



2015 South County Circulation Study and Traffic Impact Fee Update

Final Report

Prepared for:

San Luis Obispo County

Prepared by:



omni · means
ENGINEERING SOLUTIONS

2015 South County Circulation Study and Traffic Impact Fee Update

FINAL REPORT

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Introduction

The County of San Luis Obispo (County) retained Omni-Means to provide an update to the South County/Nipomo Circulation Study and Traffic Impact Fee (TIF). Included with this Circulation Study was also the update to the South County Travel Demand Model (TDM). The Circulation Study and TIF are updated approximately every five years to fulfill the requirements of Assembly Bill (AB) 1600.

The update of the "2015 Existing Conditions" traffic model has been calibrated and validated based on current land-use information, available transportation facilities, and new traffic count data collected by Omni-Means. The updated existing conditions model formed the basis for the "2035 Build-out Conditions" traffic model that was developed assuming build-out of land uses and construction of planned transportation facilities in the San Luis Obispo General Plan. The build-out conditions model has been developed in order to test alternative land use and/or circulation alternatives that will help assess the need, nature and timing of future circulation improvements within the South County/Nipomo Planning Area. The new South County traffic model will also be utilized as a planning analysis tool on a variety of traffic impact and circulation studies to assess land development proposals within the county as well as the continued update of the County's Capital Improvement Program (CIP) and Traffic Impact Fee (TIF).

This Draft Report is technical documentation in support of the South County/Nipomo Planning Area travel forecasts, resulting Circulation Study, CIP and subsequent TIF update. This report presents the methodology behind the development of the *2015 Existing Conditions*, summarizing the background data and technical components used in the development of the model, including the existing conditions calibration process. The development of the *2035 Build-out Conditions* is also summarized, including traffic projections rendered by the South County TDM as well as alternative circulation conditions tested in yielding the circulation plan recommendations.

Following the update to the circulation plan recommendations, the transportation impact fees were updated. The transportation impact fees proposed in this report have been calculated pursuant to the Mitigation Fee Act, as set for in Sections 66000 et seq. of the California Government Code (Assembly Bill 1600).

The Mitigation Fee Act was enacted by the California State legislature in 1987 and requires that all public agencies satisfy the following requirements when establishing, increasing, or imposing a fee as a condition of approval for a development project:

1. Identify the purpose of the fee;
2. Identify the use to which the fee will be put;
3. Determine that there is a reasonable relationship between the fee's use and the type of development on which the fee is imposed;
4. Determine how there is a reasonable relationship between the need for the public facility and the type of development on which the fee is imposed; and,
5. Determine how there is a reasonable relationship between the amount of the fee and the cost of the public facility or portion of the public facility attributable to the development on which the fee is imposed.

The "reasonable relationship" test was supplemented by a test of "rough proportionality" in the 1994 United State Supreme Court decision *Dolan v. City of Tigard*. In this decision, the Court

opined that, when a public agency requires an exaction from new development, the agency cannot rely solely on a general, qualitative relationship between a land use and required facility but must make a finding that the exaction is related to the proportional impact of that land use.

The Court specifically stated in its opinion that “no precise mathematical calculation is required, but the city must make some sort of individualized determination that the required dedication is related both in nature and extent to the impact of the proposed development.” This decision effectively added an additional finding that there is a rough proportionality between the amount of the fee and the impact of the development on which the fee is imposed.

As required by Government Code Section 66000 et seq. and subsequent court rulings, this report will show that a reasonable relationship exists between the calculated fee amounts and development land uses on which they are imposed. Additionally, it will be demonstrated that a rough proportionality exists between the impact of a land use on a facility and amount of the fee imposed on it.

This report is organized into the following Chapters:

- Chapter 1 - Introduction
- Chapter 2 - Background Conditions
- Chapter 3 - Travel Demand Model Development and 2015 *Existing Conditions* Calibration
- Chapter 4 - *2035 Build-out Conditions* Traffic Model Development
- Chapter 5 – Transportation Improvement Needs and Circulation Plan Recommendations
- Chapter 6 – Alternative Transportation Modes
- Chapter 7 – Cost Estimates and Funding Mechanisms, Including Transportation Impact Fees

Background Conditions

To initiate the 2015 update to the Circulations Study, TIF, and South County TDM, Omni-Means first needed to ascertain changes to the existing transportation system, land uses, and other background information since the last update was developed in 2006. To this end, Omni-Means reviewed available transportation and land use information useful in obtaining an understanding of existing or “baseline” travel patterns within and through the South County/Nipomo Planning Area. The 2015 update already had a solid background foundation from the previous model update from which to build the new South County TDM. The primary source of input data for the 2015 update came from parcel-based land use data and current traffic counts on critical transportation facilities.

Available sources of transportation and land use information pertinent to South San Luis Obispo County that were obtained and reviewed included the following:

- South County/Nipomo General Plan Land Use and Circulation Element (LUCE).
- GIS database (in *ArcGIS* format) from the County that contained Assessor’s Parcel mapping, General Plan land use designations, current zoning, overlay designations, land use symbols, planning area and urban limit line information, etc.
- Assessor Parcel Land use database (in digital format) showing current land development for parcels within the South County/Nipomo Planning Area.
- Recent traffic count data obtained from Caltrans data publications, as well as new traffic counts conducted by Omni-Means in September 2014, as well as County data for 2015.
- Field (windshield) survey of roadway, land development and travel conditions, and photographs of the South County street system.
- Most recent aerial photographs of the South County/Nipomo Planning Area.
- US Census Bureau, Census 2000 and 2010 data (in GIS format) for San Luis Obispo County and within the South County/Nipomo Planning Area.
- Miscellaneous traffic circulation studies and traffic impact studies recently completed for the County. Also, current population is estimated.

Existing Setting

The South County/Nipomo Planning Area is an area located in the southern portion of San Luis Obispo County, California, which is along the Pacific coastline in Central California. South San Luis Obispo County (South County) represents the Nipomo Mesa and extends south of the “Five Cities” area to the County’s southern border with Santa Barbara County. The San Luis Obispo County and Santa Barbara County border is defined by the Santa Maria River. Immediately across the County border is the City of Santa Maria. Nipomo is an unincorporated community, approximately 5 miles southeast of the Cities of Arroyo Grande and Grover Beach. South County area extends approximately 20 to 30 miles south of the City of San Luis Obispo.

US 101, State Route 1, and State Route 166 are the primary highways providing regional access in the area. US 101 is an interstate that provides access to Los Angeles, San Jose, and traverses up the coastline to Oregon and Washington. State Route 1 provides access to Los Angeles, and traverses up the coastline to San Francisco, and connects in multiple places with US 101, one of which is the City of San Luis Obispo. US 101 bisects Nipomo and interchanges within the study area are located at State Route 166, Tefft Street, Willow Road, and Los Berros Road/Thompson Avenue.

Population within San Luis Obispo County has seen growth between 2000 and 2010, which changes the transportation needs of the communities. Based on the data from the U.S. Census Bureau for 2010 and 2000, San Luis Obispo County population has increased by approximately 23,000 individuals from 246,681 in 2000 to 269,637 in 2010, a 9% growth increase. Nipomo/South County is the second-largest area within San Luis Obispo County and has actually experienced a disproportionately larger growth in population. The Nipomo community's population has grown by 4,088 individuals between 2000 and 2010, from 12,626 to 16,714 people. This 32% increase in growth, which is 3.5 times greater than the growth of South County, is believed to be fairly representative of the growth experienced within the Fee Study Area. This population increase causes greater transportation needs, and will be considered with the Circulation Study and Traffic Impact Fee update.

Figure 1 illustrates the study area and vicinity map of the South County/Nipomo Planning Area. The South County/Nipomo area for the purposes of this Circulation Study and Traffic Impact Fee update has its own boundary established by the Board of Supervisors with two distinct Fee areas within the Fee Study Area, as shown in Figure 1. Within this Fee Study Area is the Nipomo Community Plan Area, also shown in Figure 1.

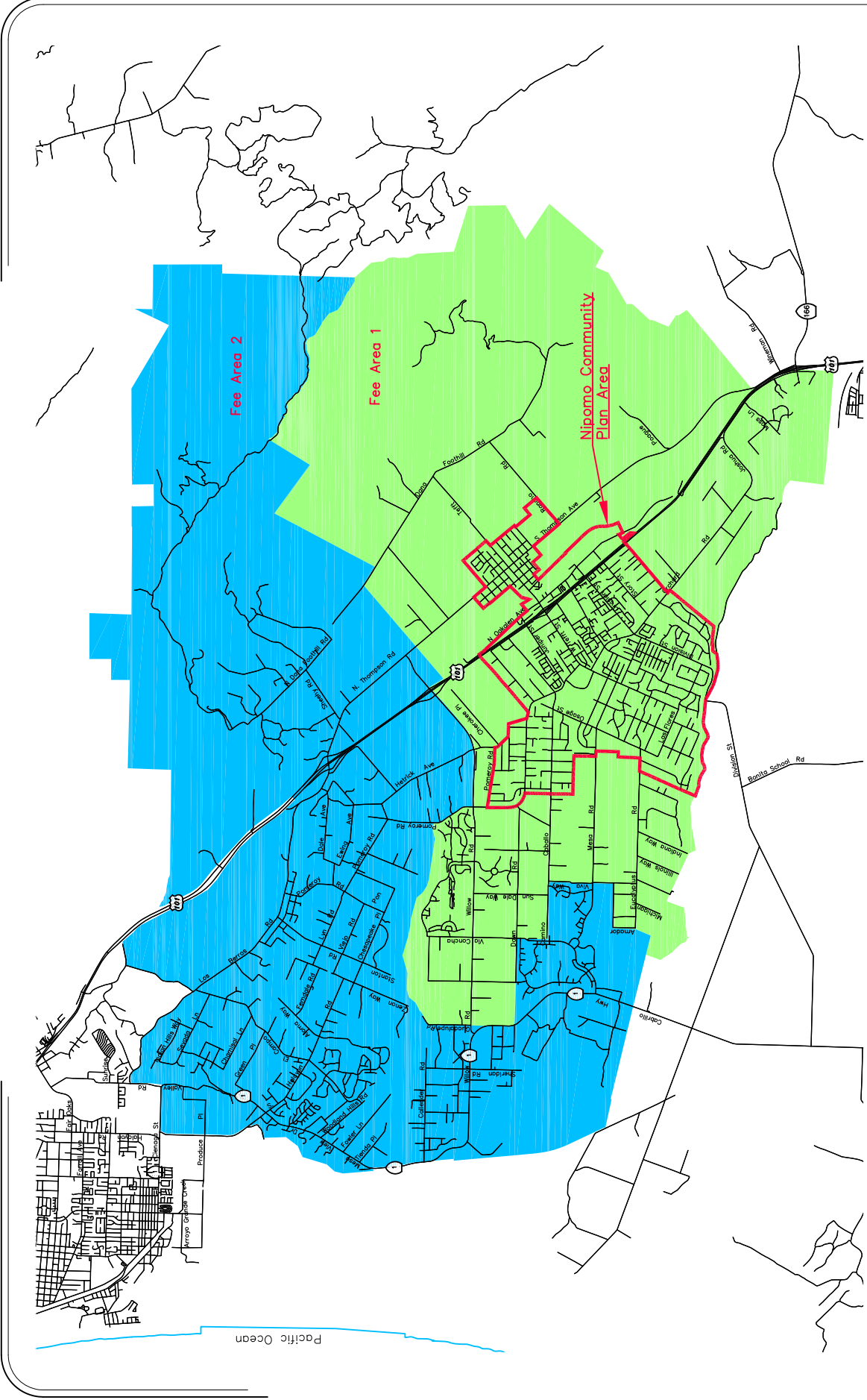
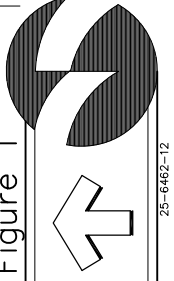


Figure 1

South County Circulation Study & Traffic Impact Fee Update

Study Area Map



Existing Transportation System

The existing physical conditions for the South County roadway network are described below. A hierarchy of streets provides access to and from residential, commercial, and industrial uses throughout the County and beyond. A route's design, including its cross-section, is determined by its functional classification and its projected traffic levels to achieve "safe and convenient movement at the development intensity anticipated in the Land Use Element."

State Freeways

Controlled access facilities whose junctions are free of at-grade crossing with other roadways, railways, or pedestrian pathways, and instead are served by interchange facilities are classified as Freeways. Freeways usually have posted speed limits up to 70 mph. The following freeway services the South County region:

U.S. Highway 101 (US 101) is a major north-south interstate that traverses along coastal California. US 101 serves as the principal inter-regional auto and truck travel route that connects San Luis Obispo County (and other portions of the Central Coast) with the Los Angeles urban basin to the south, the San Francisco Bay Area to the north, and beyond to Oregon and Washington. Within San Luis Obispo County, US 101 provides major connections between and through several cities. Through South County, US 101 represents a major commuter travel route and has a four-lane divided cross-section. Within the study area of Nipomo, US 101 forms full access interchanges with Los Berros Road/Thompson Avenue, Willow Road, Tefft Street, and SR 166. Between the Los Berros Road/Thompson Avenue and Traffic Way interchanges, US 101 is an expressway with at-grade intersections.

State Highways

Controlled access facilities whose junctions with cross streets are characterized by at grade intersections rather than interchanges are classified as highways. Highways can either be divided or undivided roadways, with speed limits up to 55 mph. The following highways service the South County/Nipomo area:

State Route 1 (SR 1/Highway 1) is a state highway that runs predominantly in a north-south direction. SR 1 branches off of US 101 within Pismo Beach and traverses south through the Fee Study Area and beyond, to the southern County line. SR 1 connects the South County area to the Five Cities area to the north, and connects to Guadalupe and Santa Maria to the south. SR 1 represents a significant parallel commuter route to US 101, as well as a recreational travel route. Through South County, SR 1 is a conventional two-lane highway.

State Route 166 (SR 166/Highway 166) is a major east-west arterial that runs between Nipomo and the San Joaquin Valley. SR 166 is a two lane arterial which begins at US 101 with a full access interchange and extends east until terminating at SR 99.

Arterial Streets

Major arterial facilities serve to connect areas of major activity within the urban area and function primarily to distribute cross-town traffic from freeways/highways to collector streets. Within the South County area, arterial streets are mostly two lane facilities. In addition, two lane arterial facilities with two-way left-turn lanes generally have limited access to adjacent land uses and have a maximum design capacity of 15,000 vehicles per day. The following arterials service the South County/Nipomo area:

Halcyon Road is primarily a north-south undivided arterial between El Camino Real and Zenon Way. At the intersection of El Camino Real and Halcyon Road, there is access to the US 101 Southbound ramps. There is a short break in the route at Highway 1/ Cienaga Street (SR 1). Halcyon Road is a two-lane arterial through most of its route; south of Mesa View Road (SR 1), it is classified as a collector. Halcyon Road is a four-lane arterial between Grand Avenue and Olive Street, in Arroyo Grande. Halcyon Road is a two-lane collector South of Cabrillo Highway (south).

Los Berros Road is an east-west two-lane undivided arterial. Los Berros Road connects Valley Road to the west and transitions into Thompson Avenue at the US 101 interchange to the east. Los Berros Road provides a full access interchange with US 101.

Orchard Road/Joshua Street/Hutton Road is a two-lane undivided arterial. Orchard Road runs north-south and begins at Tefft Street to the north and transitions into Joshua Street at Holder Park Lane to the south. Joshua Street continues east-west and transitions to Hutton Road. Hutton Road runs north-south and transitions from Joshua Street to the north and terminates south of Cuyama Lane/SR 166. Orchard Road/Joshua Street/Hutton Road connects the Nipomo urban area west of US 101 with the SR 166 interchange.

Pomeroy Road is a primarily a north-south two-lane undivided arterial through most of its route; north of Willow Road, Pomeroy Road is classified as a collector. Pomeroy Road begins at Los Berros Road to the north, and terminates at Tefft Street to the south.

Tefft Street is a major east-west arterial. Tefft Street runs from Las Flores Drive to the west, through the center of Nipomo, and terminates at Dana Foothill Road to the east. Tefft Street is a four lane arterial with a center two-way left turn lane from Pomeroy Road to Oak Glen Avenue. Tefft Street transitions to a two lane arterial east of Oak Glen Avenue and west of Pomeroy Road. Tefft Street provides a full access interchange to US 101.

Thompson Avenue is primarily a north-south two-lane undivided arterial. Thompson Avenue begins at the US 101 interchange to the north, transitioning from Los Berros Road, and terminating at SR 166 to the south. Thompson Avenue provides a full access interchange with US 101.

Willow Road is a major east-west arterial that connects SR 1 to Thompson Avenue. Willow Road is a two lane undivided arterial with left turn lanes at major intersections. Willow Road forms a full access interchange with US 101.

Collectors and Local Streets

Collectors function as connector routes between local and arterial streets providing access to residential, commercial, and industrial property. In addition, the Circulation Element identifies collectors as serving to provide bicycle and equestrian travel away from arterials for safety purposes. Local streets provide direct access to abutting properties and allow for localized movement of traffic. Local streets are characterized by low daily volumes.

Existing Traffic Data Collection

Roadway Segments

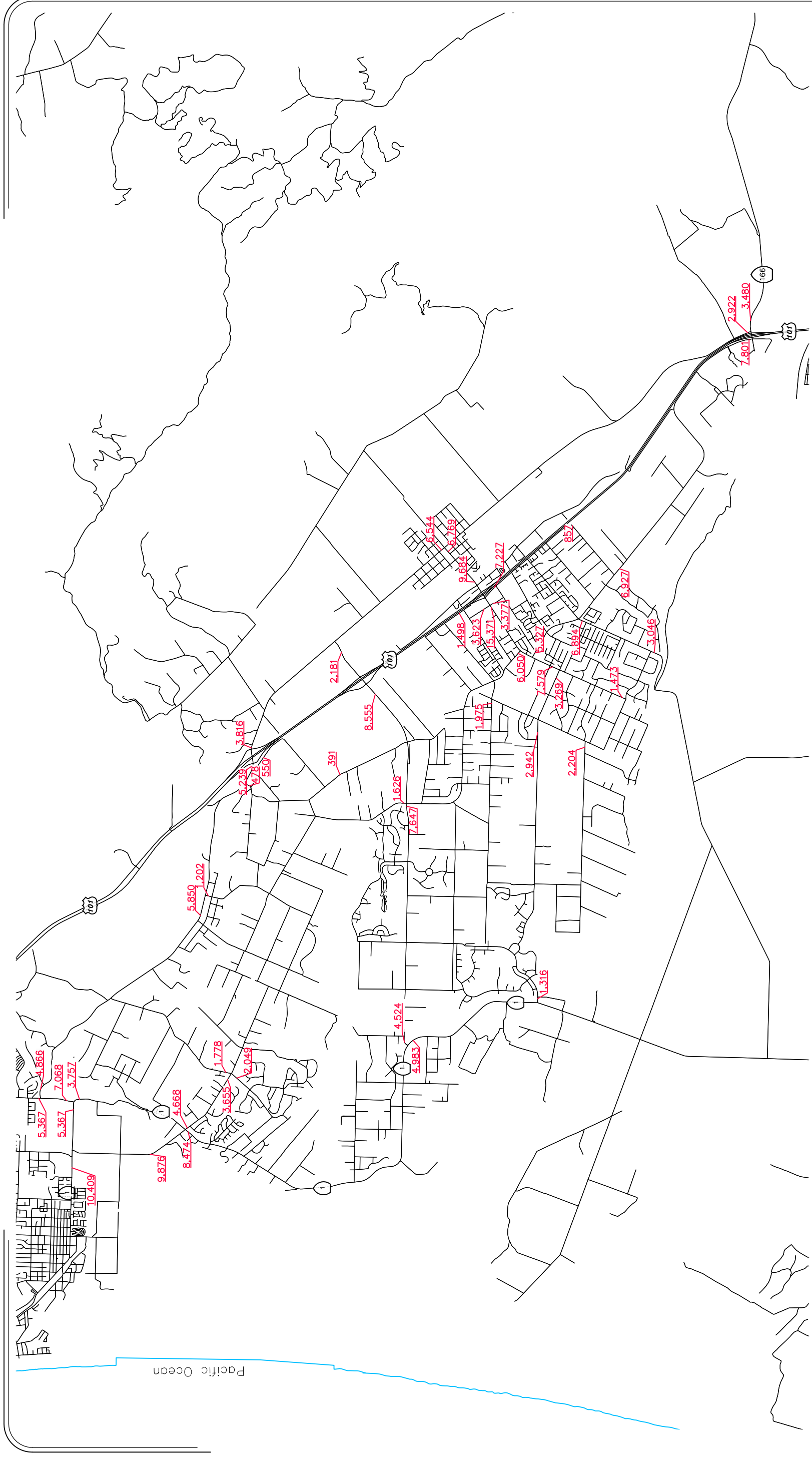
For purposes of understanding existing traffic conditions as well as for developing basic inputs to the South County traffic model, existing average daily traffic (ADT) counts were collected at critical locations within the County's planning area, where recent traffic counts may not have been conducted/available. September 14, 2014 through September 20, 2014, Omni-Means collected average daily traffic counts (recorded at 15-minute intervals over a continuous 24-hour period) for the following 50 key roadway segments:

1. Highway 1 (Cienaga Street) – west of Halcyon Road (west)
2. Highway 1 (Cienaga Street) – west of Valley Rad
3. Highway 1 (Mesa View Drive) – east of Valley Road
4. Highway 1 (Mesa View Drive) – south of Halcyon Road
5. Highway 1 – south of Willow Road
6. SR 166 – east of US 101
7. Camino Caballo – west of Osage Street
8. Dale Avenue – south of Los Berros Road
9. Division Street – west of Orchard Road
10. Division Street – south of Las Flores Drive
11. El Campo Road – north of Halcyon Road
12. El Campo Road – south of Halcyon Road
13. El Campo Road – south of US 101
14. Eucalyptus Road – west of Osage Street
15. North Frontage Road – north of Juniper Street
16. Halcyon Road – north of Cienaga Road/Highway 1
17. Halcyon Road – south of Cienaga Road
18. Halcyon Road – west of El Campo Road
19. Hetrick Avenue – south of Summit Station Road
20. Hutton Road – north of Cuyama Lane
21. Los Berros Road – east of Valley Road
22. Los Berros Road – east of Stanton Road
23. Los Berros Road – west of US 101
24. Mary Avenue – north of Tefft Street
25. Mary Avenue – south of Tefft Street
26. Mesa Road – west of Tefft Street
27. Mesa Road – west of Osage Street
28. Orchard Road – south of Tefft Street
29. Orchard Road – south of Southland Street
30. Pomeroy Road – south of Los Berros Road
31. Pomeroy Road – north of Willow Road
32. Pomeroy Road – north of Tefft Street
33. South Frontage Road – south of Tefft Street

34. Southland Street – west of South Frontage Road
35. Summit Station Road – south of Los Berros Road
36. Tefft Street – east of Las Flores Drive
37. Tefft Street – east of Mesa Road (west of Tejas Place)
38. Tefft Street – west of Mary Avenue
39. Tefft Street – east of Oakglen Avenue
40. Tefft Street – west of Thompson Avenue
41. Thompson Avenue – south of US 101
42. Thompson Avenue – north of Tefft Street
43. Thompson Avenue – north of SR 166
44. Via Concha – east of Highway 1
45. Valley Road – north of Los Berros Road
46. Valley Road – south of Los Berros Road
47. Willow Road – east of Highway 1
48. Willow Road – west of Pomeroy Road
49. Willow Road – west of US 101
50. Willow Road – east of US 101

The daily traffic counts from the above locations were supplemented with other daily traffic counts on State facilities as obtained from Caltrans data publication *2013 Traffic Volumes on California State Highways* (obtained from Caltrans' website).

Figure 2 presents the existing Average Daily Traffic (ADT) volumes on the roadways within South County.



South County Circulation Study and Traffic Impact Fee Update

Figure 2

Existing Average Daily Traffic

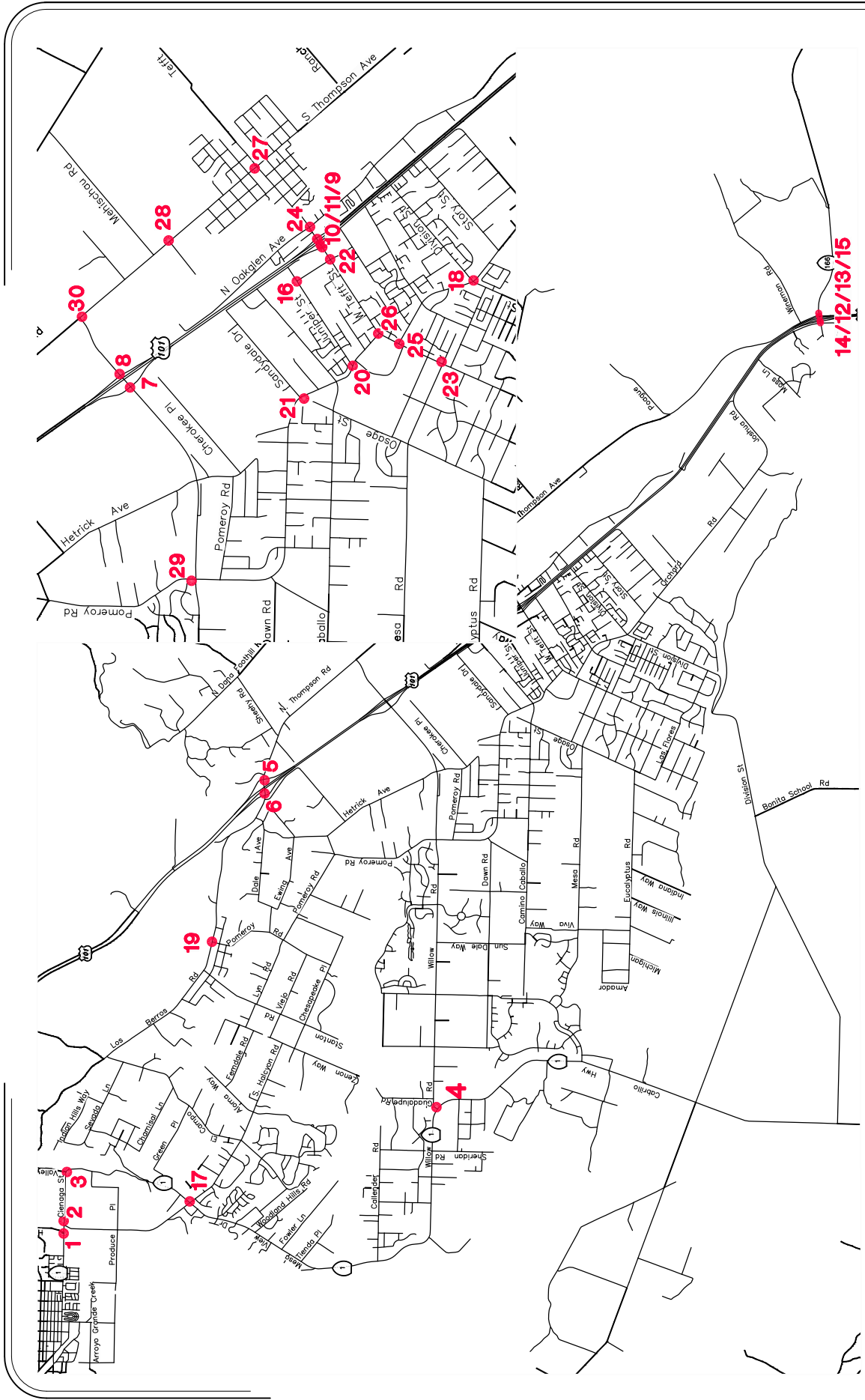


Intersections

To supplement the average daily traffic counts collected along select roadway segments and to provide background conditions for intersection traffic conditions, existing intersection traffic volume counts were collected at 30 key intersections by Omni-means on September 16, 18, and 23, 2014,. At the study intersections, weekday AM and PM peak hour turning movement counts were obtained. The AM peak hour is defined as the one-hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 7:00 AM and 9:00 AM on a typical weekday. The PM peak hour is defined as the one-hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 4:00 PM and 6:00 PM on a typical weekday, when schools are in session. The following list of critical study intersections were established for this study in coordination with San Luis Obispo County staff, and are analyzed within this study for weekday AM and PM peak hour conditions:

1. Highway 1 (Cienaga Street) at Halcyon Road (West)
2. Highway 1 (Cienaga Street) at Halcyon Road (East)
3. Highway 1 (Cienaga Street) at Valley Road
4. Highway 1 at Willow Road
5. US 101 Northbound Ramps at Thompson Avenue
6. US 101 Southbound Ramps at Los Berros Road
7. US 101 Southbound Ramps at Willow Road
8. US 101 Northbound Ramps at Willow Road
9. US 101 Northbound Ramps at Tefft Street
10. US 101 Southbound On-Ramp at Tefft Street
11. US 101 Southbound Off-Ramp/South Frontage Road at Tefft Street
12. US 101 Southbound Ramps at SR 166
13. US 101 Northbound Ramps at SR 166
14. SR 166 at Hutton Road
15. US 166 at Thompson Avenue
16. Juniper Street at Mary Avenue
17. Highway 1 (Mesa View Drive) at Halcyon Road
18. Orchard Road at Division Street
19. Pomeroy Road at Los Berros Road
20. Pomeroy Road at Juniper Street
21. Pomeroy Road at Sandydale Drive
22. Tefft Street at Mary Avenue
23. Tefft Street at Mesa Road
24. Tefft Street at Oakglen Avenue
25. Tefft Street at Orchard Road
26. Tefft Street at Pomeroy Road
27. Tefft Street at Thompson Avenue
28. Tefft Street at Nipomo High School
29. Willow Road at Pomeroy Road
30. Willow Road at Thompson Avenue

These counts will provide the baseline conditions for roadway and intersections facilities throughout South County/Nipomo. These volumes will help calibrate both existing and future traffic volume forecasts. Figure 3 presents the study intersections and their locations. Figure 4 presents the existing lane geometrics and control at the study intersections. Figure 5 presents the existing AM and PM peak hour volumes at the study intersections.



South County Circulation Study & Traffic Impact Fee Update

Figure 3

Study Intersection Locations



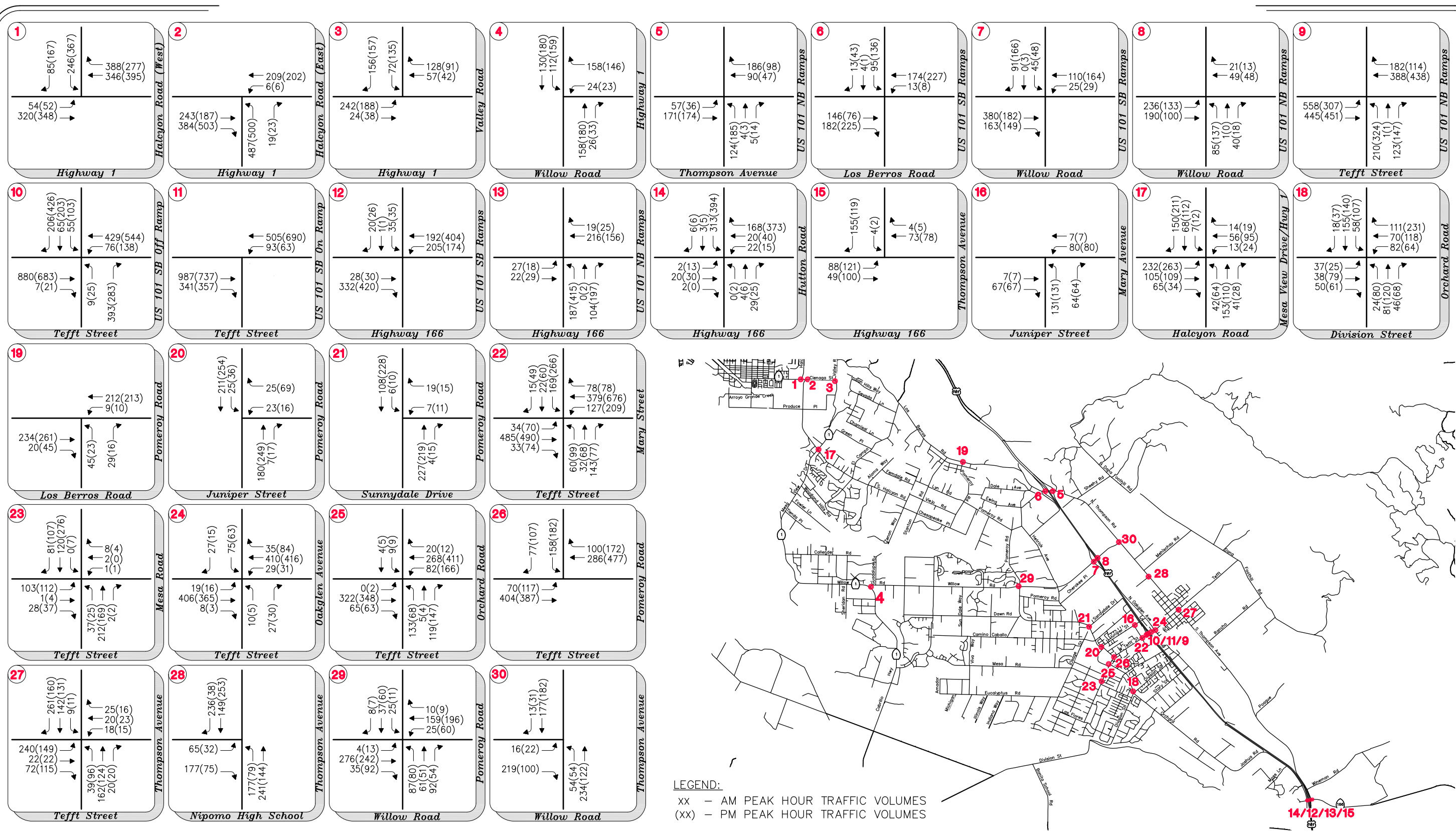


Figure 4

South County Circulation Study & Traffic Impact Fee Update

Existing Lane Geometrics and Control





South County Circulation Study & Traffic Impact Fee Update

Existing Peak Hour Traffic Volumes

Figure 5

Level of Service Methodology

Traffic operations have been quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment representing progressively worsening traffic conditions. The following section outlines the methodology and analysis parameters used to quantify existing conditions.

Roadway Capacity

Roadway segment Levels of Service were estimated using Highway Capacity Manual 2010 (HCM 2010) methodologies. The South County TDM is an ADT forecast model that has been developed to assist the County in making "planning level" decisions regarding typical roadway cross-sections that will be needed through the build-out of the area. The ADT-based capacity thresholds applied in this study (for determining required roadway capacity configurations) use built-in adjustment factors for typical intersection spacing, driveway spacing, etc. and therefore reasonably reflect roadway operations at an ADT level. For standard roadways, LOS was estimated using ADT-based LOS thresholds, as presented in Table 1. However, the rural nature of the study area introduces the problem of roadways with non-standard characteristics, e.g. roadway lane widths less than 12 feet wide per lane, shoulders less than six feet wide, rough pavement, and steep grades. Non-standard characteristics typically reduce roadway capacity from the traffic thresholds calculated for standard roadways. For the South County/Nipomo Planning Area, non-standard roadways are limited to two-lane collector/local streets and two-lane arterials. The ADT-based roadway segment LOS thresholds presented in Table 1 for two-lane roadways include traffic volume ranges that take into account capacity reductions resulting from non-standard roadway features.

**TABLE 1
DAILY ROADWAY CAPACITIES BY FACILITY TYPE**

Roadway Type	Average Daily Traffic (ADT) – Total of Both Directions				
	A	B	C	D	E
Six-Lane Freeway	42,000	64,800	92,400	111,600	120,000
Four-Lane Freeway	28,000	43,200	61,600	74,400	80,000
Six-Lane Divided Expressway	35,500	42,200	46,200	55,800	60,000
Four-Lane Divided Expressway	23,667	28,133	30,800	37,200	40,000
Four-Lane Divided Arterial	22,000	25,000	29,000	32,500	36,000
Four-Lane Arterial (w/LTL)	22,000	25,000	29,000	32,500	36,000
Four-Lane Arterial (No LTL)	18,000	21,000	24,000	27,000	30,000
Tefft Street (Mary to Oakglen) ⁴	15,000	17,000	20,000	22,000	24,000
Two-Lane Divided Arterial	11,000	12,500	14,500	16,000	18,000
Two-Lane Arterial (w/LTL)	11,000	12,500	14,500	16,000	18,000
Two-Lane Arterial (No LTL)	9,000	10,500	12,000	13,500	15,000
Two-Lane Roundabout Arterial	14,300	16,250	18,850	20,800	23,400
Four-Lane Collector	12,000	15,000	18,000	21,000	24,000
Two-Lane Collector	6,000	7,500	9,000	10,500	12,000
Two-Lane Local	1,000	2,000	3,000	4,000	5,000

Notes:

1. Based on the *South County Traffic Model Update 2006 Annual Report and Fifth Year Update*
2. w/LTL indicates arterials with either continuous center left turn lane (LTL) or left turn lanes at major intersections.
3. No LTL indicates arterials without left turn lanes (LTL) at most major intersections.
4. Tefft Street capacity from Mary Avenue to Oak Glen Avenue was determined by Synchro PM peak hour operations. LOS E was achieved using existing volumes from 2005. Based on the 2005 daily traffic count, approximately 22,000 daily trips occurred on this segment. Therefore, the LOS D/E threshold was determined to be 22,000.
5. Daily volume to capacity on freeways does not supplant the need to perform peak-hour HCM-based analysis.
6. Roundabout Arterials indicate facilities with roundabouts as an intersection control.

Daily Capacity Determination for Tefft Street Corridor

For the roadway evaluation process, facilities have been analyzed on a daily volume basis, based on daily volume capacities by roadway facility type. These capacities have been determined based on historical peak hour capacities of similar facilities in many different communities and are not refined to represent the unique conditions of specific roadways. These capacities are used to aid in the identification of facilities that may need further improvement without analyzing specific peak hour intersection operations.

Therefore, in locations where typical conditions are not present, such as where there are closely spaced intersections, irregular intersection configurations, or particularly heavy turning movements in certain directions, it is sometimes necessary to revise daily capacities for individual facilities in order to better represent the need for improvement. Such determinations usually require peak hour intersection analysis, from which a peak hour to daily volume conversion can be made in order to assign a daily capacity estimate. From previous modeling efforts in the Nipomo area, peak hour counts were available on the Tefft Street corridor between Mary Avenue and Oakglen Street. These peak hour volumes were adjusted based on changes in daily volume on Tefft Street between the date of the peak hour counts and today.

The results of the peak hour analysis indicate that the Tefft Street corridor, as currently configured, has a lower daily capacity than the typically four-lane arterial facility due to poor traffic operations at the Tefft Street/U.S. 101 Southbound Ramps/S. Frontage Road intersection. The peak hour analysis indicated that the main problem in the poor service levels is the heavy turning movements to and from Frontage Road from Tefft Street, particularly the westbound left turn. The daily capacities by facility type shown in Table 3 include a "Tefft Street" capacity. This capacity will be used in the identification of existing and future LOS conditions on Tefft Street between Mary Avenue and Oakglen Avenue so long as the intersection configurations remain as they are today.

Intersection Level of Service

Intersection Level of Service (LOS) will be calculated for all control types using the methods documented in the Transportation Research Board publications *Highway Capacity Manual, Fifth Edition, 2010 (HCM 2010)*. Traffic operations have been quantified through the determination of LOS. LOS determinations are presented on a letter grade scale from "A" to "F", whereby LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. For a signalized or all-way stop-controlled (AWSC) intersection, an LOS determination is based on the calculated averaged delay for all approaches and movements. For a two-way stop controlled (TWSC) intersection, an LOS determination is based upon the calculated average delay for all movements of the worst-performing approach. LOS definitions for different types of intersection controls are presented in Table 2.

**TABLE 2
INTERSECTION LEVEL OF SERVICE CRITERIA**

Level of Service	Type of Flow	Delay	Maneuverability	Stopped Delay/Vehicle		
				Signalized	Un signalized	All-Way Stop
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	< 10.0	< 10.0	< 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and < 20.0	>10.0 and < 15.0	>10.0 and < 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and < 35.0	>15.0 and < 25.0	>15.0 and < 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and < 55.0	>25.0 and < 35.0	>25.0 and < 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and < 80.0	>35.0 and < 50.0	>35.0 and < 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

Level of Service Policy

Caltrans' Guide for the Preparation of Traffic Impact Studies contains the following policy pertaining to the LOS standards within Caltrans jurisdiction:

Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

Per the County of San Luis Obispo 2004 South County Circulation Study Update:

"The current County policy calls for LOS "D" or better service on roadways in urban areas and LOS "C" on rural roads."

Consistent with the Caltrans and County policies, this study will consider LOS "C" as the standard acceptable threshold for all study intersections and roadways in the jurisdiction of Caltrans and areas maintained by the State (i.e., ramp intersections, and intersections along State Highways), LOS "C" as the standard acceptable threshold for all study intersections and roadways outside the Urban Reserve Limit line, and LOS "D" as the standard acceptable threshold for all study intersections and roadways in urban areas maintained by the County of San Luis Obispo.

To determine whether "significance" should be associated with unsignalized intersection operations, a supplemental traffic signal "warrant" analysis has also been completed, and is included in the Appendix. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study has employed the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD)*, as amended by the *MUTCD 2014 California Supplement*, for all study intersections. The signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, frequency of accidents, location of school areas etc. Both the FHWA's *MUTCD* and the *MUTCD 2014 California Supplement* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. The ultimate decision to signalize an intersection should be determined after careful analysis of all intersection and area characteristics.

This traffic study will specifically utilize the Peak-Hour-Volume based Warrant 3 as one representative type of traffic signal warrant analysis. Warrant 3 criteria are basically identical for both the FHWA's *MUTCD* and the *MUTCD 2014 California Supplement*. Since Warrant 3 provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating at above 40 mph), study intersections which use this specialized criteria will be clearly identified.

This traffic study focuses on a "planning level" evaluation of traffic operating conditions, which is considered sufficient for CEQA/NEPA purposes. The planning level evaluation incorporates appropriate heavy vehicle adjustment factors, peak hour factors, and signal lost time factors and reports the resulting intersection delays and LOS as estimated using the HCM 2010 based analysis methodologies. Based on discussions with the County, a Peak Hour Factor (PHF) consistent with existing traffic counts was applied in the analysis of all study intersections under all scenarios. Per HCM standards, a loss time of 4 seconds per critical movement is applied for

the analysis of all signalized intersections. The *Synchro 8* (Trafficware) software program was used to implement the HCM 2010 analysis methodologies, except for isolated intersections where the geometry limited the software's capability, i.e. the Tefft Street corridor, and the HCM 2000 analysis methodology was used. *Synchro 8* has the capability to produce results using both HCM 2000 and 2010 methodologies, and takes into account intersection signal phasing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. Assessment of "design level" parameters (including queuing on intersection lane groups, stacking length requirements, coordinated signal operations analyses, etc.) have not been included in this study.

Existing Traffic Operations

Roadway Segments

Existing roadway segment operations were quantified utilizing HCM methodologies based on daily traffic volumes from counts collected by Omni-Means in September 2014. The LOS for the 50 roadway segments throughout Nipomo and the South County region were established using the capacities in Table 1. Table 3 contains a summary of the existing roadway analysis and LOS conditions.

**TABLE 3
EXISTING CONDITIONS: ROADWAY LEVEL OF SERVICE**

#	Roadway	Location	Facility Type (# of Lanes) ^{2,3}	Target LOS	Average Daily Traffic	LOS
6	Highway 1 (Cienaga St)	W of Halcyon Road (West)	Two-Lane Arterial (w/LTL)	C	10,409	A
7	Highway 1 (Cienaga St)	W of Valley Road	Two-Lane Arterial (No LTL)	C	5,367	A
8	Highway 1 (Cienaga St)	E of Valley Road	Two-Lane Arterial (No LTL)	C	3,757	A
9	Highway 1 (Mesa View Rd)	S of Halcyon Road	Two-Lane Arterial (w/LTL)	C	4,668	A
10	Highway 1 (Guadalupe Rd)	S of Willow Road	Two-Lane Arterial (w/LTL)	C	4,983	A
11	State Route 166	E of US 101	Two-Lane Arterial (No LTL)	C	3,480	A
12	Camino Caballo	W of Osage Street	Two-Lane Local	D	1,975	B
13	Dale Avenue	S of Los Berros Road	Two-Lane Local	C	478	A
14	Division Street	W of Orchard Road	Two-Lane Collector	D	6,894	B
15	Division Street	S of Las Flores Drive	Two-Lane Collector	C	3,046	A
16	El Campo Road	N of Halcyon Road	Two-Lane Collector	C	1,778	A
17	El Campo Road	S of Halcyon Road	Two-Lane Collector	C	2,049	A
18	El Campo Road	S of US 101	Two-Lane Collector	C	2,060	A
19	Eucalyptus Road	W of Osage Street	Two-Lane Collector	D	2,204	A
20	Frontage Road	N of Juniper Street	Two-Lane Collector	D	1,498	A
21	Halcyon Road	N of Cienaga Road/Highway 1	Two-Lane Arterial (w/LTL)	C	9,876	A
22	Halcyon Road	S of Mesa View Road/Highway 1	Two-Lane Arterial (w/LTL)	C	4,668	A
23	Halcyon Road	W of El Campo	Two-Lane Collector	C	3,655	A
24	Hetrick Avenue	S of Summit Station Road	Two-Lane Local	C	391	A
25	Hutton Road	N of Cuyama Lane	Two-Lane Arterial (w/LTL)	C	7,801	A
26	Los Berros Road	E of Valley Road	Two-Lane Arterial (w/LTL)	C	4,866	A
27	Los Berros Road	E of Stanton Road	Two-Lane Arterial (w/LTL)	C	5,850	A
28	Los Berros Road	W of US 101	Two-Lane Arterial (No LTL)	C	5,239	A
29	Mary Avenue	N of Tefft Street	Two-Lane Collector	D	3,623	A
30	Mary Avenue	S of Tefft Street	Two-Lane Collector	D	3,377	A
31	Mesa Road	W of Tefft Street	Two-Lane Collector	D	3,269	A
32	Mesa Road	W of Osage Street	Two-Lane Collector	D	2,942	A
33	Orchard Road	S of Tefft Street	Two-Lane Arterial (w/LTL)	D	5,327	A
34	Orchard Road	S of Southland Street	Two-Lane Arterial (No LTL)	C	6,927	A
35	Pomeroy Road	S of Los Berros Road	Two-Lane Collector	C	1,202	A
36	Pomeroy Road	N of Willow Road	Two-Lane Collector	C	1,626	A
37	Pomeroy Road	N of Tefft Street	Two-Lane Arterial (w/LTL)	D	6,050	A
38	South Frontage Road	S of Tefft Street	Two-Lane Collector	D	7,227	B
39	Southland Street	W of South Frontage Road	Two-Lane Collector	D	857	A
40	Summit Station Road	S of Los Berros Road	Two-Lane Local	C	550	A
41	Tefft Street	E of Las Flores Drive	Two-Lane Arterial (No LTL)	D	1,473	A
42	Tefft Street	E of Mesa Road	Two-Lane Arterial (w/LTL)	D	7,579	A
43	Tefft Street	W of Mary Avenue	Four-Lane Arterial (w/LTL)	D	15,371	A
44	Tefft Street	W of US 101 SB Ramps	Tefft Street (Mary to Oakglen)⁴	D	24,500	F
45	Tefft Street	E of US 101 NB Ramps	Tefft Street (Mary to Oakglen) ⁴	D	9,684	A
46	Tefft Street	E of Oakglen Avenue	Two-Lane Arterial (w/LTL)	D	9,684	A
47	Tefft Street	W of Thompson Avenue	Two-Lane Arterial (w/LTL)	D	6,769	A
48	Thompson Avenue	S of US 101	Two-Lane Arterial (No LTL)	C	3,816	A
49	Thompson Avenue	N of Tefft Street	Two-Lane Arterial (w/LTL)	D	6,544	A
50	Thompson Avenue	N of SR 166	Two-Lane Arterial (No LTL)	C	2,922	A
51	Via Concha	E of Highway 1	Two-Lane Collector	C	1,316	A
52	Valley Road	N of Los Berros Road	Two-Lane Collector	C	5,367	A
53	Valley Road	S of Los Berros Road	Two-Lane Collector	C	7,068	B
54	Willow Road	E of Highway 1	Two-Lane Arterial (No LTL)	C	4,524	A
55	Willow Road	W of Pomeroy Road	Two-Lane Arterial (w/LTL)	C	7,641	A
56	Willow Road	W of US 101	Two-Lane Arterial (w/LTL)	C	8,555	A
57	Willow Road	E of US 101	Two-Lane Arterial (w/LTL)	C	2,181	A

Notes:

- BOLD** = Unacceptable operations
- w/LTL indicates arterials with either continuous center left turn lane (LTL) or left turn lanes at major intersections.
- No LTL indicates arterials without left turn lanes (LTL) at most major intersections.
- Tefft Street capacity from Mary Avenue to Oak Glen Avenue was determined by Synchro PM peak hour operations. LOS E was achieved using existing volumes from 2005. Based on the 2005 daily traffic count, approximately 22,000 daily trips occurred on this segment. Therefore, the LOS D/E threshold was determined to be 22,000.

As presented in Table 3, the roadway segment of Tefft Street west of US 101 Southbound Ramps operates at unacceptable LOS today.

The County's Public Works Department completed additional detailed 2010 Highway Capacity Manual calculations to determine any level of service deficiencies using a two-lane highway methodology. All roadways operate at or above the LOS thresholds except portions of Highway 1 and Los Berros which are included in the subsequent mitigations.

Intersections

Existing intersection counts were collected at 30 locations throughout the South County region. Intersections 9, 10, 14, 22, and 24 were analyzed using SimTraffic 8 (Trafficware) due to lane geometrics and configurations. Intersection 8 was analyzed using HCS 2010 during AM peak hour conditions using HCM 2010 methodology. All other intersections were analyzed using Synchro 8 (Trafficware). Existing AM and PM peak hour intersection traffic operations were quantified utilizing the existing intersection lane geometrics and controls (Figure 4) and the existing traffic volumes (Figure 5). Table 4 contains a summary of the existing intersection analysis and LOS conditions.

**TABLE 4
EXISTING CONDITIONS: INTERSECTION LEVELS OF SERVICE**

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met? ³	Delay	LOS	Warrant Met? ³
1	Highway 1 (Cienaga Street) and Halcyon Road (West)	AWSC	C	42.5	E	Yes	36.6	E	Yes
2	Highway 1 (Cienaga Street) and Halcyon Road (East)	AWSC	C	57.3	F	Yes	56.0	F	Yes
3	Highway 1 and Valley Road	TWSC	C	25.7	D	No	20.6	C	No
4	Highway 1 and Willow Road	TWSC	C	11.1	B	-	11.1	B	-
5	101 NB Ramps and Thompson Avenue/Los Berros Road	TWSC	C	21.0	C	-	13.3	B	-
6	101 SB Ramps and Thompson Avenue/Los Berros Road	TWSC	C	15.7	C	-	12.9	B	-
7	101 SB Ramps and Willow Road	TWSC	C	12.0	B	-	10.6	B	-
8	101 NB Ramps and Willow Road ⁴	TWSC	C	23.8	C	-	14.4	B	-
9	101 NB Ramps and Tefft Street ⁶	Signal	C	28.6	C	-	31.0	C	-
10	101 SB Off Ramp/Frontage Road and Tefft Street^{5,6}	Signal	C	36.0	D	-	35.2	D	-
12	101 SB Ramps and State Route 166	TWSC	C	20.1	C	-	20.6	C	-
13	101 NB Ramps and State Route 166	TWSC	C	10.8	B	-	13.1	B	-
14	State Route 166 and Hutton Road ^{6,7}	TWSC	C	10.3	B	-	12.6	B	-
15	State Route 166 and Thompson Avenue	TWSC	C	9.8	A	-	9.5	A	-
16	Juniper Street and Mary Avenue	TWSC	D	11.2	B	-	11.5	B	-
17	Halcyon Road and Highway 1 (Mesa View Drive)	Signal	C	23.3	C	-	20.4	C	-
18	Orchard Road and Division Street	Signal	D	22.8	C	-	27.7	C	-
19	Pomeroy Road and Los Berros Road	TWSC	C	12.3	B	-	11.5	B	-
20	Pomeroy Road and Juniper Street	TWSC	D	12.1	B	-	11.4	B	-
21	Pomeroy Road and Sandydale Drive	TWSC	D	10.6	B	-	10.7	B	-
22	Tefft Street and Mary Avenue ⁶	Signal	D	29.4	C	-	45.4	D	-
23	Tefft Street and Mesa Road	TWSC	D	18.1	C	-	19.2	C	-
24	Tefft Street and Oakglen Avenue ⁶	Signal	D	11.6	B	-	10.2	B	-
25	Tefft Street and Orchard Road	Signal	D	12.4	B	-	13.5	B	-
26	Tefft Street and Pomeroy Road	Signal	D	8.2	A	-	9.7	A	-
27	Tefft Street and Thomposon Avenue	Signal	D	24.2	C	-	21.7	C	-
28	Thompson Avenue and Nipomo High School⁸	TWSC	C	65.3	F	Yes	11.6	B	Yes
29	Willow Road and Pomeroy Road ⁸	AWSC	C	15.6	C	Yes	12.4	B	Yes
30	Willow Road and Thompson Avenue	TWSC	C	15.1	C	-	10.6	B	-

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal
3. Warrant = Based on California MUTCD Warrant 3
4. Intersection 8 was analyzed with HCS 2010 during AM peak hour conditions
5. Intersection 10 was analyzed as a 5-legged intersection, combined with Int.#11
6. Intersections 9, 10, 14, 22, 24 were analyzed with SimTraffic
7. Intersection 14 reports the worst movement
8. Construction for Traffic Signal has been awarded for Intersections 28 and 29
9. **Bold** - Unacceptable Operations

As shown in Table 4 there were five intersections in the AM peak hour and three intersections in the PM peak hour that operate at unacceptable LOS today. The Highway 1 (Cienaga Street) intersections at Halcyon Road (east and west) are currently operating at deficient LOS “E” or worse during both peak hour periods. Highway 1 at Valley Road and Thompson Avenue at Nipomo High School operate at unacceptable LOS in the AM peak hour under existing conditions. US 101 SB Off Ramp/S. Frontage Road at Tefft Street operates at unacceptable LOS in the AM and PM peak hours.

The Highway 1/Halcyon Road (east and west) intersections meet peak-hour-volume based signal warrants, indicating that the peak-hour-volume of minor-street vehicles experience unacceptable delays and are significantly large to warrant installation of a traffic signal at this location.

The US 101 Southbound Off-Ramp intersection at Tefft Street and South Frontage Road (Intersection 11) operates at unacceptable LOS “D” during the AM and PM peak hours. This intersection is closely spaced with the Tefft Street/US 101 SB On-Ramp intersection (Intersection 10), such that the US 101 Southbound On-Ramp is essentially the fifth leg of the US 101 Southbound Off-Ramp/South Frontage Road/Tefft Street intersection. The staggered alignment and close spacing of these intersections essentially impose the same delay from Intersection 10 to Intersection 11. Moreover, the constrained operations at the Tefft Street/US 101 Southbound Ramp intersections meter the eastbound traffic volumes at the Tefft Street/US 101 Northbound Ramp intersection, thereby artificially reducing the represented demand at the intersection.

Correction of Existing Deficiencies

In compliance with AB 1600 nexus requirements, the cost to correct existing deficiencies cannot be included in development impact fee calculations. As this is a fee program update, existing deficiencies that are ineligible for impact fee funding are defined differently than simply facilities that are operating below acceptable thresholds today.

Facilities that were not determined to be deficient at the time of the original nexus finding, for which an improvement has previously been identified, and for which impact fees are currently being collected, are not considered "existing" deficiencies. Fees can continue being collected for improvements at these locations, even if they are found to be operating deficiently today.

Existing Land Uses

According to the San Luis Obispo General Plan (South County Area Plan, last revision February 2014), the South County/Nipomo Planning Area encompasses 98,910 acres (154 square miles). According to a review of the parcel land use database (in GIS format) provided by County staff, 39,460 acres out of the 82,000 acres are within the existing South County Traffic Fee area, and therefore are included in the traffic model area. A summary of the County's General Plan land use designations is shown below in Table 5. The quantities of land uses within the County's planning area by Traffic Analysis Zone (TAZ) are included in the Appendix.

**TABLE 5
EXISTING LAND USES**

Land Use	2015 Conditions		
	Area 1	Area 2	Fee Area
Residential (dwelling units)			
Single Family	5,121	2,481	7,602
Multi Family	1,015	100	1,115
Mobile Home	317	316	633
Total Residential	6,453	2,897	9,350
Non-Residential (acres)			
Agriculture	1,232	2,240	3,472
Commercial/Retail	53	64	117
Golf	178	251	429
Industrial	23	21	44
Office	18	17	35
Storage + Warehouse	81	28	109
Total Non-Residential	1,585	2,620	4,205
Estimated Employment			
Retail	204	71	275
Service	558	282	839
Other	599	857	1,455
Total Employment	1,360	1,209	2,569

Luis Obispo County and Arroyo Grande, that are included in the South County TDM

Base Year Traffic Model Development

This chapter presents the supporting technical documentation for the South County traffic model development process.

Data Sources

The travel demand model is based on land use information at parcel level resolution as provided by the County of San Luis Obispo Engineering Department in ESRI Arc View Shape file format. The parcel, road and county limit shape file were projected into California State Plane, Zone IV, US Foot, coordinate systems using the Lambert Conformal Conic projection.

Data Evaluation

In order to generate an accurate representation of the existing land use patterns within the study area, an evaluation of the parcel land use data was performed. The County assessor uses a numeric code to describe the land use of parcels within the County. The model roadway network was created using existing roadway maps and the parcel shape file.

The Traffic Analysis Zones (TAZs) creation process begins by determining which parcels contribute traffic to the model network roads. Each parcel is analyzed to determine how the traffic it generates will logically shed to the model network. A TAZ is composed of all the parcels that shed to common model network roads. Creation of the model network is completed with the addition of centroid connectors from the TAZs.

Choice of Model Software – Cube/Voyager

In 2008, the prior South County model (2006) was upgraded by Omni-Means to the newest transportation planning software format, *Cube*. The CUBE/Voyager (Citilabs) software suite was used for the current update to the South County Travel Demand Model. The prior version of the South County model also used CUBE. The travel demand model follows an industry-standard four-step procedure for modeling travel demand. The steps are as follows:

1. Trip Generation – Estimate the trips generated and attracted by individual Traffic Analysis Zones (TAZs)
2. Trip Distribution – Match trips that are generated and attracted between zones for varying trip purposes.
3. Mode Choice – Select a travel mode for a particular trip.
4. Assignment – Select a path for the chosen travel mode and trip.

Creation of TAZ Map

South County land uses are simplified into areas referred to as “Traffic Analysis Zones” (TAZs) for travel demand modeling purposes. Aggregating minute areas like parcels into larger zones decreases the computation intensity of the model and simplifies data processing. The TAZs are defined using real-world traffic boundaries, such as natural geographic barriers (e.g. rivers and creeks) and “man-made” barriers (e.g. major street right-of-ways and railroads).

Figure 6 presents the South County TAZ boundary map. A total of 113 TAZs were defined for the South County area. The TAZ boundaries are separated into three areas, as presented in Figure 6. Two of the three model areas are fee areas (Area 1 and Area 2), which will be used in the South County Circulation Study and Impact Fee Update.

Land Use –TAZ Integration

Travel demand models simulate travel demand by first estimating trips generated in zones within the study area. The number and type of trips generated and attracted between areas depend on land use. The County Assessor’s parcel database provides land use data in terms of zoning and development type (e.g. housing, commercial development, public uses). The land uses were further simplified into housing unit and employment estimates, which are consistent with the US Census. The existing land uses within the County are summarized in Table 1.

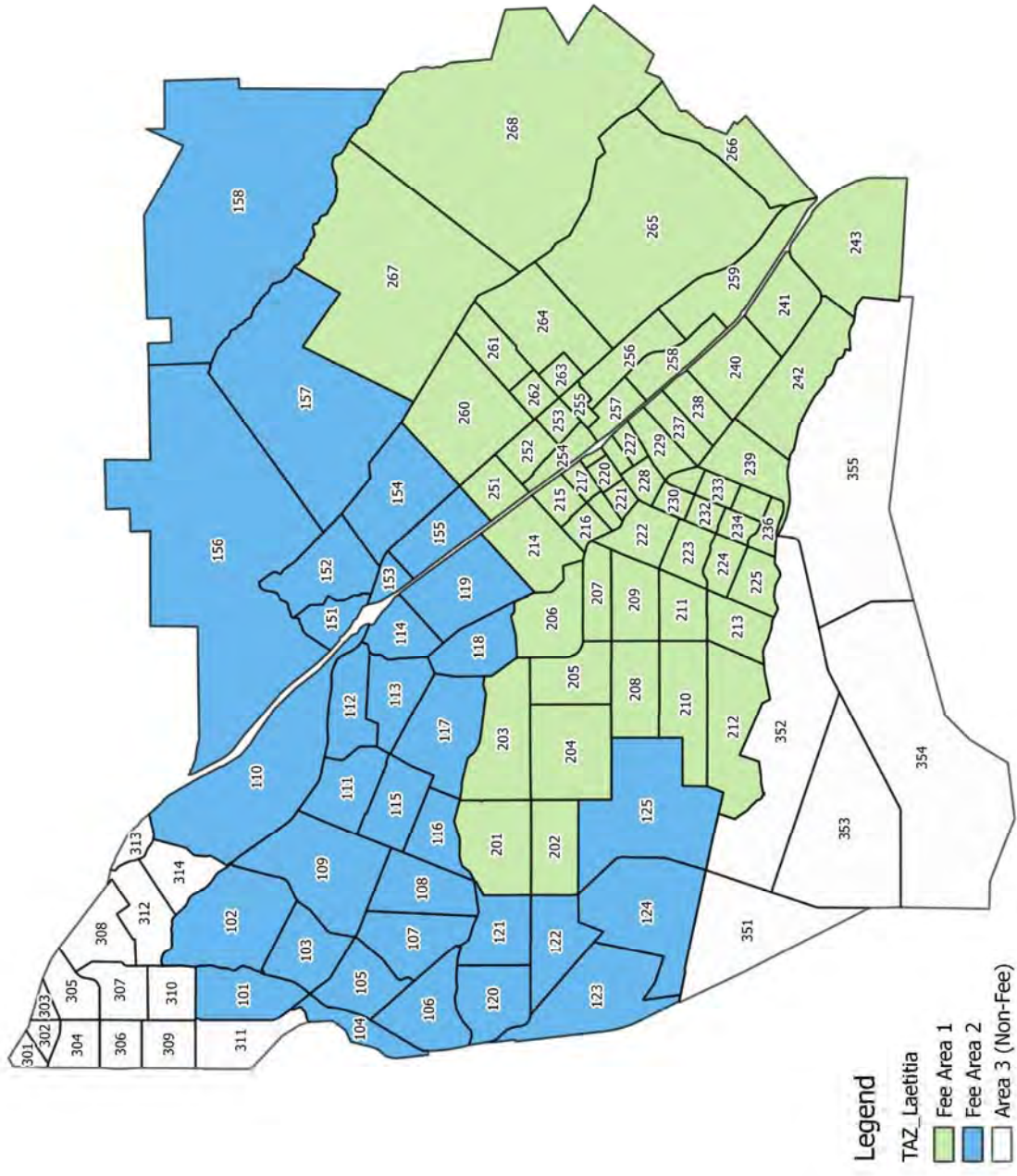
Network Creation

Street networks handle the trips generated by land use. The travel demand model simulates a road’s ability to handle travel demand based on facility type (e.g. freeway, highway, arterial, and collector), number of lanes, speed, and alignment. Figure 7 shows the Base Year network map, which reflects the existing South County roadway system.

Table 6 presents the road classification categories, the associated operating characteristics of each category, and examples of roads in each category.

**TABLE 6
ROADWAY CLASSIFICATION**

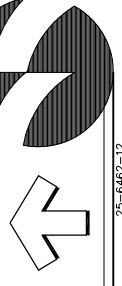
Classification	Capacity (Vehicles per Lane per Hour)	Free-Flow Speed (mph)	Example Roadway
Freeway	2000	65-70	US Highway 101
Highway	1000	45-55	Highway 1, State Route 166
Major Arterial	800	35-45	Tefft Street
Minor Arterial	700	35-45	Orchard Road, Los Berros Road
Collector	600	25-35	Osage Street, Division Street
Local	300	25-35	Mesa Road, Camino Caballo



South County Circulation Study & Traffic Impact Fee Update

Figure 6

South County TAZ Boundary Map

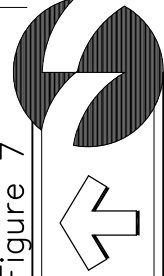




South County Circulation Study & Traffic Impact Fee Update

Figure 7

South County Travel Demand Model Network Map



Trip Generation

Land uses generate a varying number of trips based on development type and development quantity. Trip producing land use groups include single-family and multi-family residential dwelling units. Trip attracting land use groups include retail, office, industrial and educational land uses. The land use quantities derived from the parcel database was converted into dwelling unit and employment estimates. These TAZ-level estimates were checked for consistency with the US Census and the regional model.

Each trip purpose has a different trip generation rate for each land use. Trip generation rates for individual land uses were checked against traffic studies contained in the Institute of Transportation Engineers *Trip Generation, 9th Edition* manual.

Trip Distribution

The trips generated and attracted between land uses depend on trip purpose and network impedance. Modeled trips were sorted into five trip purpose categories.

1. Home-Based Work (HBW)
2. Home-Based Education (HBE)
3. Home-Based Shop (HBS)
4. Home-Based Other (HBO)
5. Other-Based Other (OBO)

The ability for one land use to satisfy the trip purpose of another land use leads to the creation of an origin-destination pairing (e.g. a trip from a residential area to an area containing retail development). The likelihood of such a pairing also depends on the travel time for such a trip to occur. Long travel times between zones, which are affected by congested roadways, decrease the likelihood of an origin-destination pairing and results in the model seeking another closer trip pairing opportunity.

Mode Choice

The South County travel demand model solely simulates automobile travel patterns. Transit service is not a major component of the vehicular traffic within South County and was not considered in the travel demand model process.

Trip Assignment

Trips between origin-destination pairs are assigned by the model using an equilibrium process. The multiple possible paths between zones are iteratively loaded until no one path provides an advantage over another. The volumes on each network link are then compared against real-world traffic counts to determine model correctness. The following section outlines the model calibration procedure.

Model Calibration

The previous section described the creation of a complete but “un-validated” base year model, i.e. the model may not accurately reflect real-world travel demand. Calibrating the model so that it reasonably reflects real world travel demand requires matching the model estimate on a set of links against traffic counts. The calibration process and technical information is included in the Appendix.

Build-Out Conditions Traffic Model Development

The creation of a long-term future conditions traffic forecast model for the South County Nipomo planning area involved the following steps.

Creation of Future Conditions Land Use Database

The South County built-out land use database was created by assuming existing uses on currently developed lands and build-out per the County's general plan (provided by San Luis Obispo County) on vacant and/or underdeveloped lands. Parcels that were considered "vacant" (San Luis Obispo County Assessor's criteria) were first identified. The currently vacant parcels were segregated into residential and non-residential land use categories based on General Plan zoning designations contained in the County tract map. The South County/Nipomo Planning Area comprises of approximately 47,000 acres, of which approximately 17,600 acres of lands are considered "vacant" by the San Luis Obispo County Assessor's parcel data. The area currently has 17,000 acres of residential, 150 acres of retail/commercial, 49 acres of industrial, 8,000 acres of general agricultural, 429 acres of golf/recreational, 230 acres of office/service, and 3,700 acres of other/public/government land uses.

Future land use projections were based on the San Luis Obispo County General Plan. The build-out of the area per General Plan zoning is projected to result in 19,700 acres of residential, 277 acres of retail/commercial, 313 acres industrial, 8,000 acres of general agricultural, 680 acres of golf/recreational, 313 acres of office/service, and 3,700 acres of other/public/government use. The development densities for build-out land uses were projected to remain consistent with existing land use density. Residential unit density for future development was projected based on the residential unit densities per land use presented in the General Plan.

Much of the recent residential development in the South County area, outside of the Community of Nipomo, has been developed as part of "villages". These villages are primarily residential developments oriented around recreational areas (e.g. golf courses) and include some commercial development. Examples of village development include Black Lake and Cypress Ridge. The Woodlands development was considered as the sole future residential village development in developing the future conditions model. The growth in the Woodlands development accounts for what has been developed since 2006, and is based on the proposed 2014 *Trilogy at Monarch Dunes Specific Plan Amendment*. The build out conditions also includes build-out of the Laetitia Agricultural Cluster Project, per the General Plan, which is located in Fee Area 2 near the existing Laetitia Vineyard.

Including Woodlands and the remaining undeveloped residential parcels in the area, the residential build-out of the South County area is projected to result in 9,891 single-family dwelling units, 1,498 multi-family dwelling units and 633 mobile homes. This residential growth projection represents a 2,600 dwelling unit increase.

The build-out land use database, as described above, is summarized in Table 7. The build-out land use for each TAZ was tabulated and is included in the Appendix.

**TABLE 7
BUILD-OUT LAND USES**

Land Use	Area 1			Area 2			Total		
	Existing	Added	Build-Out	Existing	Added	Build-Out	Existing	Added	Build-Out
Residential (dwelling units)									
Single Family	5,121	1,124	6,245	2,481	1,093	3,574	7,602	2,217	9,819
Multi Family	1,015	303	1,318	100	80	180	1,115	383	1,498
Mobile Home	317	0	317	316	0	316	633	0	633
Total Residential	6,453	1,427	7,880	2,897	1,173	4,070	9,350	2,600	11,950
Non-Residential (acres)									
Agriculture	1,232	0	1,232	2,240	0	2,240	3,472	0	3,472
Commercial	53	166	219	64	13	77	117	179	296
Golf	178	86	264	251	151	402	429	237	666
Industrial	23	0	23	21	264	285	44	264	308
Office	18	19	37	17	0	17	35	19	54
Storage + Warehouse	81	0	81	28	0	28	109	0	109
Total Non-Residential	1,585	271	1,856	2,620	428	3,048	4,205	699	4,904
Estimated Employment									
Retail	204	825	1,029	71	39	110	275	864	1,139
Service	558	806	1,364	282	227	509	839	1,033	1,872
Other	599	0	599	857	67	924	1,455	67	1,522
Total Employment	1,360	1,631	2,991	1,209	333	1,542	2,569	1,964	4,533

Year 2035 as the Future Conditions' Model Year

Caltrans and other agencies typically require twenty years or more of design life span for improvements to their transportation facilities. Recognizing these concerns, and based on discussions with County staff, year 2035 was agreed to as the cumulative or long-term future conditions' traffic model forecast year. Year 2035 is also anticipated to be consistent with the long-range forecast year for the upcoming Regional Traffic Model (RTM) being developed by SLOCOG.

The Build-out traffic model assumes full build-out of the current General Plan land uses within the South County area, superimposed on top of appropriate background traffic growth on the "through" corridors within the Community and its vicinity (e.g. US 101, SR 1, and US 166) and traffic growth to/from other "gateways" to the area. Based on the rate of residential growth in the area, the projected twenty-year growth is 28%. The twenty-year annualized growth rate is 1.2%. The annual increment in housing growth is approximately 130 dwelling units per year. As a point of reference, the County of San Luis Obispo has experienced an annualized growth rate of 2.1% over the past ten years, a growth of about 1,730 dwelling units since 2005. The City of Paso Robles, which has experienced the most rapid growth out of all incorporated areas in the County, has experienced an annual growth rate of 2.8%.

State facilities including US 101, SR 1, and SR 166, within the vicinity of the Community's planning area have experienced approximately 0.3% to 1.2% compounded annual growth in AADT over the last ten years (2014 through 2004). Based on Caltrans ten-year count data and considering differential rates of growth for communities adjacent to the South County area (e.g. Arroyo Grande and Santa Maria), the twenty-year US 101 background traffic change has been estimated as 21% growth from the south and 23% growth from the north. Growth from local gateways, particularly from the City of Arroyo Grande to the north and the City of Guadalupe to the south, was based on California Department of Finance population growth projections. As

such, the year 2035 growth from local gateways has been assumed at 23% as a worst case scenario.

The Build-Out land use database (General Plan build-out land uses) was multiplied with the calibrated existing conditions trip generation rates to develop the projected future trip generation. The updated year 2035 gateway trip production-attraction table and “through” (external or X-X) trip table were incorporated into the Build-Out traffic model.

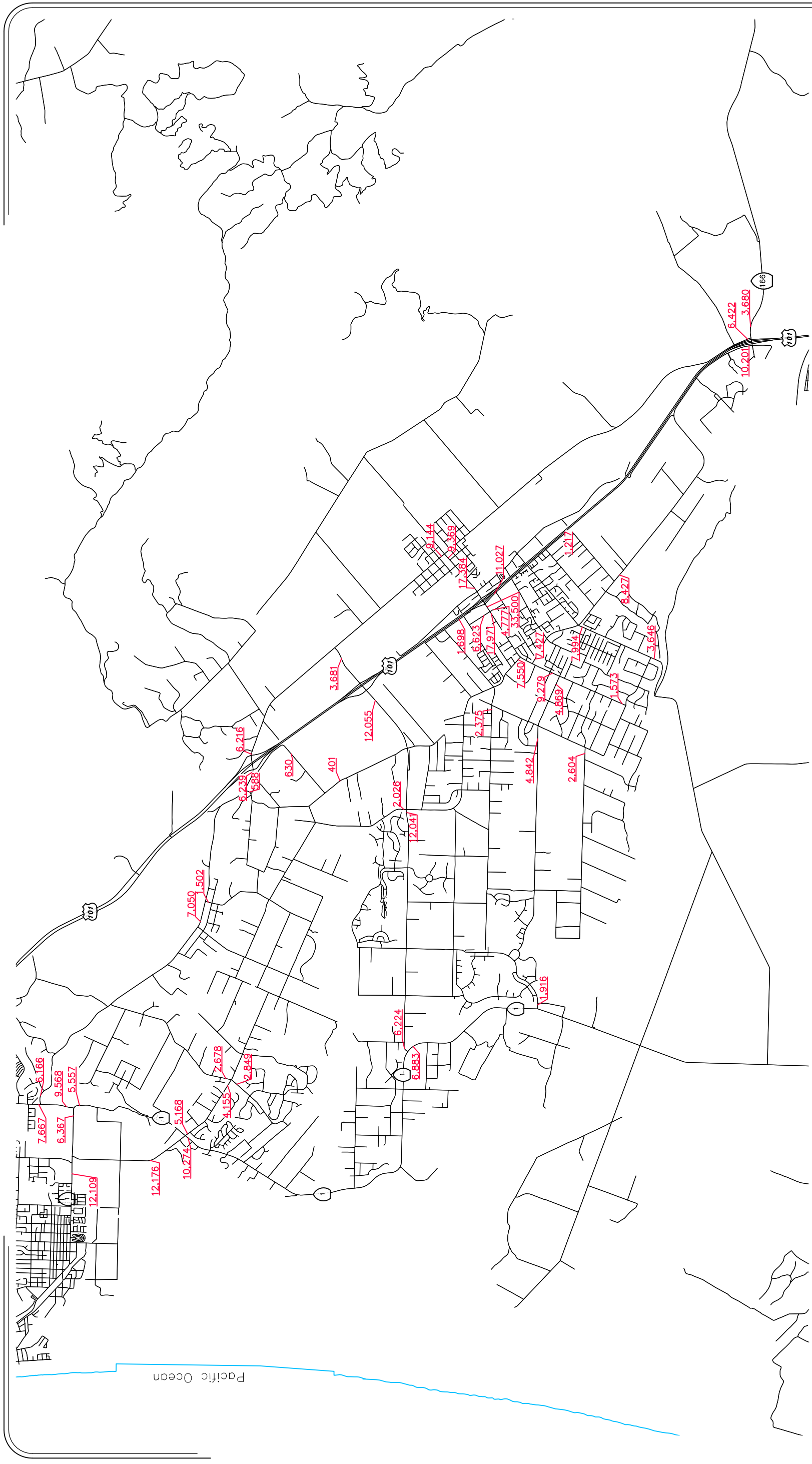
Build-Out Model Network

The projected Build-Out segment volumes are listed in Table 8 and illustrated on Figure 8. Peak hour intersection volumes at study intersections are shown in Figure 9. The Build-Out model land uses and trip volumes generated by TAZ are shown in the Appendix.

Based on the link volumes and roadway characteristics provided by the County, the peak hour Levels of Service were estimated using Highway Capacity Manual 2010 (HCM 2010) methodologies. The daily volume thresholds for roadways are presented in Table 1 provide a generalized estimate on typical roadway capacities.

Future intersection LOS was estimated using the projected Build-Out traffic volumes (Figure 8) and Highway Capacity Manual methodologies. Table 2 provides the typical delay thresholds for intersections of varying control types (e.g. signal, two-way stop, all-way stop). Due to the rural nature of the South County Nipomo planning area, an isolated intersection methodology has been employed for a majority of the intersections. *Synchro 8 (Trafficware)* software program has the capability to produce results using both HCM 2000 and 2010 methodologies, and takes into account intersection signal phasing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. *Synchro 8* was used to implement the HCM 2010 analysis methodologies, except for isolated intersections where the geometry limited the software's capability, i.e. the Tefft Street corridor, and the HCM 2000 analysis methodology was used. Intersection 8 was analyzed using HCS 2010 during AM peak hour conditions using HCM 2010 methodology.

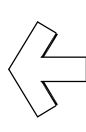
Table 9 shows the estimated intersection LOS under existing intersection controls and the projected Build-Out intersection volumes, as shown in Figure 9.



South County Circulation Study and Traffic Impact Fee Update

2035 Buildout Conditions Average Daily Traffic Projections (South County Overview)

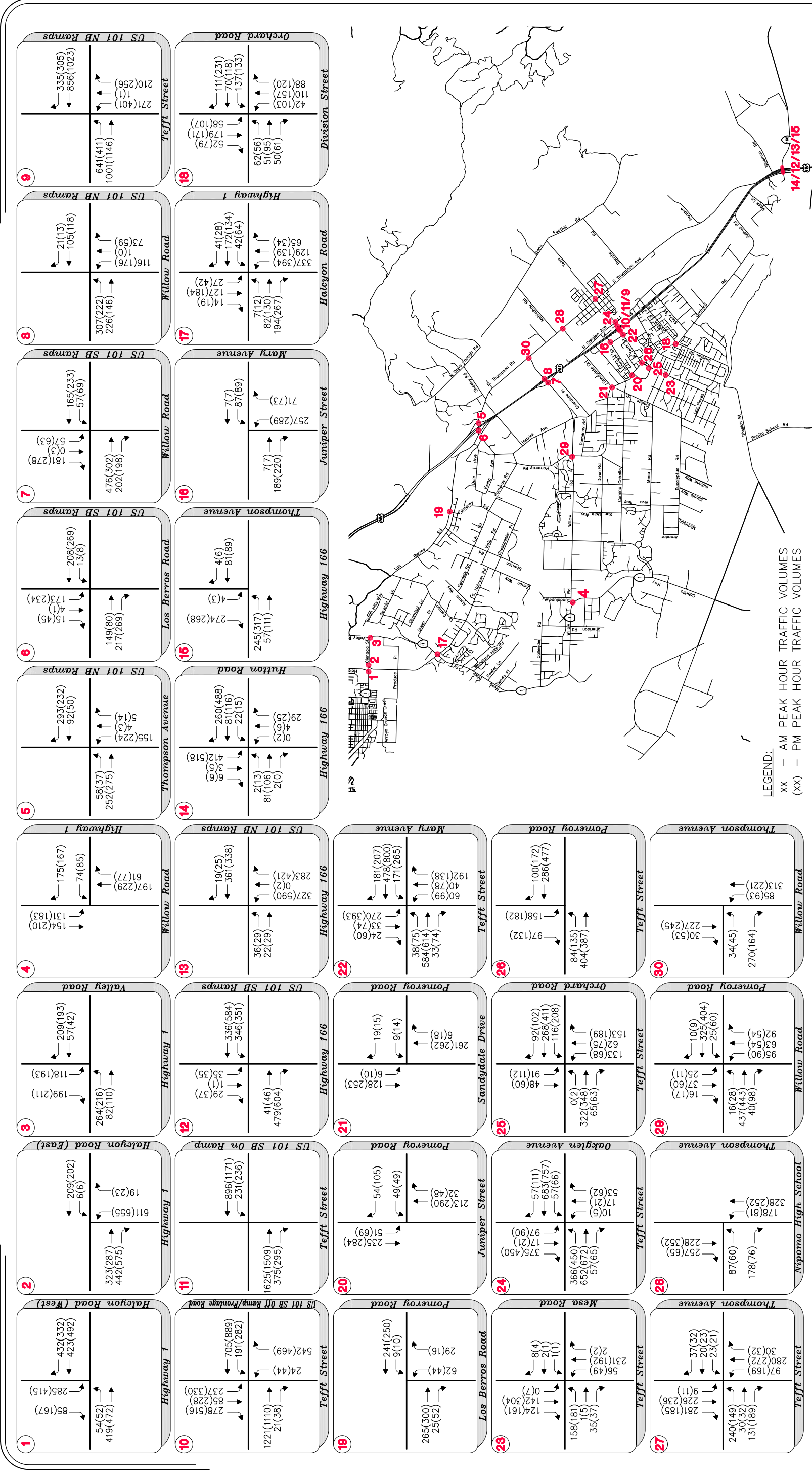
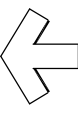
Figure 8



South County Circulation Study & Traffic Impact Fee Update

2035 Buildout Peak Hour Traffic Volumes

Figure 9



**TABLE 8
BUILD-OUT CONDITIONS: ROADWAY SEGMENT AVERAGE DAILY TRAFFIC LEVELS OF SERVICE**

Roadway	Location	Facility Type (# of Lanes) ^{3,4}	HCS Analysis LOS ⁵	Average Daily Traffic	LOS
Highway 1 (Cienaga St)	W of Halcyon Road (West)	Two-Lane Arterial (w/LTL)	-	12,109	B
Highway 1 (Cienaga St)	W of Valley Road	Two-Lane Arterial (No LTL)	-	6,367	A
Highway 1 (Cienaga St)	E of Valley Road	Two-Lane Arterial (No LTL)	C	5,557	A
Highway 1 (Mesa View Rd)	S of Halcyon Road	Two-Lane Arterial (w/LTL)	D	10,274	A
Highway 1 (Guadalupe Rd)	S of Willow Road	Two-Lane Arterial (w/LTL)	C	6,883	A
State Route 166	E of US 101	Two-Lane Arterial (No LTL)	B	3,680	A
Camino Caballo	W of Osage Street	Two-Lane Local	-	2,375	C
Dale Avenue	S of Los Berros Road	Two-Lane Local	-	588	A
Division Street	W of Orchard Road	Two-Lane Collector	-	7,994	C
Division Street	S of Las Flores Drive	Two-Lane Collector	D	3,646	A
El Campo Road	N of Halcyon Road	Two-Lane Collector	C	2,678	A
El Campo Road	S of Halcyon Road	Two-Lane Collector	B	2,849	A
El Campo Road	S of US 101	Two-Lane Collector	C	4,660	A
Eucalyptus Road	W of Osage Street	Two-Lane Collector	-	2,604	A
Frontage Road	N of Juniper Street	Two-Lane Collector	-	1,698	A
Halcyon Road	S of Cienaga Road/Highway 1	Two-Lane Arterial (w/LTL)	D	12,176	B
Halcyon Road	S of Mesa View Road/Highway 1	Two-Lane Arterial (w/LTL)	C	5,168	A
Halcyon Road	W of El Campo	Two-Lane Collector	C	4,155	A
Hetrick Avenue	S of Summit State Road	Two-Lane Local	-	401	A
Hutton Road	N of Cuyama Lane	Two-Lane Arterial (w/LTL)	D	10,201	A
Los Berros Road	E of Valley Road	Two-Lane Arterial (w/LTL)	E	6,166	A
Los Berros Road	E of Stanton Road	Two-Lane Arterial (w/LTL)	D	7,050	A
Los Berros Road	W of US 101	Two-Lane Arterial (No LTL)	D	6,239	A
Mary Avenue	N of Tefft Street	Two-Lane Collector	-	6,623	B
Mary Avenue	S of Tefft Street	Two-Lane Collector	-	4,777	A
Mesa Road	W of Tefft Street	Two-Lane Collector	-	4,869	A
Mesa Road	W of Osage Street	Two-Lane Collector	-	4,842	A
Orchard Road	S of Tefft Street	Two-Lane Arterial (w/LTL)	-	7,427	A
Orchard Road	S of Southland Street	Two-Lane Arterial (No LTL)	D	8,427	A
Pomeroy Road	S of Los Berros Road	Two-Lane Collector	B	1,502	A
Pomeroy Road	N of Willow Road	Two-Lane Collector	B	2,026	A
Pomeroy Road	N of Tefft Street	Two-Lane Arterial (w/LTL)	-	7,550	A
South Frontage Road	S of Tefft Street	Two-Lane Collector	-	11,027	E
Southland Street	W of South Frontage Road	Two-Lane Arterial (No LTL)	-	1,217	A
Summit Station Road	S of Los Berros Road	Two-Lane Local	-	630	A
Tefft Street	E of Las Flores Drive	Two-Lane Arterial (No LTL)	-	1,573	A
Tefft Street	E of Mesa Road	Two-Lane Arterial (w/LTL)	-	9,279	A
Tefft Street	W of Mary Avenue	Four-Lane Arterial (w/LTL)	-	17,971	A
Tefft Street	W of US 101 SB Ramps	Tefft Street (Mary to Oakglen)⁴	-	33,500	F
Tefft Street	E of US 101 NB Ramps	Tefft Street (Mary to Oakglen)⁴	-	25,484	F
Tefft Street	E of Oakglen Avenue	Two-Lane Arterial (w/LTL)	-	17,384	E
Tefft Street	W of Thompson Avenue	Two-Lane Arterial (w/LTL)	-	9,369	A
Thompson Avenue	S of US 101	Two-Lane Arterial (No LTL)	D	6,216	A
Thompson Avenue	N of Tefft Street	Two-Lane Arterial (w/LTL)	-	9,144	A
Thompson Avenue	N of SR 166	Two-Lane Arterial (No LTL)	C	6,422	A
Via Concha	E of Highway 1	Two-Lane Collector	B	1,916	A
Valley Road	N of Los Berros Road	Two-Lane Collector	C	7,667	C
Valley Road	S of Los Berros Road	Two-Lane Collector	C	9,568	D
Willow Road	E of Highway 1	Two-Lane Arterial (No LTL)	C	6,224	A
Willow Road	W of Pomeroy Road	Two-Lane Arterial (w/LTL)	D	12,041	B
Willow Road	W of US 101	Two-Lane Arterial (w/LTL)	-	12,055	B
Willow Road	E of US 101	Two-Lane Arterial (w/LTL)	-	3,681	A

Notes:

- BOLD** = Unacceptable operations
- w/LTL indicates arterials with either continuous center left turn lane (LTL) or left turn lanes at major intersections.
- No LTL indicates arterials without left turn lanes (LTL) at most major intersections.
- Tefft Street capacity from Mary Avenue to Oak Glen Avenue was determined by Synchro PM peak hour operations. LOS E was achieved using existing volumes from 2005. Based on the 2005 daily traffic count, approximately 22,000 daily trips occurred on this segment. Therefore, the LOS D/E threshold was determined to be 22,000.
- Arterials and Collectors outside the URL not build to current standards, were also analyzed using the two-lane highway methodology to confirm LOS deficiencies. Locations previously mitigated were also omitted.

**TABLE 9
BUILD-OUT CONDITIONS: INTERSECTION LEVELS OF SERVICE**

#	Intersection	Control Type ^{1,2}	Target LOS	AM Peak Hour			PM Peak Hour		
				Delay	LOS	Warrant Met? ³	Delay	LOS	Warrant Met? ³
1	Highway 1 (Cienaga Street) and Halcyon Road (West)	AWSC	C	52.2	F	Yes	57.8	F	Yes
2	Highway 1 (Cienaga Street) and Halcyon Road (East)	AWSC	C	58.4	F	Yes	57.4	F	Yes
3	Highway 1 and Valley Road	TWSC	C	64.9	F	No	111.6	F	Yes
4	Highway 1 and Willow Road	TWSC	C	14.1	B	-	15.8	C	-
5	101 NB Ramps and Thompson Avenue/Los Berros Road	TWSC	C	43.9	E	Yes	19.2	C	Yes
6	101 SB Ramps and Thompson Avenue/Los Berros Road	TWSC	C	25.0	C	Yes	18.1	C	Yes
7	101 SB Ramps and Willow Road	TWSC	C	15.1	C	Yes	13.3	B	Yes
8	101 NB Ramps and Willow Road ⁴	TWSC	C	26.9	D	Yes	29.5	D	Yes
9	101 NB Ramps and Tefft Street	Signal	C	98.2	F	-	25.2	C	-
10	101 SB Off Ramp/Frontage Road and Tefft Street ⁵	Signal	C	248.9	F	-	136.4	F	-
12	101 SB Ramps and State Route 166 ⁶	TWSC	C	103.6	F	No	149.5	F	Yes
13	101 NB Ramps and State Route 166	TWSC	C	18.3	C	Yes	44.9	E	Yes
14	State Route 166 and Hutton Road ⁶	TWSC	C	13.1	B	Yes	22.0	C	Yes
15	State Route 166 and Thompson Avenue	TWSC	C	11.2	B	Yes	11.0	B	Yes
16	Juniper Street and Mary Avenue	TWSC	D	15.8	C	-	20.8	C	-
17	Halcyon Road and Highway 1 (Mesa View Drive)	Signal	C	26.1	C	-	25.4	C	-
18	Orchard Road and Division Street	Signal	D	24.5	C	-	29.5	C	-
19	Pomeroy Road and Los Berros Road	TWSC	C	13.5	B	-	12.7	B	-
20	Pomeroy Road and Juniper Street	TWSC	D	15.8	C	-	15.6	C	-
21	Pomeroy Road and Sandydale Drive	TWSC	D	11.3	B	-	11.4	B	-
22	Tefft Street and Mary Avenue	Signal	D	56.3	E	-	110.2	F	-
23	Tefft Street and Mesa Road	TWSC	D	36.0	E	Yes	44.8	E	Yes
24	Tefft Street and Oakglen Avenue	Signal	D	236.5	F	-	166.4	F	-
25	Tefft Street and Orchard Road	Signal	D	51.4	D	-	42.6	D	-
26	Tefft Street and Pomeroy Road	Signal	D	39.4	D	-	36.6	D	-
27	Tefft Street and Thompson Avenue	Signal	D	28.1	C	-	19.2	B	-
28	Thompson Avenue and Nipomo High School ⁷	Signal	C	19.3	B	-	4.5	A	-
29	Willow Road and Pomeroy Road ⁷	Signal	C	16.6	B	-	24.0	C	-
30	Willow Road and Thompson Avenue	TWSC	C	24.0	C	-	13.0	B	-

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal
3. Warrant = Based on California MUTCD Warrant 3
4. Intersection 8 was analyzed with HCS 2010 during AM peak hour conditions
5. Intersection 10 was analyzed as a 5-legged intersection, combined with Int.#11
6. Intersection 14 reports the worst approach delay from SimTraffic Analysis due to the three-way stop control
7. Intersections 28 and 29 are considered to be Signalized under build out; their construction has been awarded.
8. Signal Warrant Analysis completed for closely spaced intersections or interchanges which have one deficient intersection.

As shown in Table 8, several roadway segments within South County are projected to operate at deficient LOS "C" or worse for rural roadways, and LOS "D" or worse for urban roadways, during the projected build-out conditions. In particular are the segments of Tefft Street, between Mesa Road and Oakglen Avenue; the segments of Halcyon Road, near the Highway 1 (Cienaga Street and at Mesa View Drive) intersections; South Frontage Road south of Tefft Street; and Valley Road south of Los Berros Road. Roadway improvement alternatives are evaluated in the following section.

Shown in Table 9, intersections at the Highway 1(Cienaga Street)/Halcyon Road junction, at Highway 1/Valley Road, at US 101 NB Ramps/Thompson Road, US 101 NB Ramps/Willow Road, along the Tefft Street corridor, at Tefft Street and Mesa Road, and at the US 101/SR 166 interchange are projected to result in deficient LOS "D" or worse under build-out conditions. Intersection improvement alternatives are evaluated in a subsequent section.

Circulation Issues of Concern

The following are summaries of circulations issues of concern, based on forecasts developed using the South County/ Nipomo Traffic Model for Build-out cumulative conditions. Utilizing average daily traffic (ADT) forecasts produced by the model, the peak hour-based Levels of Service for each roadway segment were calculated according to the methodology described in Chapter 2. Consistent with San Luis Obispo County and Caltrans policies, LOS “C” was taken as the general threshold for acceptable/tolerable operations for rural areas and within Caltrans jurisdiction, and LOS “D” taken as the general threshold for urban areas. Roadway segments with projected LOS worse than the identified thresholds were determined as “deficient”. Implications on community traffic conditions and safety are also described in this section, along with possible effects resulting from approved/planned capital improvement projects listed in the South County Nipomo Capital Improvement Program project inventory.

Roadway Segments

Tefft Street Corridor

- a. *Between Mary Avenue and Oakglen Avenue* – This segment of Tefft Street, which passes through the US 101 interchange and the primary commercial corridor of the Community of Nipomo, is projected to operate at deficient LOS “E” or worse during build-out conditions. The roadway is configured as a five lane arterial and has adequate capacity to provide acceptable operations based on roadway segment traffic volumes alone. However, the LOS along Tefft Street through the interchange is constrained by the close intersection spacing and the limited capacity of the US 101 interchange bridge. The recommended circulation improvement in response to the projected deficient LOS is to perform capacity improvements at the intersections along this roadway segment. The intersection improvements are discussed in the following section.
- b. *Between Oakglen Avenue and Thompson Avenue* – As detailed in the 2004 South County Circulation Study Update, the County Board of Supervisors adopted the “Olde Town Nipomo Design and Circulation Plan”, which calls for a three-lane arterial configuration with on-street angled parking and additional features conducive to a pedestrian environment (e.g. bulb-outs). The volume of traffic along this roadway segment is projected to result in LOS “E” with the existing three-lane configuration. While roadway capacity may decrease to LOS “F” due to the on-street angled parking and pedestrian features, the recommended circulation improvement is to widen Tefft Street to four lanes from the US 101 NB Ramp intersection to the Nipomo Creek Bridge.

South Frontage Road (south of Tefft Street)

- a. The projected traffic volumes along South Frontage Road results in LOS "E". The close intersection spacing between the US 101 ramps and the Tefft Street/Frontage Road intersection constrains the traffic capacity of the roadway. The recommended circulation improvements are presented in the Tefft Street corridor improvements, included in Chapter 5.

Valley Road (south of Los Berros Road)

- a. The projected traffic volumes along Valley Road results in LOS "D" under build-out conditions. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to upgrade this section of Valley Road to an arterial with left turn lanes, matching the section to the north of Los Berros Road.

Orchard Road (Southland Street to Nancy Lane)

- a. The projected traffic volumes along Orchard Road results in LOS "D" under build-out conditions using the Highway Capacity Software (HCS) analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to install a left turn lane and install bike lanes.

Los Berros Road Improvements

- a. The projected traffic volumes along Los Berros Road results in LOS "D" or worse under build-out conditions using the HCS analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to add bike lanes and add left turn lanes at Dale Avenue, Pomeroy Road, Stanton Street, El Campo Road, and Century Lane. These improvements are partially complete and improvements will complete to arterial standards.

Highway 1 – West of Willow Road

- a. The projected traffic volumes along Highway 1 between Willow Road and 1.3 mile west of Willow Road results in LOS "D" under build-out conditions using the HCS analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to install a left turn lane and install 8' shoulders.

Intersections

Highway 1 (Cienaga Street)/Halcyon Road (east/west) – The Halcyon Road intersections at Highway 1 currently operate at LOS "F" and worsen under build-out conditions. The close intersection spacing and lack of capacity from turn lanes and intersection control types causes major delays through these intersections. Improvements for these intersections, which are configured as an off-set T-intersection, have been studied in the past, however final approval was not met. The recommended improvements entail converting these two intersections into roundabouts, which also adds capacity to the roadway and provides acceptable LOS for the projected traffic volumes at these intersections.

Highway 1 (Cienaga Street/Mesa View Road)/Valley Road – This intersection currently operates at LOS "D" in the existing AM peak hour. Per the 2004 South County Circulation Study Update, a completed Project Study Report (PSR) recommends that the horizontal curves on Highway 1 from Valley Road to Halcyon Road be realigned as part of the Halcyon Road/Highway 1 phased improvements. The recommended intersection improvement is to add a southbound right turn lane and convert the intersection to a roundabout, making Highway 1 (Cienaga Street) a roundabout corridor from Valley Road to Halcyon Road.

Moreover, the recommended improvement at this intersection, beyond realigning the horizontal curve from the northwest-bound approach, is to widen the eastbound and southbound approaches to accommodate roundabouts, and add a southbound right turn lane.

US 101 Northbound Ramps/Willow Road – This intersection is projected to operate at deficient LOS "D" under build-out conditions. The volumes are projected to satisfy peak hour warrants for a traffic signal. The volumes at the intersection of US 101 Southbound Ramps/Willow Road are also projected to meet the peak hour signal warrant for a traffic signal. The recommended

intersection improvement is converting the intersection ramp terminals for US 101/Willow Road interchange to a system of two traffic signals to preserve interchange control consistency.

Willow Road/Pomeroy Road – The intersection of Willow Road at Pomeroy Road is currently an all-way stop-controlled intersection and the traffic volumes satisfy peak hour warrants for a traffic signal. The construction of the traffic signal has been awarded and is considered to be in place under build-out conditions.

US 101 Northbound Ramps/Thompson Road/Los Berros Road – This intersection is projected to operate at deficient LOS “E” under build-out conditions. The volumes are projected to satisfy peak hour warrants for a traffic signal at both ramp terminals. The recommended improvement is to convert the intersections to traffic signals, and widen the roadway between S. Frontage Road and Cimarron Way to incorporate turn lanes.

SR 166/US 101 Interchange – The SR 166/US 101 interchange is currently used as an alternative access point to US 101 south from a portion of the South County area west of the freeway. The projected future traffic volumes show that this route will continue to provide vital access to US 101 south, such that traffic volume growth results in LOS “F” at the ramp and frontage road intersections. Additional development near Cuyama Lane and the raceway would likely further increase traffic demand and congestion. Based on the projected traffic volumes, the appropriate improvements are roundabouts at both ramp intersections. These roundabouts are recommended so that the closely spaced frontage roads of Hutton Road on the west side and Thompson Avenue on the east can be incorporated into single intersections with the ramps. For the west side roundabout, a large drainage facility will need to be addressed in its design and eventual construction.

Tefft Street Intersections:

- a. Currently the intersection of Tefft Street/S. Frontage Road/SB Off-Ramp operates at deficient LOS "D" and worsens to LOS "F" under build-out conditions.
- b. The projected traffic volumes along Tefft Street results in LOS deficiencies at the intersections of Mary Avenue, Mesa Road, Oakglen Avenue, US 101 NB Ramps, and worsens conditions at US 101 SB Ramps/S. Frontage Road under build-out conditions. Construction of the Southland Street interchange and the realignment of the SB Off-Ramp will shift traffic volumes and result in acceptable LOS along the Tefft Street corridor. However, at the intersections of Mesa Road, Oakglen Avenue, and at the NB Ramps, intersection improvements are needed.

Thompson Avenue/Nipomo High School – This intersection is currently operating at deficient LOS "F" in the AM peak hour. The volumes satisfy the peak hour warrants for a traffic signal, and the construction of the traffic signal has been awarded and is considered to be in place under build-out conditions.

Transportation Improvement Needs and Circulation Plan Recommendations

This section presents the results of analyses on traffic network improvements considered for construction. The analyses' intent is to use the South County/Nipomo Traffic Model to test the potential improvements and determine the overall circulation benefits of the potential improvements.

Base Network

The effectiveness of traffic improvements were evaluated against a Build-out "base" traffic scenario that had no traffic improvements. The Build-out "base" scenario for the alternatives evaluation was a model network that superimposed the build-out land uses onto the existing traffic network. Consistent with the General Plan, a large amount of development was modeled in Nipomo, southwest of US 101, and in the Woodlands village development. As expected, all existing capacity problems are exacerbated at build-out, particularly along the major arterials within the South County/Nipomo area, e.g. Tefft Street and Highway 1.

Interchange access to US 101 and east-west access across the freeway were projected as heavily constrained. Tefft Street was particularly constrained due to high demand from US 101 south traffic. US 101 traffic access was also constrained at the SR 166 interchange. The improvements consider additional freeway interchange access between Tefft Street and SR 166, and operational improvements at both the SR 166 and Tefft Street existing interchanges.

Transportation Improvement Needs

Tefft Street Corridor Improvements

The Tefft Street/US 101 southbound ramps are configured such that the on-ramp forms a T-intersection in close proximity to the US 101 southbound off-ramp/Tefft Street/S. Frontage Road intersection. Tefft Street also serves as the primary commercial corridor and is the central US 101 crossing for the community. During peak hour periods, the interchange is severely constrained and extensive queuing occurs through several intersections, causing significant delays. Omni-Means has identified improvements to the interchange that will provide acceptable operations, however, any improvement design in Caltrans right-of-way, including ramp terminal intersections, will ultimately be subject to Caltrans approval and will require evaluation through the Caltrans intersection control evaluation process. Some improvements to the Tefft Street interchange and vicinity corridor have already been implemented, including new connections to frontage roads north and south of Tefft Street.

Realign the US 101 ramp terminals and South Frontage Road. This improvement may include realigning the southbound ramp terminals to oppose each other. This would effectively eliminate the non-standard staggered southbound US 101 ramp alignment at Tefft Street and would create a standard four-way Tefft Street/US 101 Southbound Ramps intersection. Although the design of the ultimate improvements for this corridor are not currently determined, an interim improvement to add dual southbound left turn lanes at the Southbound ramp terminal is planned to increase capacity and reduce delay at that intersection.

In conjunction with improvements to intersections at the interchange ramp terminals and corridor, South Frontage Road and Hill Street would also require improvements to improve access between Tefft Street, Mary Avenue, South Frontage Road, and Hill Street. South Frontage Road and Hill Street improvements include widening to accommodate left turn lanes, shoulders, and bike lanes. Intersection improvements at Hill Street, Grande Avenue, and at Division Street include adding left turn lanes and traffic signalization.

Tefft Street/US 101 Northbound On-Ramp – widen to two lanes – This improvement would add an additional lane to the NB US 101 On-Ramp with dual eastbound left turn lanes. The traffic projections for US 101 North are expected to grow and adding the turn lanes will alleviate the LOS deficiency under build-out conditions.

Tefft Street/Oakglen Avenue – Remaining consistent with the “Olde Town Nipomo Design and Circulation Plan”, which calls for a three-lane cross-section on Tefft Street east of Oakglen Avenue, the recommended intersection geometrics are as follows:

- Eastbound Tefft Street – One left-turn lane, two through lanes, one right turn lane
- Westbound Tefft Street – One left-turn lane, one through lane, one shared through-right turn lane.

The listed intersection geometrics will result in urban-standard acceptable LOS “C”.

Tefft Street/Mesa Road – This intersection is projected to operate at deficient LOS "E" under build-out conditions. The volumes at the intersection of Tefft Street/Mesa Road are also projected to meet the peak hour signal warrant for a traffic signal. The recommended intersection improvement is converting the intersection into a traffic signal.

Southland Area Interchange

The motivation in constructing additional interchange access in the vicinity of Southland Street is to reduce traffic demand at the Tefft Street interchange and on Orchard Road/Joshua Street/Hutton Road. The existing constrained conditions at the Tefft Street interchange forces some traffic diversion onto the SR 166/US 101 interchange, which is four miles away. The SR 166/US 101 interchange is approximately two miles south of the Nipomo community. The proposed interchange near Southland Street was conceived as being able to alleviate congestion at both capacity-constrained facilities. The Southland Interchange was added to the Capital Improvement Program in the previous update. Any improvement design in Caltrans right-of-way, including a new partial- or full-access interchange, will ultimately be subject to Caltrans approval and will require evaluation through the appropriate Caltrans process.

Construct a full access US 101 interchange in vicinity of Southland Street. This improvement extends the concept of the first improvement by constructing a full access US 101 interchange in the vicinity of Southland Street. The new interchange would likely connect with Southland Street, or another existing or new east-west local street, on the US 101 southbound ramp side and with Oakglen Avenue on the northbound ramp side. Access from Oakglen Avenue to Thompson Avenue was not included in the analysis alternative, but has also been considered in previous planning efforts.

The additional interchange is projected to reduce traffic volumes at the Tefft Street/US 101 interchange. Ramp volumes from US 101 south (US 101 southbound on-ramp, northbound off-

ramp) are projected at approximately 11,000 daily trips on each ramp. Ramp volumes from US 101 north (US 101 southbound off-ramp, northbound on-ramp) are projected at approximately 10,000 daily trips on each ramp.

The diversion in freeway traffic at the new interchange is projected to result in Tefft Street corridor traffic volumes during build-out conditions only slightly higher than those observed under existing conditions. The full interchange reduces approximately 6,500 trips from the Tefft Street corridor. Consistent with the General Plan development scheme, the majority of the trips passing through the new interchange come from Nipomo, west of US 101. The intersection deficiencies currently existing at the Tefft Street interchange would remain without additional intersection and/on-ramp improvements.

A US 101/Southland Street interchange configuration was created by Omni-Means based on additional input from the County. This configuration features at-grade ramps and a US 101 overpass further to the south. Recognizing that this interchange configuration is non-standard and that Caltrans design exceptions would need to be made, the advantage of this intersection is that it allows for phased construction, with the ramps preceding the overpass, with little-to-no “throw-away” construction costs. This configuration is similar to the other interchange configurations in terms of its traffic operations and is recognized as the preferred alternative within this report.

North Frontage Road Extension

Due to the construction of the new interchange at Willow Road, corresponding new connections are expected to occur over several years. This improvement also extends the previous concepts to alleviate traffic on Tefft Street.

Extend North Frontage Road from Sandydale Drive to Willow Road. This improvement extends North Frontage Road from Sandydale Drive to the North and terminates at Willow Road. This will provide a better connection for the areas north of Tefft Street to Willow Road and the new Willow Road interchange. The modeled traffic projection for this roadway extension is 2,800 daily trips.

As part of this improvement, the intersection of Mary Avenue and Juniper Street will be converted to a traffic signal.

SR 166/US 101 Intersections

The SR 166/Cuyama Lane interchange has closely spaced intersections with the frontage roads of Hutton Road (west) and Thompson Avenue (east), which are projected to fail under build-out conditions. Currently, the intersections are stop-controlled with the thru movements at the SB Ramps intersection having a free movement. The NB On-Ramp is the only intersection having all-way stop control. The other intersections have one to three stop-controlled approaches, and the configuration is not consistent throughout this interchange.

The projected future traffic volumes show that this route will continue to provide vital access to US 101 south interchange, such that traffic volume growth results in LOS “F” at the ramp intersections. Additional development near Cuyama Lane and the raceway would likely further increase traffic demand and congestion. Based on the projected traffic volumes, roundabouts would be appropriate improvements at both ramp intersections. Ultimately, any improvement design in Caltrans right-of-way, including ramp terminal intersections, will ultimately be subject

to Caltrans approval and will require evaluation through the Caltrans intersection control evaluation process.

Roundabouts are recommended so that the closely spaced frontage roads of Hutton Road on the west side and Thompson Avenue on the east can be incorporated into single roundabout-controlled intersections with the ramps. For the west side roundabout, a large drainage facility will need to be addressed in its design and eventual construction. The improvement design will ultimately be subject to Caltrans approval and will require evaluation through the Caltrans intersection control evaluation process.

Highway 1 (Cienaga Street and Mesa View Road) at Halcyon Road, Valley Road, and West of Willow Road

Highway 1 (Cienaga Street) at Halcyon Road intersections – Highway 1 through the staggered intersections of Halcyon Road currently experiences delay and capacity issues throughout these intersections. The projected traffic volumes along Highway 1 through the staggered intersections of Halcyon Road result in LOS "D". The close intersection spacing and lack of capacity from turn lanes and intersection control types causes major delays through these intersections. Highway 1 at Valley Road also currently experiences delay and will reach LOS "F" under build-out conditions. Recommended circulation improvements are to install roundabouts at these three locations.

In addition to this improvement, the widening of Halcyon Road to include a truck climbing lane west of Highway 1 (Mesa View Road) to west of Mountain View Road was included in the previous update but is not currently supported.

Highway 1 (Cienaga Street/Mesa View Drive) at Valley Road – Valley Road at Highway 1 does not operate acceptably during Existing AM peak hour conditions. Placing in an all-way stop-control is not recommended due to possible geometric limitations and an increase in delay for the "thru" movements. The addition of a southbound right turn lane is projected to accommodate the existing conditions volumes; however, the build-out projections for this intersection will require further intersection improvements. Recommended improvements at this intersection include realigning the horizontal curve from the northwest-bound approach, and to widen the eastbound and southbound approaches to accommodate roundabouts with a southbound right turn lane.

Highway 1 – West of Willow Road – The projected traffic volumes along Highway 1 between Willow Road and 1.3 mile west of Willow Road results in LOS "D" under build-out conditions using the HCS analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to install a left turn lane and install 8' shoulders.

US 101 Northbound Ramps at Willow Road and at Thompson Avenue/Los Berros Road

US 101 Northbound Ramps/Willow Road – This intersection is projected to operate at deficient LOS "D" under build-out conditions. The volumes at the intersection of US 101 Southbound Ramps/Willow Road are also projected to meet the peak hour signal warrant for a traffic signal. The recommended intersection improvement is converting the intersection ramp terminals for US 101/Willow Road interchange to a system of two traffic signals to preserve interchange control consistency.

US 101 Northbound Ramps/Thompson Avenue – This intersection is projected to operate at deficient LOS “E” under build-out conditions. The volumes are projected to satisfy peak hour warrants for a traffic signal at both Northbound and Southbound ramp terminals. The recommended intersection improvement is to convert the intersection ramp terminals for US 101/Los Berros Road/Thompson Avenue interchange to a system of two traffic signals to preserve interchange control consistency, and widen the roadway between S. Frontage Road and Cimarron Way to incorporate turn lanes and shoulders.

Los Berros Road, Orchard Road, and Valley Road

Los Berros Road Improvements – The projected traffic volumes along Los Berros Road results in LOS "D" or worse under build-out conditions using the HCS analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to add bike lanes and add left turn lanes at Dale Avenue, Pomeroy Road, Stanton Street, El Campo Road, and Century Lane. These improvements are partially complete and improvements will complete to arterial standards.

Orchard Road (Southland Street to Nancy Lane) – The projected traffic volumes along Orchard Road results in LOS "D" under build-out conditions using the HCS analysis for two-lane highways. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to install a left turn lane and install bike lanes.

Valley Road (south of Los Berros Road) – The projected traffic volumes along Valley Road south of Los Berros Road result in LOS "D" under build-out conditions. The lack of turn lanes constrains the traffic capacity of the roadway. The recommended circulation improvements are to upgrade this section of Valley Road to an arterial with left turn lanes at major intersections, matching the section to the north of Los Berros Road.

Other Planned Improvements

Additional transportation improvements which are also included in the Capital Improvements Projects are as follows, and are not anticipated to receive development impact funding:

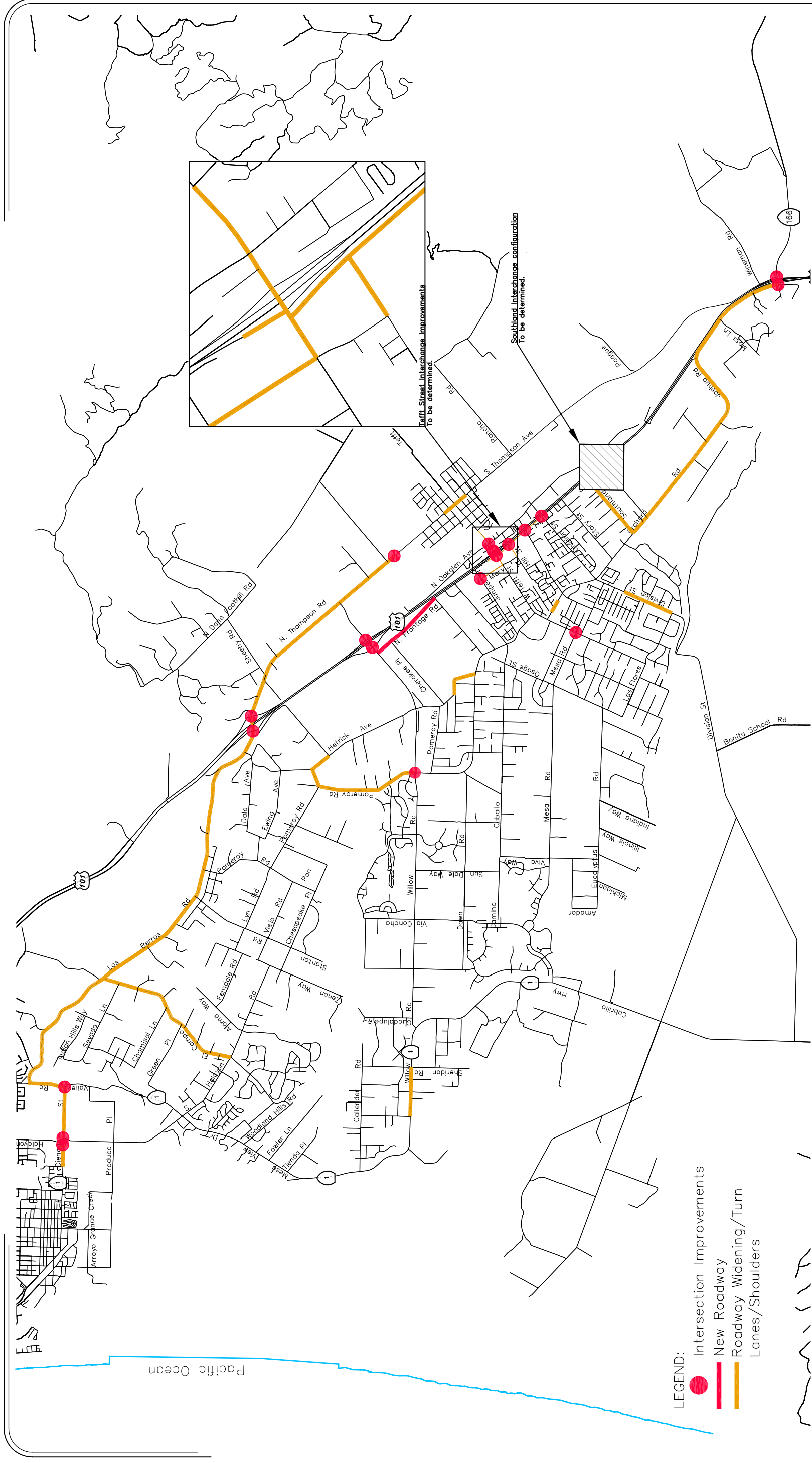
- Division Street from Sequoia Lane to Las Flores Drive, provide a left turn lane and bike lanes;
- Hetrick Road two-lane roadway extension between Glenhaven Place and Pomeroy Road;
- Orchard Road from Tefft Street to Division Street, provide left turn lanes and pedestrian improvements at Theodora Street (RIF portion previously completed);
- Orchard Road/Hutton Road from Nancy Lane to SR 166, construct shoulders (partially complete);
- Pomeroy Road from Willow Road to Aden way, add turn lanes and bike lanes,
- Thompson Avenue from Chestnut Street to Price Street, complete urban street improvements;
- Thompson Avenue from Cimarron Way to Willow Road, provide a left turn lane at Sheehy Road and bike lanes;
- Aden Road/Hetrick Road two-lane roadway extension from Summit Station Road to Pomeroy Road;
- El Campo Road from Halcyon Road to Los Berros Road, provide 8' shoulders; and
- North Frontage Road extension between Willow Road and Summit Station Road

Circulation Plan Analysis and Recommendations Summary

The summary of improvements listed above, along with improvements listed previously at other deficient intersections, was analyzed both on roadways and at intersections for Existing and Build-Out scenarios, as necessary. The preferred alternative for Tefft Street corridor to realign the US 101 SB Off-Ramp opposite the On-Ramp was evaluated using the build-out model along with the following other network improvements:

- Southland Street Interchange
- North Frontage Road Extension
- Tefft Street Corridor Improvements (Oakglen Avenue to S. Frontage Road)
 - (includes South Frontage Road realignment & improvement)
- Tefft Street/Mesa Road traffic signalization
- US 101 NB Ramps/Thompson Avenue/Los Berros Road intersection improvements with traffic signalization
- US 101 NB Ramps/Willow Road intersection improvements with traffic signalization
- US 101 Ramps/SR 166 and frontage road intersection control improvements.

Figure 10 presents the transportation network improvements listed above and the locations of the intersections that require improvements as stated previously.



South County Circulation Study and Traffic Impact Fee Update

Figure 10

Transportation Improvements



Existing Conditions Roadway LOS and intersection LOS at the deficient locations, with the necessary improvements, are presented in Table 10A and Table 10B, respectively. Items highlighted in yellow in these tables represent improvements to the facility type.

Build-out roadway LOS, with the listed improvements is presented in Table 11A. Build-out intersection LOS as estimated by the Synchro analysis for the improved intersections with geometrics as listed above, is shown in Table 11B.

**TABLE 10A
EXISTING IMPROVED CONDITIONS: ROADWAY LEVELS OF SERVICE**

Roadway	Location	Facility Type (# of Lanes)	Target LOS	Average Daily Traffic	LOS	Possible Improvements
Highway 1 (Mesa View Rd)	S of Halcyon Road	Two-Lane Arterial (w/LTL)	C	8,474	A	Add left turn lanes at Sheridan Road and Winterhaven Way
Los Berros Road	E of Valley Road	Two-Lane Arterial (w/LTL)	C	4,866	A	Construct shoulders
Los Berros Road	E of Stanton Road	Two-Lane Arterial (w/LTL)	C	5,850	A	Construct shoulders
Los Berros Road	W of US 101	Two-Lane Arterial (No LTL)	C	5,239	A	Construct LTL and shoulders
Tefft Street	W of US 101 SB Ramps	Four-Lane Arterial (w/LTL)	D	24,500	B	Realign Southbound Ramp terminals/S. Frontage Road, provide dual Southbound left ⁴ , Change facility type

Notes:

- BOLD** = Unacceptable operations
- w/LTL indicates arterials with either continuous center left turn lane (LTL) or left turn lanes at major intersections.
- No LTL indicates arterials without left turn lanes (LTL) at most major intersections.
- Improvements at Caltrans facilities are subject to Caltrans Intersection Control Evaluation (ICE) process and approval.

*In CIP, No RIF

**TABLE 10B
EXISTING IMPROVED CONDITIONS: INTERSECTION LEVELS OF SERVICE**

#	Intersection	Control Type ^{1,2}	Target LOS	Hour		Hour		Possible Improvements
				Delay	LOS	Delay	LOS	
1	Highway 1 and Halcyon Road (West)	Signal	C					Intersection Control Improvements (Roundabout/Signal) ³
2	Highway 1 and Halcyon Road (East)	Signal	C					Intersection Control Improvements (Roundabout/Signal) ³
3	Highway 1 and Valley Road	TWSC	C	16.7	C	14.7	B	Add SB Right Turn Pocket
10	101 SB Off Ramp/Frontage Road and Tefft Street	Signal	C	13.1	B	24.4	C	Realign Southbound Ramp terminals/S. Frontage Road, provide dual Southbound left ³
28	Thompson Avenue and Nipomo High School	Signal	C	25.4	C	8.0	A	Signal

Not Notes:

- AWSC = All Way Stop Control; TWSC = Two Way Stop Control
- LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal
- Improvements at Caltrans facilities are subject to Caltrans Intersection Control Evaluation (ICE) process and approval, final configurations TBD.

**TABLE 11A
BUILD-OUT IMPROVED CONDITIONS: ROADWAY LEVELS OF SERVICE**

Roadway	Location	Facility Type (# of Lanes) ^{3,4}	Target LOS	Average Daily Traffic	LOS	Possible Improvements
Highway 1 (Cienaga St)	W of Halcyon Road (West)	Two-Lane Arterial (w/LTL)	C	12,009	B	
Highway 1 (Cienaga St)	W of Valley Road	Two-Lane Arterial (No LTL)	C	5,367	A	Construct Roundabouts at Highway 1 (capacity increase 30% over 2-lane with LTL)
Highway 1 (Cienaga St)	E of Valley Road	Two-Lane Arterial (No LTL)	C	4,457	A	
Highway 1 (Mesa View Rd)	S of Halcyon Road	Two-Lane Arterial (w/LTL)	C	9,874	A	Add left turn lanes and shoulders at major intersections
Highway 1 (Guadalupe State Route 166)	S of Willow Road	Two-Lane Arterial (w/LTL)	C	6,883	A	
	E of US 101	Two-Lane Arterial (No LTL)	C	3,780	A	
Camino Caballo	W of Osage Street	Two-Lane Local	D	2,275	C	
Dale Avenue	S of Los Berros Road	Two-Lane Local	C	488	A	
Division Street	W of Orchard Road	Two-Lane Collector	D	8,894	C	Add turn lanes at major intersections between Sequoia Lane and Las Flores Drive*
Division Street	S of Las Flores Drive	Two-Lane Collector	C	3,646	A	
El Campo Road	N of Halcyon Road	Two-Lane Collector	C	2,178	A	Install Shoulders*
El Campo Road	S of Halcyon Road	Two-Lane Collector	C	2,649	A	
El Campo Road	S of US 101	Two-Lane Collector	C	4,260	A	
Eucalyptus Road	W of Osage Street	Two-Lane Collector	D	2,604	A	
Frontage Road	N of Juniper Street	Two-Lane Collector	D	1,098	A	
Halcyon Road	S of Cienaga Road/Highway 1	Two-Lane Arterial (w/LTL)	D	12,676	C	
Halcyon Road	S of Mesa View Road/Highway 1	Two-Lane Arterial (No LTL)	C	5,268	A	
Halcyon Road	W of El Campo	Two-Lane Collector	C	4,255	A	
Hetrick Avenue	S of Summit State Road	Two-Lane Local	C	401	A	Complete Hetrick Ave connection between Pomeroy Rd @ Aden Rd and Pomeroy Road east of Calimex Place *
Hutton Road	N of Cuyama Lane	Two-Lane Arterial (w/LTL)	C	2,901	A	Shoulder widening (partially complete)*
Los Berros Road	E of Valley Road	Two-Lane Arterial (w/LTL)	C	5,866	A	Construct bike lanes
Los Berros Road	E of Stanton Road	Two-Lane Arterial (w/LTL)	C	6,750	A	Construct bike lanes
Los Berros Road	W of US 101	Two-Lane Arterial (No LTL)	C	6,139	A	Construct LTL at Dale and South Frontage and add shoulders
Mary Avenue	N of Tefft Street	Two-Lane Collector	D	4,823	A	
Mary Avenue	S of Tefft Street	Two-Lane Collector	D	3,677	A	
Mesa Road	W of Tefft Street	Two-Lane Collector	D	4,669	A	
Mesa Road	W of Osage Street	Two-Lane Collector	D	4,842	A	
Orchard Road	S of Tefft Street	Two-Lane Arterial (w/LTL)	C	6,127	A	Turn lanes at Apricot St and Simon Ln under construction; add LTL at Theodora (RIF previously completed)*
Orchard Road	S of Southland Street	Two-Lane Arterial (No LTL)	D	1,027	A	Add turn lanes at major intersections to Nancy Ln, add Bike Lanes
Pomeroy Road	S of Los Berros Road	Two-Lane Collector	C	1,302	A	
Pomeroy Road	N of Willow Road	Two-Lane Collector	C	1,926	A	Add left turn lanes and bike lanes from Willow Rd to Aden Wy*
Pomeroy Road	N of Tefft Street	Two-Lane Arterial (w/LTL)	D	7,350	A	
South Frontage Road	S of Tefft Street	Two-Lane Collector	D	7,227	B	S. Frontage Road and Hill Street improvements (Traffic shifts to Mary), add turn lanes at Hill Street and Grande Avenue, construct bike lanes
Southland Street	W of South Frontage Road	Two-Lane Arterial (No LTL)	D	9,817	B	Construct Southland Interchange, with frontage road connections, and left turn lanes at major intersections
Summit Station Road	S of Los Berros Road	Two-Lane Local	C	630	A	
Tefft Street	E of Las Flores Drive	Two-Lane Arterial (No LTL)	D	1,573	A	
Tefft Street	E of Mesa Road	Two-Lane Arterial (w/LTL)	D	7,879	A	
Tefft Street	W of Mary Avenue	Four-Lane Arterial (w/LTL)	D	14,371	A	
Tefft Street	W of US 101 SB Ramps	Four-Lane Divided Arterial	D	27,000	C	Realign Southbound Ramp terminals/S. Frontage Road, provide dual left for SB off ramp, modify S. Frontage Road access, provide additional turn lanes on Tefft, signalize intersections on South Frontage and Construct Southland Interchange (diverts traffic)⁴, Change facility type
Tefft Street	E of US 101 NB Ramps	Four-Lane Arterial (w/LTL)	D	24,984	B	Widen to 4 lanes to Nipomo Creek Bridge, Change facility type
Tefft Street	E of Oakglen Avenue	Four-Lane Arterial (w/LTL)	D	19,184	A	Widen to 4 lanes to Nipomo Creek Bridge, Change facility type
Tefft Street	W of Thompson Avenue	Two-Lane Arterial (w/LTL)	C	9,569	A	
Thompson Avenue	S of US 101	Two-Lane Arterial (No LTL)	D	5,716	A	Add turn lane and bike lanes at ramps and Cimmarron Wy. Widening at Sheehy Rd is a project specific impact not in the RIF.
Thompson Avenue	N of Tefft Street	Two-Lane Arterial (w/LTL)	D	8,844	A	Complete urban street improvements per Tefft St Enhancement Plan*
Thompson Avenue	N of SR 166	Two-Lane Arterial (No LTL)	C	5,822	A	
Via Concha	E of Highway 1	Two-Lane Collector	C	2,016	A	
Valley Road	N of Los Berros Road	Two-Lane Collector	C	7,167	B	
Valley Road	S of Los Berros Road	Two-Lane Arterial (w/LTL)	C	8,668	A	Add turn lanes at Highway 1 and Los Berros, Change facility type
Willow Road	E of Highway 1	Two-Lane Arterial (w/LTL)	C	6,124	A	
Willow Road	W of Pomeroy Road	Two-Lane Arterial (w/LTL)	C	11,541	B	
Willow Road	W of US 101	Two-Lane Arterial (w/LTL)	C	11,655	B	
Willow Road	E of US 101	Two-Lane Arterial (w/LTL)	C	4,081	A	
North Frontage Road	S of Willow Road	Two-Lane Collector	D	2,800	A	With N. Frontage Road Extension from

Notes:

- BOLD** = Possible Improvement for deficiency
- w/LTL indicates arterials with either continuous center left turn lane (LTL) or left turn lanes at major intersections.
- No LTL indicates arterials without left turn lanes (LTL) at most major intersections.
- Improvements at Caltrans facilities are subject to Caltrans Intersection Control Evaluation (ICE) process and approval.

*In CIP, No RIF

**TABLE 11B
BUILD-OUT IMPROVED CONDITIONS: INTERSECTION LEVELS OF SERVICE**

#	Intersection	Control Type ^{1,2}	Target LOS	Hour		Hour		Possible Improvements
				Delay	LOS	Delay	LOS	
1	Highway 1 (Cienaga Street) and Halcyon Road (West)	RNDBT	C					Intersection Control Improvements (Roundabout/Signal) ³
2	Highway 1 (Cienaga Street) and Halcyon Road (East)	RNDBT	C					Intersection Control Improvements (Roundabout/Signal) ³
3	Highway 1 and Valley Road	RNDBT	C					Intersection Control Improvements (Roundabout/Signal) ³
5	101 NB Ramps and Thompson Avenue/Los Berros Road	Signal	C	18.9	B	16.0	B	Intersection Control Improvements (Roundabout/Signal) ³
8	101 NB Ramps and Willow Road	Signal	C	12.1	B	24.7	C	Intersection Control Improvements (Roundabout/Signal) ³
9	101 NB Ramps and Tefft Street	Signal	C	29.7	C	22.4	C	Realign Southbound Ramp terminals/S. Frontage Road, provide dual left for SB off ramp, modify S. Frontage Road access, provide additional turn lanes on Tefft, and Construct Southland Interchange (diverts traffic) ³
10	101 SB Off Ramps and Tefft Street	Signal	C	26.4	C	33.1	C	
12	101 SB Ramps and State Route 166	RNDBT	C					Combine the SB Ramps and Hutton Road intersections into a single Roundabout-controlled intersection ³
13	101 NB Ramps and State Route 166	RNDBT	C					
14	State Route 166 and Hutton Road	RNDBT	C					Combine the NB Ramps and Thompson Ave intersections into a single Roundabout-controlled intersection ³
15	State Route 166 and Thompson Avenue	RNDBT	C					
22	Tefft Street and Mary Avenue	Signal	D	24.1	C	37.5	D	Construction of Southland Interchange will reduce volumes on Tefft Street through Mesa Road, and on Mary Avenue
23	Tefft Street and Mesa Road	Signal	D	13.7	B	15.3	B	Signalize
24	Tefft Street and Oakglen Avenue	Signal	D	27.6	C	34.1	C	Construct Two Thru Lanes Eastbound and Westbound on Tefft, and a Southbound Right Turn Pocket

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control
2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal
3. Improvements at Caltrans facilities are subject to Caltrans Intersection Control Evaluation (ICE) process and approval, final configurations TBD.

Alternative Transportation Modes

Public Transportation

The South County region is serviced by South County Transit (SCT), a branch of San Luis Obispo Regional Transit Authority (SLORTA). SCT Route 10 serves a regional connection for South County and includes the Cities of Santa Maria, Nipomo, Arroyo Grande, Pismo Beach, and San Luis Obispo. Route 10 runs between 5:45 am to 8:28 pm weekdays, 7:14 am to 7:28 pm on Saturdays, and 8:14 am to 5:28 pm on Sundays. Route 10 provides the following stops within the Nipomo area:

- Thompson Avenue at US 101
- Thompson Avenue at Nipomo High School
- Thompson Avenue at Branch Street
- Tefft Street at Carrillo Street

Pedestrian Transportation

Sidewalks exist along urban streets in the South County area, particularly in commercial areas such as downtown Nipomo. The General Plan contains special planning area standards that address sidewalk construction. The villages of Callender-Garrett and Los Berros do not currently have sidewalks and none would be required under current County policy. Sidewalks tend to contribute toward the success of associated non-auto modes such as public transit service.

It is recommended that this study take no action which would discourage pedestrian activity, and to continue to require sidewalks whenever possible to complete the sidewalk system within the business districts. Sidewalk improvements will contribute greatly to the success of such programs as the transit service described above.

Bicycle Transportation

San Luis Obispo County updated the Bikeways Plan in 2010 and is working toward the 2015 update. The plan encourages the use of walking and bicycling and recognizes three classes of bikeways:

Class I Multi Use Path. Class I facilities are multi-use facilities that provide a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flows of motorized traffic minimized.

Class II Bike Lane. Class II facilities provide a striped and signed lane for one-way bicycle travel on each side of a street or highway. The minimum width for bike lanes ranges between four and six feet depending upon the edge of roadway conditions (curbs) and speed. Bike lanes are demarcated by a six-inch white stripe, signage and pavement legends.

Class III Bike Route. Class III facilities provide signs for shared use with motor vehicles within the same travel lane on a street or highway. Bike routes may be enhanced with

warning or guide signs and shared lane marking pavement stencils. While Class III routes do not provide measure of separation, they have an important function in providing continuity to the bikeway network.

Existing Bicycle Facilities

The current bicycle and trail network consists of only on-street facilities that are identified as Class II and Class III bikeways. The South County study area currently has 29 bike facilities consisting of thirteen Class II and sixteen Class III facilities. No Class I facilities were reported within the study area. The County has a pavement management program and regularly makes repairs as needed. The following segments currently have Class II Bike Lanes:

- Tefft Street from Las Flores Drive to Carillo Street
- Orchard Road from Tefft Street to Southland Street
- Joshua Street from Orchard Road to Hutton Road
- Division Street from Las Flores Drive to Orchard Road
- Pomeroy Road from Tefft Street to Willow Road
- Frontage Road from Grande Street to Southland Street
- Thompson Avenue from Tefft Street to Mehlschau Road
- Willow Road from Highway 1 to Thompson Avenue
- Halcyon Road from Highway 1 to The Pike
- Fair Oaks Avenue from Halcyon Road to South Elm Street
- South Elm Street from Farroll Avenue to Ash Street
- Portions of Hutton Road
- Portions of Valley Road from Highway 1 to Fair Oaks Avenue

The following segments are currently Class III Bike Routes:

- Las Flores Drive
- Osage Street from Las Flores Drive to Mesa Road
- Mesa Road
- Hazel Lane
- Juniper Street
- Mary Avenue from Juniper Street to Tefft Street
- Frontage Road from Tefft Street to Grande Street
- Joshua Road/Hutton Road from Orchard Road to south of SR 166
- Mallagh Street from Day Street to Tefft Street
- Tefft Street from Carillo Street to Thompson Avenue
- Price Street from Thompson Avenue to Beechnut Street
- Halcyon Road from The Pike to Fair Oaks Avenue
- Fair Oaks Avenue from Halcyon Road to Traffic Way
- Portions of Valley Road from Highway 1 to Fair Oaks Avenue
- Highway 1
- Oso Flaco Lake Road

The 2010 Bikeways Plan existing and proposed facilities for the Nipomo area are shown in Figure 11. The 2010 Bikeways Plan existing and proposed facilities for the Oceano area are shown in Figure 12.

**COUNTY
Bikeways Plan
2010 UPDATE**

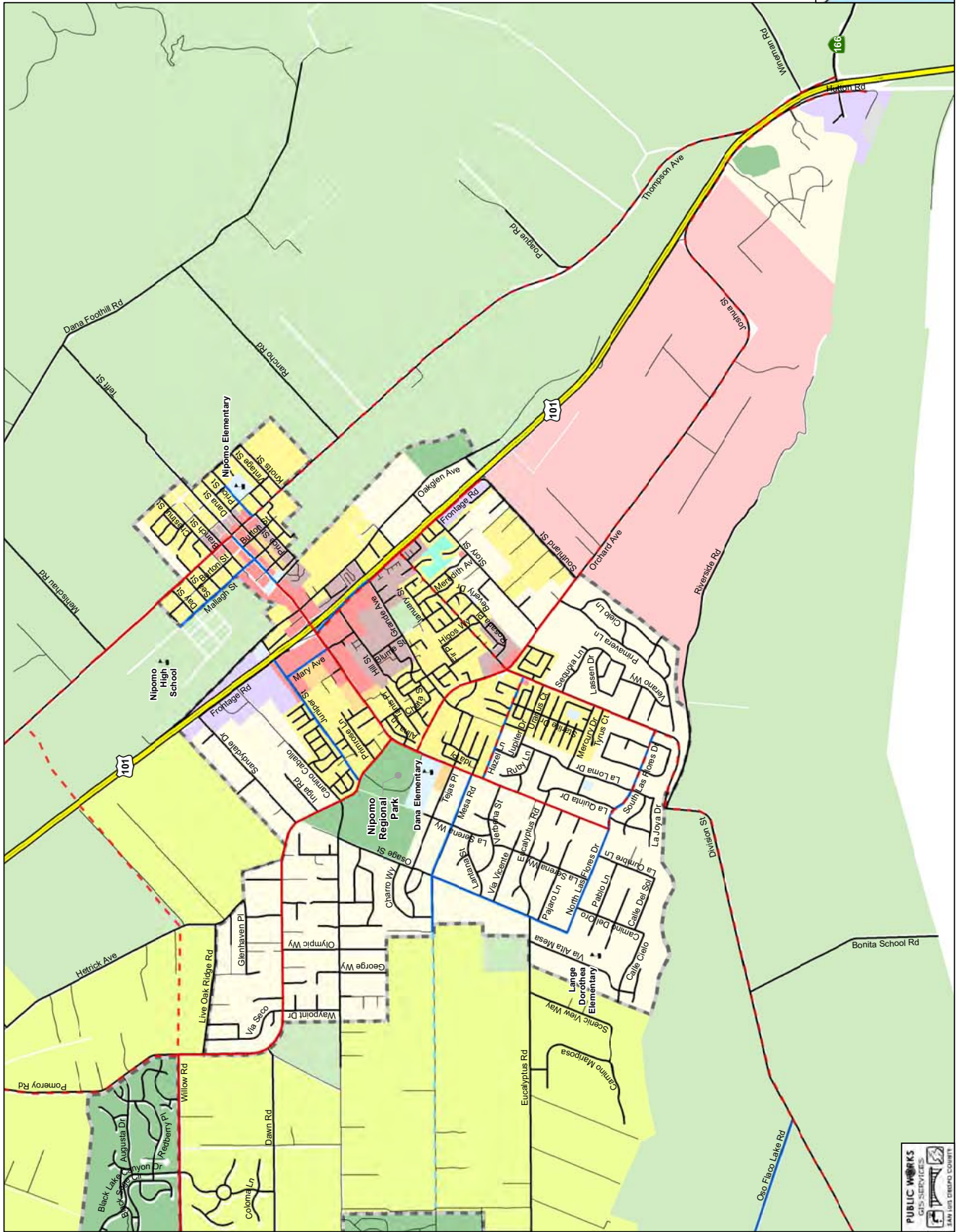
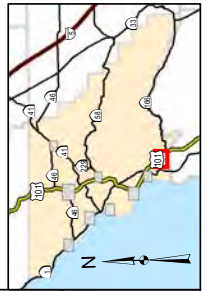
Figure 11:

- Nipomo**
- County Roadways**
- Existing Class I Bikeway
 - Proposed Class I Bikeway
 - Existing Class II Bikeway (Conceptual Alignment)
 - Proposed Class II Bikeway
 - Existing Class III Bikeway
 - Proposed Class III Bikeway
 - County Maintained Road

- Cal Trans Roadways**
(For Bikeways See Appendix G)
- US Highway
 - State Highway

- Land Use Category**
- Agriculture
 - Commercial Retail
 - Commercial Service
 - Industrial
 - Multi-Land Use Category
 - Office Professional
 - Open Space
 - Public Facility
 - Recreation
 - Rural Lands
 - Residential Multi Family
 - Residential Rural
 - Residential Suburban
 - Residential Single Family

- Non-County Road
- Rail Road
- City Limit
- U/R Boundary
- School



COUNTY
Bikeways Plan
2010 UPDATE

Figure 12:

- Oceano**
- County Roadways**
- Existing Class I Bikeway
 - Proposed Class I Bikeway
 - Existing Class II Bikeway (Conceptual Alignment)
 - Proposed Class II Bikeway
 - Existing Class III Bikeway
 - Proposed Class III Bikeway
 - County Maintained Road

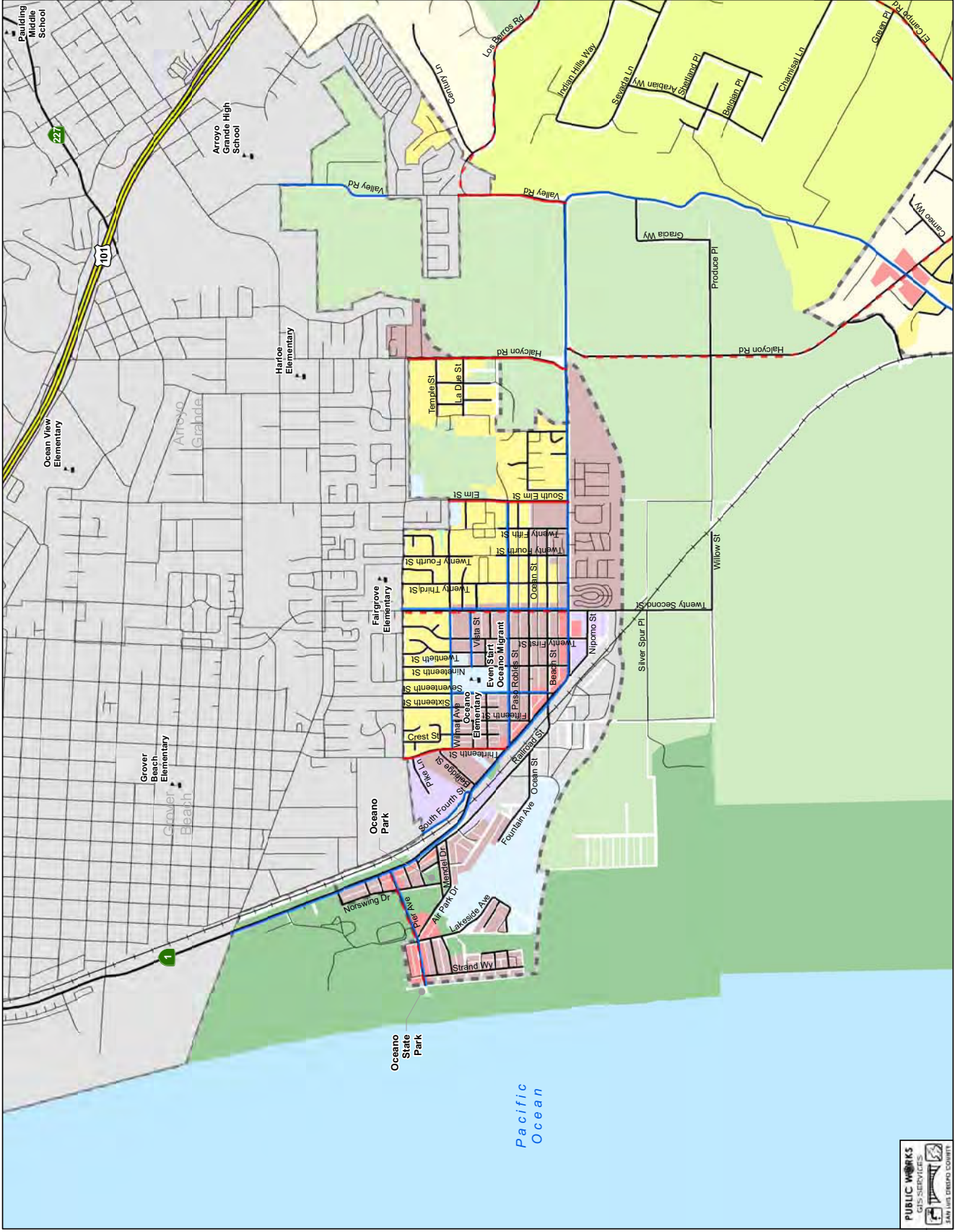
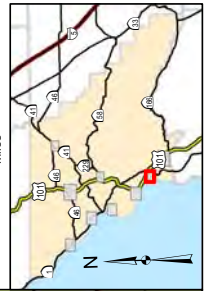
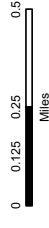
- Cal Trans Roadways**
(For Bikeways See Appendix G)
- US Highway
 - State Highway

Land Use Category

- Agriculture
- Commercial Retail
- Commercial Service
- Industrial
- Multi-Land Use Category
- Office Professional
- Open Space
- Public Facility
- Recreation
- Rural Lands
- Residential Multi Family
- Residential Rural
- Residential Suburban
- Residential Single Family

- Non-County Road
- Rail Road

- City Limit
- U/R Boundary
- School



Ridesharing

The San Luis Obispo Regional Transit Authority, in cooperation with State and Federal governments, operates the Regional Ridesharing Program. This program provides opportunities for carpool formation through its carpool matching service. The Transit Authority serves as a clearinghouse for information on all other alternative transportation modes. The ridesharing program concentrates on outreach to major employers, as these have the density of employment necessary to assure successful carpool matching. One key action, which facilitates ridesharing, is the provision of Park & Ride lots. A Park & Ride lot on South Frontage Road, south of Tefft Street and west of the US 101 interchange, was removed due to lack of use.

Truck Routes

Truck routes are intended to carry heavyweight commercial, industrial, and agricultural vehicles through and around the community with minimum disruption to local auto traffic and minimum annoyance to residential areas. The 1982 Surface Transportation Assistance Act set standards for large trucks, known as STAA trucks, and set minimum truck sizes that states must allow on the National Network including the Interstate System another defined routes. The US 101 highway through South County and statewide is a National Truck Network. Highway 1 is a California Legal Truck Network, passing through the west side of South County splitting off of US 101 north of Pismo Beach.

Rail Operations

No commuter rail transportation (AMTRAK) is currently located in the South County region. The nearest Amtrak is located in the City of Grover Beach and Guadalupe. These facilities are 12 miles and 10 miles away, respectively, from Nipomo.

Airports

The Santa Maria Public Airport is the closest commercial airport to the South County/Nipomo area. The airport is approximately 14 miles south of Nipomo and serves national flights to San Francisco and Las Vegas with airlines United Express operated by SkyWest Airlines (United) and Allegiant Air.

Oceano County Airport is the closest non-commercial airport to the South County area, located in the unincorporated community of Oceano, southwest of Arroyo Grande. The airport is mainly used for recreational activities and is accessible off of Highway 1.

The San Luis Obispo County Regional Airport, also known as McChesney Field, is located in the City of San Luis Obispo about 20 miles from Nipomo. It is served by two commercial airlines providing services to Los Angeles, Phoenix, and San Francisco. It is also home to full service general aviation and corporate facilities. McChesney Field is located on the west side of SR 227, about 2 miles east of US 101.

Cost Estimates and Funding Mechanisms, Including Transportation Impact Fees

This chapter presents the cost estimates developed for the recommended transportation improvements and discusses possible funding mechanisms.

Cost Estimates

A series of planning level cost estimates have been prepared by County Public Work Staff for projects discussed in Chapter 4 and 5. The cost estimates are necessary to determine the funding required to implement the transportation improvements. A summary of the recommended projects, cost estimates, recommended funding sources, and expected project completion dates are shown in Table 12.

All cost estimates include the cost of construction, right-of-way, design, administration, environmental considerations, and inspection. All costs for construction activity were determined from typical experiences in San Luis Obispo County. Construction costs include clearing and grubbing, paving, drainage, stormwater, lighting, signing, and striping. Roadway edge improvements like curb, gutter, and sidewalk are generally excluded since they are usually constructed at the time of adjacent development.

Funding Mechanisms

Implementation of the elements of the transportation plan for South County will require sources of revenue dedicated to infrastructure investment. Local government has traditionally provided for public facilities, with the costs being financed by revenues derived from gasoline tax and state and federal funds. In the recent past, the traditional revenue sources have shrunk to inadequate levels through a combination of growth, aging capital facilities, State realignment of property tax revenues, construction cost inflation, increasing costs of environmental mitigation and competing needs for limited public dollars.

I. Impact Fees – The California Government Code (Sections 66001-66025) grants authority to local agencies to establish, increase, or impose fees as a condition of approval of a development project within their jurisdictional boundaries. California courts require that such fees be reasonably related to the contributing development's impact on community facilities. Provided that the impact fees are used to finance construction of specific facilities, impact fees are not considered taxes and, therefore, do not require electorate approval. San Luis Obispo County adopted Ordinance No. 2379 in 1988 to provide for the collection of roadway impact fees. A fee program has been established for the study areas of the South County (Nipomo Mesa), San Luis Bay (Avila Valley), Templeton, North Coast (Cambria), Los Osos, and San Miguel. The impact fee is collected at the time of development and held in an account dedicated for road improvements within the area of benefit. Credits toward the fee are provided to landowners who dedicate right-of-way and/or construct facilities listed on the capital improvements table (Table 12).

For the South County area, impact fees were established January 17, 1989 to fund the portion of roadway needs that are attributable to new development within the study area. These improvements were explicitly determined for the likely types of development that will occur in this area over the next 50 or more years. The following discussion highlights the considerations involved in establishing an equitable basis for impact fees in the South County area.

A. Public/Private Share of Costs – In determining an appropriate level for the impact fees, improvement costs must first be apportioned among the public and private sectors according to the benefits provided to existing and future traffic sources. Existing deficiencies are not eligible for correction with impact fee funding, and such costs must be subtracted from the cost estimates. Existing deficiencies are defined as problems present at the time of initial roadway or intersection construction (i.e. vertical and horizontal curves).

The next step in assigning eligible costs to the impact fee calculation is to estimate the portion of roadway improvement costs attributable to through traffic. These costs are not eligible for funding by impact fees. In the South County, most through traffic uses Highway 101. “Local” traffic, i.e. traffic generated within the South County, creates the need for improvements at the freeway interchanges. For this reason, the improvements to the Tefft Street, Los Berros Road/Thompson Avenue, and State Route 166 interchanges, and the construction of a new interchange between Tefft Street and State Route 166, are included in the impact fee calculations. Also, the need for improvements on Highway 1 from Willow Road to 1.3 miles west of Willow Road is a result of local development and, therefore, has been included in the impact fee calculations.

B. Areas 1 and 2 – The South County Circulation Study has one of the largest geographic areas of any in the County’s transportation planning study areas. The South County Study area is characterized by a natural “screenline” (Black Lake Canyon) that spans approximately across the center of the area, thereby forming a natural transportation barrier or “traffic shed”. For the most part, the recommended transportation improvements are concentrated in the Nipomo urban area, south of the screenline, and in the northwest portion of the Nipomo Mesa, north of the screenline. For this reason, the study area has been divided into two Areas, using Black Lake Canyon and Willow Road as the primary boundary.

Historically, Area 1 and Area 2 are defined as follows: Area 1 includes the Nipomo urban area and extends north and west as far as the Black Lake Village area. Area 2 consists of the portion of Nipomo Mesa north of the Canyon and the Willow Road extension, and also includes the village of Callender-Garrett, Woodlands and the surrounding rural area along Highway 1 that contributes traffic to the proposed improvements in the Halcyon Road area. Figure 1 shows the boundaries of the two planning areas.

Since the last update, the Woodlands project has completed an Environmental Impact Report (EIR) and begun construction. The Woodlands project was also included in the model developed for this update. As stated by the Woodlands project EIR, approximately 75% of the Woodlands traffic will travel into the Community of Nipomo and 25 % on to the Highway 1 corridor. Consistent with the year 2006 update, it is recommended that the fees paid from the Woodlands project be divided between Area 1 and Area 2 based on the percentage of traffic traveling to each area. The Woodlands area has prepaid their impact fees for all proposed development in advance of construction. No further fees are anticipated to be collected from the Woodlands area.

The recommended impact fee schedule shown in Table 16 reflects the prepayment of Woodlands fees and the 75/25 fee split.

C. Distribution Among Future Traffic Sources. When the total private share of costs has been established, these costs must be further distributed among the various land uses that contribute to traffic growth. The calculated fees are based on the amount of traffic generated during the weekday afternoon (PM) peak hour by each type of new development. The amount of traffic is determined from the Institute of Transportation Engineers (ITE)-published *Trip Generation (9th Edition)*. The change in land use and corresponding number of equivalent trip units, PM peak hour trips, has been recalculated to reflect year 2015 conditions.

Impact Fee Calculation

In order to establish a rough proportionality between the fee amount proposed and new development, PM peak hour trip generation for added land uses has been estimated in Table 13. The added land uses in Table 13 match the units presented in Table 8, with the exception of Area 2, which excludes the Woodlands area for fee calculation purposes, since those fees have already been collected.

**TABLE 13
REMAINING FUNDING REQUIRED FROM IMPACT FEES**

Land Use	PM Peak Hour Trip Rate / Unit ¹	Area 1			Area 2		
		Added Acres	Added Units ²	PM Peak Trips	Added Acres	Added Units ²	PM Peak Trips
Residential (dwelling units)							
Single Family	1.00 / D.U.		1,124	1,124		478	478
Multi Family	0.62 / D.U.		303	188		0	0
Total Residential			1,427	1,312		1,173	478
Non-Residential (acres)							
Retail/Commercial	3.71 / KSF	166	1,805	6,696	10	107	396
Golf	2.74 / Hole	86	9	25	25	3	8
Industrial	0.97 / KSF	0	0	0	264	1,725	1,673
Office	1.49 / KSF	19	207	308	12	125	187
Total Non-Residential			271	7,029		428	2,264
Total New Trips (Residential + Non-Residential)				8,341			2,742

Notes:

1. D.U. = Dwelling Unit; KSF = 1,000 Square Feet; Hole = Equivalent Golf Holes

2. Assumes 25% floor-area ratio for commercial and office; 15% for industrial. Assumes roughly 10 acres per golf hole

As shown in Table 13, a total of 8,341 PM peak hour trips are expected to be generated by new development in Area 1, and a total of 2,742 PM peak hour trips are expected to be generated by new development in Area 2 (excluding Woodlands).

As shown in the 2015 Capital Improvement Program (Table 12) the entire CIP is not proposed to be funded through the impact fee program (RIF). Table 14 presents a summary of the total funding required from the fee program, consistent with the Area 1 and Area 2 RIF totals in Table 12.

**TABLE 14
REMAINING FUNDING REQUIRED FROM IMPACT FEES**

	Total Required Funding From Impact Fees	Current Fund Balance (as of 10/2015)	Woodlands Contribution (Already Collected)	Woodlands % Allocation	Net Funding Required From Impact Fees
Area 1	\$41,130,000	\$77,420	\$1,800,796	25%	\$39,251,784
Area 2	\$28,167,000	\$3,574,778	\$5,402,387	75%	\$19,189,835
Total	\$69,297,000	\$3,652,199	\$7,203,182	100%	\$58,441,619

As shown in Table 14, the total required funding from the impact fee program, after accounting for the current fee balance and the Woodlands contributions, is just about \$58.4 million. The required funding from Areas 1 and 2 is about \$39.2 million and \$19.2 million respectively.

The fees for South County have remained the same since 2009. It was determined that the existing fee level is still adequate to accommodate the build-out traffic volumes and recommended Capitol Improvement Program. Table 15 presents a summary of the fees for the South County area by Fee Area and use type.

**TABLE 15
PROPOSED 2015 FEE BY AREA AND USE**

Use Type	Area 1	Area 2
Retail	\$3,336	\$4,539
Residential	\$12,011	\$10,048
Other	\$5,133	\$6,983

As shown in Table 15, it is recommended that the same fee be carried forward with this 2015 fee update. Buildout of the added future land uses under the currently adopted fee rates will result in a full-funded fee program.

Appendix

- A) MODEL CALIBRATION REPORT
- B) LAND USE FORECASTS MEMORANDUM
- C) LAND USE BY TAZ
- D) SIGNAL WARRANTS
- E) LEVEL OF SERVICE WORKSHEETS