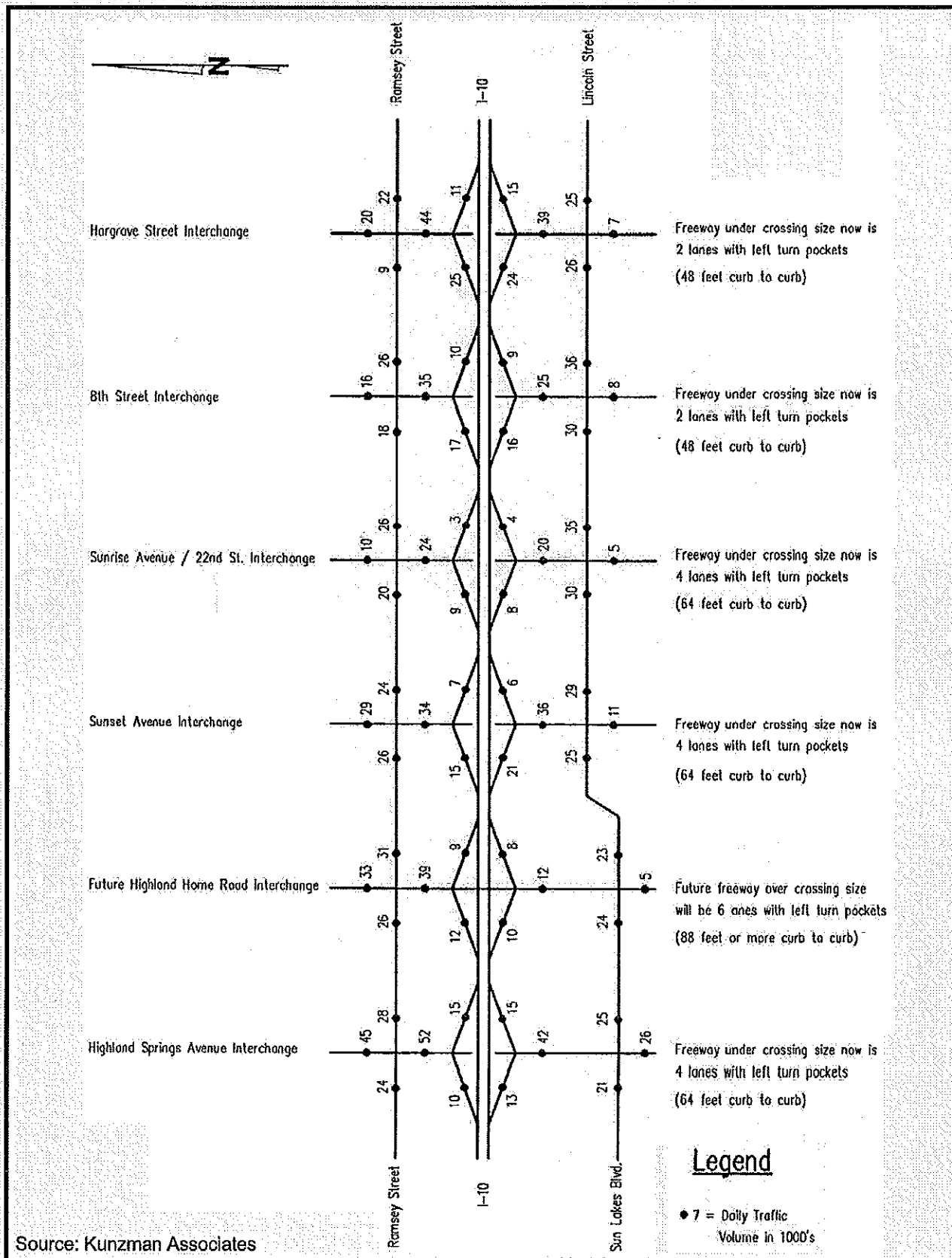
study. Should CalTrans or the City wish to change the current on-street connection to a direct connection, a potential alignment has been depicted on Exhibit III-6, Proposed General Plan Street System. However, since the impacts to the City's streets from SR 243 traffic is not considered to significantly impact City roadways, realignment should be considered a low priority.

Additional Freeway Interchange Capacity

The traffic analysis for this General Plan showed unacceptable levels of service during the peak hour at several I-10 ramp intersections, as discussed above. Exhibit III-8 shows the estimated volumes of traffic at interchanges at buildout of this General Plan. The study considered the potential of expanding existing interchange capacity, however, right of way is severely constrained, the under-crossings existing at 8th Street and Hargrave are undersized and would be extremely costly to widen.

As a result, the City will require two additional freeway interchanges: one at Highland Home Road on the west end of the City, and one at Cottonwood Road (North - South) on the east end of the City. The Highland Home interchange, which has been shown as a future interchange in the 1994 Circulation Element, will alleviate congestion at Highland Springs and Sunset interchanges. The added interchange at Cottonwood will alleviate congestion at 8th Street and Hargrave interchanges.

CalTrans plans to widen I-10 in the future, by adding one lane in each direction. Given the costs associated with this widening, and the cost of the interchanges, a coordinated construction program of widening and interchange additions would likely be most cost effective.



Highland Home Road/Cherry Valley Boulevard/Brookside/18th Street/Highland Springs

The General Plan roadway system has shown Highland Home connecting to Cherry Valley Boulevard in the City of Beaumont. The extension of Highland Home however, could connect to the west at Brookside Avenue in Beaumont. Further, Highland Springs is planned to extend to the northeast to Bluff Street, to provide access to the Black Bench area, and a second connection from the Banning Bench to the City. This connection could also be made through the extension of 18th Street to the northeast.

In all cases, traffic flow will not be significantly affected, insofar as traffic volumes on these streets in this area are not expected to be high. The Recommended General Plan Street System shows these streets in their currently envisioned configuration. However, as development occurs and the feasibility of the extensions is considered, flexibility is included in this General Plan to allow changes to the street system in the future.

At Grade Railroad Crossings

The City has two grade separated railroad crossings at streets with I-10 interchanges. The other four existing or planned interchanges must also be improved to include grade separations, in order to maintain acceptable levels of service. A grade separation is included in the Transportation Uniform Mitigation Fee (TUMF) program for the Sunset Avenue interchange. The others are not in the TUMF program.

The City will need to aggressively pursue grade separations for the railroad tracks at all interchanges. This should include the preparation of feasibility studies, the securing of all available funding, and the cooperation of the development community. Although construction of these facilities may not occur in the near term, the planning must be initiated immediately, in order for the City to be able to implement the construction in the future.

Lincoln Street and Westward avenue west of Sunset Avenue

The 1994 Circulation Element included the extension of both Lincoln and Westward from Highland Home to Sunset. Both these roadways occur currently east of Sunset. West of Highland Home, only one roadway, Sun Lakes Boulevard, currently occurs. The traffic study for this General Plan considered the traffic volumes generated south of I-10 on Sunset, and the potential volumes for Lincoln and Westward east of Sunset. The study found that Westward will have sufficiently low volumes so as to require a 2 lane collector east of Sunset. Lincoln is projected as a Major Highway from Highland Home easterly, as is Sun Lakes Boulevard. Traffic volumes will result in LOS C or better for both Lincoln and Westward in this area. Therefore, the elimination of Westward west of Sunset will not have a negative effect on east-west traffic south of I-10.

Level of Service Policy

The City has in the past enforced a LOS C policy for City streets, except at freeway interchanges, where a LOS D is considered acceptable. The traffic study for this General Plan found that the City will be able to maintain LOS C on most City streets, except Ramsey. In order to maintain LOS C on Ramsey Street, additional travel lanes would be required at its intersection with Highland Springs, Sunset, 8th Street and Hargrave. Some of these lanes would need to be on

Ramsey, some on the cross street. Without the additional lanes, intersections along Ramsey will operate at LOS D at General Plan buildout. As described at the beginning of this Element, LOS D does not represent a significant degradation in traffic flow. When balancing the need for an efficient traffic system and the widening of streets to accommodate peak hour traffic, it appears that a lowering of the City's requirement for Ramsey Street from LOS C to LOS D will not result in a significant negative effect.

Alternative Transportation

As cited above, existing rights-of-way on City streets are not adequate to allow for development of non-motorized transportation. The City has generally been able to secure right-of-way from new development as it occurs to provide full-width mid-block roadway improvements, but the process can be time consuming and costly.

New development should be required to provide separate paths for bicycles and/or equestrians, pedestrians and golf carts to assure safety and avoid conflicts. Equestrian trails should be included in projects developed south of the railroad right-of-way, as well as a connection to the San Bernardino and San Jacinto mountains.

Bicycle and golf cart parking facilities should be integrated into the design of commercial office and public land uses. Connectivity should also be a primary goal of residential design and should emphasize easy accessibility within and between neighborhood and commercial services to maximize the opportunities for pedestrian, bicycle, equestrian and golf cart access by short and direct trips. This planning focus will also help to shorten vehicle trips for residents who must use their automobiles.

Public transport out of the City is limited, particularly into the Inland Empire communities to the west. As development occurs in the City, and increased pressure is brought to provide service and lower vehicular trips on a regional level, additional public transportation will become necessary.

GOALS, POLICIES, AND PROGRAMS

Goal

A safe and efficient transportation system.

Policy 1

The City's Recommended General Plan Street System shall be strictly implemented.

Program 1.A

Street rights of way shall be 134 feet for Urban Arterial Highways, 110 feet for Arterial Highways, 100 feet for Major Highways, 88 feet for Secondary Highways, 78 feet for Divided Collectors, 66 feet for Collectors, and 60 feet for Local Streets. Local street standards can be amended as described in Policy 2.

Responsible Agency: Planning Department, Public Works Department, Planning Commission, City Council

Schedule: 2005-2006, Ongoing

Program 1.B

The City's Public Works roadway standards shall be amended to match the standards contained in this General Plan.

Responsible Agency: Public Works Department

Schedule: 2005-2006

Program 1.C

Minimum lane width for all City streets shall be designed at 12 feet.

Policy 2

Local streets shall be scaled to encourage neighborhood interaction, pedestrian safety and reduced speeds.

Program 2.A

The design of new local streets can vary from the City's standard of 60 foot right-of-way, 40 foot paved width, under the following conditions:

1. The minimum travel lane width shall be 12 feet.
2. Parking shall be provided on at least one side of any public street. Parking lanes shall be a minimum of 8 feet in width.
3. Parking may be eliminated on private streets, if provisions are made in Conditions, Covenants and Restrictions (CC&R's) for enforcement by the Homeowners' Association.
4. Landscaped traffic circles, chokers, and center islands are encouraged, but must meet the requirements of the Fire Department.
5. The minimum parkway width shall be 10 feet.
6. Linear sidewalks are discouraged. Meandering sidewalks, which provide landscaping and street trees adjacent to the curb, shall be included in local street design.

The design of local streets varying from the City's standard, shall be included in the Tentative Tract Map application, and shall be reviewed by the Planning Commission and approved by the City Council.

Responsible Agency: Planning Department, Public Works Department, Planning Commission, City Council

Schedule: 2005-2006, Ongoing

Program 2.B

Existing local streets will be inventoried, and a master plan of potential improvements designed to improve their aesthetic and safety, including landscaped medians, sidewalks and traffic calming devices, shall be developed, cost engineered, and implemented.

Responsible Agencies: Public Works Department, Planning Commission, City Council

Schedule: 2006-2007, Ongoing

Policy 3

The City shall establish and maintain a 5-Year Capital Improvement Program for streets.

Program 3.A

The Public Works Department shall establish a Capital Improvement Program for 5 years, and update it annually.

Responsible Agency: Public Works Department

Schedule: 2006-2007

Policy 4

Proactively participate in regional transportation planning.

Program 4.A

Maintain active relationships with the City of Beaumont, the County of Riverside, the Western Riverside County Council of Governments, the California Department of Transportation and the Morongo Band of Mission Indians to share information and promote comprehensive transportation planning in the region.

Responsible Agency: Public Works Department, City Manager's Office, City Council, City of Beaumont, County of Riverside, WRCOG, CalTrans, Tribe

Schedule: 2005-2006

Program 4.B

Aggressively pursue Banning projects in the Transportation Uniform Mitigation Fee (TUMF) program, particularly the addition of projects to the TUMF project list, including grade separated road crossings.

Responsible Agency: Public Works Department

Schedule: 2005-2006

Program 4.C

Aggressively pursue the design and development of interchanges at Highland Home Road and Cottonwood Road (North - South), including all sources of funding, and the coordination of I-10 widening with their installation.

Responsible Agency: Public Works Department, City Manager's Office, City Council, CalTrans, Railroad

Schedule: 2005-2006

Policy 5

Consider amendments to the Highland Home/Highland Springs/18th Street/Brookside street configurations based on public safety, design feasibility and area needs.

Policy 6

The City shall maintain peak hour Level of Service C or better on all local intersections, except those on Ramsey Street and at I-10 interchanges, where Level of Service D or better shall be maintained.

Program 6.A

Periodically review current traffic volumes and the actual pattern of development to coordinate, program and, as necessary, revise road improvements.

Policy 7

New development proposals shall pay their fair share for the improvement of street within and surrounding their projects on which they have an impact, including roadways, bridges, grade separations and traffic signals.

Policy 8

Traffic calming devices shall be integrated into all City streets to the greatest extent possible and all new streets shall be designed to achieve desired speeds.

Policy 9

Street trees within the City right of way shall be preserved, unless a danger to the public health and safety or if the tree is diseased.

Program 9.A

Sidewalks in areas with street trees shall be designed to "wrap around" the tree if they are added to an existing neighborhood.

Responsible Agency: Public Works Department

Schedule: Ongoing

Policy 10

Sidewalks shall be provided on all roadways 66 feet wide or wider. In Rural Residential land use designation pathways shall be provided.

Program 10.A

The Public Works Department shall prepare an inventory of discontinuous sidewalks on all qualifying roadways, and fund individual projects through the Capital Improvement Program annually.

Responsible Agency: Public Works Department, City Council

Schedule: Inventory in 2006-2007, Annually thereafter

Program 10.B

All new development proposals located adjacent to qualifying roadways shall be required to install curb, gutter and sidewalk concurrent with construction.

Responsible Agency: Public Works Department, Planning Department

Schedule: Ongoing

Program 10.C

The City shall develop procedures to address neighborhood sidewalk needs as they are requested by that neighborhood.

Responsible Agency: Public Works Department

Schedule: 2005-2006, Ongoing

Program 10.D

Work with the School District to develop safe routes to school.

Responsible Agency: Public Works Department

Schedule: 2005-2006, Ongoing

Policy 11

Sidewalks or other pedestrian walkways shall be required on all streets within all new subdivisions.

Policy 12

In the absence of a vehicular grade separation, the City shall aggressively pursue a grade separated pedestrian access across San Geronio, to assure that high school students do not have to cross the railroad tracks on their way to and from school.

Policy 13

Pedestrian access in the Downtown Commercial designation shall be preserved and enhanced.

Program 13.A

All development and redevelopment proposals for the Downtown area shall include enhanced sidewalk, pedestrian walkway, lighting and landscaping designs and assure connections to existing and planned sidewalks.

Responsible Agency: Public Works Department, Planning Department

Schedule: As development proposals are presented

Policy 14

The City shall aggressively pursue the construction of all weather crossings over General Plan roadways.

Program 14.A

The Public Works Department shall prioritize the need for bridges listed in this Element, develop preliminary cost estimates, identify and pursue sources of funding, including developer funding, for each facility.

Responsible Agency: Public Works Department, City Council

Schedule: 2005-2006, Annually thereafter

Program 14.B

All new development proposals shall pay their fair share of bridge construction needed to serve their project.

Responsible Agency: Public Works Department, Planning Department

Schedule: Ongoing

Policy 15

The City shall develop a Golf Cart Plan compliant with state requirements.

Program 15.A

The City shall develop a golf cart plan and associated ordinances and other required implementation programs.

Responsible Agency: Public Works Department, City Council

Schedule: 2006-2007

Policy 16

Golf cart paths and facilities shall be funded, to the greatest extent possible, by new development.

Program 16.A

The routing and facilities required in the Golf Cart Plan shall be incorporated into the Development Impact Fee when the Plan is adopted.

Responsible Agency: Public Works Department

Schedule: 2006-2007

Program 16.B

Golf cart facilities shall be incorporated into new project plans located on golf cart routes.

Responsible Agency: Planning Department, Public Works Department, Planning Commission, City Council

Schedule: 2005-2006, Ongoing

Policy 17

Encourage the expansion of an integrated Pass transit system.

Program 17.A

The City will explore the potential for either bus or rail connection to the Metrolink transit system.

Responsible Agency: City Manager's Office, Community Services Department

Schedule: 2006-2007, Ongoing

Policy 18

The City shall review its transit service to major regional attractions, and intra-City recreational locations in future planning efforts, based on need.

Policy 19

Bus pullouts shall be designed into all new projects on arterial roadways, to allow buses to leave the flow of traffic and reduce congestion.

Program 19.A

Bus pullouts will be retrofitted on built-out streets, wherever possible.

Responsible Agency: Public Works Department, City Council

Schedule: 2006-2007, Ongoing

Policy 20

Promote the location of a passenger rail station for long distance and commuter rail service.

Policy 21

Update the Airport Master Plan every five years to meet the needs of the general aviation, business and tourism segments of the community.

Program 21.A

Land use designation decisions within the area of influence of the airport shall be specifically reviewed to assure compatibility.

Responsible Agency: Planning Commission, City Council

Schedule: Ongoing

Program 21.B

Work with the Chamber of Commerce, the Morongo Band of Mission Indians, and other interested parties to provide services which meet the needs of passenger and freight transport.

Responsible Agency: Airport Management, Economic Development staff, Chamber of Commerce, Morongo Band of Mission Indians, City Council

Schedule: Ongoing

Policy 22

Maintain an accurate mapping of all utility corridors.

Program 22.A

The Building Department shall inventory and map transmission utility easements on the Land Use Map (including electric, fiber optics, natural gas and petroleum).

Responsible Agency: Building Department, Planning Department

Schedule: Inventory in 2005-2006, Annually thereafter

Policy 23

The City shall purchase and/or replace its fleet of vehicles with alternate fuel vehicles when available to the greatest extent possible, and shall encourage other agencies to do the same.

Policy 24

Public alleys throughout the City shall be maintained to be useful and safe at all times.

Program 24.A

The City shall create a downtown alley master plan and where appropriate pave, light and otherwise improve alleys.

Responsible Agency: Public Works Department

Schedule: Ongoing

Program 24.B

The Public Works Department shall inventory all public alleys, determine which are necessary, and vacate those that are not.

Responsible Agency: Public Works Department, City Council

Schedule: 2006-2007

Policy 25

The City shall develop and implement plans for a coordinated and connected bicycle lane network in the community that allows for safe use of bicycles on City streets.

Program 25.A

The City shall inventory all streets for potential Class I, Class II and Class III bikeways, and shall program their installation in its Capital Improvement Program.

Responsible Agency: Planning Department; Engineering Division; Public Works Department; Planning Commission; City Council

Schedule: 2005-2006.

Program 25.B

Class I bikeways and sidewalks should be installed on both sides of Wilson Street, Ramsey Street, and Lincoln Street, and other major streets where sufficient right-of-way is available.

Responsible Agency: Engineering Division; Public Works Department

Schedule: 2005-2006, Ongoing

Program 25.C

Class II bikeways and sidewalks should be designated on all existing arterial streets that have sufficient width to safely accommodate bicycle travel lanes.

Responsible Agency: Planning Department; Engineering Division; Public Works Department

Schedule: 2005-2006.

Program 25.D

The City should designate Class III bikeways only where Class I and Class II facilities are not feasible.

Responsible Agency: Planning Department; Public Works Department

Schedule: Continuous.

Policy 26

The City should continue to work with the Morongo Band of Mission Indians and neighboring cities and communities to create a regional bicycle and trail network.

Policy 27

The City shall provide for a comprehensive, interconnected recreational trails system suitable for bicycles, equestrians and/or pedestrians.

Program 27.A

Evaluate the practicality of utilizing flood control channels for multi-use trails, where flooding and safety issues can be accommodated, and negotiate inter-agency agreements for this purpose.

Responsible Agency: Planning Department

Schedule: 2005-2006.

Program 27.B

Evaluate the practicality of developing a multi-use trails system along the Banning Bench adjacent to and extending into San Bernardino National Forest lands, where environmental and safety issues can be accommodated, and negotiate inter-agency agreements with the U.S. Forest Service for this purpose.

Responsible Agency: Planning Department, U.S. Forest Service/San Bernardino National Forest

Schedule: 2005-2006.

Program 27.C

Establish a multi-purpose trail between Dysart Park and Smith Creek Park, suitable for equestrian, bicycle and pedestrian use.

Responsible Agency: Community Services Department; Public Works Department; Parks and Recreation Advisory Committee

Schedule: 2005-2006, ongoing as development occurs

Policy 28

Motorized vehicles shall be prohibited on City trails.

Program 28.A

The City shall develop a non-motorized trail system and associated ordinances and other required implementation programs.

Responsible Agency: Public Works Department, Planning Commission, City Council

Schedule: 2006-2007

Program 28.B

The non-motorized trail system shall be funded, to the greatest extent possible, by new development.

Responsible Agency: Public Works Department

Schedule: 2006-2007

Program 28.C

The routing and facilities required in the non-motorized trail system Plan shall be incorporated into the Development Impact Fee when the Plan is adopted.

Responsible Agency: Public Works Department

Schedule: 2006-2007

ATTACHMENT 2

Traffic Impact Analysis for the Banning General Plan Amendment Change in Level of Service Policy

TRAFFIC IMPACT ANALYSIS

**BANNING GENERAL PLAN AMENDMENT
CHANGE IN LEVEL OF SERVICE POLICY**

CITY OF BANNING

RIVERSIDE COUNTY, CALIFORNIA

LSA

September 2012

43

TRAFFIC IMPACT ANALYSIS

BANNING GENERAL PLAN AMENDMENT CHANGE IN LEVEL OF SERVICE POLICY

CITY OF BANNING

RIVERSIDE COUNTY, CALIFORNIA

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September 2012

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EXECUTIVE SUMMARY

This Traffic Impact Analysis (TIA) has been prepared to assess the proposed amendment to the City of Banning (City) General Plan Circulation Element (adopted January 2006). According to the current General Plan Circulation Element, the City considers Level of Service (LOS) C as the upper limit of satisfactory operation except for intersections along Ramsey Street and interchange intersections along Interstate 10 (I-10), where LOS D is considered satisfactory. The City is proposing to change its existing policy for acceptable LOS criteria from LOS C to LOS D for all intersections within the City.

Traffic conditions were analyzed at eight intersections for a.m. and p.m. peak hours for the following conditions:

- General Plan Buildout with Existing Conditions
- General Plan Buildout with LOS C Improvement Conditions
- General Plan Buildout with LOS D Improvement Conditions

Recommended improvements and conceptual plans are provided in the study for both LOS C and LOS D.

The current LOS criterion within the City of Banning includes two standards: one is LOS D for intersections along Ramsey Street and at all I-10 interchange intersections, and the second is LOS C for the remaining intersections in the City. The benefits of changing the Citywide LOS standard from LOS C (all intersection except the ones on Ramsey Street and I-10 ramps) to LOS D are listed below:

1. Consistent LOS with the City of Beaumont along the common border of Highland Springs Avenue. The City of Beaumont has established LOS D as an acceptable LOS standard, and if the City of Banning adopts the LOS D standard, the same LOS standard will then be applicable to all intersections along Highland Springs Avenue (the border between the two cities). Currently, the intersection configuration required to maintain the LOS standard at each location is different for both Cities since the LOS standard is different. The change in LOS policy (from LOS C to LOS D) will result in uniform intersection configuration at intersections along Highland Springs Avenue.
2. The change in LOS (from LOS C to LOS D) will reduce the Capital Improvement Cost and physical impact for improving an intersection to acceptable LOS per City's General Plan Policy.
3. The reduction in the Capital Improvement Cost will result in lower traffic impact fee.
4. Drivers will experience consistent LOS conditions. Without the LOS policy change, drivers would experience different LOS standards at intersections within the City. For example, if a driver traveling through the City intersections (LOS C standard) reaches an intersection along Ramsey Street or a ramp intersection (along I-10), the minor changes (increases) in delay and congestion levels that are acceptable at these locations (LOS D standard) will appear to be exaggerated (more than they really are) to the driver since he has been experiencing slightly lower levels of delay and congestion at intersections throughout the City. The change in LOS (from C to D) will eliminate this perceived exaggeration from the overall driver experience within the City.

Based on the results of this TIA, it is recommended that the City adopt the proposed change in its existing policy for acceptable LOS criteria from LOS C to LOS D for all intersections within the City. If LOS D is adopted as the acceptable LOS standard, fewer improvements and less right-of-way (ROW) acquisition would be required to improve General Plan Buildout intersection deficiencies.

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APPENDIX

A: LEVEL OF SERVICE CALCULATION WORKSHEETS

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1.0 INTRODUCTION AND SUMMARY

1.1 Purpose of Report and Study Objective

This traffic impact analysis (TIA) has been prepared to assess the proposed amendment to the City of Banning (City) General Plan Circulation Element (adopted January 2006). According to the current General Plan Circulation Element, the City considers LOS C as the upper limit of satisfactory operation except for intersections along Ramsey Street and interchange intersections along Interstate 10 (I-10), where LOS D is considered satisfactory. The City is proposing to change its existing policy for acceptable LOS criteria from LOS C to LOS D for all intersections within the City.

This report includes analysis of the following three scenarios to satisfy the requirements for the disclosure of potential impacts and improvements per the California Environmental Quality Act (CEQA).

- General Plan Buildout with Existing Conditions
- General Plan Buildout with LOS C Improvement Conditions
- General Plan Buildout with LOS D Improvement Conditions

This study analyzes General Plan Buildout conditions for the a.m. and p.m. peak hours.

2.0 STUDY AREA

2.1 Study Area

The study area was defined based on the study area analyzed in the TIA included in the adopted General Plan. The intersections that were categorized under LOS C criteria in the adopted General Plan were selected as the study area intersections. The study area includes the following intersections, as illustrated in Figure 1:

1. Highland Springs Avenue/Wilson Street
2. Highland Springs Avenue/Sun Lakes Boulevard
3. Highland Home Road/Wilson Street
4. Sunset Avenue/Wilson Street
5. Sunset Avenue/Lincoln Street
6. 8th Street/Wilson Street
7. 8th Street/Lincoln Street
8. Hargrave Street/Lincoln Street

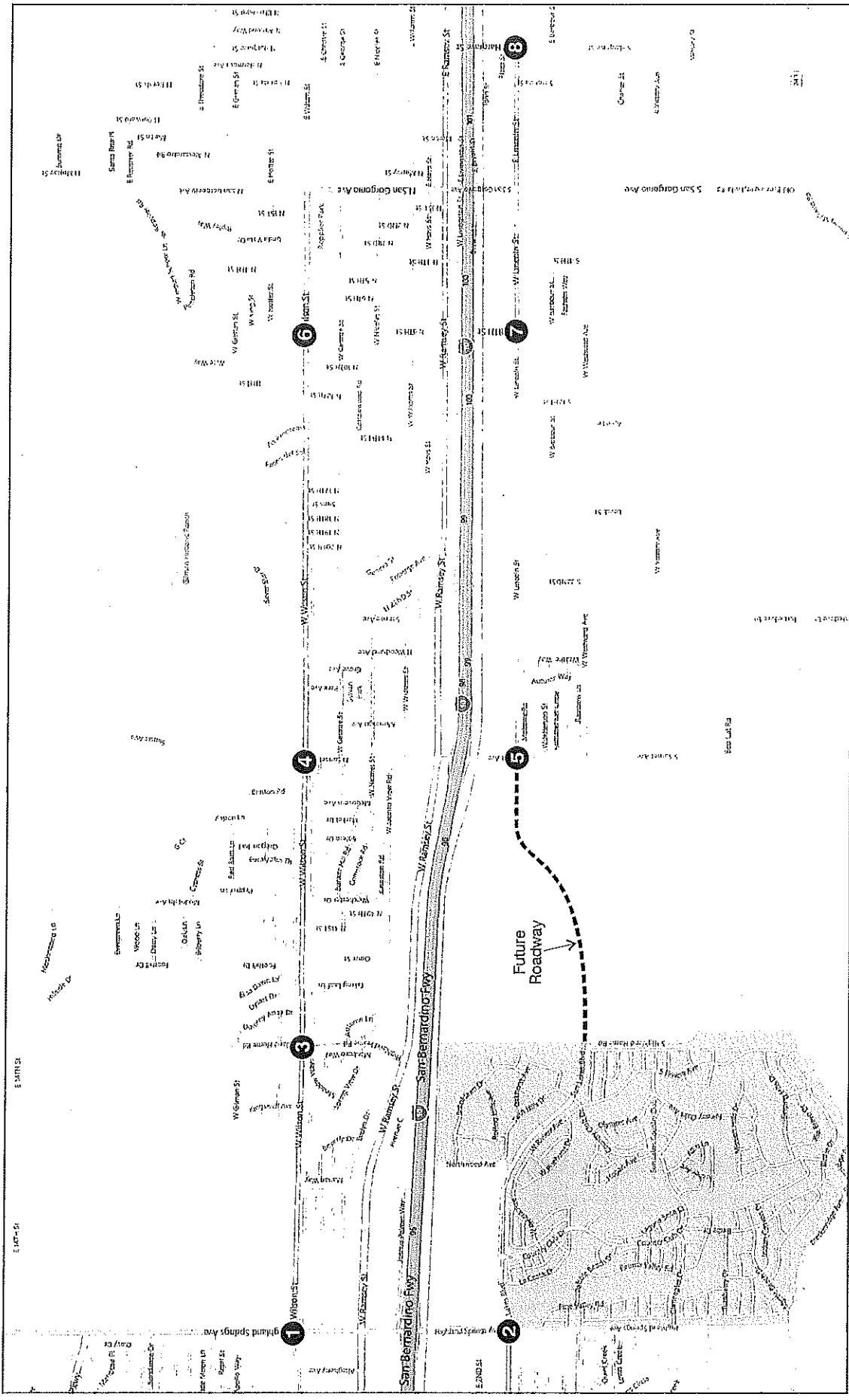


FIGURE 1

LEGEND
③ - Study Area Intersection

2.2 Intersection Levels of Service: Definition and Criteria

Intersection operations and the relationship between capacity and traffic volumes are generally expressed in terms of LOS, which are defined using the letter grades A through F. These levels recognize that, while an absolute limit exists as to the amount of traffic traveling through a given intersection (the absolute capacity), the conditions that motorists experience rapidly deteriorate as traffic approaches the absolute capacity. Under such conditions, congestion is experienced. There is general instability in the traffic flow, which means that relatively small incidents (e.g., a momentary engine stall) can cause considerable fluctuations in speeds and delays. This near-capacity situation is labeled LOS E. Beyond LOS E, capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. An upstream queue will then form and continue to expand in length until the demand volume again declines.

A complete description of the meaning of LOS can be found in the Transportation Research Board Special Report 209, *Highway Capacity Manual*. The Manual establishes levels of service A through F. Brief descriptions of the six levels of service, as abstracted from the Manual, are provided below.

LOS	Description
A	No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, both speed and volume can drop to zero.

LOS = level of service

The LOS criteria for unsignalized and signalized intersections is shown below.

LOS	Unsignalized Intersection Average Delay per Vehicle (seconds)	Signalized Intersection Average Delay per Vehicle (seconds)
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 15.0	> 10.0 and ≤ 20.0
C	> 15.0 and ≤ 25.0	> 20.0 and ≤ 35.0
D	> 25.0 and ≤ 35.0	> 35.0 and ≤ 55.0
E	> 35.0 and ≤ 50.0	> 55.0 and ≤ 80.0
F	> 50.0	> 80.0

LOS = level of service

Consistent with Riverside County guidelines, all study area intersections were analyzed using the 2000 *Highway Capacity Manual* (HCM 2000) analysis methodologies. Intersection LOS was calculated using Traffix software.

According to the current City General Plan Circulation Element, LOS C is considered the upper limit of satisfactory operation except for intersections along Ramsey Street and interchange intersections along I-10, where LOS D is considered satisfactory.

3.0 GENERAL PLAN BUILDOUT CONDITIONS

Consistent with the approach used in the previous TIA included in the adopted General Plan, the future General Plan Buildout conditions at all study area intersections were analyzed using existing intersection configurations illustrated in Figure 2. The traffic volumes for the General Plan Buildout conditions were obtained from the adopted General Plan TIA. The General Plan Buildout peak-hour volumes are shown in Figure 3.

3.1 General Plan Buildout Conditions Levels of Service

An LOS analysis was conducted in the General Plan TIA as part of the City General Plan Circulation Element to evaluate General Plan Buildout a.m. and p.m. peak-hour traffic operations at the study area intersections. The LOS analysis worksheets are provided in Attachment A. Table A summarizes the results of the LOS analysis. As shown in this table, all study area intersections exceed LOS thresholds during both peak hours (LOS F), with the exception of Highland Springs Avenue/Wilson Street and Highland Springs Avenue/Sun Lakes Boulevard. These two intersections were previously all-way stop-controlled (AWSC) intersections during preparation of the General Plan TIA. However, the existing geometrics at Highland Springs Avenue/Wilson Street and Highland Springs Avenue/Sun Lakes Boulevard have since been improved and are currently signalized.

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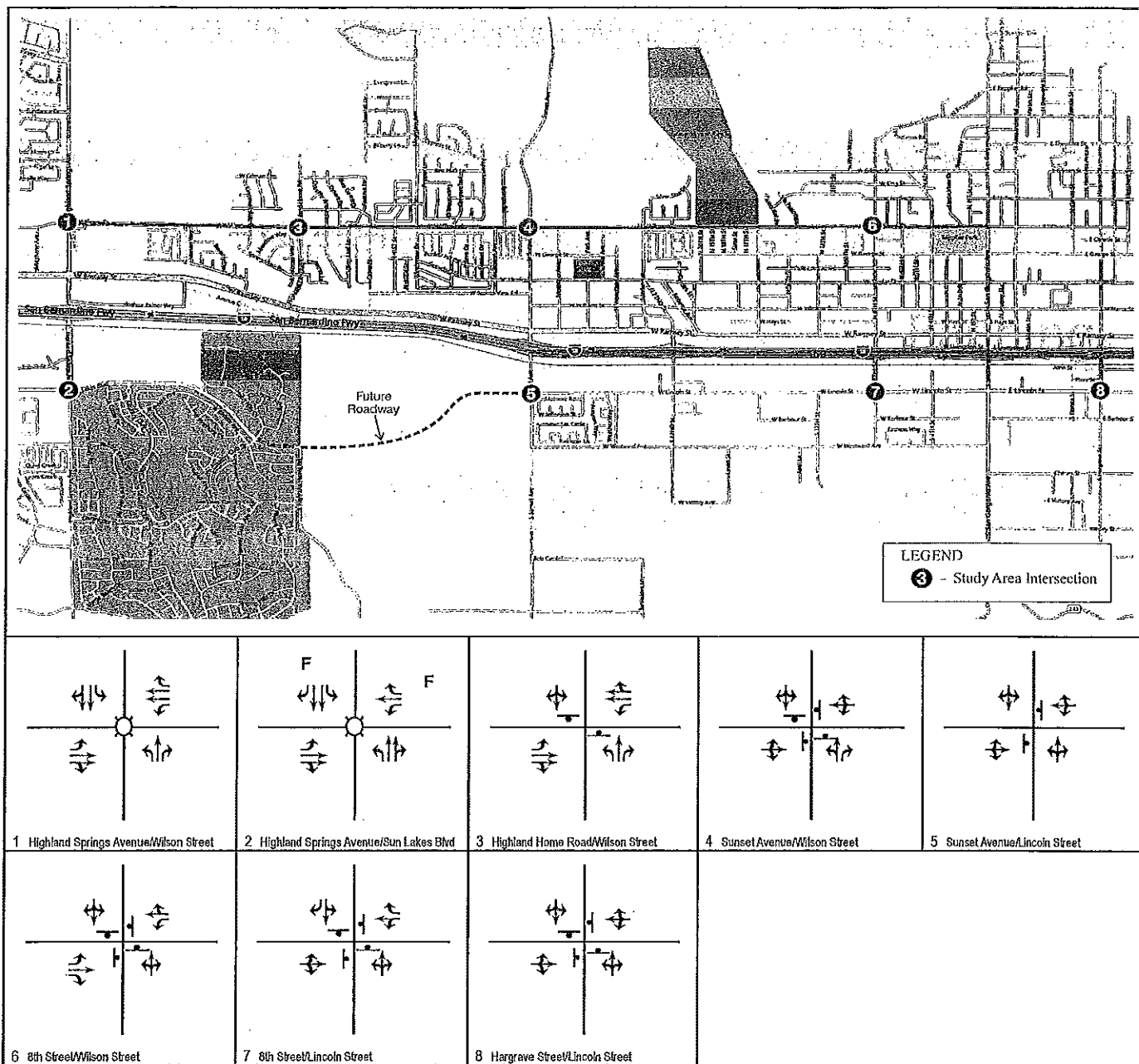


FIGURE 2

Legend

- Signal
- Stop Sign
- F Free Right
- O Overlap

Banning General Plan Amendment
Change in LOS Policy
 Existing Intersection Geometrics

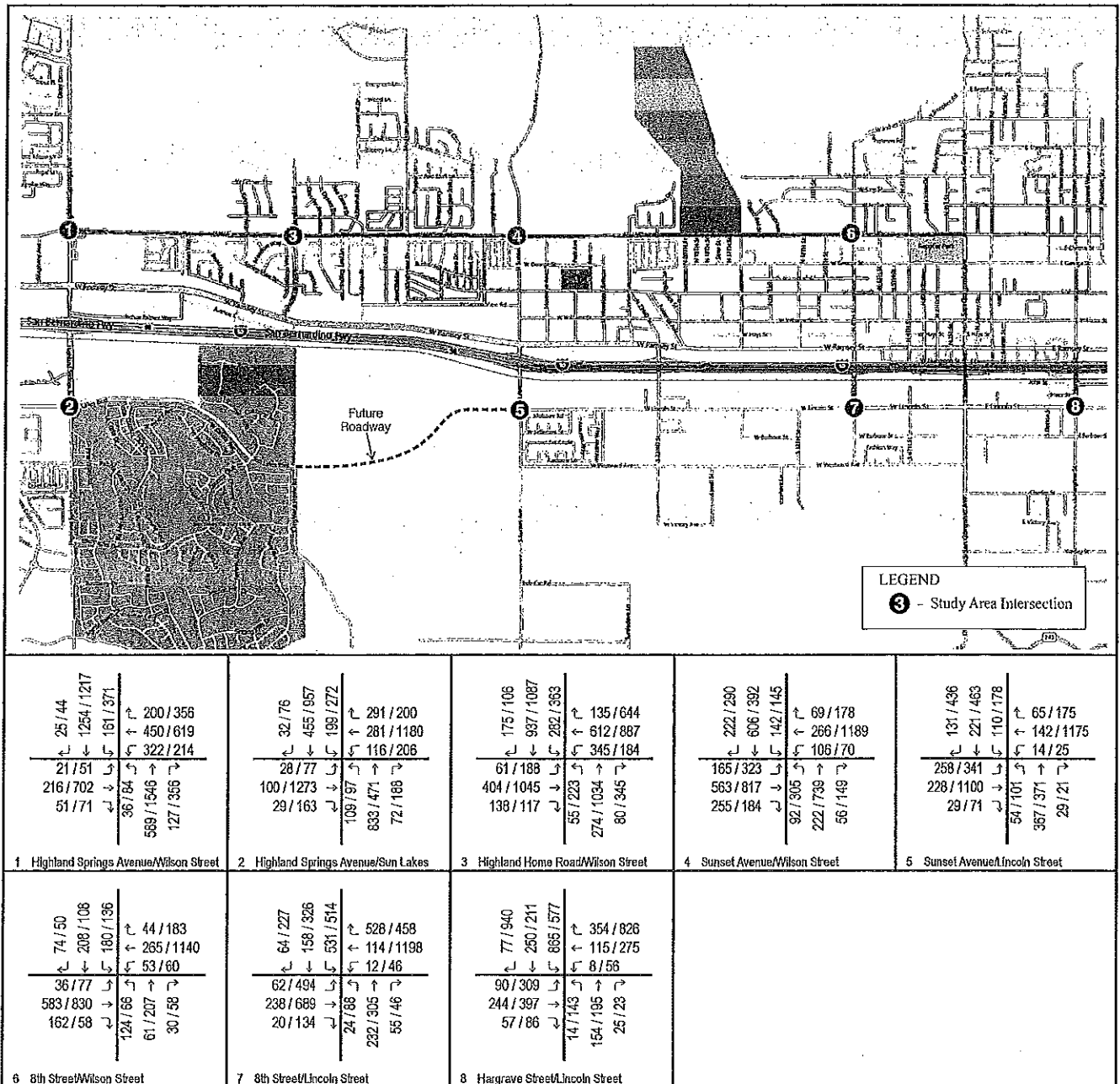


FIGURE 3

Legend

123 / 456 AM / PM Volume

Banning General Plan Amendment
Change in LOS Policy
General Plan Buildout Peak Hour Volumes

Table A: General Plan Buildout Intersection LOS Summary

Intersection ¹	Control	Baseline			
		AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1 Highland Springs Avenue/Wilson Street ²					
Adopted General Plan	AWSC	>50.0 sec	F ³	>50.0 sec	F
Existing Geometrics	Signal	32.2 sec	C	>80.0 sec	F
2 Highland Springs Avenue/Sun Lakes Boulevard ¹					
Adopted General Plan	AWSC	>50.0 sec	F	>50.0 sec	F
Existing Geometrics	Signal	27.5 sec	C	>80.0 sec	F
3 Highland Home Road/Wilson Street	TWSC	>50.0 sec	F	>50.0 sec	F
4 Sunset Avenue/Wilson Street	AWSC	>50.0 sec	F	>50.0 sec	F
5 Sunset Avenue/Lincoln Street	TWSC	>50.0 sec	F	>50.0 sec	F
6 8th Street/Wilson Street	AWSC	>50.0 sec	F	>50.0 sec	F
7 8th Street/Lincoln Street	AWSC	> 50.0 sec	F	>50.0 sec	F
8 Hargrave Street/Lincoln Street	AWSC	> 50.0 sec	F	>50.0 sec	F

¹ Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.² The intersection control and geometrics have been improved since the General Plan was adopted.³ **Bold** = exceeds City's of LOS criteria

AWSC = all-way stop-controlled

LOS = level of service

sec = seconds

TWSC = two-way stop-controlled

4.0 GENERAL PLAN IMPROVEMENTS

At any intersection that is projected to operate at an unsatisfactory LOS, the City requires that improvements be identified to maintain conformance with LOS standards. Discussions on necessary improvements required at each deficient intersection are provided below. It should be noted that signal timing/phasing changes may also be required. Only physical intersection improvements (i.e., additional lanes) are listed below.

4.1 General Plan Buildout LOS C Improvements

The adopted City General Plan Circulation Element identified the following LOS C improvements for the deficient study area intersections, as shown in Figure 4:

- **Highland Springs Avenue/Wilson Street:** Add two northbound through lanes, a second southbound left-turn lane, a third southbound through lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a designated northbound right-turn lane, a second southbound left-turn lane, a third southbound through lane (with the conversion of the free southbound right-turn lane to an inclusive right-turn lane), a second eastbound left-turn lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a second westbound through lane (with the conversion of the free westbound right-turn lane to an inclusive right-turn lane).

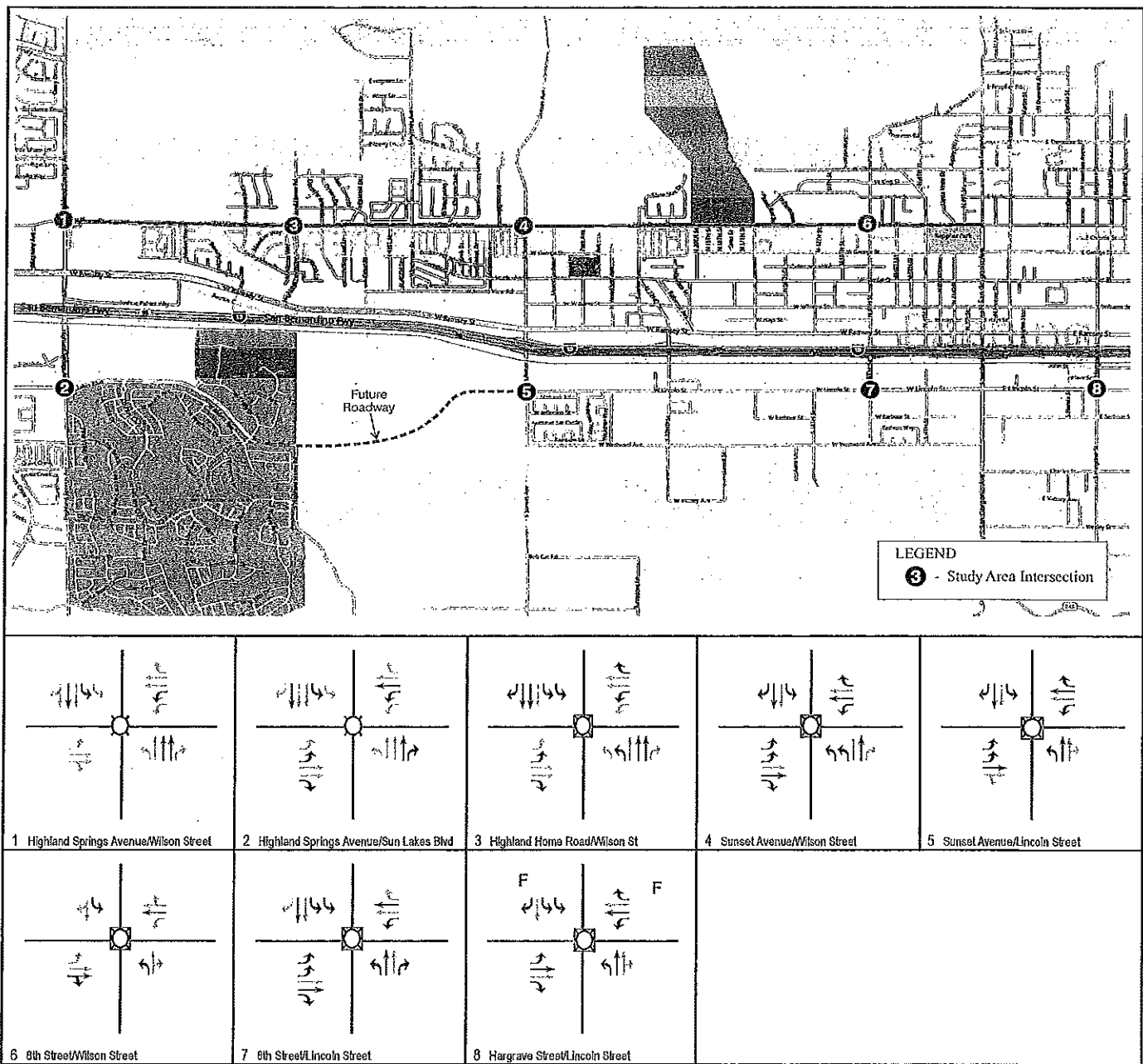


FIGURE 4

Legend

- Signal
- Stop Sign
- F Free Right
- Existing
- ↑ LOS C Improvement

*Banning General Plan Amendment
Change in LOS Policy*

General Plan Buildout with LOS C Improvements Intersection Geometrics

- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound left-turn lane, two northbound through lanes, two southbound left-turn lanes, two southbound through lanes, a designated southbound right-turn lane, a second eastbound left-turn lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a designated westbound right-turn lane.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.
- **8th Street/Wilson Street:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, a shared eastbound through/right-turn lane (i.e., conversion of the designated eastbound right-turn lane and widening of the departure leg to accept the eastbound through lane), and a second westbound through lane.
- **8th Street/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a designated northbound right-turn lane, two southbound left-turn lanes, a second southbound through lane, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, and a second westbound through lane.
- **Hargrave Street/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, two southbound left-turn lanes, a free southbound right-turn lane, an eastbound left-turn lane, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, a second westbound through lane, and a free westbound right-turn lane.

Based on the intersection LOS analysis, the improvements described above would result in acceptable LOS C during both peak hours. Table B summarizes the results of the analysis.

Table B: General Plan Buildout with LOS C Improvements Intersection LOS Summary

Intersection		With LOS C Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	25.2 sec	C	32.4 sec	C
2	Highland Springs Avenue/Sun Lakes Boulevard	Signal	28.9 sec	C	31.2 sec	C
3	Highland Home Road/Wilson Street	Signal	28.1 sec	C	34.1 sec	C
4	Sunset Avenue/Wilson Street	Signal	26.9 sec	C	33.8 sec	C
5	Sunset Avenue/Lincoln Street	Signal	28.7 sec	C	31.6 sec	C
6	8th Street/Wilson Street	Signal	29.4 sec	C	28.1 sec	C
7	8th Street/Lincoln Street	Signal	23.9 sec	C	33.6 sec	C
8	Hargrave Street/Lincoln Street	Signal	23.7 sec	C	33.1 sec	C

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

LOS = level of service

sec = seconds

4.2 General Plan Buildout LOS D Improvements

In order to improve the intersection deficiencies under General Plan Buildout baseline conditions to the proposed LOS standard of LOS D, the following improvements would be needed, as shown in Figure 5:

- **Highland Springs Avenue/Wilson Street:** Add a second northbound through lane, a shared northbound through/right-turn lane (i.e., conversion of the designated northbound right-turn lane and widening of the departure leg to accept the northbound through lane), a second southbound left-turn lane, a third southbound through lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a third southbound through lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a designated westbound right-turn lane.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, an eastbound left-turn lane, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, an eastbound left-turn lane, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.
- **8th Street/Wilson Street:** Install a traffic signal. Add a shared eastbound through/right-turn lane (i.e., conversion of the designated eastbound right-turn lane and widening of the departure leg to accept the eastbound through lane) and a second westbound through lane.

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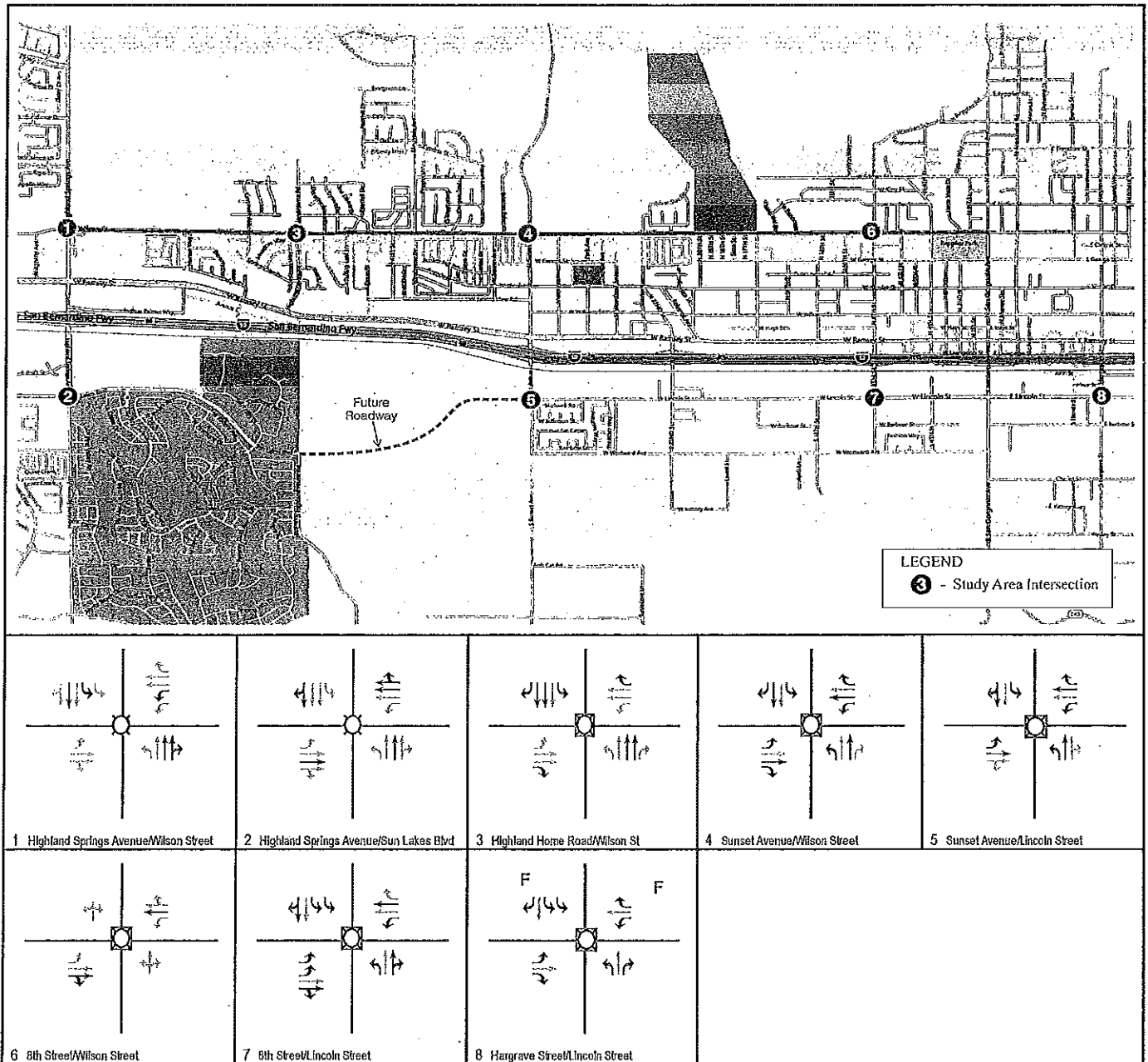


FIGURE 5

Legend

- Signal
- Stop Sign
- F Free Right
- Existing
- LOS D Improvement

*Banning General Plan Amendment
Change in LOS Policy*

General Plan Buildout with LOS D Improvements Intersection Geometrics

- **8th Street/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, two southbound left-turn lanes, a second southbound through lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, and a second westbound through lane.
- **Hargrave Street/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a designated northbound right-turn lane, two southbound left-turn lanes, a free southbound right-turn lane, an eastbound left-turn lane, a designated eastbound right-turn lane, a westbound left-turn lane, and a free westbound right-turn lane.

Table C summarizes the results of the General Plan Buildout with LOS D improvements analysis. The LOS worksheets are provided in Appendix A.

Table C: General Plan Buildout with LOS D Improvements Intersection LOS Summary

Intersection		With LOS D Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	25.6 sec	C	37.0 sec	D
2	Highland Springs Avenue/Sun Lakes Boulevard	Signal	30.9 sec	C	46.2 sec	D
3	Highland Home Road/Wilson Street	Signal	32.1 sec	C	48.0 sec	D
4	Sunset Avenue/Wilson Street	Signal	29.1 sec	C	54.7 sec	D
5	Sunset Avenue/Lincoln Street	Signal	30.3 sec	C	51.1 sec	D
6	8th Street/Wilson Street	Signal	36.6 sec	D	41.0 sec	D
7	8th Street/Lincoln Street	Signal	24.4 sec	C	36.3 sec	D
8	Hargrave Street/Lincoln Street	Signal	26.5 sec	C	36.2 sec	D

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.
LOS = level of service
sec = seconds

Figure 6 illustrates the General Plan Buildout with both LOS C and D improvements intersection geometrics and traffic control. If LOS D is adopted as the acceptable City LOS standard, reduced improvements would be required to improve the General Plan Buildout intersection deficiencies.

A summary of the LOS C improvements that are not required to achieve LOS D is provided below.

- **Highland Springs Avenue/Wilson Street:** A designated northbound right-turn lane. The addition of this turn lane would require approximately 12 feet (ft) of additional ROW on the east side of Highland Springs Avenue south of Wilson Street.
- **Highland Springs Avenue/Sun Lakes Boulevard:** A designated northbound right-turn lane, a second southbound left-turn lane, a second eastbound left-turn lane, a designated eastbound right-turn lane, and a second westbound left-turn lane.

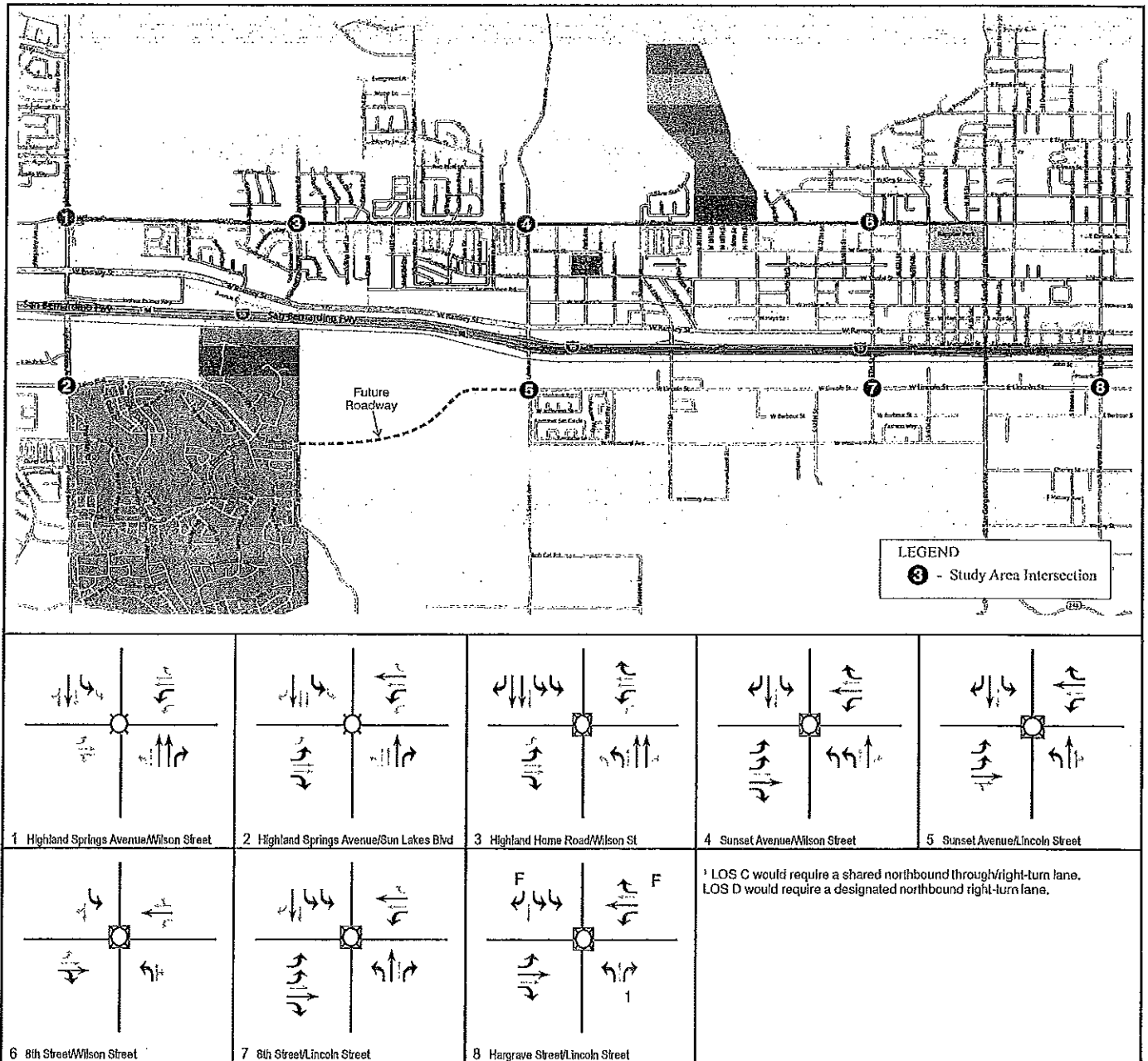


FIGURE 6

Legend

□	Signal	Existing
—	Stop Sign	LOS D Improvement
F	Free Right	LOS C Improvement Eliminated

*Banning General Plan Amendment
Change in LOS Policy*

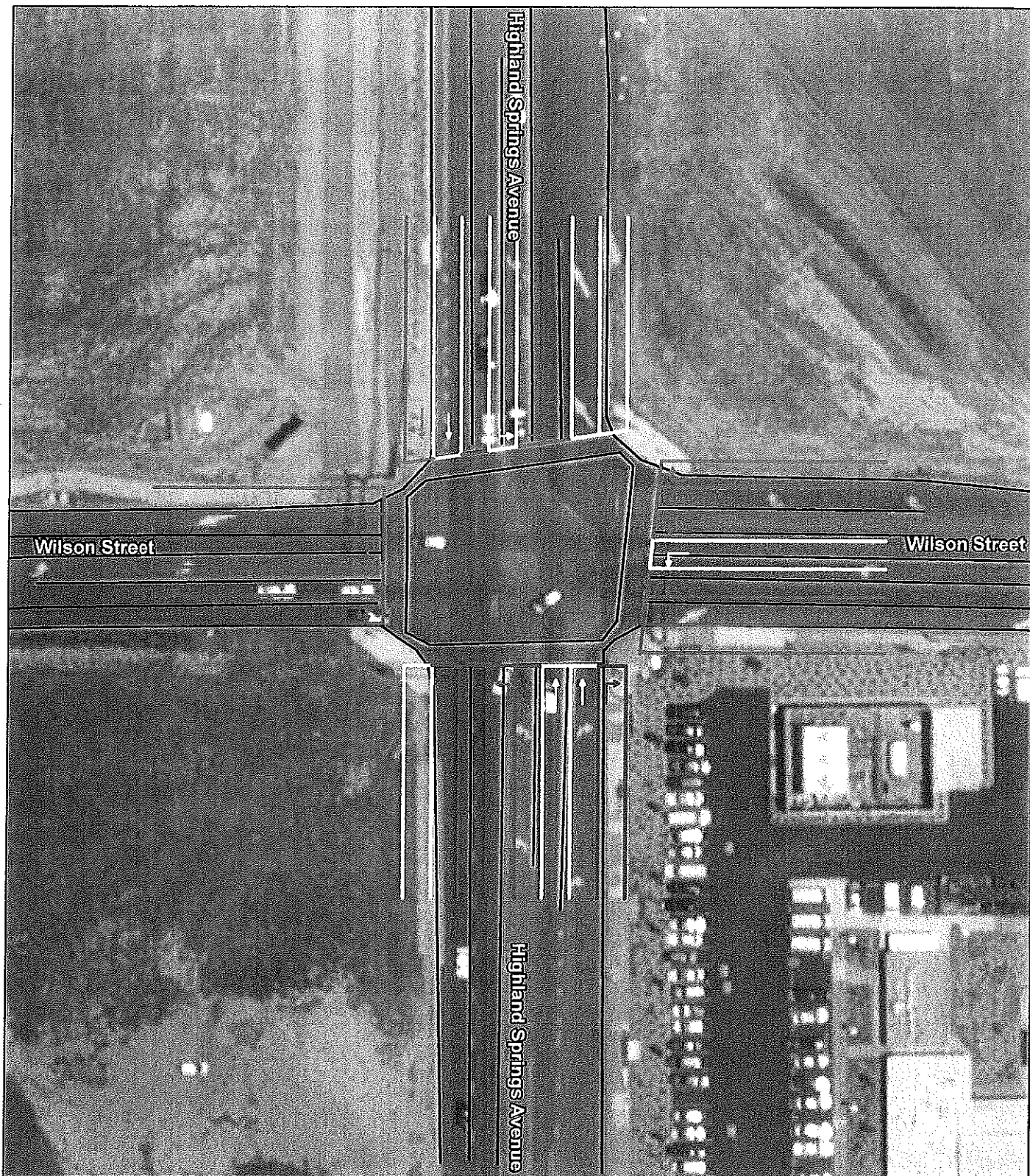
General Plan Buildout with Improvements Intersection Geometries

The addition of these turn lanes would require approximately 12 ft of additional ROW on each side of Highland Springs Avenue, 6 ft of ROW on the north side of Sun Lakes Boulevard, 18 ft of ROW on the south side of Sun Lakes Boulevard west of Highland Springs Avenue, and 6 ft of ROW on the south side of Sun Lakes Boulevard east of Highland Springs Avenue.

- **Highland Home Road/Wilson Street:** A second northbound left-turn lane, a second southbound left-turn lane, a second eastbound left-turn lane, and a second westbound left-turn lane. The addition of these turn lanes would require approximately 6 ft of ROW on each side of Highland Home Avenue and 6 ft of ROW on each side of Wilson Street.
- **Sunset Avenue/Wilson Street:** A second northbound left-turn lane and a second eastbound left-turn lane. The addition of these turn lanes would require approximately 12 ft of additional ROW on the east side of Sunset Avenue south of Wilson Street and 12 ft of ROW on the north side of Wilson Street west of Sunset Avenue.
- **Sunset Avenue/Lincoln Street:** A designated southbound right-turn lane and a second eastbound left-turn lane. The addition of these turn lanes would approximately require 12 ft of additional ROW on the west side of Sunset Avenue north of Lincoln Street, and 12 ft of ROW on the north side of Lincoln Street west of Sunset Avenue.
- **8th Street/Wilson Street:** A northbound left-turn lane and a southbound left-turn lane. The addition of these turn lanes would require approximately 6 ft of additional ROW on each side of 8th Street.
- **8th Street/Lincoln Street:** A designated northbound right-turn lane and a designated eastbound right-turn lane. The addition of these turn lanes would require approximately 12 ft of additional ROW on the east side of 8th Street south of Lincoln Street and 12 ft of ROW on the south side of Lincoln Street west of 8th Street.
- **Hargrave Street/Lincoln Street:** A second eastbound through lane and a second westbound through lane. The addition of these turn lanes would require approximately 12 ft of additional ROW on each side of Lincoln Street. It should be noted that a second northbound through lane (i.e., a shared northbound through/right-turn lane) would not be required. A single northbound through lane with a designated northbound right-turn lane would achieve LOS D.

4.3 Conceptual Plans

In order to facilitate visualization of the extent of improvements required to maintain LOS C vs. LOS D, conceptual plans were developed for all study area intersections. Proposed improvements were overlaid on aerial base maps of each intersection location. Figures 7-14 show the existing configuration and the proposed conceptual layout of each intersection. As illustrated in these conceptual plans, if LOS D is adopted as the standard for acceptable LOS, reduced ROW and physical capacity improvements will be required in comparison to LOS criteria. It should be noted that the approach and lane alignments shown in Fig 7-14 may require additional right-of-way. The required intersection improvements and possible additional right-of-way will be monitored and implemented through a subsequent traffic fee program developed by the city. Further environmental review would be required prior to the implementation (construction) of these future intersection improvements.



LSA

LEGEND

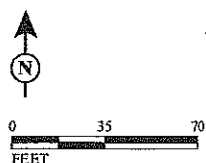
- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 7

*Banning General Plan Amendment
Change in LOS Policy*

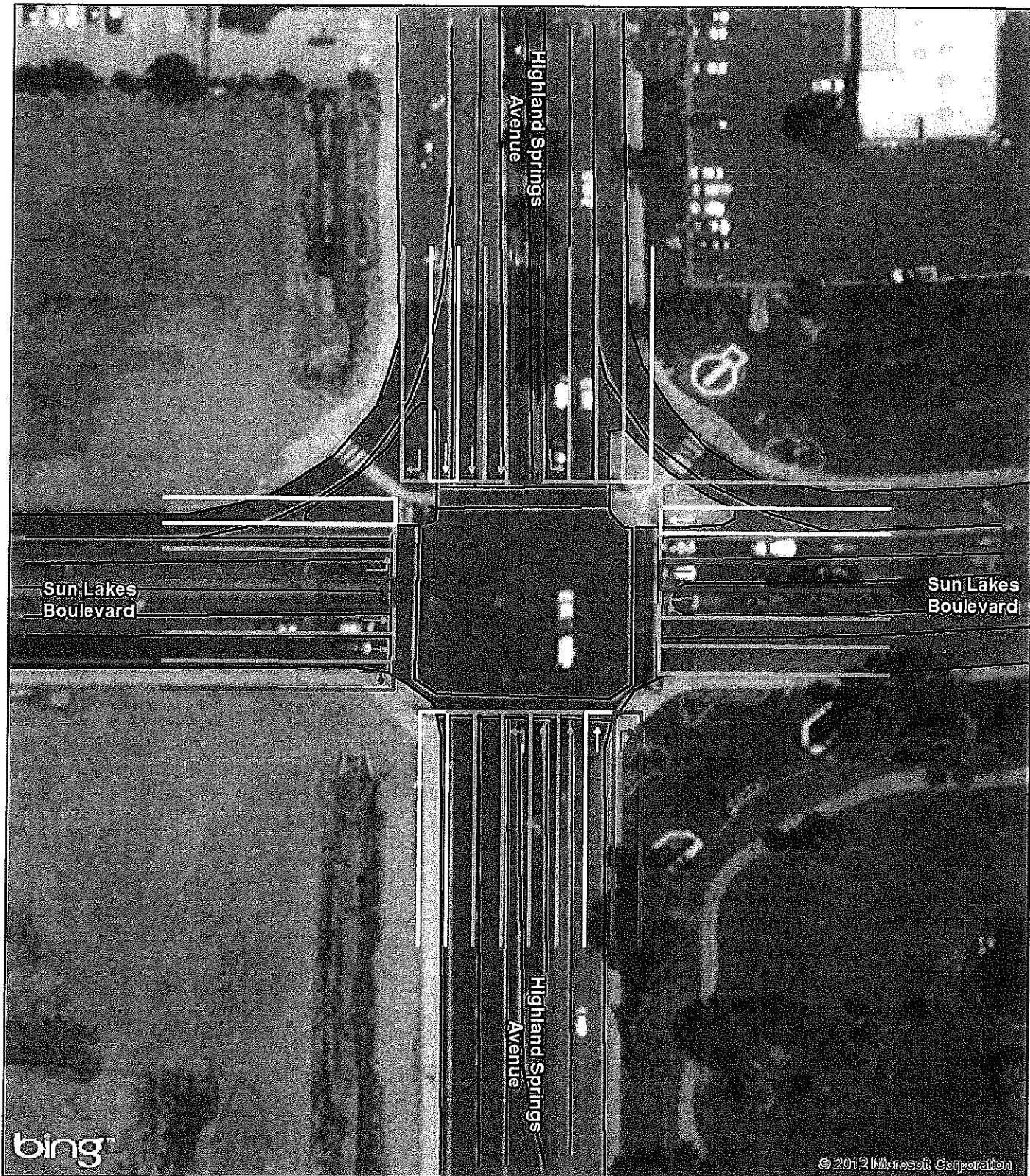
1. Highland Springs Avenue/Wilson Street
General Plan Buildout Improvements (Conceptual Plan)



SOURCE: Aerial - Bing Maps (c.2010)

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62



LSA

LEGEND

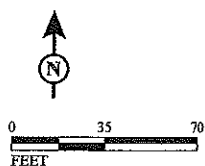
- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 8

*Banning General Plan Amendment
Change in LOS Policy*

2. Highland Springs Avenue/Sun Lakes Boulevard
General Plan Buildout Improvements (Conceptual Plan)



SOURCE: Aerial - Bing Maps (c.2010)

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6.3

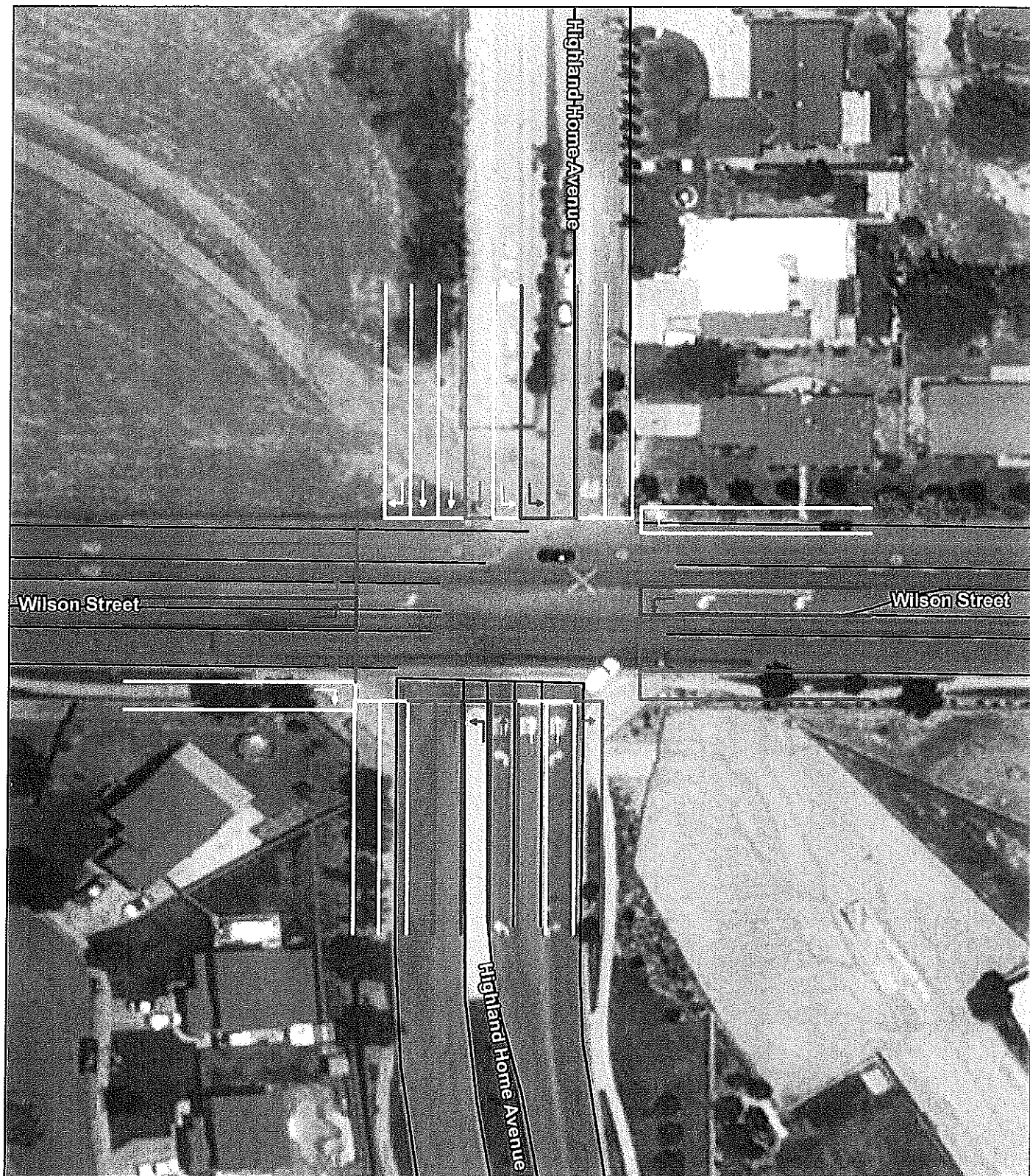


FIGURE 9

LSA

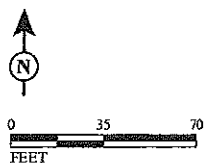
LEGEND

- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

*Banning General Plan Amendment
Change in LOS Policy*

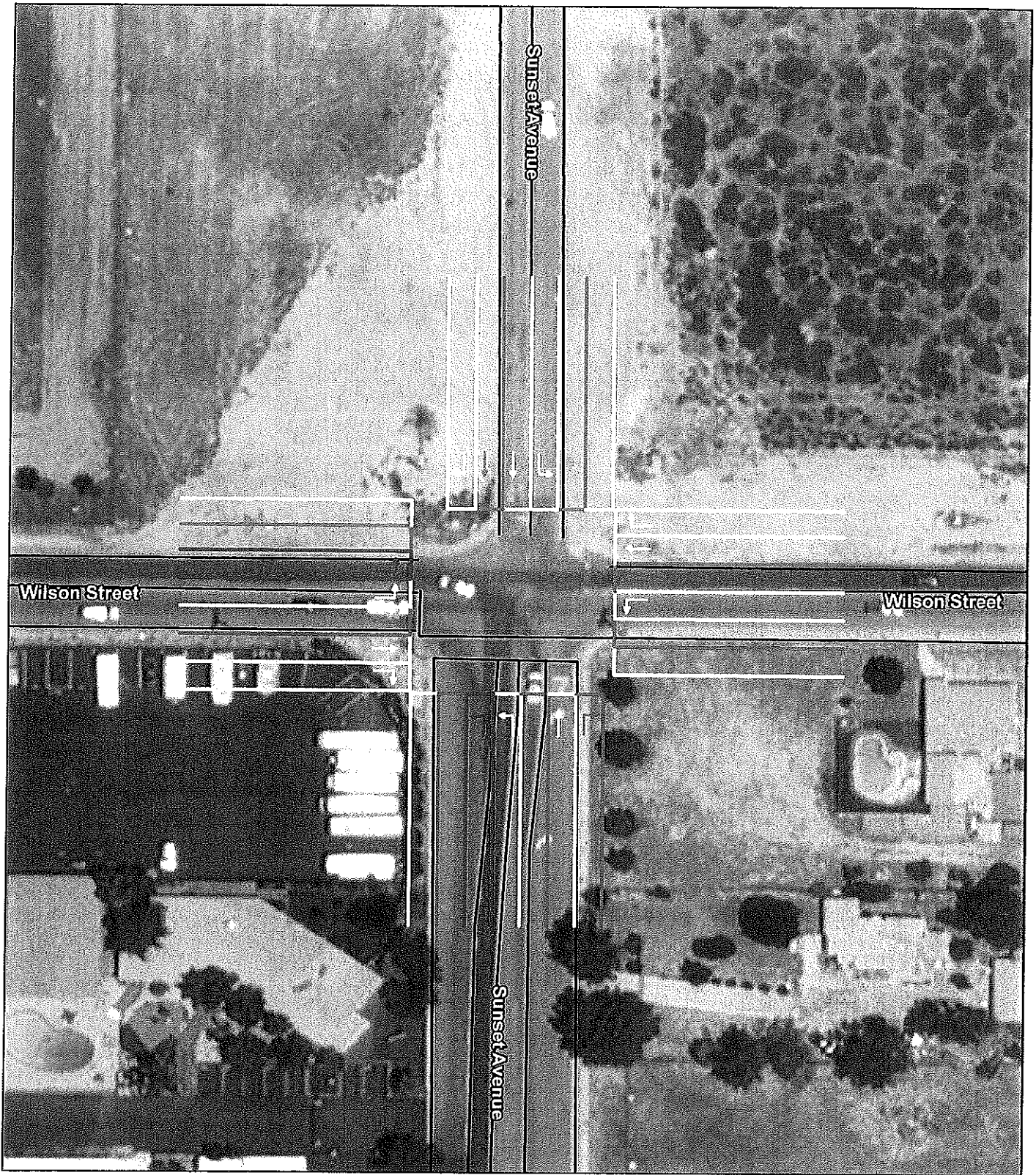
3. Highland Home Road/Wilson Street
General Plan Buildout Improvements (Conceptual Plan)



SOURCE: Aerial - Bing Maps (c.2010)

I:\COB1101\GIS\HighlandHome_Wilson.mxd (8/7/2012)

64



LSA

LEGEND

- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 10

*Banning General Plan Amendment
Change in LOS Policy*

4. Sunset Avenue/Wilson Street
General Plan Buildout Improvements (Conceptual Plan)



0 35 70
FEET

SOURCE: Aerial - Bing Maps (c.2010)

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65

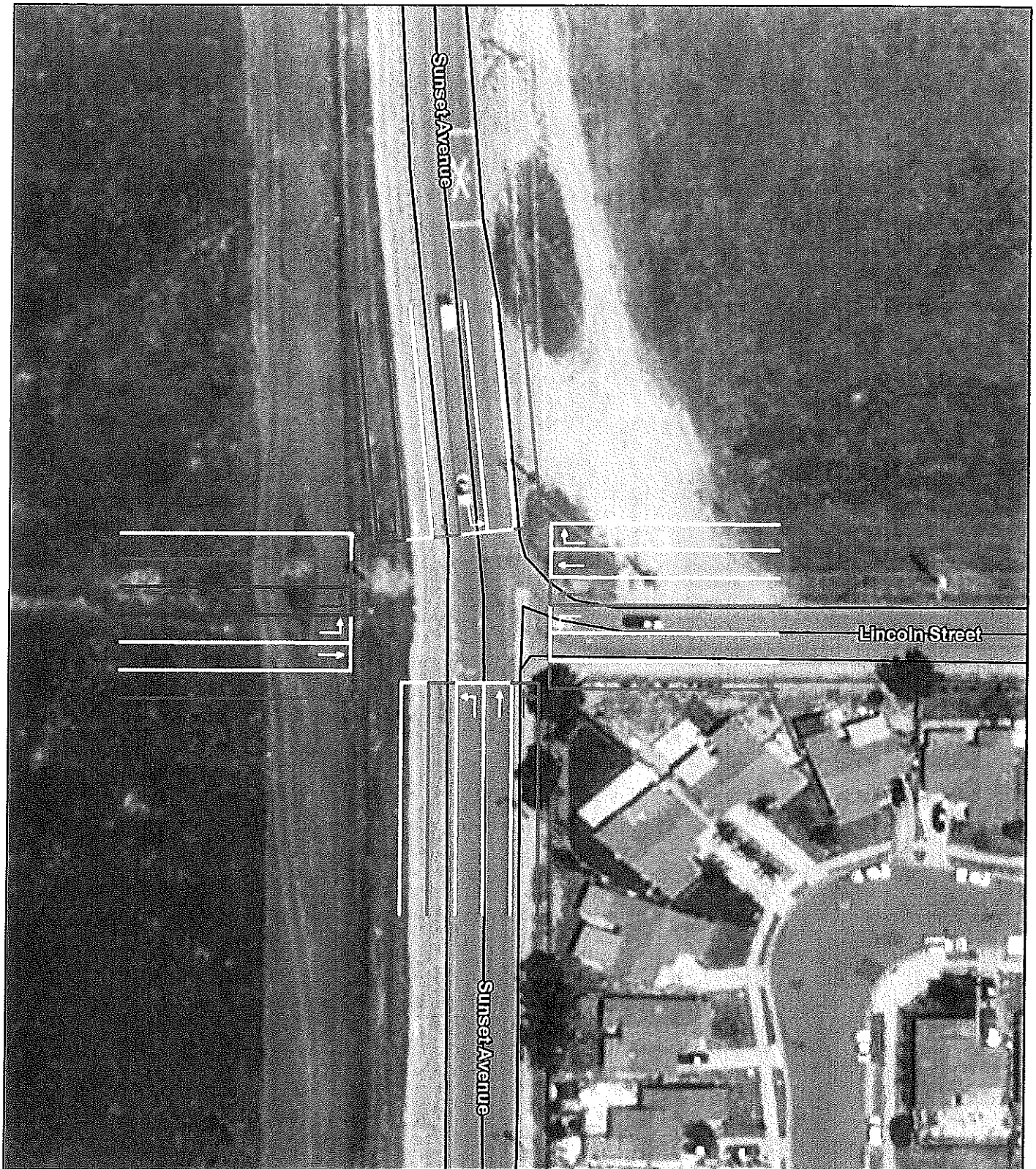


FIGURE 11

LSA

LEGEND

- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

*Banning General Plan Amendment
Change in LOS Policy*

5. Sunset Avenue/Lincoln Street
General Plan Buildout Improvements (Conceptual Plan)



0 35 70
FEET

SOURCE: Aerial - Bing Maps (c.2010)

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66



LSA

LEGEND

— Existing Roadway

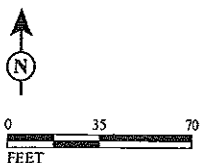
— Existing Geometrics

— LOS D Improvement

— Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 12



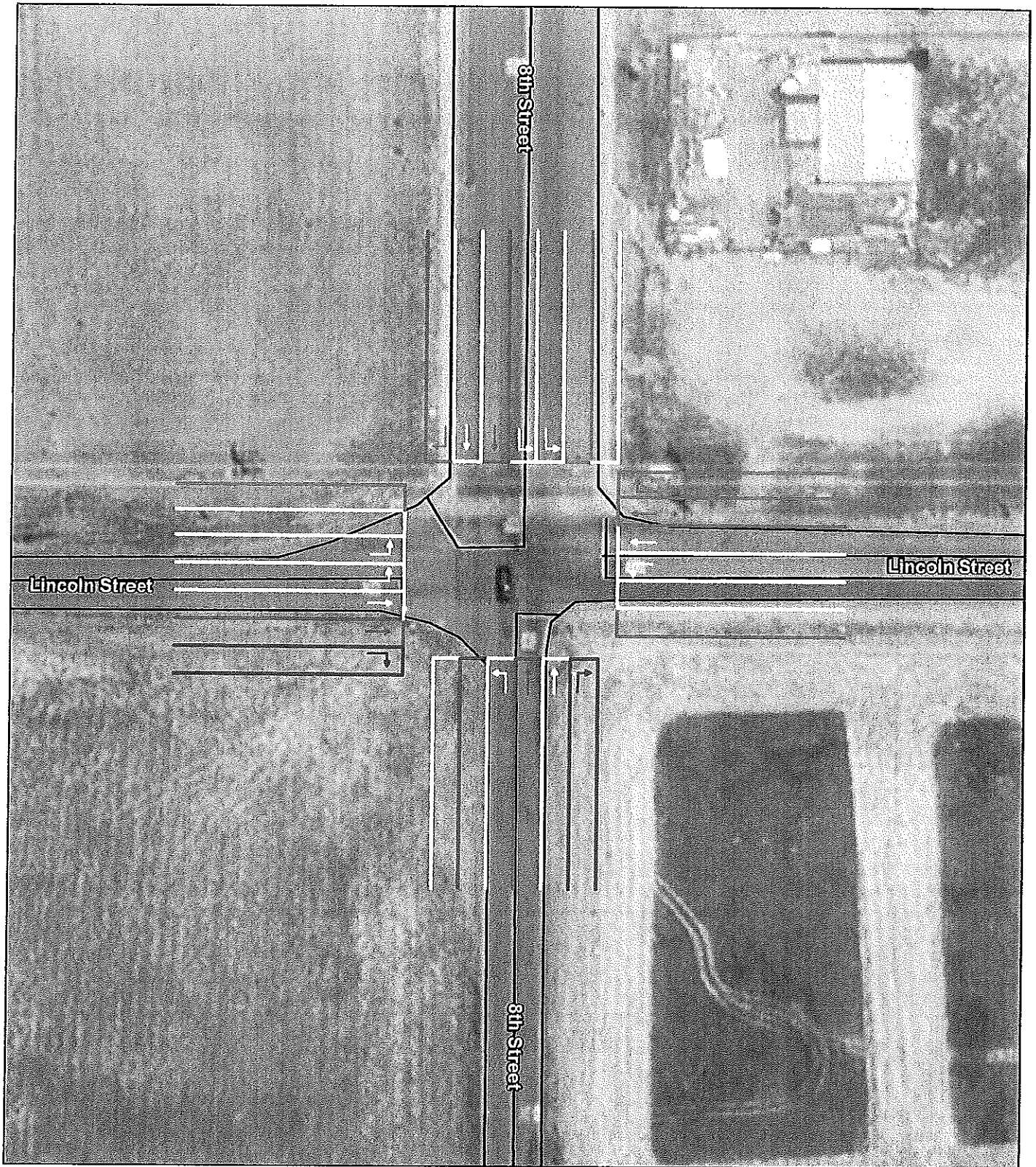
SOURCE: Aerial - Bing Maps (c.2010)

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*Banning General Plan Amendment
Change in LOS Policy*

6. 8th Street/Wilson Street
General Plan Buildout Improvements (Conceptual Plan)

67



LSA

LEGEND

- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 13



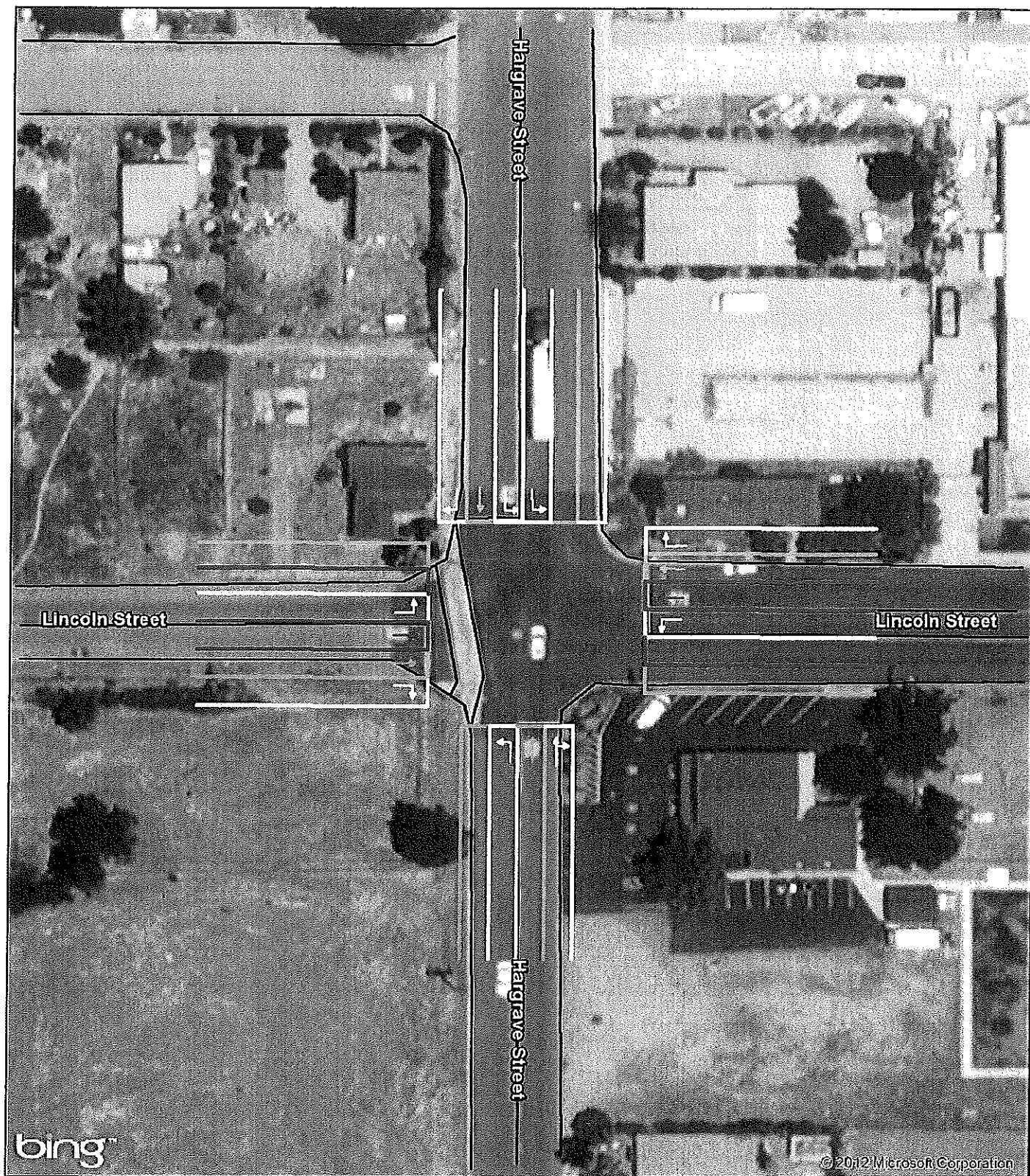
SOURCE: Aerial - Bing Maps (c.2010)

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*Banning General Plan Amendment
Change in LOS Policy*

**7. 8th Street/Lincoln Street
General Plan Buildout Improvements (Conceptual Plan)**

68



LSA

LEGEND

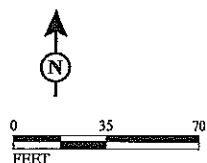
- Existing Roadway
- Existing Geometrics
- LOS D Improvement
- Additional LOS C Improvement

* Adjusting Approaches and Lane Alignments
may require additional Right of Way

FIGURE 14

*Banning General Plan Amendment
Change in LOS Policy*

8. Hargrave Street/Lincoln Street
General Plan Buildout Improvements (Conceptual Plan)



SOURCE: Aerial - Bing Maps (c.2010)

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5.0 CONCLUSION

Based on the results of this TIA, it is recommended that the City adopt the proposed change in its existing policy for acceptable LOS criteria from LOS C to LOS D for all intersections within the City. If LOS D is adopted as the acceptable LOS standard, fewer improvements and less ROW acquisition would be required to improve General Plan Buildout intersection deficiencies.

Transportation adequacy is both a technical and a public policy issue. Measuring transportation performance and adequacy also involves a policy determination regarding what level of congestion and delay is acceptable to community residents relative to the cost of reducing the congestion.

The acceptable LOS criterion for the County of Riverside is to maintain the following countywide target LOS (*Riverside County General Plan Policy C.2.1*):

LOS "C" along all County maintained roads and conventional state highways. As an exception, LOS "D" may be allowed in Community Development areas, only at intersections of any combination of Secondary Highways, Major Highways, Urban, Expressways, conventional state highways or freeway ramp intersections. LOS "E" may be allowed in designated community centers to the extent that it would support transit-oriented development and walkable Communities.

Per the County General Plan, the City of Banning is included in a Community Development area; thus, the applicable LOS standard for the region within the City would be LOS D. The LOS policy change from C to D would make the City's policy consistent with the County and other jurisdictions in the region.

The City of Beaumont has established LOS D as a target LOS standard and LOS E as a threshold standard (*Circulation Element Policy 10*). The City recognizes that not all intersections within the City can meet the target LOS D. In these instances, the City Council must find that the improvements necessary to meet the target LOS D are not feasible because of one or more of the following reasons: (1) the cost of the necessary improvements exceeds available funding sources; (2) the design of the necessary improvements is not compatible with the surrounding land uses; or, (3) the design of the necessary improvements is contrary to other established City policies.

The current LOS criterion within the City of Banning includes two standards: one is LOS D for intersections along Ramsey Street and at all I-10 interchange intersections, and the second is LOS C for the remaining intersections in the City. The benefits of changing the Citywide LOS standard from LOS C (all intersections except the ones on Ramsey Street and I-10 ramps) to LOS D are listed below:

1. Consistent LOS with the City of Beaumont along the common border of Highland Springs Avenue. The City of Beaumont has established LOS D as an acceptable LOS standard, and if the City of Banning adopts the LOS D standard, the same LOS standard will then be applicable to all intersections along Highland Springs Avenue (the border between the two cities). Currently, the intersection configuration required to maintain the LOS standard at each location is different for both Cities since the LOS standard is different. The change in LOS policy (from LOS C to LOS D) will result in uniform intersection configuration at intersections along Highland Springs Avenue.

2. The change in LOS (from LOS C to LOS D) will reduce the Capital Improvement Cost and physical impact for improving an intersection to acceptable LOS per City's General Plan Policy.
3. The reduction in the Capital Improvement Cost will result in lower traffic impact fee.
4. Drivers will experience consistent LOS conditions. Without the LOS policy change, drivers would experience different LOS standards at intersections within the City. For example, if a driver traveling through the City intersections (LOS C standard) reaches an intersection along Ramsey Street or a ramp intersection (along I-10), the minor changes (increases) in delay and congestion levels that are acceptable at these locations (LOS D standard) will appear to be exaggerated (more than they really are) to the driver since he has been experiencing slightly lower levels of delay and congestion at intersections throughout the City. The change in LOS (from C to D) will eliminate this perceived exaggeration from the overall driver experience within the City.

ATTACHMENT 3

Traffic Impact Analysis for the Banning General Plan Redesignation of the Highland Home Road at Interstate 10 from an Interchange to an Overcrossing

TRAFFIC IMPACT ANALYSIS

BANNING GENERAL PLAN AMENDMENT REDESIGNATION OF HIGHLAND HOME ROAD AT INTERSTATE 10 FROM AN INTERCHANGE TO AN OVERCROSSING

**CITY OF BANNING
RIVERSIDE COUNTY, CALIFORNIA**

Prepared for:

City of Banning
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LSA Project No. COB1101

LSA

September 2012

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EXECUTIVE SUMMARY

This traffic impact analysis (TIA) has been prepared to assess a proposed amendment to the adopted City of Banning (City) General Plan Circulation Element (adopted in January 2006). According to the current General Plan Circulation Element, Highland Home Road is shown to be extended from Ramsey Street to Lincoln Street and will provide access (via interchange) to Interstate 10 (I-10). The City is proposing to eliminate the interchange and maintain an overcrossing. This removal of interchange (while retaining the overcrossing) is being considered due to the likely unfeasible nature of an interchange at the I-10 freeway. The interchange is likely unfeasible due to approval criteria required from the California Department of Transportation (Caltrans) and the technical feasibility, which has been documented in preliminary engineering studies prepared by the City. Due to the questionable status of the potential circulation improvement, this evaluation addresses the impacts to the balance of the City's circulation system if the interchange is deleted while retaining the overcrossing.

Traffic conditions were analyzed at 16 intersections for a.m. and p.m. peak hours for the following scenarios:

- General Plan Buildout with I-10/Highland Home Road Interchange conditions
- General Plan Buildout with Highland Home Road Overcrossing conditions
- General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Road) conditions

Mitigation measures are provided in the study for both level of service (LOS) C and LOS D.

Based on the results of the TIA, it is recommended that the proposed I-10/Highland Home Road interchange be eliminated while retaining the overcrossing. The Highland Home Road Overcrossing would result in fewer improvements, less right-of-way acquisition, and lower construction costs.

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1.0 INTRODUCTION AND SUMMARY

1.1 Purpose of Report and Study Objective

This traffic impact analysis (TIA) has been prepared to assess a proposed amendment to the adopted City of Banning (City) General Plan Circulation Element (adopted in January 2006). According to the current General Plan Circulation Element, Highland Home Road will be extended from Ramsey Street to Lincoln Street and will provide access (via interchange) to Interstate 10 (I-10). The City is proposing the removal of the I-10/Highland Home Road interchange while retaining the overcrossing.

This report includes analysis of the following three scenarios to satisfy the requirements for the disclosure of potential impacts and mitigation measures per the California Environmental Quality Act (CEQA).

- General Plan Buildout with I-10/Highland Home Road Interchange (current General Plan) condition
- General Plan Buildout with Highland Home Road Overcrossing condition
- General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Road) condition

This study analyzes a.m. and p.m. peak-hour conditions for General Plan Buildout with the I-10/Highland Home Interchange, with the Highland Home Overcrossing, and with neither.

2.0 STUDY AREA

2.1 Study Area Intersections

Intersections along Highland Home Road (north and south of I-10), Highland Springs Avenue (interchange just west of Highland Home Road), and Sunset Avenue (interchange just east of Highland Home Road) were included in the analysis in order to assess the impacts of the removal of the I-10/Highland Home Road interchange. The study area includes the following intersections, as illustrated in Figure 1:

1. Highland Springs Avenue/Wilson Street
2. Highland Springs Avenue/Ramsey Street
3. Highland Springs Avenue/I-10 Westbound Ramps
4. Highland Springs Avenue/I-10 Eastbound Ramps
5. Highland Springs Avenue/Sun Lakes Boulevard
6. Highland Home Road/Wilson Street
7. Highland Home Road/Ramsey Street
8. Highland Home Road/Sun Lakes Boulevard–Westward Avenue
9. Sunset Avenue/Wilson Street
10. Sunset Avenue/Ramsey Street

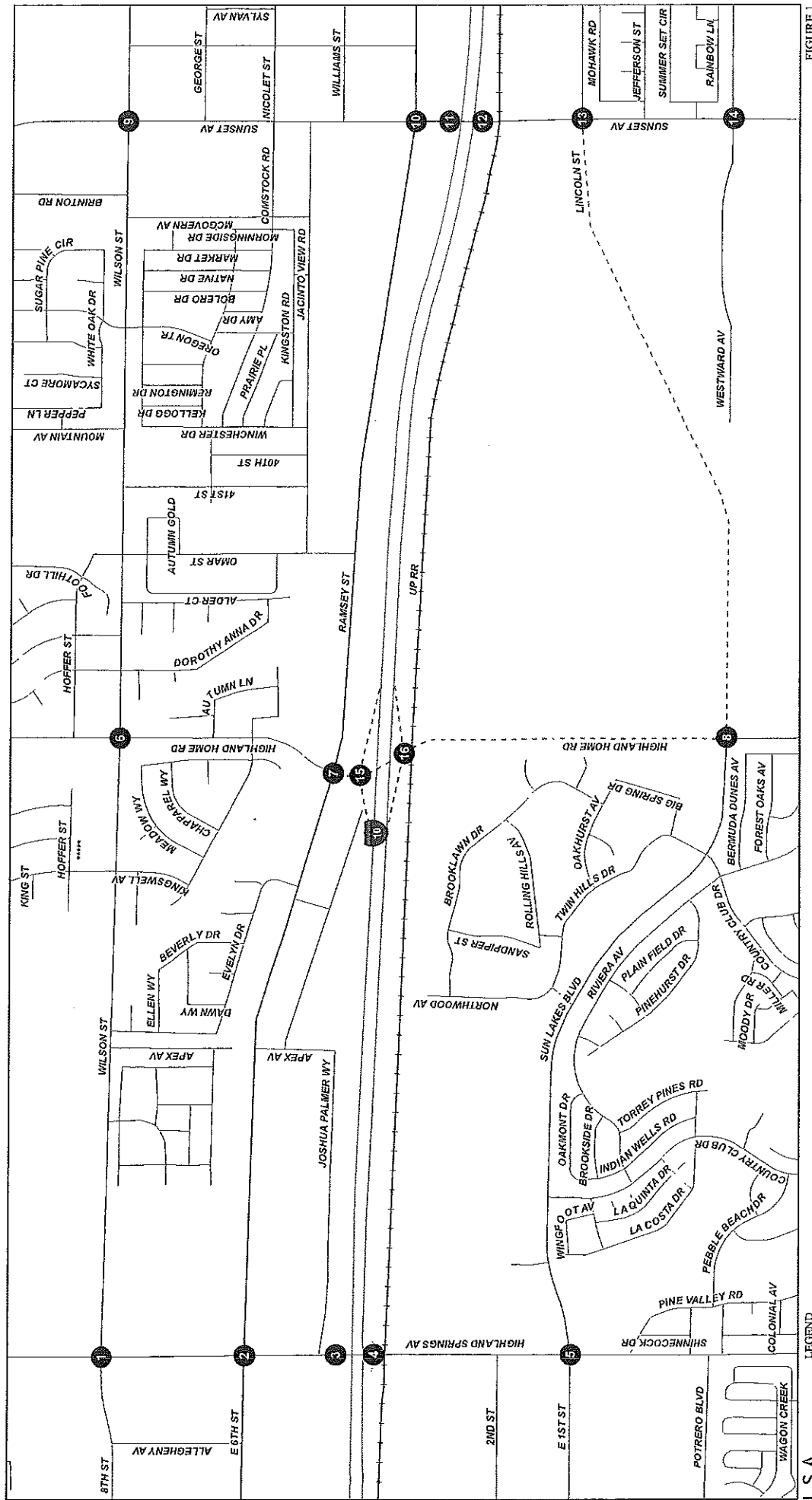


FIGURE 1

Banning General Plan Amendment
Removal of I-10/Highland Home Road Interchange
Study Area Intersections

SOURCE: Thomas Bros. (2010)
B:\C01101\GIS\StudyArea\Intersections.mxd (12/1/2011)

11. Sunset Avenue/I-10 Westbound Ramps
12. Sunset Avenue/I-10 Eastbound Ramps
13. Sunset Avenue/Lincoln Street
14. Sunset Avenue/Westward Avenue
15. Highland Home Road/I-10 Westbound Ramps
16. Highland Home Road/I-10 Eastbound Ramps

2.2 Intersection Levels of Service: Definition and Criteria

Intersection operations and the relationship between capacity and traffic volumes are generally expressed in terms of levels of service (LOS), which are defined using the letter grades A through F. These levels recognize that, while an absolute limit exists as to the amount of traffic traveling through a given intersection (the absolute capacity), the conditions that motorists experience rapidly deteriorate as traffic approaches the absolute capacity. Under such conditions, congestion is experienced. There is general instability in the traffic flow, which means that relatively small incidents (e.g., momentary engine stall) can cause considerable fluctuations in speeds and delays. This near-capacity situation is labeled LOS E. Beyond LOS E, capacity has been exceeded, and arriving traffic will exceed the ability of the intersection to accommodate it. An upstream queue will then form and continue to expand in length until the demand volume again declines.

A complete description of the meaning of level of service can be found in the Transportation Research Board Special Report 209, *Highway Capacity Manual*. The Manual establishes LOS A through F. Brief descriptions of the six levels of service, as abstracted from the Manual, are provided below.

LOS	Description
A	No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Typically, the approach appears quite open, turns are made easily, and nearly all drivers find freedom of operation.
B	This service level represents stable operation, where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.
C	This level still represents stable operating conditions. Occasionally, drivers may have to wait through more than one red signal indication, and backups may develop behind turning vehicles. Most drivers feel somewhat restricted but not objectionably so.
D	This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak period; however, enough cycles with lower demand occur to permit periodic clearance of developing queues, thus preventing excessive backups.
E	Capacity occurs at the upper end of this service level. It represents the most vehicles that any particular intersection approach can accommodate. Full utilization of every signal cycle is seldom attained no matter how great the demand.
F	This level describes forced flow operations at low speeds, where volumes exceed capacity. These conditions usually result from queues of vehicles backing up from a restriction downstream. Speeds are reduced substantially and stoppages may occur for short or long periods of time due to the congestion. In the extreme case, both speed and volume can drop to zero.

The LOS criteria for unsignalized and signalized intersections are shown below.

LOS	Unsignalized Intersection Average Delay per Vehicle (seconds)	Signalized Intersection Average Delay per Vehicle (seconds)
A	≤ 10.0	≤ 10.0
B	> 10.0 and ≤ 15.0	> 10.0 and ≤ 20.0
C	> 15.0 and ≤ 25.0	> 20.0 and ≤ 35.0
D	> 25.0 and ≤ 35.0	> 35.0 and ≤ 55.0
E	> 35.0 and ≤ 50.0	> 55.0 and ≤ 80.0
F	> 50.0	> 80.0

Consistent with Riverside County guidelines, all study area intersections were analyzed using the 2000 *Highway Capacity Manual* (HCM 2000) analysis methodologies. Intersection LOS was calculated using Traffix software.

According to the current City General Plan Circulation Element, within the study area, LOS C is considered the upper limit of satisfactory operations except for intersections along Ramsey Street and interchange intersections along I-10, where LOS D is considered satisfactory.

3.0 GENERAL PLAN BUILDOUT CONDITIONS

Consistent with the previous TIA included in the adopted General Plan, the future General Plan Buildout conditions at all study area intersections were analyzed using existing intersection configurations illustrated in Figure 2.

The traffic volumes for analyzing the study area intersections for General Buildout with I-10/Highland Home Road Interchange, with Highland Home Road Overcrossing conditions, as well as with neither, were developed from the Pass Area Traffic Model, which was used in developing traffic volumes in the adopted General Plan TIA.

The future traffic forecast for the Circulation Element of the adopted Banning General Plan (updated June 2005) was developed based on the Pass Area Model (PAM), which is an intensified/detailed version of the Riverside County Integrated Project (RCIP). This model has been used to develop General Plan build-out conditions traffic volumes for this General Plan update. PAM is a Tranplan model, which includes the Pass Area street network and Traffic Analysis Zones (TAZs). Each TAZ contains land use information, and the traffic that the land use would generate.

Following model runs were obtained from PAM to develop forecast traffic volumes for the General Plan build-out year scenario:

- General Plan Build-Out Year with I-10/Highland Home Road Interchange; and
- General Plan Build-Out Year without I-10/Highland Home Road Interchange and Overcrossing (No Road).

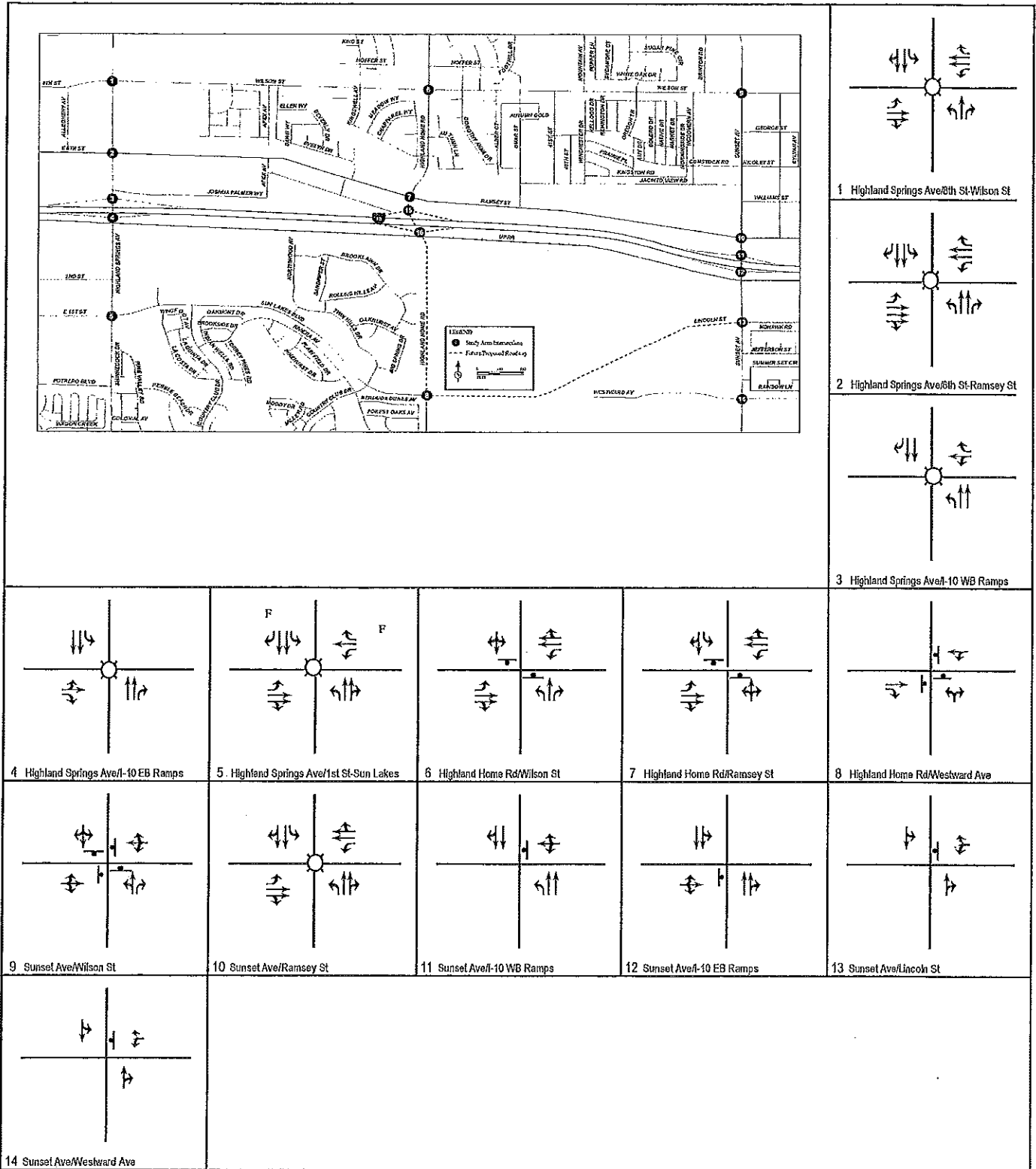


FIGURE 2

Banning General Plan Amendment

Existing Intersection Geometries

Peak-hour turning movement volumes (a.m. and p.m. peak hours) obtained from the model runs were used to develop turning movement volumes at study intersections for build-out year peak hour conditions. The model turning movement volumes at some study intersections were adjusted to refine minor discrepancies.

The traffic volumes for 'Highland Home Road Overcrossing scenario' were developed using the traffic volumes from the 'With Highland Home Road Interchange scenario.' The ramp volumes on the Highland Home Road interchange were reassigned to adjacent ramps (Highland Springs Avenue and Sunset Avenue) while the assignment of north-south through traffic remained unchanged during the conversion (development) of the traffic volume from 'Interchange scenario' to 'Overcrossing scenario.'

3.1 General Plan Buildout with I-10/Highland Home Road Interchange Conditions LOS

Figure 3 illustrates the a.m. and p.m. peak-hour volumes for General Plan Buildout with I-10/Highland Home Road Interchange conditions. An LOS analysis was conducted to evaluate the peak-hour traffic operations at the study area intersections. The LOS worksheets for analysis scenarios are provided in Appendix A. Table A summarizes the results of this analysis. As shown in this table, 11 study area intersections will exceed LOS thresholds. The following five intersections will operate at satisfactory LOS:

- Highland Springs Avenue/I-10 Westbound Ramps
- Highland Springs Avenue/I-10 Eastbound Ramps
- Sunset Avenue/Westward Avenue
- Highland Home Road/I-10 Westbound Ramps
- Highland Home Road/I-10 Eastbound Ramps

The LOS results include traffic demand from complete buildout of the General Plan and existing intersection geometrics.

3.2 General Plan Buildout with Highland Home Road Overcrossing Conditions LOS

Figure 4 illustrates the a.m. and p.m. peak-hour volumes for General Plan Buildout with Highland Home Road Overcrossing conditions. An LOS analysis was conducted to evaluate the peak-hour traffic operations at the study area intersections. Table B summarizes the results of this analysis. As shown in this table, all study area intersections will exceed LOS thresholds, with the exception of Sunset Avenue/Westward Avenue.

3.3 General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Connection) Conditions LOS

Figure 5 illustrates the a.m. and p.m. peak-hour volumes for General Plan Buildout without I-10/Highland Home Road Interchange conditions. An LOS analysis was conducted to evaluate the peak-hour traffic operations at the study area intersections. Table C summarizes the results of this analysis.

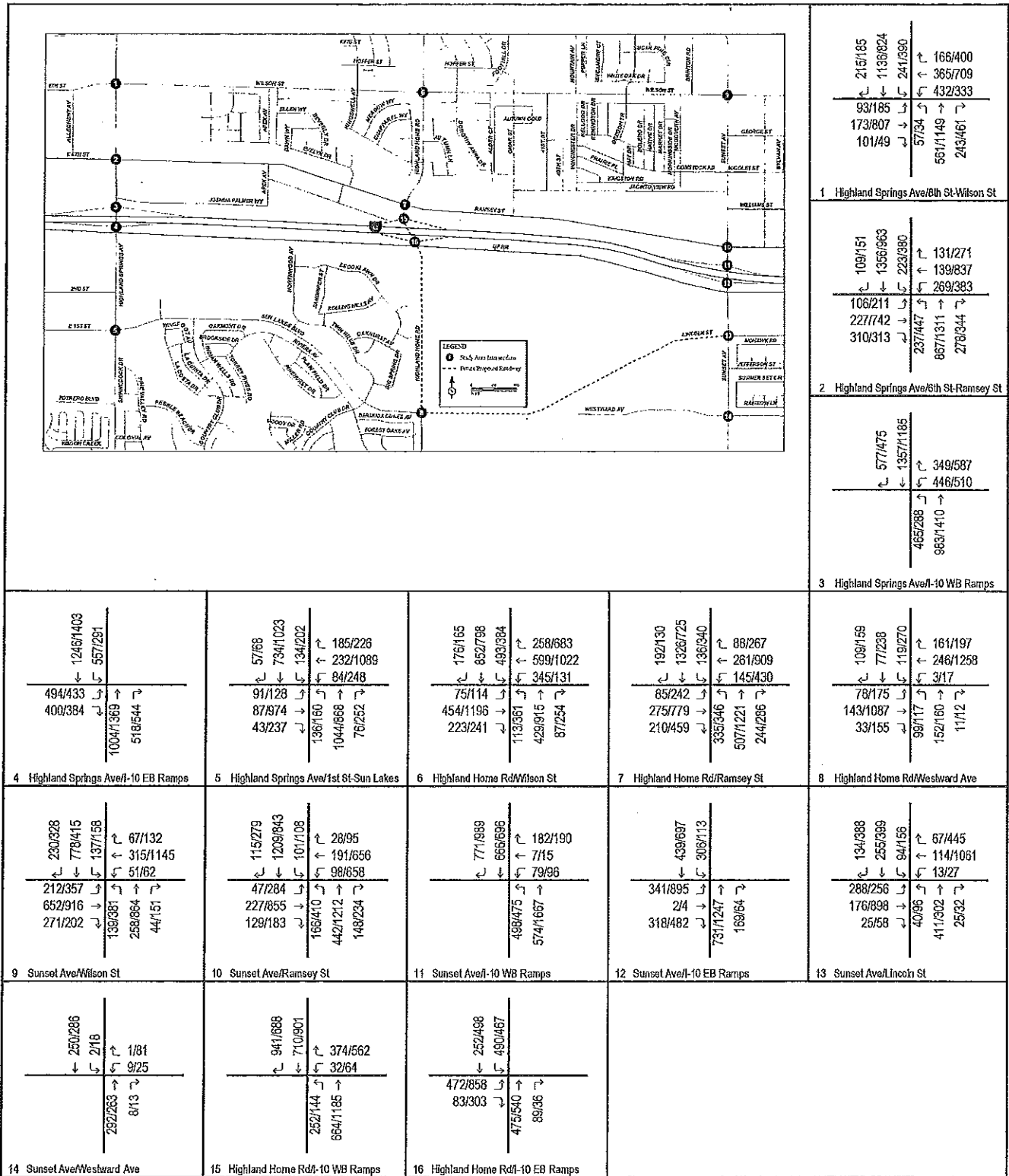


FIGURE 3


Legend
 xxx/yyy AM/PM Peak Hour Volume

Banning General Plan Amendment
 General Plan Buildout Peak Hour Volumes
 With I-10/Highland Home Road Interchange

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**Table A: General Plan Buildout Intersection LOS Summary
With I-10/Highland Home Road Interchange**

Intersection	Baseline				
	Control	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
1 Highland Springs Avenue/Wilson Street	Signal	43.5 sec	D	>80.0 sec	F
2 Highland Springs Avenue/Ramsey Street ¹	Signal	54.0 sec	D	>80.0 sec	F
3 Highland Springs Avenue/I-10 WB Ramps ¹	Signal	49.9 sec	D	42.2 sec	D
4 Highland Springs Avenue/I-10 EB Ramps ¹	Signal	49.7 sec	D	32.1 sec	C
5 Highland Springs Avenue/Sun Lakes Blvd	Signal	24.3 sec	C	>80.0 sec	F
6 Highland Home Road/Wilson Street	TWSC	>50.0 sec	F	>50.0 sec	F
7 Highland Home Road/Ramsey Street ¹	TWSC	>50.0 sec	F	>50.0 sec	F
8 Highland Home Road/Westward Avenue	AWSC	17.6 sec	C	>50.0 sec	F
9 Sunset Avenue/Wilson Street	AWSC	>50.0 sec	F	>50.0 sec	F
10 Sunset Avenue/Ramsey Street ¹	Signal	19.9 sec	B	>80.0 sec	F
11 Sunset Avenue/I-10 WB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
12 Sunset Avenue/I-10 EB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
13 Sunset Avenue/Lincoln Street	TWSC	>50.0 sec	F	>50.0 sec	F
14 Sunset Avenue/Westward Avenue	TWSC	12.1 sec	B	11.4 sec	B
15 Highland Home Road/I-10 WB Ramps ¹	Signal	17.6 sec	B	6.1 sec	A
16 Highland Home Road/I-10 EB Ramps ¹	Signal	28.0 sec	C	31.1 sec	C

 = exceeds City's of level of service (LOS) criteria

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

N/A = not applicable. Future intersection to be analyzed as part of LOS C and LOS D mitigations.

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

84

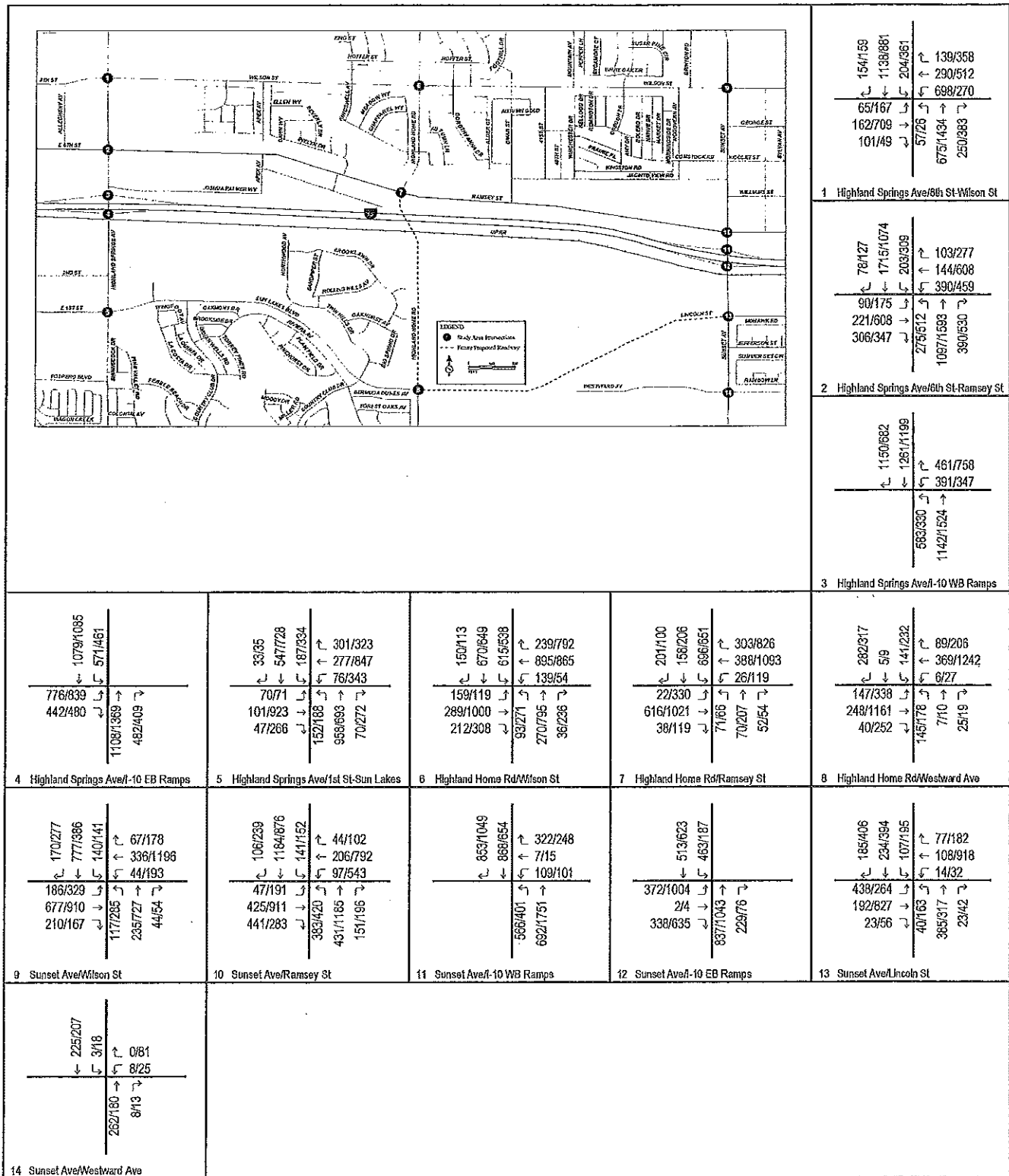


FIGURE 4

Legend

xxx/yyy AM/PM Peak Hour Volume

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General Plan Buildout Peak Hour Volumes With Highland Home Road Overcrossing

**Table B: General Plan Buildout Intersection LOS Summary
With Highland Home Road Overcrossing**

Intersection		Baseline				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	77.1 sec	F	>80.0 sec	F
2	Highland Springs Avenue/Ramsey Street ¹	Signal	>80.0 sec	F	>80.0 sec	F
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	>80.0 sec	F	77.1 sec	E
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	>80.0 sec	F	>80.0 sec	F
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	27.4 sec	C	>80.0 sec	F
6	Highland Home Road/Wilson Street	TWSC	>50.0 sec	F	>50.0 sec	F
7	Highland Home Road/Ramsey Street ¹	TWSC	>50.0 sec	F	>50.0 sec	F
8	Highland Home Road/Westward Avenue	AWSC	42.2 sec	F	>50.0 sec	F
9	Sunset Avenue/Wilson Street	AWSC	>50.0 sec	F	>50.0 sec	F
10	Sunset Avenue/Ramsey Street ¹	Signal	>80.0 sec	F	>80.0 sec	F
11	Sunset Avenue/I-10 WB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
12	Sunset Avenue/I-10 EB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
13	Sunset Avenue/Lincoln Street	TWSC	>50.0 sec	F	>50.0 sec	F
14	Sunset Avenue/Westward Avenue	TWSC	11.8 sec	B	10.4 sec	B

■ = exceeds City's of level of service (LOS) criteria

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

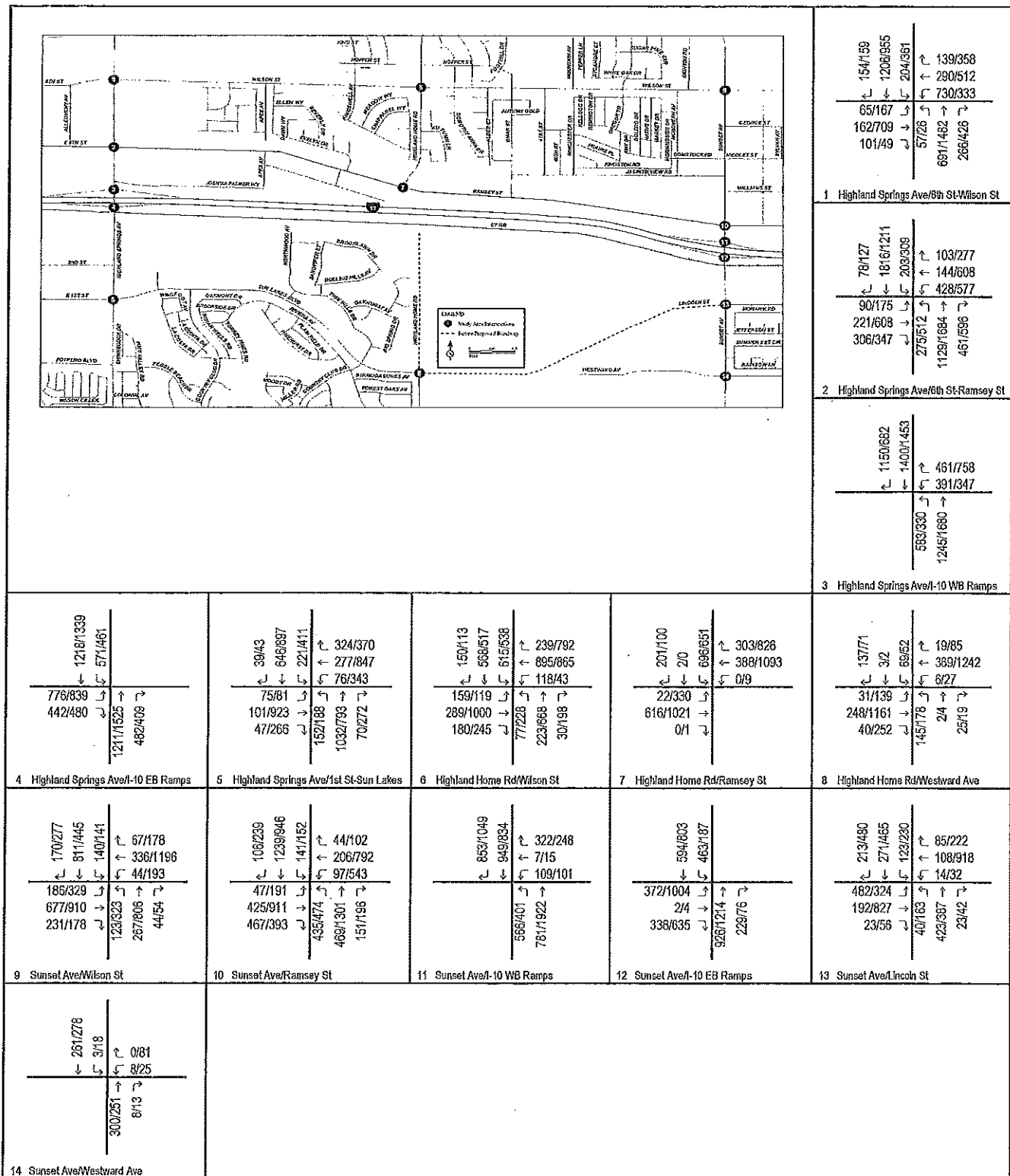


FIGURE 5

Legend

xxx/yyy AM/PM Peak Hour Volume


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General Plan Buildout Peak Hour Volumes

Without I-10/Highland Home Road Interchange/Overcrossing (No Connection)

Table C: General Plan Buildout Intersection LOS Summary
Without I-10/Highland Home Road Interchange/Overcrossing (No Connection)

Intersection		Control	Baseline			
			AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	>80.0 sec	F	>80.0 sec	F
2	Highland Springs Avenue/Ramsey Street ¹	Signal	>80.0 sec	F	>80.0 sec	F
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	>80.0 sec	F	>80.0 sec	F
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	>80.0 sec	F	>80.0 sec	F
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	28.2 sec	C	>80.0 sec	F
6	Highland Home Road/Wilson Street	TWSC	>50.0 sec	F	>50.0 sec	F
7	Highland Home Road/Ramsey Street ¹	TWSC	>50.0 sec	F	>50.0 sec	F
8	Highland Home Road/Westward Avenue	AWSC	14.4 sec	B	>50.0 sec	F
9	Sunset Avenue/Wilson Street	AWSC	>50.0 sec	F	>50.0 sec	F
10	Sunset Avenue/Ramsey Street ¹	Signal	>80.0 sec	F	>80.0 sec	F
11	Sunset Avenue/I-10 WB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
12	Sunset Avenue/I-10 EB Ramps ¹	TWSC	>50.0 sec	F	>50.0 sec	F
13	Sunset Avenue/Lincoln Street	TWSC	>50.0 sec	F	>50.0 sec	F
14	Sunset Avenue/Westward Avenue	TWSC	12.6 sec	B	0.9 sec	B

 = exceeds City's of level of service (LOS) criteria

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

As shown in Table C, all study area intersections will exceed LOS thresholds, with the exception of Sunset Avenue/Westward Avenue.

4.0 MITIGATION MEASURES

The current General Plan traffic study lists mitigation measures to improve the intersection LOS in the General Plan Buildout conditions. Some of these measures have already been implemented, while others will be implemented as development is undertaken in the future. The Highland Springs Avenue Corridor and I-10 interchange is an example of such a location where interim traffic operations improvements (signal coordination and phasing) have been implemented, and a Project Study Report (PSR) is currently underway for studying alternatives for improving the interchange in the long term.

These improvements have been undertaken in coordination and cooperation with Beaumont since Highland Springs is the municipal boundary. These improvements are intended to improve the flow of traffic and reduce congestion along this corridor.

At any intersection that is projected to operate at an unsatisfactory LOS, the City requires that improvements be identified to maintain conformance with LOS standards. Discussions on necessary improvements required at each deficient intersection are provided below. It should be noted that signal timing/phasing changes may also be required. Only physical intersection improvements (i.e., additional lanes) are listed below.

4.1 General Plan Buildout with Highland Home Road Interchange

LOS C Mitigation Requirements. The adopted City General Plan Circulation Element identified the following mitigation measures, as shown in Figure 6, to improve the deficient study area intersection LOS to LOS C:

- **Highland Springs Avenue/Wilson Street:** Add two northbound through lanes, a second southbound left-turn lane, a third southbound through lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a designated northbound right-turn lane, a second southbound left-turn lane, a third southbound through lane, a second eastbound left-turn lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound left-turn lane, two northbound through lanes, two southbound left-turn lanes, two southbound through lanes, a designated southbound right-turn lane, a second eastbound left-turn lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a designated westbound right-turn lane.
- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, two eastbound through lanes, and two westbound through lanes.

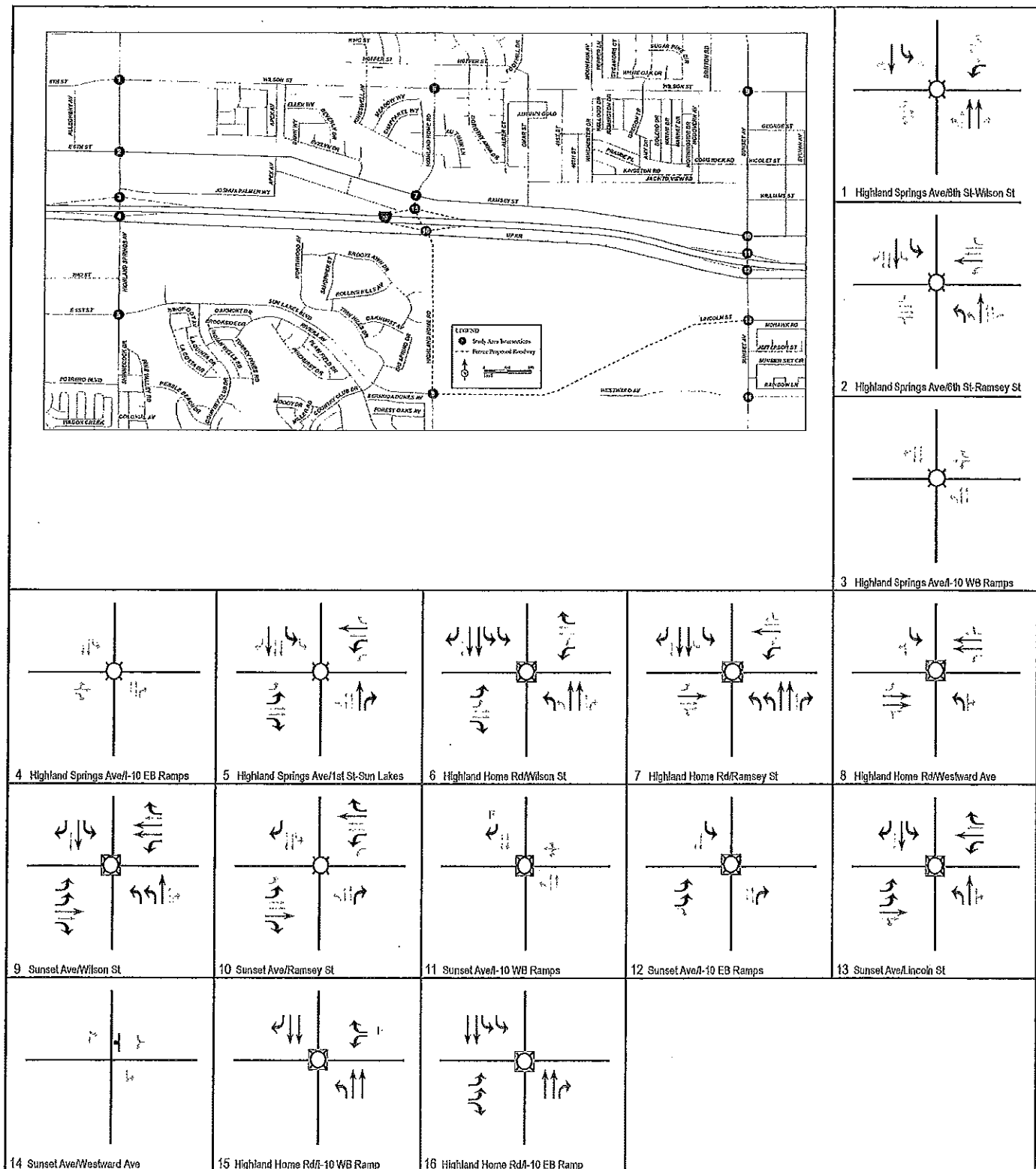


FIGURE 6

Legend

- | | | | |
|---|------------|---|---------------------------------|
| □ | Signal | ↑ | Existing Geometrics |
| + | Stop Sign | ↑ | LOS D Mitigation |
| F | Free Right | ↑ | Additional Mitigation for LOS C |
| | | ↑ | Future Geometrics |

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General Plan Buildout with Mitigations Intersection Geometrics
With I-10/Highland Home Road Interchange

- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, two westbound through lanes, and a designated westbound right-turn lane.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

The intersections along Ramsey Street and the I-10 interchange intersections operate at unacceptable LOS with existing geometrics and will require improvements to mitigate the deficiencies to acceptable LOS D. The improvements to these intersections are included in the next section, which discusses LOS D requirements.

Table D summarizes the results of the General Plan Buildout with the I-10/Highland Home Road Interchange and LOS C Improvements analysis.

LOS D Mitigation Requirements. In order to mitigate the intersection deficiencies under General Plan Buildout with I-10/Highland Home Road Interchange conditions to the proposed LOS standard of LOS D, the following improvements would be needed, as shown in Figure 6:

- **Highland Springs Avenue/Wilson Street:** Add two northbound through lanes, a second southbound left-turn lane, and a third southbound through lane.
- **Highland Springs Avenue/Ramsey Street:** Add a second northbound left-turn lane, a third northbound through lane, a second southbound left-turn lane, a third southbound through lane, and a third westbound through lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a third southbound through lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add two northbound through lanes, a southbound left-turn lane, two southbound through lanes, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a designated westbound right-turn lane.
- **Highland Home Road/Ramsey Street:** Install a traffic signal. Add two northbound left-turn lanes, two northbound through lanes, a designated northbound right-turn lane, a second southbound left-turn lane, two southbound through lanes, a designated southbound right-turn lane, a third eastbound through lane, a second westbound left-turn lane, and a third westbound through lane.
- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, a second eastbound through lane, and a second westbound through lane.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane,

**Table D: General Plan Buildout Intersection LOS C Summary
With I-10/Highland Home Road Interchange**

Intersection		With LOS C Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	28.2 sec	C	35.0 sec	C
2	Highland Springs Avenue/Ramsey Street ¹	Signal	35.1 sec	D	45.4 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	49.9 sec	D	42.2 sec	D
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	49.7 sec	D	32.1 sec	C
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	26.6 sec	C	33.4 sec	C
6	Highland Home Road/Wilson Street	Signal	29.8 sec	C	33.1 sec	C
7	Highland Home Road/Ramsey Street ¹	Signal	28.8 sec	C	40.9 sec	D
8	Highland Home Road/Westward Avenue	Signal	30.0 sec	C	32.6 sec	C
9	Sunset Avenue/Wilson Street	Signal	28.5 sec	C	34.3 sec	C
10	Sunset Avenue/Ramsey Street ¹	Signal	24.4 sec	C	43.8 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	28.8 sec	C	34.3 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	28.7 sec	C	30.8 sec	C
13	Sunset Avenue/Lincoln Street	Signal	27.5 sec	C	29.3 sec	C
14	Sunset Avenue/Westward Avenue	TWSC	12.1 sec	B	11.4 sec	B
15	Highland Home Road/I-10 WB Ramps ¹	Signal	17.6 sec	B	6.1 sec	A
16	Highland Home Road/I-10 EB Ramps ¹	Signal	28.0 sec	C	31.1 sec	C

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹Intersection with LOS D criteria.

a designated southbound right-turn lane, an eastbound left-turn lane, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

- **Sunset Avenue/Ramsey Street:** Add a designated northbound right-turn lane, a designated southbound right-turn lane, a second eastbound left-turn lane, a third eastbound through lane, a designated eastbound right-turn lane, a second westbound left-turn lane, a third westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/I-10 Westbound Ramps:** Install a traffic signal and add a free southbound right-turn lane.
- **Sunset Avenue/I-10 Eastbound Ramps:** Install a traffic signal. Add a designated northbound right-turn lane, a southbound left-turn lane, and two eastbound left-turn lanes.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, an eastbound left-turn lane, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

Table E summarizes the results of the General Plan Buildout with I-10/Highland Home Road Interchange and LOS D Improvements analysis. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10.

Figure 6 illustrates the General Plan Buildout with mitigation intersection geometrics and control (with I-10/Highland Home Road Interchange). If LOS D is adopted as the acceptable City LOS standard, fewer mitigation measures would be required to improve the intersection deficiencies.

4.2 General Plan Buildout with Highland Home Road Overcrossing

LOS C Mitigation Requirements. The following mitigation measures, as shown in Figure 7, improve the deficient study area intersection LOS to LOS C:

- **Highland Springs Avenue/Wilson Street:** Add two northbound through lanes, a second southbound left-turn lane, a designated southbound right-turn lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a designated northbound right-turn lane, a second southbound left-turn lane, a third southbound through lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound left-turn lane, two northbound through lanes, two southbound left-turn lanes, a second southbound through lane, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a designated westbound right-turn lane.
- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, two eastbound left-turn lanes, two eastbound through lanes, and two westbound through lanes.

**Table E: General Plan Buildout Intersection LOS D Summary
With I-10/Highland Home Road Interchange**

Intersection		With LOS D Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	31.6 sec	C	39.6 sec	D
2	Highland Springs Avenue/Ramsey Street ¹	Signal	35.1 sec	D	45.4 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	49.9 sec	D	42.2 sec	D
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	49.7 sec	D	32.1 sec	C
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	29.2 sec	C	52.7 sec	D
6	Highland Home Road/Wilson Street	Signal	36.9 sec	D	45.8 sec	D
7	Highland Home Road/Ramsey Street ¹	Signal	28.8 sec	C	40.9 sec	D
8	Highland Home Road/Westward Avenue	Signal	29.9 sec	C	42.5 sec	D
9	Sunset Avenue/Wilson Street	Signal	29.0 sec	C	49.9 sec	D
10	Sunset Avenue/Ramsey Street ¹	Signal	24.4 sec	C	43.8 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	28.8 sec	C	34.3 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	28.7 sec	C	30.8 sec	C
13	Sunset Avenue/Lincoln Street	Signal	29.7 sec	C	37.5 sec	D
14	Sunset Avenue/Westward Avenue	TWSC	12.1 sec	B	11.4 sec	B
15	Highland Home Road/I-10 WB Ramps ¹	Signal	17.6 sec	B	6.1 sec	A
16	Highland Home Road/I-10 EB Ramps ¹	Signal	28.0 sec	C	31.1 sec	C

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

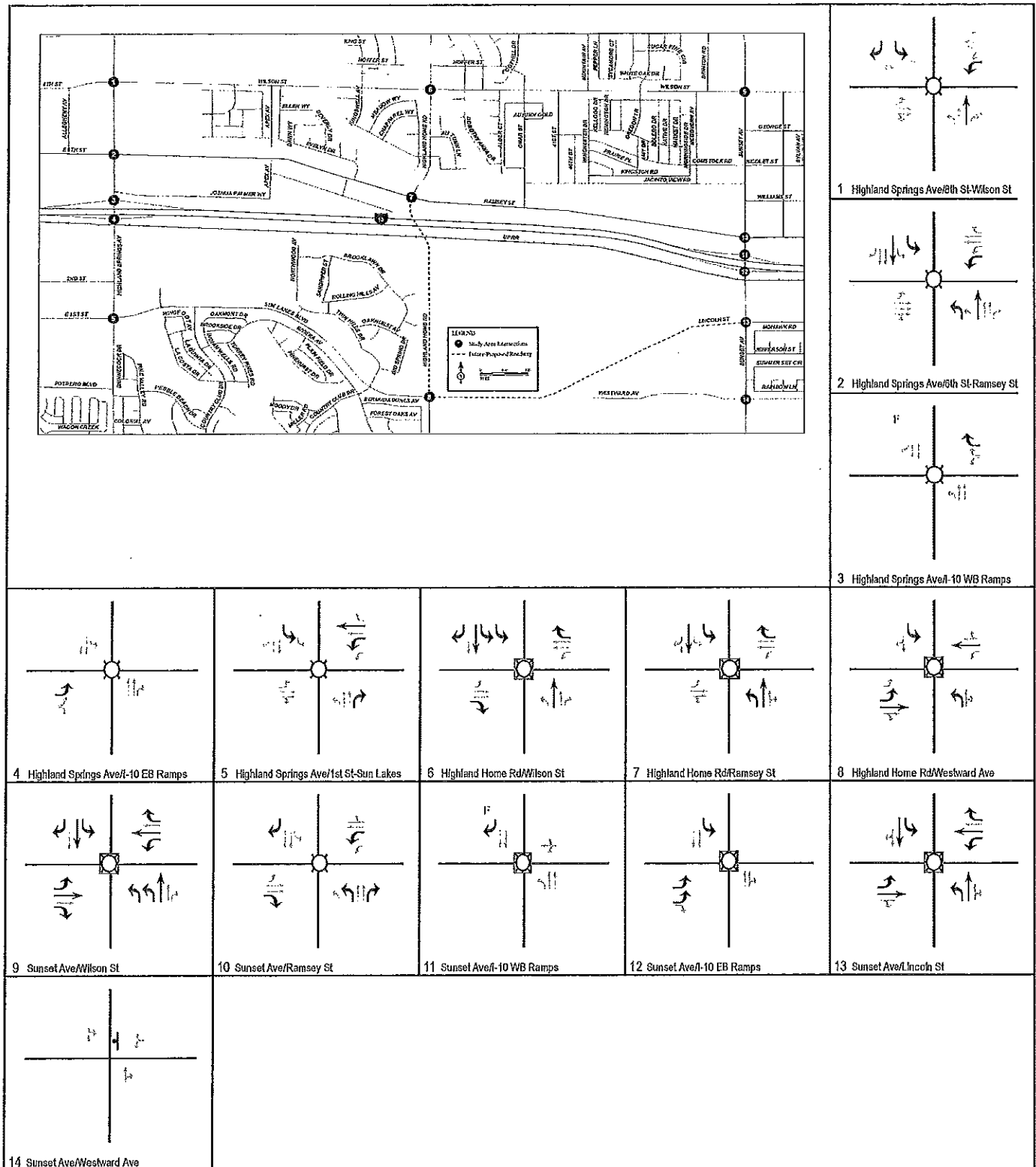


FIGURE 7

Legend

- Existing Geometrics
- Signal
- Stop Sign
- Free Right
- LOS D Mitigation

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General Plan Buildout with Mitigations Intersection Geometries
With Highland Home Road Overcrossing

- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, two westbound through lanes, and a designated westbound right-turn lane.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

The intersections along Ramsey Street and I-10 interchange intersections operate at unacceptable LOS with existing geometrics and will require improvements to mitigate the deficiencies to acceptable LOS D. The improvements to these intersections are included in the next section, which discusses LOS D requirements.

Table F summarizes the results of the General Plan Buildout with Highland Home Road Overcrossing and LOS C Improvements analysis.

LOS D Mitigation Requirements. In order to mitigate the intersection deficiencies under General Plan Buildout with Highland Home Road Overcrossing conditions to the proposed LOS standard of LOS D, the following improvements would be needed, as shown in Figure 7:

- **Highland Springs Avenue/Wilson Street:** Add a second northbound through lane, a second southbound left-turn lane, a designated southbound right-turn lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Ramsey Street:** Add a second northbound left-turn lane, a third northbound through lane, a second southbound left-turn lane, a third southbound through lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
- **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second eastbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a designated northbound right-turn lane, a second southbound left-turn lane, a second westbound left-turn lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound through lane, two southbound left-turn lanes, a second southbound through lane, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a designated westbound right-turn lane.
- **Highland Home Road/Ramsey Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a second southbound left-turn lane, a second southbound through lane, and a designated westbound right-turn lane.

**Table F: General Plan Buildout Intersection LOS C Summary
With Highland Home Road Overcrossing**

Intersection		Control	With LOS C Improvements			
			AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	30.2 sec	C	33.3 sec	C
2	Highland Springs Avenue/Ramsey Street ¹	Signal	34.2 sec	C	39.6 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	47.7 sec	D	32.4 sec	C
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	52.6 sec	D	54.4 sec	D
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	27.3 sec	C	34.1 sec	C
6	Highland Home Road/Wilson Street	Signal	31.8 sec	C	34.9 sec	C
7	Highland Home Road/Ramsey Street ¹	Signal	24.3 sec	C	39.9 sec	D
8	Highland Home Road/Westward Avenue	Signal	31.6 sec	C	33.1 sec	C
9	Sunset Avenue/Wilson Street	Signal	28.4 sec	C	34.5 sec	C
10	Sunset Avenue/Ramsey Street ¹	Signal	35.4 sec	D	45.5 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	50.4 sec	D	28.5 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	40.5 sec	D	43.1 sec	D
13	Sunset Avenue/Lincoln Street	Signal	27.7 sec	C	31.8 sec	C
14	Sunset Avenue/Westward Avenue	TWSC	11.8 sec	B	10.4 sec	B

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, a second eastbound left-turn lane, a second eastbound through lane, and a second westbound through lane.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, an eastbound left-turn lane, a second eastbound through lane, a designated eastbound right-turn lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane, a designated northbound right-turn lane, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a designated westbound right-turn lane.
- **Sunset Avenue/I-10 Westbound Ramps:** Install a traffic signal and add a free southbound right-turn lane.
- **Sunset Avenue/I-10 Eastbound Ramps:** Install a traffic signal. Add a southbound left-turn lane and two eastbound left-turn lanes.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, an eastbound left-turn lane, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

Table G summarizes the results of the General Plan Buildout with Highland Home Road Overcrossing and LOS D Improvements analysis. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10.

Figure 7 illustrates the General Plan Buildout with mitigation intersection geometrics and control (with Highland Home Road Overcrossing). If LOS D is adopted as the acceptable City LOS standard, fewer mitigation measures would be required to improve the intersection deficiencies.

4.3 General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Connection)

LOS C Mitigation Requirements. The following mitigation measures, as shown in Figure 8, improve the deficient study area intersection LOS to LOS C:

- **Highland Springs Avenue/Wilson Street:** Add two northbound through lanes, a second southbound left-turn lane, a designated southbound right-turn lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a designated northbound right-turn lane, a second southbound left-turn lane, a second westbound left-turn lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound through lane, a designated northbound right-turn lane, two southbound left-turn lanes, a second southbound through lane, a designated southbound right-turn lane, a second eastbound left-turn

**Table G: General Plan Buildout Intersection LOS D Summary
With Highland Home Road Overcrossing**

Intersection		With LOS D Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	31.4 sec	C	41.7 sec	D
2	Highland Springs Avenue/Ramsey Street ¹	Signal	34.2 sec	C	39.6 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	47.7 sec	D	32.4 sec	C
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	52.6 sec	D	54.4 sec	D
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	26.3 sec	C	42.6 sec	D
6	Highland Home Road/Wilson Street	Signal	33.1 sec	C	40.8 sec	D
7	Highland Home Road/Ramsey Street ¹	Signal	24.3 sec	C	39.9 sec	D
8	Highland Home Road/Westward Avenue	Signal	31.0 sec	C	44.0 sec	D
9	Sunset Avenue/Wilson Street	Signal	28.8 sec	C	43.9 sec	D
10	Sunset Avenue/Ramsey Street ¹	Signal	35.4 sec	D	45.5 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	50.4 sec	D	28.5 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	40.5 sec	D	43.1 sec	D
13	Sunset Avenue/Lincoln Street	Signal	31.0 sec	C	39.5 sec	D
14	Sunset Avenue/Westward Avenue	TWSC	11.8 sec	B	10.4 sec	B

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

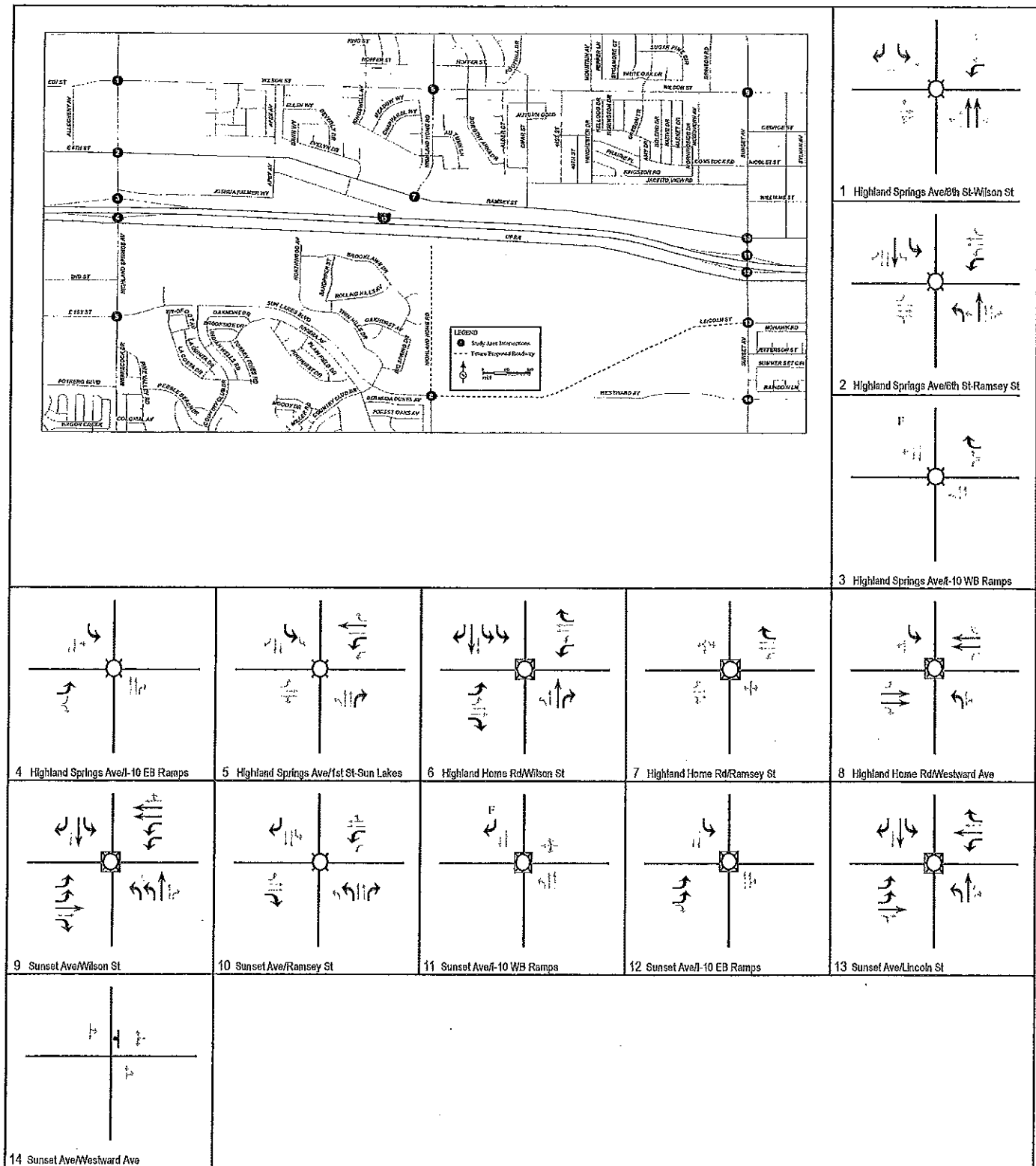


FIGURE 8

Legend

- Signal
- Stop Sign
- Free Right
- Existing Geometrics
- LOS D Mitigation
- Additional Mitigation for LOS C

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General Plan Buildout with Mitigations Intersection Geometrics
Without I-10/Highland Home Road Interchange/Overcrossing (No Connection)

100

lane, a designated eastbound right-turn lane, a second westbound left-turn lane, and a designated westbound right-turn lane.

- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, two eastbound through lanes, and two westbound through lanes.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, two westbound left-turn lanes, and two westbound through lanes.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

The intersections along Ramsey Street and I-10 interchange intersections operate at unacceptable LOS with existing geometrics and will require improvements to mitigate the deficiencies to acceptable LOS D. The improvements to these intersections are included in the next section, which discusses LOS D requirements.

Table H summarizes the results of the General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Connection) and LOS C Improvements analysis.

LOS D Mitigation Requirements. In order to mitigate the intersection deficiencies under General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Connection) conditions to the proposed LOS standard of LOS D, the following improvements would be needed, as shown in Figure 8:

- **Highland Springs Avenue/Wilson Street:** Add a second northbound through lane, a second southbound left-turn lane, a designated southbound right-turn lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/Ramsey Street:** Add a second northbound left-turn lane, a third northbound through lane, a second southbound left-turn lane, a third southbound through lane, and a second westbound left-turn lane.
- **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
- **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second southbound left-turn lane and a second eastbound left-turn lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a designated northbound right-turn lane, a second westbound left-turn lane, and a second westbound through lane.
- **Highland Home Road/Wilson Street:** Install a traffic signal. Add a second northbound through lane, two southbound left-turn lanes, a second southbound through lane, and a designated westbound right-turn lane.

Table H: General Plan Buildout Intersection LOS C Summary
Without I-10/Highland Home Road Interchange/Overcrossing (No Connection)

Intersection		With LOS C Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	30.8 sec	C	34.4 sec	C
2	Highland Springs Avenue/Ramsey Street ¹	Signal	36.6 sec	D	48.0 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	54.5 sec	D	38.9 sec	D
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	32.7 sec	C	37.9 sec	D
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	23.4 sec	C	34.1 sec	C
6	Highland Home Road/Wilson Street	Signal	29.6 sec	C	33.9 sec	C
7	Highland Home Road/Ramsey Street ¹	Signal	23.4 sec	C	45.2 sec	D
8	Highland Home Road/Westward Avenue	Signal	28.2 sec	C	20.4 sec	C
9	Sunset Avenue/Wilson Street	Signal	28.1 sec	C	34.9 sec	C
10	Sunset Avenue/Ramsey Street ¹	Signal	30.4 sec	C	48.5 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	54.3 sec	D	31.1 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	43.2 sec	D	51.3 sec	D
13	Sunset Avenue/Lincoln Street	Signal	27.9 sec	C	33.8 sec	C
14	Sunset Avenue/Westward Avenue	TWSC	12.6 sec	B	0.9 sec	B

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

- **Highland Home Road/Ramsey Street:** Install a traffic signal and add a designated westbound right-turn lane.
- **Highland Home Road/Westward Avenue:** Install a traffic signal. Add a northbound left-turn lane, a southbound left-turn lane, an eastbound through lane, and a westbound through lane.
- **Sunset Avenue/Wilson Street:** Install a traffic signal. Add two northbound left-turn lanes, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, a designated southbound right-turn lane, two eastbound left-turn lanes, a second eastbound through lane, a designated eastbound right-turn lane, two westbound left-turn lanes, and a second westbound through lane.
- **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane, a designated northbound right-turn lane, a designated southbound right-turn lane, a designated eastbound right-turn lane, and a second westbound left-turn lane.
- **Sunset Avenue/I-10 Westbound Ramps:** Install a traffic signal and add a free southbound right-turn lane.
- **Sunset Avenue/I-10 Eastbound Ramps:** Install a traffic signal. Add a southbound left-turn lane and two eastbound left-turn lanes.
- **Sunset Avenue/Lincoln Street:** Install a traffic signal. Add a northbound left-turn lane, a second northbound through lane, a southbound left-turn lane, a second southbound through lane, two eastbound left-turn lanes, a second eastbound through lane, a westbound left-turn lane, a second westbound through lane, and a designated westbound right-turn lane.

Table I summarizes the results of the General Plan Buildout without I-10/Highland Home Road Interchange and Overcrossing (No Connection) and LOS D Improvements' analysis. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10.

Figure 8 illustrates the General Plan Buildout with mitigation intersection geometrics and control (without I-10/Highland Home Road Interchange and Overcrossing). If LOS D is adopted as the acceptable City LOS standard, fewer mitigation measures would be required to improve the intersection deficiencies.

5.0 COMPARISON OF ALTERNATIVES

The differences in mitigation measures for the current General Plan (with I-10/Highland Home Road Interchange) compared to the alternatives of with Highland Home Road Overcrossing, and without I-10/Highland Home Road Interchange and Overcrossing (No Connection) are described for both LOS C and D below.

5.1 With I-10/Highland Home Road Interchange and Overcrossing (LOS C Mitigation)

Figure 9 illustrates the LOS C mitigation measures for with I-10/Highland Home Road Interchange and Overcrossing. This figure highlights the geometric differences between the two scenarios. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and

Table I: General Plan Buildout Intersection LOS D Summary
Without I-10/Highland Home Road Interchange/Overcrossing (No Connection)

Intersection		With LOS D Improvements				
		Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	Highland Springs Avenue/Wilson Street	Signal	32.0 sec	C	45.9 sec	D
2	Highland Springs Avenue/Ramsey Street ¹	Signal	36.6 sec	D	48.0 sec	D
3	Highland Springs Avenue/I-10 WB Ramps ¹	Signal	54.5 sec	D	38.9 sec	D
4	Highland Springs Avenue/I-10 EB Ramps ¹	Signal	32.7 sec	C	37.9 sec	D
5	Highland Springs Avenue/Sun Lakes Blvd	Signal	25.3 sec	C	41.5 sec	D
6	Highland Home Road/Wilson Street	Signal	33.0 sec	C	46.5 sec	D
7	Highland Home Road/Ramsey Street ¹	Signal	23.4 sec	C	45.2 sec	D
8	Highland Home Road/Westward Avenue	Signal	25.9 sec	C	48.6 sec	D
9	Sunset Avenue/Wilson Street	Signal	28.2 sec	C	41.8 sec	D
10	Sunset Avenue/Ramsey Street ¹	Signal	30.4 sec	C	48.5 sec	D
11	Sunset Avenue/I-10 WB Ramps ¹	Signal	54.3 sec	D	31.1 sec	C
12	Sunset Avenue/I-10 EB Ramps ¹	Signal	43.2 sec	D	51.3 sec	D
13	Sunset Avenue/Lincoln Street	Signal	29.5 sec	C	39.1 sec	D
14	Sunset Avenue/Westward Avenue	TWSC	12.6 sec	B	0.9 sec	B

LOS = level of service

AWSC = all-way stop-controlled, TWSC = two-way stop controlled

WB = westbound, EB = eastbound

Intersections are analyzed using the Highway Capacity Manual (HCM) methodology.

Delay is reported in seconds (sec).

¹ Intersection with LOS D criteria.

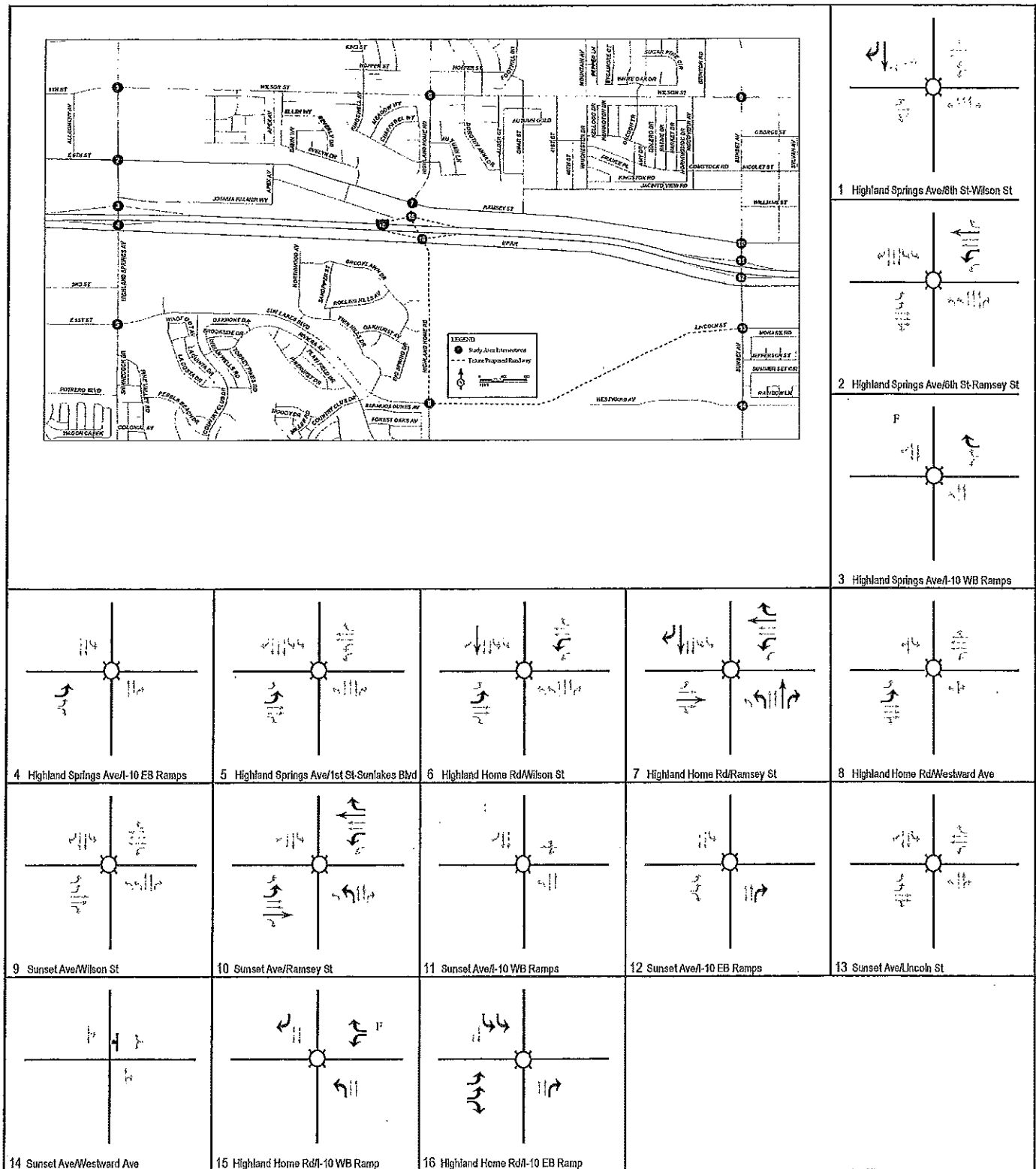


FIGURE 9

Legend

- Signal
- ⊥ Stop Sign
- F Free Right
- Current General Plan
- ↑ Improvements Eliminated
- ↑ Improvements Added

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LOS C Improvements

Difference Between Highland Home Road Interchange and Overcrossing Only

interchange intersections along I-10. The differences in mitigation measures for these two alternatives have been identified below.

- **With I-10/Highland Home Road Interchange**
 - **Highland Springs Avenue/Wilson Street:** Add a third southbound through lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a third westbound through lane.
 - **Highland Springs Avenue/Sun Lakes Boulevard:** Add a second eastbound left-turn lane.
 - **Highland Home Road/Wilson Street:** Add a third southbound through lane, a second eastbound left-turn lane, and a second westbound left-turn lane.
 - **Highland Home Road/Ramsey Street:** Add a second northbound left-turn lane, a third northbound through lane, a designated northbound right-turn lane, a third southbound through lane, a designated southbound right-turn lane, a third eastbound through lane, a second westbound left-turn lane, and a third westbound through lane.
 - **Sunset Avenue/Ramsey Street:** Add a second eastbound left-turn lane, a third eastbound through lane, a second westbound left-turn lane, a third westbound through lane, and a designated westbound right-turn lane.
 - **Sunset Avenue/I-10 Eastbound Ramps:** Add a designated northbound right-turn lane.
- **With Highland Home Road Overcrossing**
 - **Highland Springs Avenue/Wilson Street:** Add a designated southbound right-turn lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a second westbound left-turn lane
 - **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
 - **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second eastbound left-turn lane.
 - **Highland Home Road/Ramsey Street:** Add a designated westbound right-turn lane.
 - **Highland Home Road/Westward Avenue:** Add a second eastbound left-turn lane.
 - **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane.

5.2 With I-10/Highland Home Road Interchange and Overcrossing (LOS D Mitigation)

Figure 10 illustrates the LOS D mitigation measures for with I-10/Highland Home Road Interchange and Overcrossing. This figure highlights the geometric differences between the two scenarios. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10. The differences in mitigation measures for these two alternatives have been identified below.

- **With I-10/Highland Home Road Interchange**
 - **Highland Springs Avenue/Wilson Street:** Add a third northbound through lane and a third southbound through lane.

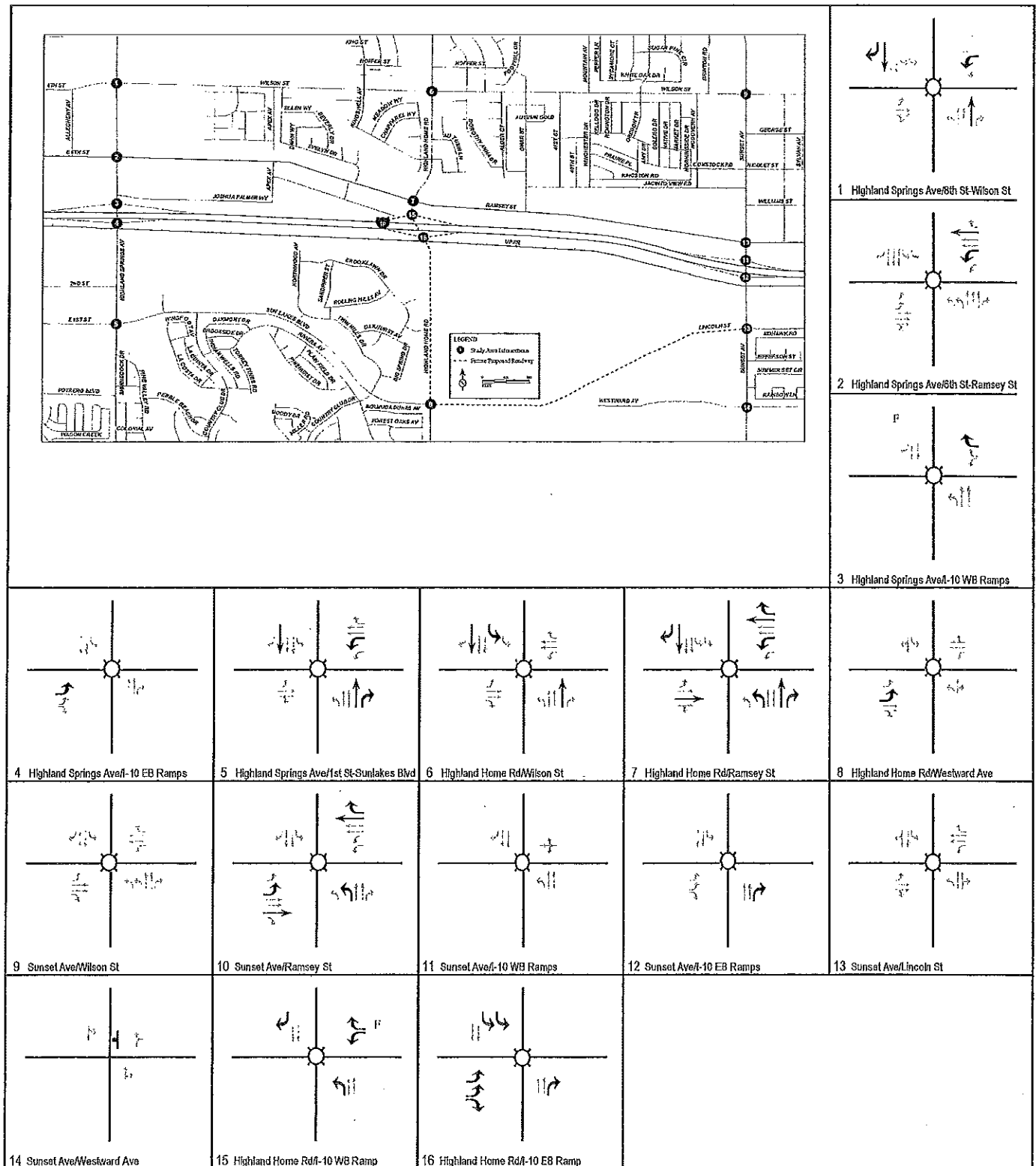


FIGURE 10

Legend

- Signal
- Stop Sign
- F Free Right
- Current General Plan
- ↑ Improvements Eliminated
- ↑ Improvements Added

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LOS D Improvements

Difference Between Highland Home Road Interchange and Overcrossing Only

- **Highland Springs Avenue/Ramsey Street:** Add a third westbound through lane.
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane and a third southbound through lane.
- **Highland Home Road/Wilson Street:** Add a third northbound through lane and a third southbound through lane.
- **Highland Home Road/Ramsey Street:** Add a second northbound left-turn lane, a third northbound through lane, a designated northbound right-turn lane, a third southbound through lane, a designated southbound right-turn lane, a third eastbound through lane, a second westbound left-turn lane, and a third westbound through lane.
- **Sunset Avenue/Ramsey Street:** Add a second eastbound left-turn lane, a third eastbound through lane, a third westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/I-10 Eastbound Ramps:** Add a designated northbound right-turn lane.
- **With Highland Home Road Overcrossing**
 - **Highland Springs Avenue/Wilson Street:** Add a designated southbound right-turn lane and a second westbound left-turn lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a second westbound left-turn lane
 - **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
 - **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second eastbound left-turn lane.
 - **Highland Springs Avenue/Sun Lakes Boulevard:** Add a designated northbound right-turn lane and a second westbound left-turn lane.
 - **Highland Home Road/Wilson Street:** Add a second southbound left-turn lane.
 - **Highland Home Road/Ramsey Street:** Add a designated westbound right-turn lane.
 - **Highland Home Road/Westward Avenue:** Add a second eastbound left-turn lane.
 - **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane.

5.3 With and Without I-10/Highland Home Road Interchange and Overcrossing (LOS C Mitigation)

Figure 11 illustrates the LOS C mitigation measures for with and without I-10/Highland Home Road Interchange conditions. This figure highlights the geometric differences between the two scenarios. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10. The differences in mitigation measures for these two alternatives have been identified below.

- **With I-10/Highland Home Road Interchange**
 - **Highland Springs Avenue/Wilson Street:** Add a third southbound through lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a third westbound through lane.

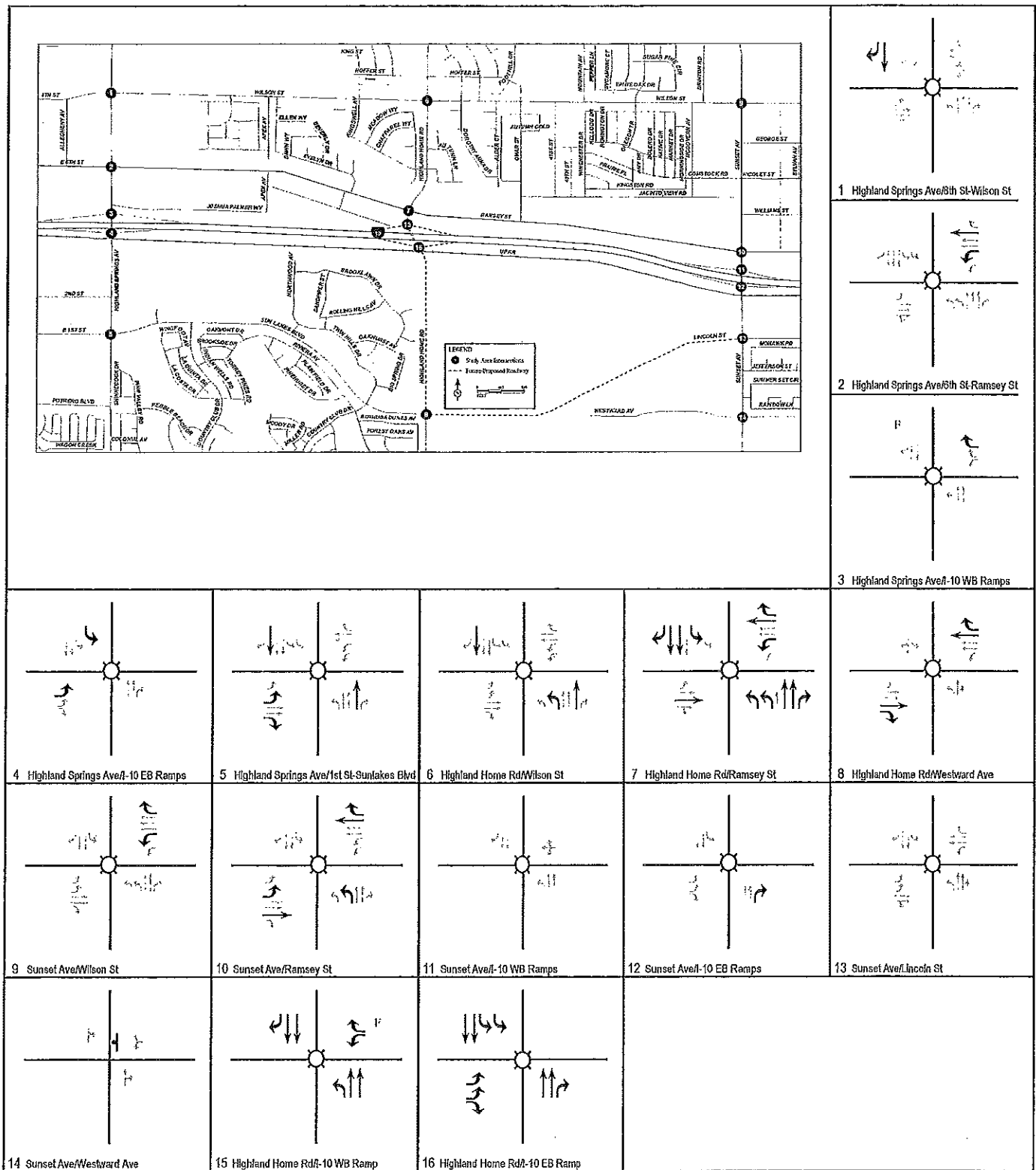


FIGURE 11

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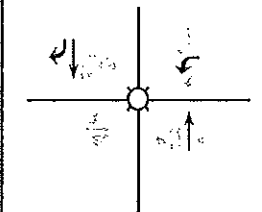
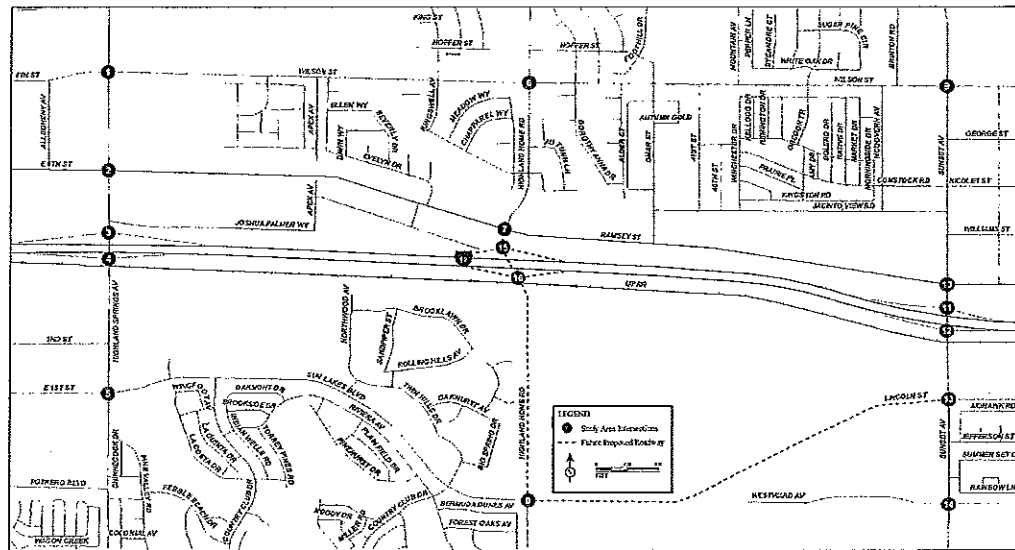
LOS C Improvements

Difference Between Highland Home Road Interchange and No Connection Only

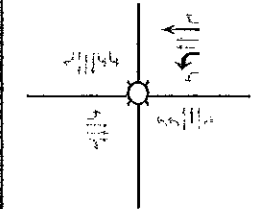
- **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane, a third southbound through lane, a second eastbound left-turn lane, and a designated eastbound right-turn lane.
- **Highland Home Road/Wilson Street:** Add a second northbound left-turn lane, a third northbound through lane, and a third southbound through lane.
- **Highland Home Road/Ramsey Street:** Add two northbound left-turn lanes, two northbound through lanes, a designated northbound right-turn lane, a second southbound left-turn lane, two southbound through lanes, a designated southbound right-turn lane, a third eastbound through lane, a second westbound left-turn lane, and a third westbound through lane.
- **Highland Home Road/Westward Avenue:** Add a third eastbound through lane and a third westbound through lane.
- **Sunset Avenue/Wilson Street:** Add a designated eastbound right-turn lane.
- **Sunset Avenue/Ramsey Street:** Add a second eastbound left-turn lane, a third eastbound through lane, a third westbound through lane, and a designated westbound right-turn lane.
- **Sunset Avenue/I-10 Eastbound Ramps:** Add a designated northbound right-turn lane.
- **Without I-10/Highland Home Road Interchange and Overcrossing (No Connection)**
 - **Highland Springs Avenue/Wilson Street:** Add a designated southbound right-turn lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a second westbound left-turn lane.
 - **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
 - **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second southbound left-turn lane and a second eastbound left-turn lane.
 - **Highland Home Road/Ramsey Street:** Add a designated westbound right-turn lane.
 - **Highland Home Road/Westward Avenue:** Add a designated eastbound right-turn lane and a designated westbound right-turn lane.
 - **Sunset Avenue/Wilson Street:** Add a second westbound left-turn lane.
 - **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane.

5.4 With and Without I-10/Highland Home Road Interchange and Overcrossing (LOS D Mitigation)

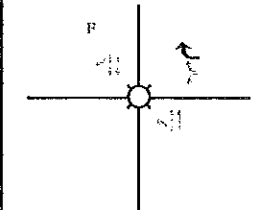
Figure 12 illustrates the LOS D mitigation measures for the with and without I-10/Highland Home Road Interchange condition. This figure highlights the geometric differences between the two scenarios. As stated previously, LOS D is considered acceptable at intersections along Ramsey Street and interchange intersections along I-10. The differences in mitigation measures for these two alternatives have been identified below.



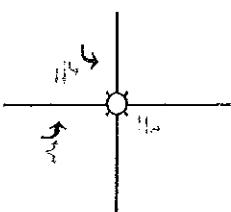
1 Highland Springs Ave/8th St-Wilson St



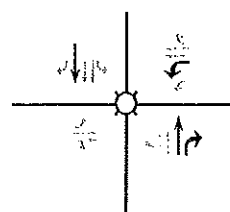
2 Highland Springs Ave/6th St-Ramsey St



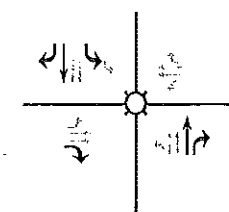
3 Highland Springs Ave/I-10 WB Ramps



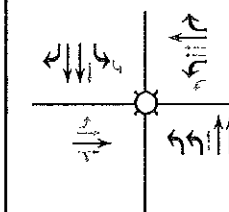
4 Highland Springs Ave/I-10 EB Ramps



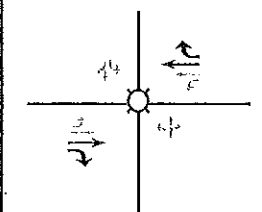
5 Highland Springs Ave/1st St-Sunlakes Blvd



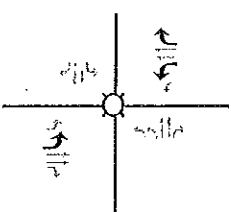
6 Highland Home Rd/Wilson St



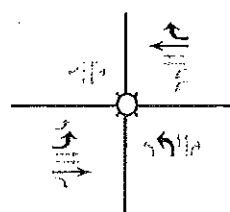
7 Highland Home Rd/Ramsey St



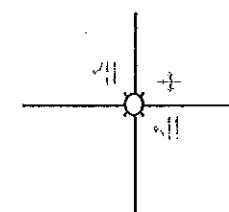
8 Highland Home Rd/Westward Ave



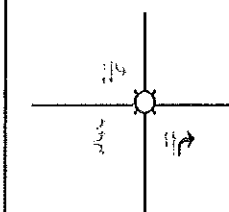
9 Sunset Ave/Wilson St



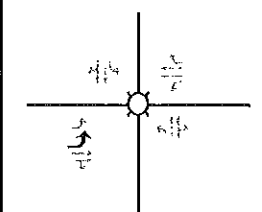
10 Sunset Ave/Ramsey St



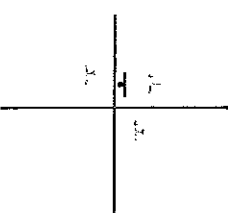
11 Sunset Ave/I-10 WB Ramps



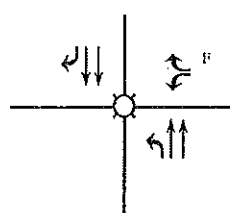
12 Sunset Ave/I-10 EB Ramps



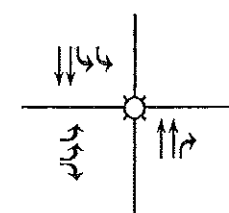
13 Sunset Ave/Lincoln St



14 Sunset Ave/Westward Ave



15 Highland Home Rd/I-10 WB Ramp



16 Highland Home Rd/I-10 EB Ramp

FIGURE 12

Legend

- Signal
- Stop Sign
- F Free Right
- Current General Plan
- ↑ Improvements Eliminated
- ↑ Improvements Added

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LOS D Improvements

Difference Between Highland Home Road Interchange and No Connection Only

- **With I-10/Highland Home Road Interchange**
 - **Highland Springs Avenue/Wilson Street:** Add a third northbound through lane and a third southbound through lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a third westbound through lane.
 - **Highland Springs Avenue/Sun Lakes Boulevard:** Add a third northbound through lane and a third southbound through lane.
 - **Highland Home Road/Wilson Street:** Add a third northbound through lane, a designated northbound right-turn lane, a third southbound through lane, a designated southbound right-turn lane, and a designated eastbound right-turn lane.
 - **Highland Home Road/Ramsey Street:** Add two northbound left-turn lanes, two northbound through lanes, a designated northbound right-turn lane, a second southbound left-turn lane, two southbound through lanes, a designated southbound right-turn lane, a third eastbound through lane, a second westbound left-turn lane, and a third westbound through lane.
 - **Highland Home Road/Westward Avenue:** Add a second eastbound through lane and a second westbound through lane.
 - **Sunset Avenue/Wilson Street:** Add a designated westbound right-turn lane.
 - **Sunset Avenue/Ramsey Street:** Add a second eastbound left-turn lane, a third eastbound through lane, a third westbound through lane, and a designated westbound right-turn lane.
 - **Sunset Avenue/I-10 Eastbound Ramps:** Add a designated northbound right-turn lane.
- **Without I-10/Highland Home Road Interchange and Overcrossing (No Connection)**
 - **Highland Springs Avenue/Wilson Street:** Add a designated southbound right-turn lane and a second westbound left-turn lane.
 - **Highland Springs Avenue/Ramsey Street:** Add a second westbound left-turn lane.
 - **Highland Springs Avenue/I-10 Westbound Ramps:** Convert the existing southbound right-turn lane to a free right-turn lane, and add a second westbound right-turn lane.
 - **Highland Springs Avenue/I-10 Eastbound Ramps:** Add a second southbound left-turn lane and a second eastbound left-turn lane.
 - **Highland Springs Avenue/Sun Lakes Boulevard:** Add a designated northbound right-turn lane and a second westbound left-turn lane.
 - **Highland Home Road/Wilson Street:** Add a second southbound left-turn lane.
 - **Highland Home Road/Ramsey Street:** Add a designated westbound right-turn lane.
 - **Highland Home Road/Westward Avenue:** Add a designated eastbound right-turn lane and a designated westbound right-turn lane.
 - **Sunset Avenue/Wilson Street:** Add a second eastbound left-turn lane and a second westbound left-turn lane.
 - **Sunset Avenue/Ramsey Street:** Add a second northbound left-turn lane.
 - **Sunset Avenue/Lincoln Street:** Add a second eastbound left-turn lane.

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6.0 CONCLUSION

The I-10/Highland Home Road interchange improvements are neither recommended nor included in the Pass Area Regional Transportation Needs Assessment Report (PARTNAR), prepared by the California Department of Transportation (Caltrans) in 2010. The PARTNAR identifies capacity improvements to select locations along I-10 (per the Capacity and Interchange Improvements Map), such as ramp modifications at Sunset Avenue (east of Highland Home Road) and the widening of I-10 from four lanes to six lanes at Highland Springs Avenue (west of Highland Home Road). According to the PARTNAR, the I-10/Highland Home Road interchange does not meet minimum interstate spacing criteria, and therefore is not included in any long-range freeway planning studies by the County of Riverside, the Southern California Association of Governments (SCAG), or Caltrans.

Although the provision of an interchange at I-10/Highland Home Road could slightly alleviate vehicle demand, delay, and congestion at the adjacent I-10 interchange intersections, the construction of an interchange would require additional right-of-way, including partial and full acquisitions of commercial properties, residential properties, a golf course, an electrical substation, and a water tank. Therefore, the impacts caused by the cost of construction of the interchange and the extensive amount of right-of-way required for the interchange would not outweigh the slight beneficial impact to vehicle demand, delay, and congestion.

Because the construction of the I-10/Highland Home Road interchange is not consistent with the recommendations in the PARTNAR, and the cost for property acquisition, relocation, and construction of the interchange or overcrossing would not outweigh the minimal traffic benefits, it is recommended that the proposed I-10/Highland Home Road interchange be eliminated from further consideration.

In addition, the added circulation improvements that are required to address redistribution of traffic to parallel streets, as shown on Figures 9 (LOS C) and 10 (LOS D), are conventional intersection improvements (i.e., added turn lanes only) that are offset by eliminated lanes in many cases.