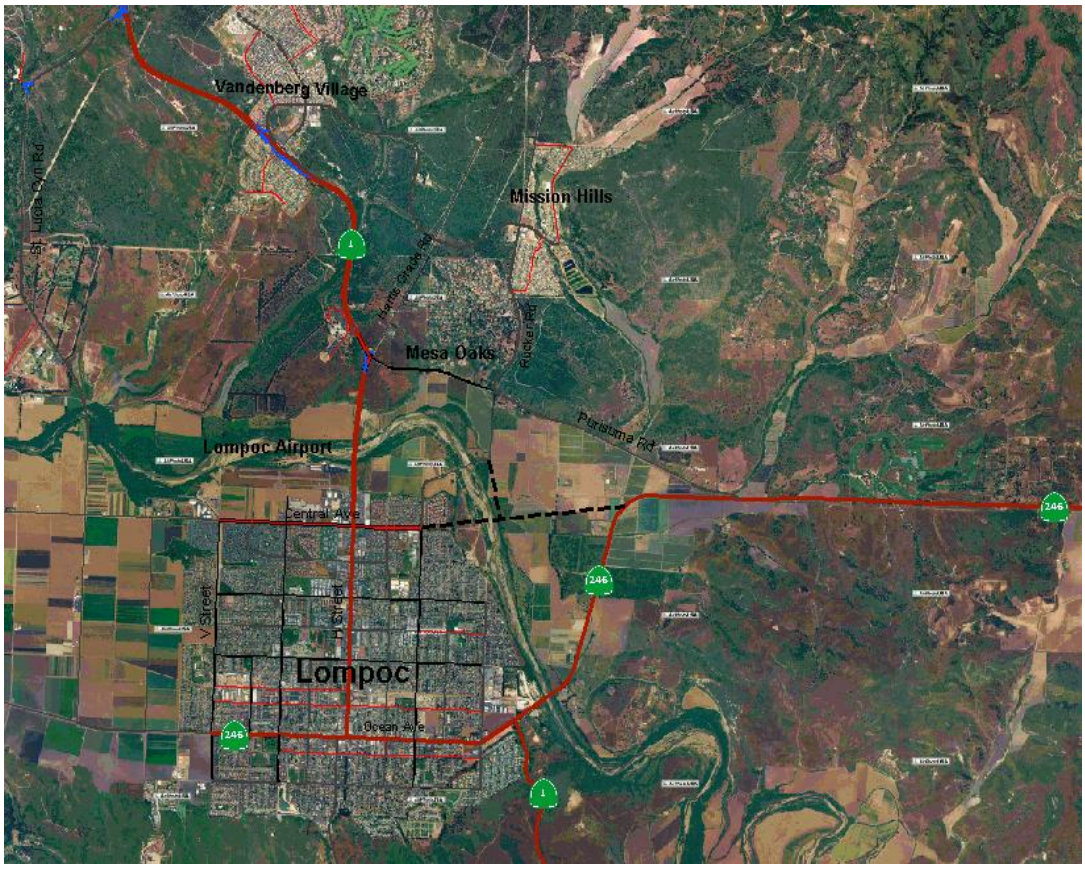
The State Route 246
Central Avenue Extension and Purisima Road Traffic Study

Draft Final Report



January 2008

Project Staff

Jim M. Kemp	Executive Director
Michael G. Powers	Deputy Director, Planning
William F. Yim	Transportation Planner II/Author
Andrew P. Orfila	Transportation Planner II

Project Steering Committee

Larry Bean	PW Director, City of Lompoc
Kevin McCune	Civil Engineer, City of Lompoc
Peggy Woods *	City Planner, City of Lompoc
Lucille Breese	City Planner, City of Lompoc
William Robertson	PW, County of Santa Barbara
Josh McDonnell *	P&D, County of Santa Barbara
George Amoon *	P&D, County of Santa Barbara
Pat Michelson	Caltrans Planning
Dan Herron	Caltrans Planning
Keith Hinrichsen *	Caltrans Planning

* Not a member as of 2006. The Steering Committee list will be amended at the upcoming project meeting.

Financial support for the preparation of this study was furnished by the Federal Highway Administration and the State of California.

Table of Contents

List of Tables and Exhibits

Executive Summary

In cooperation with the City of Lompoc, California Department of Transportation (Caltrans) and the County of Santa Barbara, the Santa Barbara County Association of Governments (SBCAG) prepared the State Route 246/Central Avenue Extension/Purisima Road Traffic Study. The objective of this planning study is to examine the traffic issues associated with various roadway improvement alternatives to access the City of Lompoc from SR246. A total of four alternatives were identified by the Project Steering Committee during initial project meeting.

This report presents the findings for the following four alternatives:

- Alt. 1: 2030 Baseline (No-Build)
- Alt. 2: Extend Central Avenue to SR246 as a 2-Lane Minor Arterial
- Alt 3: Extend Central Avenue to SR246 as a 4-Lane Minor Arterial
- Alt. 4: Widen SR246 east of Route 1 as a 4-Lane Minor Arterial

Alt. 1, the 2030 Baseline, refers to the 2030 ”programmed” forecast. This forecast is also the “No-Build” alternative for the study. Alt. 2 and Alt. 3 incorporated the assumption that a bridge would be constructed to span over the Santa Ynez River to facilitate the Central Avenue Extension between Central Avenue and SR246. Alt. 4 incorporated the assumption that the Robinson Bridge which crosses the Santa Ynez River would be reconstructed to avoid the seasonal flooding.

The study examines the existing (2002 and 2005) traffic conditions for major arterials in the study area including SR246, Route 1, Central Avenue, and major rural collectors in the northern and downtown areas of Lompoc. Future forecasts are presented for the year 2030 for each alternative in terms of average daily traffic (ADT) and PM peak hour traffic. Evaluation of the traffic impacts and changes in circulation patterns were based on modeling results for the roadway improvement alternatives. Other impacts including natural resources, flood control, economic, safety, noise, capital costs, etc. are beyond the scope of the study and would have to be examined through the project development and CEQA/NEPA process.

The following highlights the findings for each of the four alternatives:

<u>2030 Traffic Forecasts and Impacts on Major Roadways</u>

- Alt. 1 (Baseline) provides slightly higher 2030 traffic growth among all four alternatives. By 2030, traffic on Route 1 (H Street) north of Central Avenue is forecast to increase 57%, reaching 46,600 ADT. Because of the ongoing residential development on Route 1 north of Central and in the Wye areas, congestion and slow moving traffic is expected at the Route 1/Purisima intersection.

- Alt. 2 (Central Avenue Extension to SR246 as a 2-Lane Minor Arterial) provides a direct access for traffic, particularly trucks, from SR246 to the City of Lompoc. It also provides a favorable alternative route for traffic between Central Avenue and areas of Mesa Oaks and Mission Hills.

- The Central Avenue Extension would divert a significant amount of traffic from SR246 originally destined for Ocean Avenue and the City of Lompoc to Central Avenue. By 2030, traffic on the Central Avenue Extension is forecast at 14,200 ADT. Traffic from Downtown

Lompoc would be able to use the Central Avenue Extension and the improved Rucker Road as an alternate route to the northern unincorporated residential areas. This 2-lane arterial alternative appears to provide enough capacity to meet the 2030 forecast demand.

- Because of the strategic importance of the Central Avenue Extension, this route would likely become a primary truck route for goods movement from SR246 and the Santa Ynez Valley. Current truck traffic on Central Avenue accounts for approximately 8.6% of all daily trips. Extending Central Avenue as a 2-lane arterial to SR246 would provide an efficient truck access from the Santa Ynez Valley and Highway 101 to the City of Lompoc.

- Traffic on Route 1, south of Purisima Road and Harris Grade, would be the heaviest traveled roadway segment in the study area. In Alt. 2, traffic is about 10% less than Alt. 1 (42,100 ADT) because some traffic on Route 1 would be attracted to use the Central Avenue Extension and Rucker Road to access to Mesa Oaks and Mission Hills. However, some congestion and slow moving traffic during PM peak conditions would still be expected.

- Alt. 3 (Central Avenue Extension as a 4-Lane Minor Arterial) appears identical to Alt. 2. Similar traffic diversion from SR246 to Central Avenue Extension is expected. From the modeling standpoint, a 4-lane Central Avenue Extension does not appear to increase traffic demand on this 4-lane roadway segment, except for providing marginal operational benefits.

- Alt. 4 (widening SR246 northeast of Route 1 to 4-Lane) is identified as the "least preferred" alternative. Traffic on this SR246 segment appears to be slightly less than, if not similar to, Alt. 1. Doubling the capacity on this SR246 segment would not attract any additional traffic to Ocean Avenue and Southern Lompoc areas. The model results also indicated that as long as SR246 between Purisima and Domingos Road remains a 2-lane arterial, widening SR246 northeast of Route 1 to 4-lane does not increase traffic on this route or provide any circulation benefits. Future forecasts for Central Avenue, Downtown Lompoc, and the rural collectors in the study area appear to remain the same as Alt. 1 (Baseline).

- A travel time analysis indicated that with the Central Avenue Extension (Alt. 2 or Alt. 3), approximately 3 to 4 minutes could be saved per vehicle trip. Given approximately 7,600 to 8,100 daily vehicles trips could be diverted from SR246 to the Central Avenue Extension, approximately 380 to 540 hours of travel time savings could be realized in an average work day.

- Additional scenarios which assumed a full 4-lane widening of SR246 between Purisima and Domingos Road were considered. It appears that higher traffic volumes, mostly interregional traffic, on SR246 could only be achieved when there is a substantial increase in capacity, e.g., a full 4-lane widening. Operational improvements such as construction of passing lanes at specific locations would not contribute significant increases in traffic on SR246. Only with a full widened SR246 would significant interregional traffic be diverted from Route 1 to SR246.

Exhibit ES-1 presents a summary of traffic impacts for the Central Avenue Extension under Alt. 2.

2030 PM Peak Hour Intersection LOS Analysis

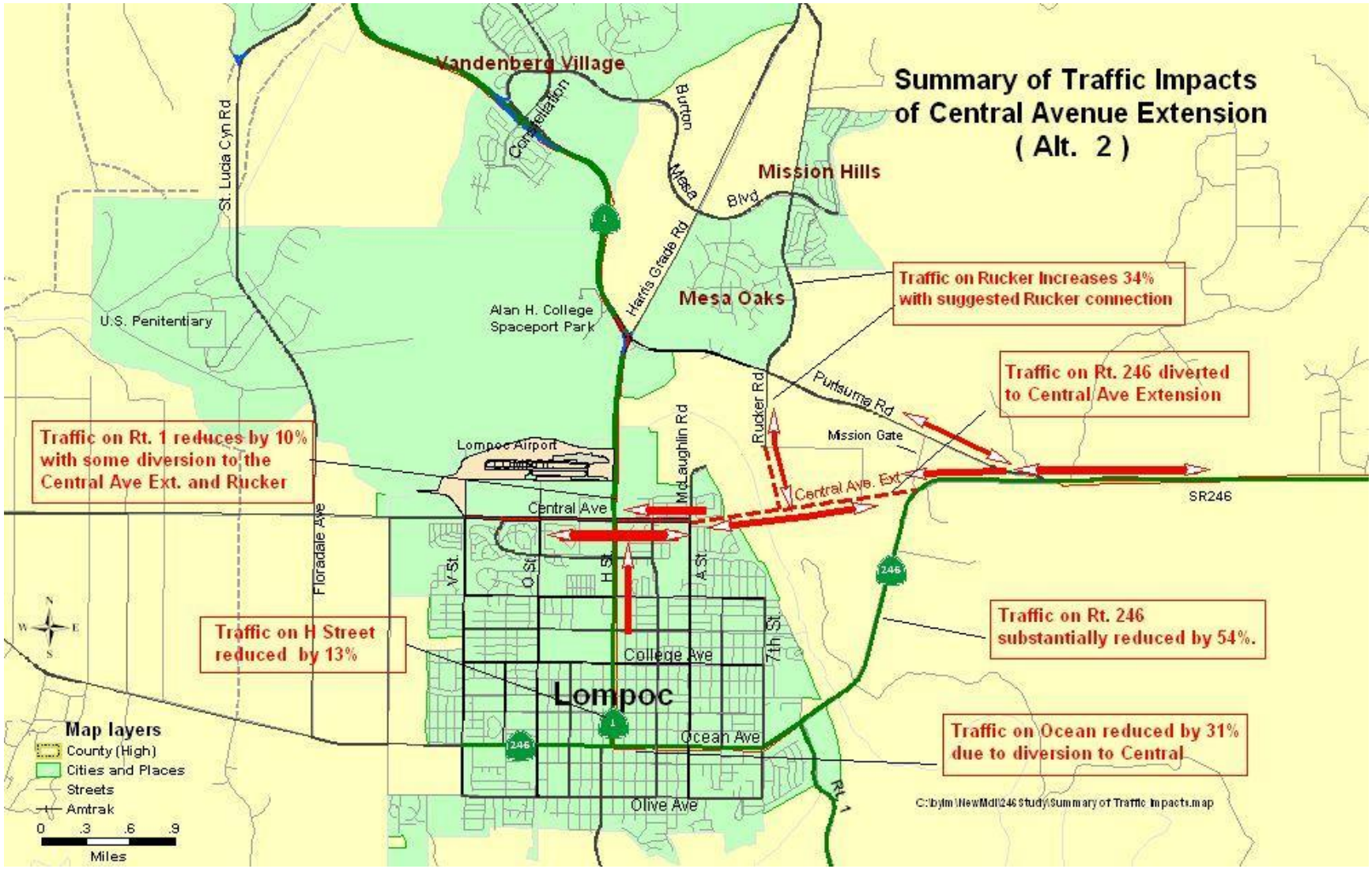
- By 2020, an extension of Central Avenue would significantly reduce PM peak hour volumes on Purisima Road by 30%, Harris Grade Road north of Purisima Road by 15%, H Street north of Ocean Avenue by 27%, Route 1 south of the proposed Central Avenue extension by 40%, and Ocean Avenue east of H Street by 34%.

- The Central Avenue Extension would increase PM peak hour volumes on Central Avenue between O Street and A Street by 15-30%.

- With adequate capacity improvements in place, most of the study-area intersections would operate more efficiently with the Central Avenue extension, with the exception of the Central Avenue/H Street intersection.

.

Exhibit ES - 1:


Summary of Traffic Impacts
of Central Avenue Extension
(Alt. 2)
Vandenberg Village
Mission Hills
Mesa Oaks
Lompoc Airport
Lompoc
Traffic on Rucker Increases 34%
with suggested Rucker connection
Traffic on Rt. 246 diverted
to Central Ave Extension
Traffic on Rt. 1 reduces by 10%
with some diversion to the
Central Ave Ext. and Rucker
Traffic on H Street
reduced by 13%
Traffic on Rt. 246
substantially reduced by 54%.
Traffic on Ocean reduced by 31%
due to diversion to Central
Map layers
County (High)
Cities and Places
Streets
Amtrak
Miles
C:\bjm\NewMdl\246 Study\Summary of Traffic Impacts.map

Executive Summary of the State Route 246, Central Avenue Extension and Purisima Road Traffic Study
.

I. Introduction

This **State Route 246/Central Avenue Extension/Purisima Road Traffic Study** is prepared in cooperation with the City of Lompoc, California Department of Transportation (Caltrans) and the County of Santa Barbara. The objective of this planning study is to examine the traffic issues associated with four 2030 roadway improvement alternatives to access the City of Lompoc from SR246. Alternatives examined include a Baseline (No-Build) option, an extension of Central Avenue across the Santa Ynez River to link up with SR246 as a 2-lane and a 4-lane minor arterial, and widening the SR246 segment between Purisima Road and Route 1 to a 4-lane minor arterial. SBCAG completed a preliminary draft report of this study in November 2005. This report presents an update of the model findings and recommendations to the earlier report resulting from refinements of these four roadway improvement alternatives for the year 2030 using the latest expanded version of SBCAG Travel Demand Model.

Background

The Central Avenue Extension project has a history dating back to the early 1990's. The issues include:

- The need for a dependable and higher capacity transportation link from the commercial area around Central Avenue and H Street to Route 246 and Highway 101
- A direct link to the commercial areas along Central Avenue that reduces truck traffic in downtown Lompoc
- The need for a connection to Rucker Road to better serve Mesa Oaks and Mission Hills areas since McLaughlin is not a "thru" traffic roadway.

Currently there is no direct access from Route 246 to the commercial areas in the northern part of the City of Lompoc. Over the last decade, a significant amount of business and residential development has occurred in the northern part of the City along Central Avenue and between the nearby communities of Mesa Oaks, Mission Hills, and Vandenberg Village. Because Central Avenue deadends at A Street, traffic destined for Central Avenue from SR246 and Highway 101, particularly trucks serving businesses along Central Avenue, would have to either travel on Purisima Road and Route 1 to the north or via SR246 and Ocean Avenue to the south. Both routes are circuitous and create traffic impacts on Route 1 and H Street in Downtown Lompoc. Future residential development in the Wye area between Route 1 and Harris Grade Road will also increase traffic on Route 1 and Central Avenue. In addition, frequent closures of Route 1 south to Highway 101, the potential for seasonal flooding in the area of Robinson Bridge on SR246, and, the inadequacy of McLaughlin Road as a "thru" roadway further added to the need to examine the feasibility of Central Avenue Extension as an alternative route to access central Lompoc.

As ongoing residential developments occur in the northern unincorporated areas of Lompoc, traffic is becoming more interregional in nature. An extension of Central Avenue from A Street over the Santa Ynez River to link up with SR246 could play an important role in providing a direct access to the unincorporated areas north-east of the City and at the same time improve the transportation network in the area. Furthermore, Lompoc is served by two lane highways and is one of the few urbanized areas in the state that is not served by a higher capacity freeway. The Central Avenue extension together with improvements on SR246 will help to provide a more direct access to northern Lompoc.

Over the last decade, several studies have addressed the issue of the Central Avenue Extension. In 1996 in conjunction with the City of Lompoc Circulation Element Background Study, SBCAG completed the "Lompoc Valley Travel Forecast" study. One of the roadway improvement scenarios examined in this study was the "Preferred General Plan" scenario in which the primary improvement was to extend the Central Avenue from A Street to SR246 in order to improve access to and from the northern part of the City of Lompoc.

The City of Lompoc General Plan also indicated that in order to accommodate the projected buildout traffic demand, some improvements will be necessary. These include improving the intersection of Central Avenue and A Street, and the construction of the Central Avenue extension from east of A Street to SR246.

In 2001, Caltrans completed the Project Study Report (PSR) for SR246. One of the options examined in the document for improving this state route was the consideration of extending Central Avenue across the Santa Ynez River to tie-in with the existing SR246. In May 2004, Caltrans completed the State Route 246 Transportation Concept Report (TCR). More detailed information on this route is incorporated, including information on Segment 1 (Ocean Avenue west of Floradale Avenue, PM 8.30 to 9.55), Segment 2 (east city limit to Purisima Road intersection, PM 9.56 to R12.26), and Segment 3A (Purisima Road to Domingos Road, PM R12.26 to R20.85).

The Central Avenue Extension was part of the "planned projects list" of the 2004 Metropolitan Transportation Plan (MTP). In the Lompoc General Plan update (August 2005), the City of Lompoc approved the Central Avenue Extension project as part of the City's goals and policies in its Circulation Element. However, this project is not in the unincorporated County's General Plan.

In November 2005, SBCAG completed a preliminary draft report to update the 1996 Lompoc Valley Travel Forecast Study. However, the study was put on hold. This **State Route 246/Central Avenue Extension/Purisima Road Traffic Study, Revised Draft** is an update of the November 2005 draft report as well as the 1996 Lompoc Valley Travel Forecast Report using the latest version (August 2007) of the SBCAG Expanded Model. The purpose of this study is to examine the traffic issues associated with four roadway improvement alternatives for the Central Avenue Extension to access the City of Lompoc from SR246. Evaluation of the changes in traffic patterns was based on the average daily traffic (ADT), PM Peak Hour, and level of service impacts with respect to ten critical intersections identified within the study area.

This study is a cooperative effort of SBCAG, Caltrans District 5, the County of Santa Barbara, and the City of Lompoc. The Steering Committee formed in June 2004 consists of Caltrans planning staff, County and City planning staff and SBCAG. At the project kick-off meeting in June 2004, the Steering Committee refined the scope of work, including the specification of the four alternatives for this study. The organization of this revised draft report primarily followed the layout of November 2005 draft report, but with updated analyses and findings based on the latest SBCAG modeling effort. In response to the comments from the Steering Committee based on the 2005 draft report, detailed intersection level of service analyses for ten critical intersections in the study area were incorporated in this report. However, other impacts such as natural resources, flood control, economic, safety, noise, capital costs, etc. are beyond the scope of this study and therefore would have to be examined through project development and the CEQA/NEPA process.

Staff is grateful and hereby acknowledges the assistance and support from the state, county, and local officials.

Scope of Work

The work scope of this study is to examine the traffic issues associated with the following four capital improvement alternatives:

- **Alt 1 - 2030 Baseline (Program) Forecast:** Essentially, this alternative incorporates the 2030 "programmed" roadway network, which includes all currently "programmed" projects for the year in the 2007 Federal Transportation Improvement Program (FTIP), except for the Central Avenue Extension. The only project in the FTIP that directly relates to this traffic study is the SR246 operational improvements (construction of passing lanes) between Purisima Road and Domingos Road west of Buellton (Segment 3A, Caltrans Route 246 TCR). (**Exhibit I-1**[1])

- **Alt 2 – 2030 Central Avenue Extension as a 2-Lane Minor Arterial:** This alternative is based on Alt. 1 plus a 2-lane extension of Central Avenue as a minor arterial from A Street across the Santa Ynez River to SR246 at Mission Gate Road. It also includes a Rucker Road connection linking up Rucker and the Central Avenue Extension. Rucker would be improved and served as a 2-lane rural collector.

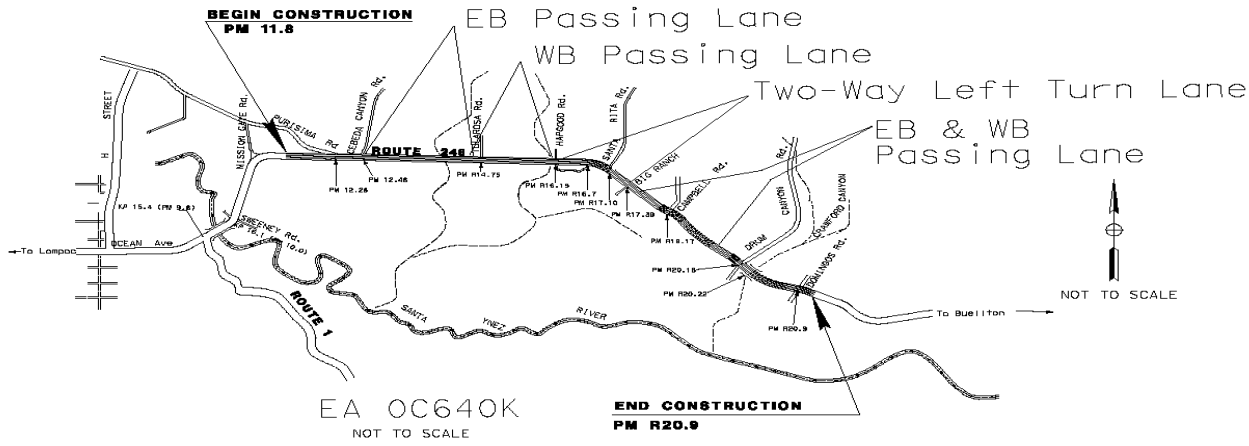
- **Alt 3 – 2030 Central Avenue Extension as a 4-Lane Minor Arterial**: This alternative is similar to Alt. 2, except that it includes a 4-lane extension of Central Avenue from A Street to SR246 at Mission Gate Road plus the same Rucker Road connection. For purposes of modeling, this alternative assumes that the 4-lane widening of the Central Avenue Extension includes a short 4-lane segment on SR246 between Mission Gate Road and SR246/Purisuma intersection.

- **Alt 4 – Widen SR246 east of Route 1 to a 4-Lane Minor Arterial:** This alternative includes widening existing SR246 between Purisima Road and Route 1 to a 4-lane minor arterial, but without the Central Avenue Extension.

Model forecasts and results are presented in average daily traffic (ADT). PM peak hour traffic analyses are primarily focused on the ten critical intersections with level of service analysis conducted under the 2030 forecast conditions. Because of the ongoing residential and commercial developments in the northern part of the City, truck traffic on SR246 and Central Avenue is becoming a concern. This study also examines current (2002 and 2005) truck traffic conditions in the study area.

[1] Preliminary information based on discussion with Caltrans D5. Official Caltrans exhibits may be available in the Final Report.

Exhibit I-1: State Route 246 Operational Improvements



Study Area

The study area encompasses the entire City of Lompoc and the county unincorporated areas of Vandenberg Village, Mesa Oaks, and Mission Hills in the north and portions of SR246 and Highway 1 to the east. **Exhibit I-2** depicts the study area and roadway network.

A total of 35 traffic analysis zones (TAZs) were included in the study area. TAZs are geographical zones based on the 2000 Census information as well as existing homogeneous land uses. They were identified to reflect the unique person and vehicle trip generation characteristics of different areas. **Exhibit I-3** depicts the Lompoc area traffic analysis zones.

The Vandenberg Air Force Base (VAFB) identified as TAZs #261-268 in the exhibit is located adjacent to the study area. VAFB is a major employment generator in the county. Though VAFB is not part of the study area, the SBCAG model conducted under a countywide basis includes traffic impacts from VAFB. The forecast results presented in this report incorporated all interregional traffic to and from VAFB through major roadways in the study area, i.e., Route 1, SR246, Central Avenue Extension, and Ocean Avenue, with forecasts and findings primarily focused in the study area.

It should be noted that the "Purisima Road Widening Improvements" currently being conducted by the County's Engineering Department to investigate feasible alternatives of adding a Class 2 bike lane on Purisima Road from Route 1 to SR246 is not part of this study.

.

Exhibit I-2: Lompoc Area Network

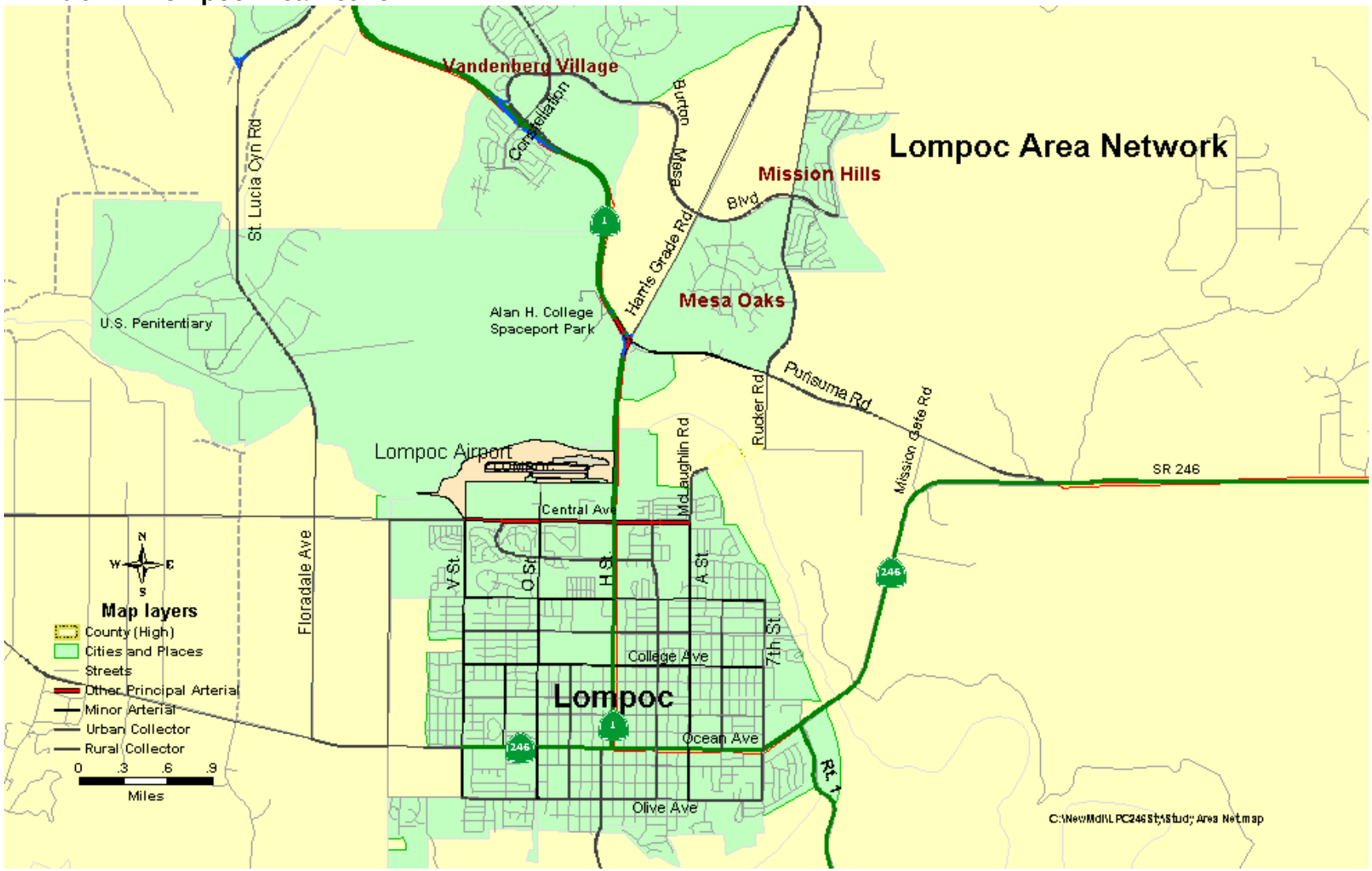
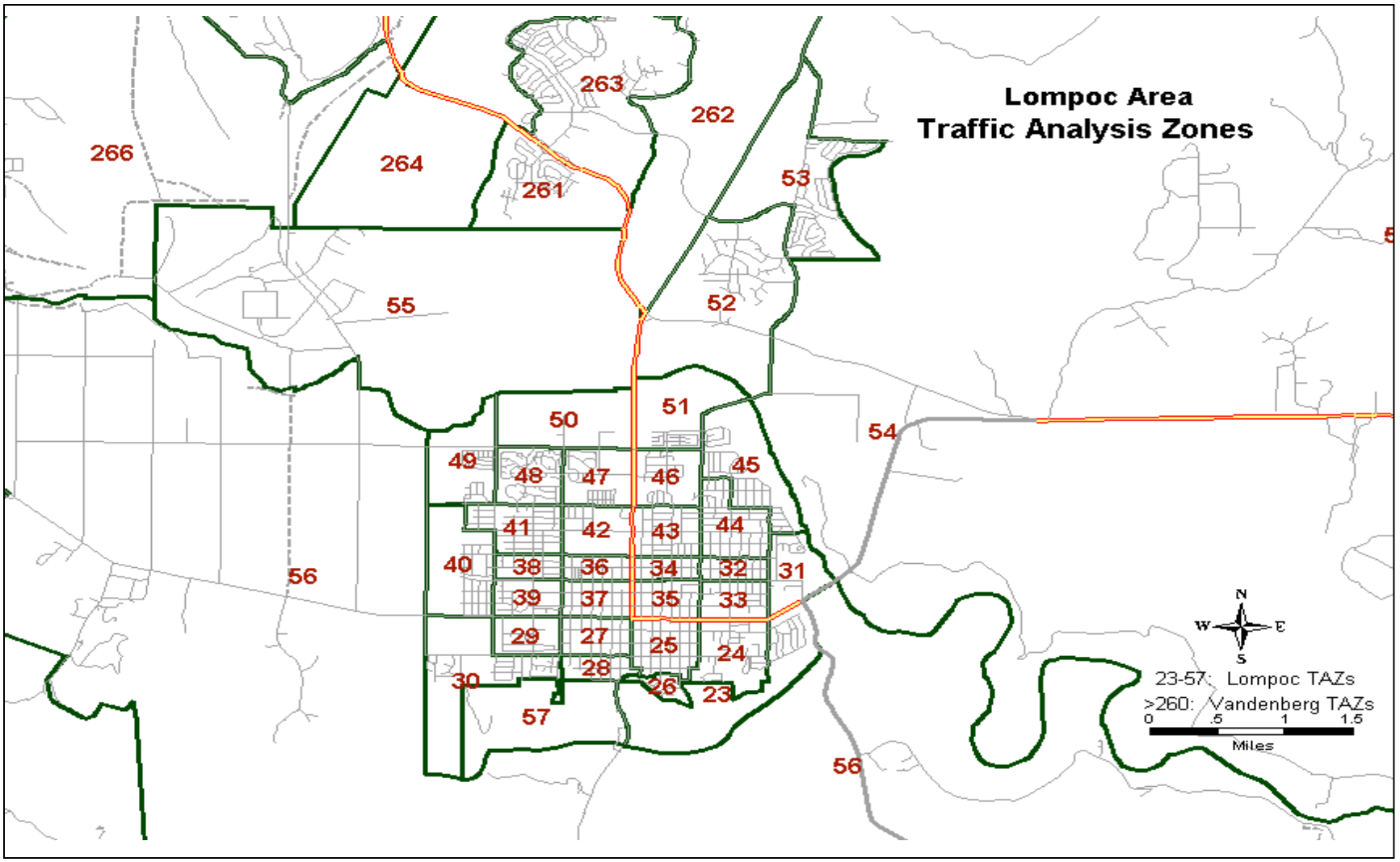


Exhibit I-3: Lompoc Area Traffic Analysis Zones



Major Modeling Assumptions

For modeling purposes, the following assumptions were incorporated:

- For Alt. 1 (Baseline), the network includes passing lanes on SR246 at three locations as identified by Caltrans District 5 between Purisima Road and Domingos Road west of Buellton.

- Alts 2 and 3 assumed that Rucker Road would be improved and in place to connect the existing Rucker Road to the Central Avenue Extension. McLaughlin Road is not a "thru" roadway for traffic under the current condition. The road is connected by a "fair weather" foot bridge over the Santa Ynez River. The County has indicated that there is no plan to upgrade or improve this crossing in the future. From the modeling standpoint, McLaughlin Road is assumed to remain "unconnected" for all forecast alternatives.

- For Alt. 3, the short roadway segment on SR246 between Mission Gate Road and the 246/Purisima intersection is assumed as a 4-lane facility in order to effect a full 4-lane Central Avenue Extension to be evaluated.

- For critical intersections LOS analysis, certain professional judgment on the turning lanes and signaling assumptions were made in order to analyze the peak hour level turn movements to determine the level of service since information on future improvements on these intersections is not readily available. Detailed information and analysis are provided in Chapter VI, 2030 PM Peak Hour Intersection LOS Analysis.

II. Methodology and Modeling Approach

The SBCAG Travel Demand Model

Over the last three years, the SBCAG Travel Demand Model has gone through a few updated versions. The latest model update was in August 2007. This study employs this latest version of the SBCAG Model. More detailed information regarding the SBCAG model update is provided in Attachment I.

Model Forecast, Interpretation, and Adjustments

Model forecasts are expressed in terms of average daily traffic (ADT) or daily vehicle trips and PM peak hour vehicle trips. PM peak hour is considered the most heavily traveled period during a normal weekday, and is generally used for critical peak traffic analysis. The PM peak hour represents the hour between 4:00 to 5:00 PM, and is use to examine the "magnitude" of the worst case forecast scenario for critical intersection analysis in the study area.

Traffic forecasts presented in this study also employed a "base year differencing" methodology, a state-of-the-practice procedure in presenting travel forecasts. This procedure involves a post-process adjustment of modeled volumes to account for differences between the actual ground counts and modeled volumes for both the base year and future forecasts. For example, if the base year model volume on a particular roadway segment is over-estimated by 500 ADT from the ground counts, both the base year modeled volume and the 2030 forecast will be adjusted by the same amount (500 ADT) so that the modeled volumes would be in line with the existing traffic conditions. This procedure is applied to all base year and forecasts presented in this report.

III. Socioeconomic Forecast

Socioeconomic Forecast

The SBCAG Regional Growth Forecast 2000-2030 (RGF2002) provides the basis for forecasts of population, employment, and land uses to the year 2030 for Santa Barbara County, its major economic and demographic regions, and eight incorporated cities. Primary demographic factors such as population, households and employment are distributed in terms of much smaller geographic areas of TAZs for purposes of modeling. Within the Lompoc region, the study area comprises the City of Lompoc and the nearby county unincorporated areas of Mesa Oaks, Missions Hills, Vandenberg Village. **Table 1** summarizes the 2030 demographic growth forecast for the study area.

The SBCAG travel model uses a refined population, household, and employment forecast. New information was incorporated into the SBCAG Regional Growth Forecast based on traffic model data that indicates the specific location of residential and commercial development, as noted in the County Planning and Development Open Lands Report, as well as other sources. In addition, a more precise TAZ based "total" employment database, developed from InfoUSA, was used as a baseline but is consistent with employment growth in "Wage and Salary Employment" as documented in the Regional Growth Forecast. The refined database results in somewhat greater forecast population (7 percent), households (4 percent) and employment (5 percent) by TAZ in the travel model as compared to the RGF2002.

By 2030 total population in the study area is expected to grow from 46,300 to 62,800, representing an increase of approximately 36 percent. Total household is expected to grow from 14,900 to 18,900, an increase of approximately 27 percent. Total employment is forecast to grow from 12,000 to 16,500, presenting an increase of approximately 37 percent.

Table III-1: Socioeconomic Forecast for the Lompoc Area

Demographics	2000	2030	% Incr.
Population	46,347	62,846	35.6%
Households	14,876	18,918	27.2%
Employment	12,030	16,518	37.3%
Employment			
Office	478	540	13.0%
Industrial	1,427	2,812	97.1%
Service	5,455	7,644	40.1%
Commercial	3,658	4,369	19.4%
Agricultural	1,012	1,153	13.9%
Total Employment	**12,030**	**16,518**	**37.3%**

The SBCAG growth forecast has recently been updated but the revised growth assumptions have not yet been incorporated into the travel model.

Special Generators

Part of the socioeconomic forecast database also includes special traffic generators. Special generators are land uses that require separate treatments due to the differences in trip rates with other general land use categories. Special generators in the study area include the

Lompoc Airport, the U.S. Penitentiary, the La Purisima Mission, Alan Hancock College Lompoc Campus, and the ongoing development of the Spaceport Park. Most of the data were collected either from the City of Lompoc, Chamber of Commence, or directly from the sources. **Table III-2** summarizes the details of the special generators. 90

Table III- 2: Special Generators

Special Generators	Parameters	2000	2030
Lompoc Airport	Enplanements	47,000	66,800
U.S. Penitentiary	Employees	921	957
La Purisima Mission	An. Visitors	176,000	230,300
A Hancock College, Lompoc Campus	Enrollment	3,983	5,211
Spaceport Park	An. Visitors	0	200,000

Sources: Best estimates from direct sources.

For Parks, Missions and State Beaches: Annual visitor data were collected on a normal weekday and converted to person trips by trip purpose for input in the trip generation model. For those TAZs where special generators contain employment data, the amount of employment was subtracted out from the demographics tables to avoid double-counting.

Alan Hancock College: The Alan Hancock College Lompoc Campus is one of three campuses in North County. Student enrollment data for this campus was used to estimate person trips.

U.S. Penitentiary: The model employs trip rates from the ITE Trip Generation Manual to compute total vehicle trips.

Lompoc Airport: Enplanements were used to estimate person trips by trip purpose.

Vandenberg Air Force Base (VAFB): VAFB is an important institution in the Lompoc valley but is not part of the immediate study area. VAFB is the second largest employer and a special generator in Santa Barbara County. A number of the civilian employees live in the Lompoc area and commute to the VAFB on a daily basis. Information from VAFB indicated that approximately 13% of these trips are related to the rocket launch sites in the southern part of the base. Traffic between VAFB South Gate and Highway 101 would have an impact on the Central Avenue Extension alternative, particularly for those who work at the launch sites in the southern part of the base. The Central Avenue Extension would improve access for traffic traveling between VAFB and SR246 and Highway 101.

IV. Existing Traffic Conditions

In the November 2005 draft report, the year 2002 was considered as the existing conditions. In this update, 2005 ground counts were added, to the extent possible, to reflect the latest traffic growth on the specified roadway segments within the study area.

2002 and 2005 Traffic Conditions

Table IV-1 summarizes 2002 and 2005 traffic counts by representative roadway segments. Existing daily traffic on SR246 east of Purisima Road is between 11,540 and 12,500 trips. Traffic on SR246 east of Route 1 is approximately 9,300 trips, and traffic on Route 1 north of Harris Grade Road is approximately 24,890 trips. Within the City of Lompoc, traffic on Central Avenue is between 10,600 and 14,000 trips and traffic on Ocean Avenue is around 16,000 trips.

PM peak hour percentage varies depending on individual roadway segment. PM peak traffic on SR246 east of Purisima accounts is approximately 8.5% of daily trips. For segment east of Route 1, the PM peak hour percentage is higher (8.4% to 9.2%). One factor affecting traffic growth in the Lompoc region is the job-housing balance. Many Lompoc residents commute to jobs in the South Coast using Route 1 and SR246. This has resulted in interregional traffic growth at a faster rate than local traffic.

Minor arterial such as Purisima Road and rural collectors such as Harris Grade Road, Rucker Road and Constellation are quite heavily used. Daily volumes on these roadways range between 7,500 and 9,000 trips. PM peak percentage on Purisima, Rucker, and Constellation is about 8.5%. For arterials within the City of Lompoc, e.g., H Street, Ocean and Central Avenue, PM peak percentage varies between 7 and 9 percent of total daily trips.

Table IV-1: Existing 2002 and 2005 Traffic

	2002 1/		PM PH	2004/5 2/		PM PH
Lompoc and Vicinity	**Daily Cts**	**PMPH**	**%**	**Daily Cts**	**PMPH**	**%**
SR246 e/o Purisima	11,540	981	8.5%	12,100 3/	1,030	8.5%
SR246 e/o Rt 1	8,900	820	9.2%	9,300	780	8.4%
Rt 1 s/o 246 4/	9,000	917	10.2%	8,300	800	9.6%
Rt 1 s/o VAFB Main Gate	17,800	1,450	8.1%	16,100	1,350	8.4%
Rt 1 n/o Harris Grade Rd	24,890	1,742	7.0%	20,000	1,600	8.0%
Purisima e/o Rucker	7,490	636	8.5%	6,700	NA	NA
Harris Grade n/o Rt. 1	7,600	505	6.6%	7,040	NA	NA
Rucker Rd n/o Purisima	4,610	392	8.5%	2,430	NA	NA
Constellation	8,940	760	8.5%	7,670	NA	NA
Burton Mesa Blvd e/o Rucker	5,140	269	5.2%	2,090	NA	NA
Central e/o H St 4/	10,585	700	6.6%	12,965	1,089	8.4%
Central e/o O St 4/	13,965	1,100	7.9%	14,400	1,040	8.5%
Ocean e/o 7 St 1/	15,000	1,190	7.9%	13,510	1,290	9.5%
Ocean e/o H St 1/	16,000	1,204	7.5%	16,000	1,401	8.8%
H St n/o Ocean 1/	13,000	1,130	8.7%	16,000	1,300	8.1%
H St n/o Central	31,000	2,640	8.5%	28,000	2,400	8.6%
College w/o H St	NA	506	NA	NA	NA	NA

1/ The Wye Spec. Plan, 5/2004; and Caltrans Counts 2002. Counts

2/ Westar Home Depot EIR, Clubhouse Estates EIR, Caltrans 2005 Counts, County of SB Counts, 2004

3/ Estimated from counts based on 246 e/o Rt. 1.

4/ City of Lompoc Counts

File: RegProg\246 CentralTrvlFcst\Traf Imp Comp Alts1-4\2002 Cts.xls

Truck Traffic

Truck traffic is an important issue in the study area. SR246 is currently being used as one of the primary routes for transporting agricultural goods and produce (for example, flowers and broccoli) between the Lompoc area, Highway 101 and the Santa Ynez Valley. The Caltrans State Route 246 TCR has identified this route as an important inter-regional route for goods movement because of its vital economic importance to the agricultural industry in the Lompoc region and the Santa Ynez Valley. Furthermore, this roadway is also used for transport of light industrial goods and services, farm equipment, and hazardous material in and out of the study area.

Table IV-2 summarizes the existing (2002 and 2005) truck traffic in the study area. In general, truck traffic accounts for approximately 3 to 6% of the daily traffic on SR246 and Route 1. Truck traffic on SR246 is approximately 4% whereas truck traffic on Route 1 north of Santa Ynez River Bridge is 5.6%. Truck traffic on Route 1 south of SR246 is quite high (approximately 11%), indicating that Route 1 is the primarily route for truck traffic between the South Coast and Lompoc.

Because Central Avenue is an important arterial serving the City and the nearby commercial and residential developments, truck traffic on Central is relatively higher than other areas of the City. According to Caltrans truck statistics, under a normal weekday day, truck traffic on Central east of H Street accounts for approximately 8.6% of daily traffic. However, the 2002 City of Lompoc traffic counts by vehicle classification indicated that trucks only accounted for 6.2% of total daily traffic with a majority of the truck traffic being single-unit trucks and semis. **(Exhibits IV-1 and IV-2)**

Because of the strategic importance of the Central Avenue Extension, the volume of truck traffic on Central is expected to increase in the future. It is prudent that additional analyses be conducted to determine the impact of truck traffic on major intersections on Central Avenue and other related arterials.

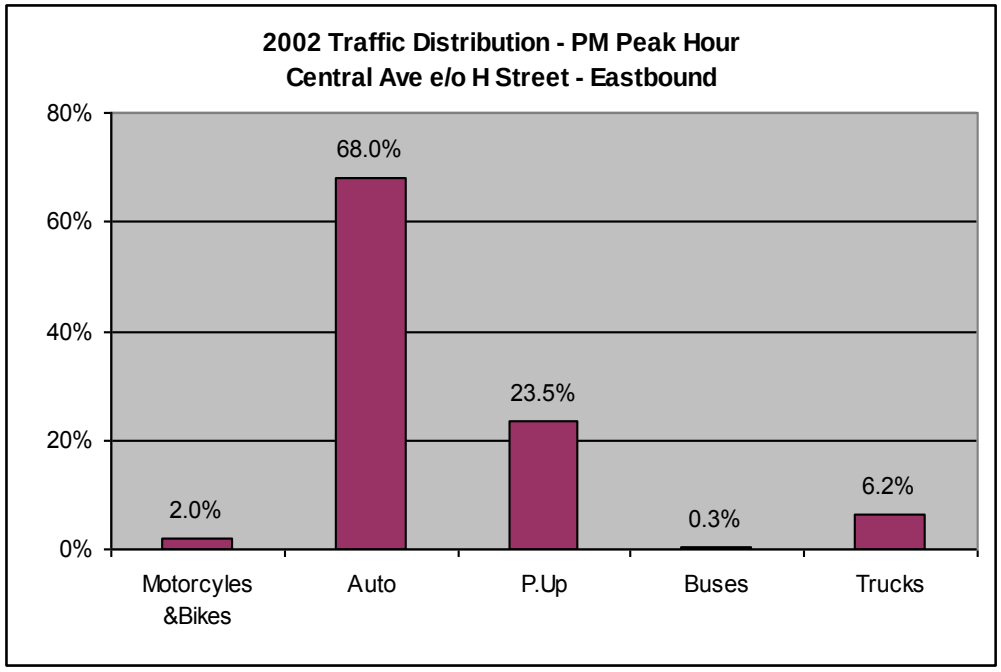
Table IV-2: 2002 and 2005 Truck Traffic

	2002			2005		
Roadway Segments 1/	**AADT**	**Truck**	**% Truck**	**AADT**	**Truck**	**% Truck**
246 s/o Rt. 1	8,900	329	3.7%	11,000	407	3.7%
246 w/o 101	17,400	713	4.1%	20,500	841	4.1%
Rt.1 s/o Jct 246	9,200	1,012	11.0%	9,500	1,045	11.0%
Rt. 1 n/o SY River Bridge	20,500	1,148	5.6%	28,000	1,568	5.6%
Central e/o H Street 2/	16,240	1,391	8.6%	NA	NA	NA

1/ 2002 & 2005 Caltrans Truck Counts

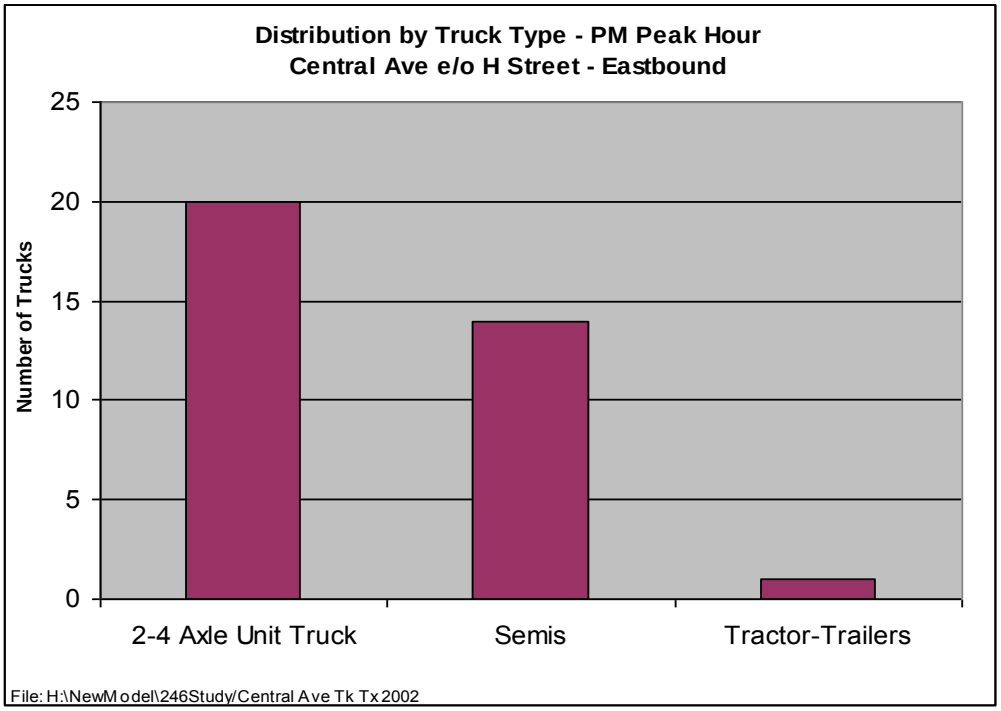
2/ 2002 City of Lompoc counts. Total Truck volume is based on doubling the EB Counts

Exhibit IV-1: 2002 PM Peak Traffic Distribution, Central Avenue Eastbound



Source: City of Lompoc, Thursday, October 31, 2002 between 4:00 to 5:00 PM.

Exhibit IV-2: 2002 PM Peak Truck Distribution, Central Avenue Eastbound



Source: City of Lompoc, Thursday, October 31, 2002 between 4:00 to 5:00 PM.

V. 2030 Traffic Forecast by Alternative

Alt. 1: 2030 Baseline Forecast

Alt. 1 examines the question "how much traffic growth is expected in the study area by 2030?" Essentially, Alt. 1 reflects the 2030 "baseline" forecast. The draft report in November 2005 assumed the widening of SR246 from 2-lane to 4-lane. However, in this revised report, the widening of SR246 was replaced by operational improvements (construction of passing lanes) along the route between Purisima Road and Domingos Road. **Exhibit V-1** presents a summary of the 2030 traffic impacts for Alt. 1. **Tables V-1 and V-2** compare the traffic growth between the 2002 base year and 2030 forecast under daily conditions. The following highlights the findings on major roadways in the study area:

- SR246 and Purisima Road: By 2030, traffic on SR246 is forecast to increase from 11,540 to 24,700 ADT, more than doubling the amount of 2000 traffic.

- Route 1: Traffic on Route 1 south of SR246 is forecast at 22,000 ADT, an increase of 153% over 2000. Traffic on Route 1 north of Harris Grade Road is expected to increase 49% reaching 37,100 ADT. Traffic on Route 1 (H Street) north of Central Avenue is expected to remain the heaviest within the study area. By 2030, traffic is forecast to increase 57%, reaching 46,600 ADT. Because of the ongoing residential development on Route 1 north of Central and in the Wye areas, the intersection of Route 1 and Purisima will become congested at peak hours. Traffic congestion and slow vehicular speeds are expected. More detailed findings are provided in Chapter VI.

- Central Avenue: Traffic on Central Avenue east of H Street is forecast at 20,700 ADT, representing an increase of 28% between 2002 and 2030.

- Rural Collectors: Currently more traffic is experienced on Harris Grade Road than on Rucker Road. By 2030, traffic on Harris Grade Road is forecast to increase 87%, reaching 14,200 ADT. However, with ongoing developments in the WYE area and the nearby communities, Rucker Road would be used more and more. Under the Baseline alternative, traffic on Rucker Road is forecast to increase approximately 54%, reaching 7,100 ADT.

- Downtown Lompoc: Traffic on H Street is expected to increase between 49% and 62% whereas traffic on Ocean Avenue east of H Street is forecast to increase 69% reaching 27,100 ADT.

Table V-1: 2030 Traffic Forecasts for Lompoc Areas

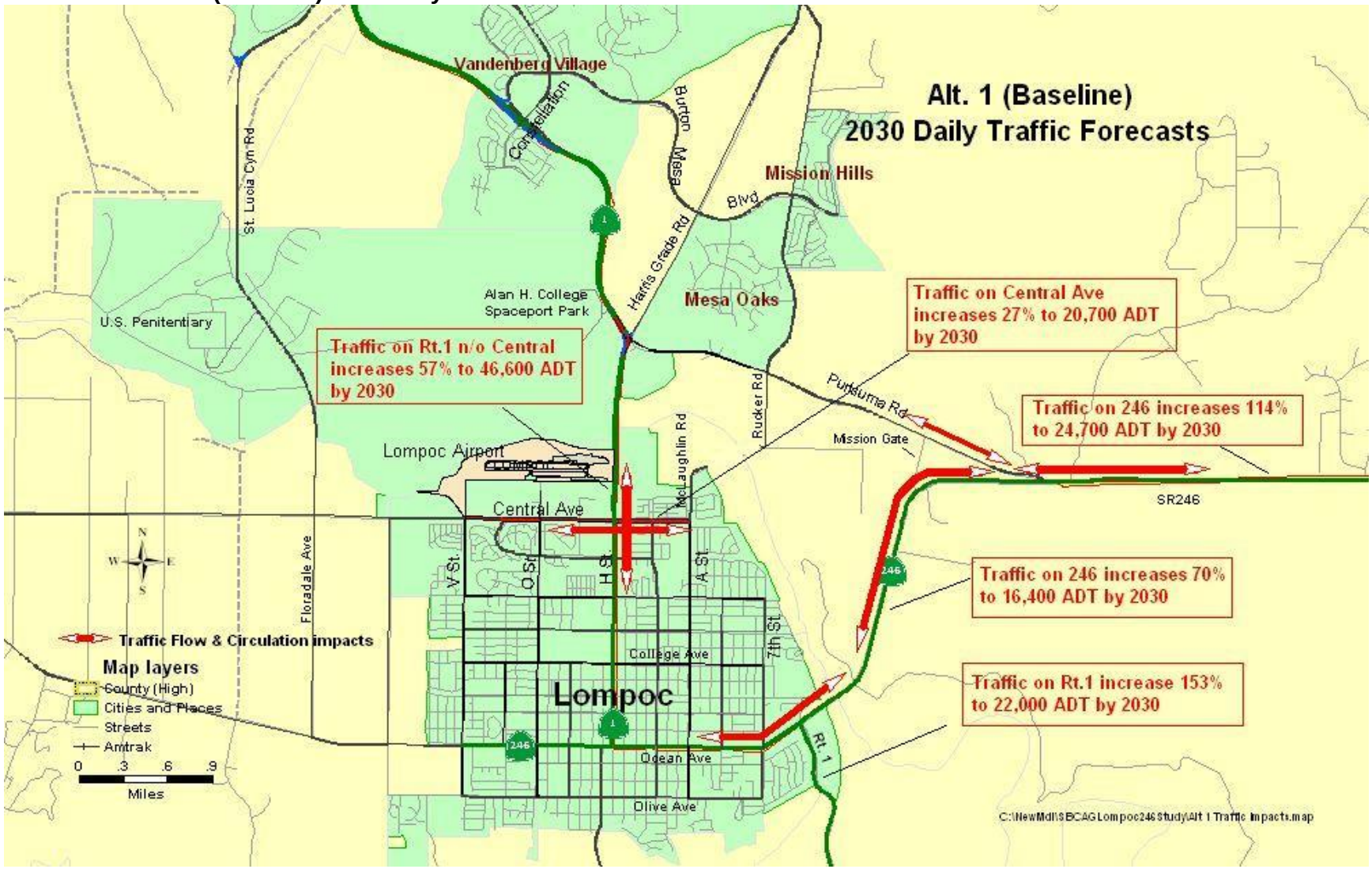
Lompoc and Vicinity	2002 Counts	2030 Baseline Forecast	
		Alt. 1	% Incr.
SR246 e/o Purisima	11,540	24,700	114.0%
SR246 e/o Rt 1	8,900	15,100	69.7%
Rt 1 s/o 246	8,700	22,000	152.9%
Rt 1 s/o VAFB Main Gate	17,800	25,700	44.4%
Rt 1 n/o Harris Grade Rd	24,890	37,100	49.1%
Purisima e/o Rucker	7,490	15,600	108.3%
Harris Grade n/o Rt. 1	7,600	14,200	86.8%
Rucker Rd n/o Purisima	4,610	7,100	54.0%
Constellation	8,940	12,200	36.5%
Burton Mesa Blvd e/o Rucker	5,140	6,300	22.6%
Central e/o H St	16,240	20,700	27.5%
Central e/o O St	20,590	24,500	19.0%
Central w/o V St	4,400	6,300	43.2%
Ocean e/o 7 St 1/	15,000	23,700	58.0%
Ocean e/o H St 1/	16,000	27,100	69.4%
H St n/o Ocean 1/	13,000	21,000	61.5%
H St n/o College	14,900	22,200	49.0%
H St n/o Central 2/	29,690	46,600	57.0%
College w/o H St	11,400	11,900	4.4%
North w/o H St	8,820	10,400	17.9%
S. Lucia Cyn Rd n/o Central	6,800	9,100	33.8%

Sources: The Wye Specific Plan, Caltrans Counts 2002, and various sources. 1/ 2000 data used. 2/ 2003 City of Lompoc Counts

File: RegProg\246 CentralTrvlFcst\Traf Imp Comp Alts1-4.xls

.

Exhibit V-1 – Alt. 1 (Baseline) 2030 Daily Traffic Forecasts



The following section discusses the 2030 forecasts for Alt. 2, Alt. 3, and Alt. 4. Summaries of the 2030 forecast by alternative are presented on **Table V-2**.

Table V-2: 2030 Daily Forecast by Alternative

Lompoc and VAFB areas	2030 Forecast (ADT)			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Lompoc Vicinty				
SR246 e/o Purisima	24,700	24,700	24,700	23,900
SR246 e/o Rt 1	15,100	7,000	7,000	14,600
Rt 1 s/o 246	22,000	19,000	19,000	19,500
Rt 1 s/o VAFB Main Gate	25,700	25,700	25,700	25,700
Rt 1 n/o Harris Grade Rd	37,100	37,100	37,100	37,100
Purisima e/o Rucker	15,600	12,600	12,600	15,400
Harris Grade n/o Rt. 1	14,200	11,700	11,700	14,100
Rucker Rd n/o Purisima	7,100	9,500	9,500	6,900
Constellation	12,200	12,200	12,200	12,200
Burton Mesa Blvd e/o Rucker	6,300	6,300	6,300	6,300
Central Ext'n, w/o Rucker	NA	14,200	14,200	NA
Central Ext'n e/o Rucker	NA	12,200	12,200	NA
Rucker Ext'n to Central	NA	3,400	3,400	NA
City of Lompoc				
Central e/o H St	20,700	23,200	23,200	20,500
Central e/o O St	24,500	27,300	27,300	24,900
Central w/o V St	6,300	6,500	6,500	6,300
Ocean e/o 7 St	23,700	11,400	11,400	15,900
Ocean e/o H St	27,100	19,200	19,200	23,200
H St n/o Ocean	21,000	18,200	18,200	19,800
H St n/o College	22,200	21,900	21,900	21,900
H St n/o Central	46,600	42,100	42,100	46,500
College w/o H St	11,900	12,000	12,000	11,900
North w/o H St	10,400	10,900	10,900	10,900
S. Lucia Cyn Rd n/o Central	9,100	9,000	9,000	9,000

Alt 2 - Extend Central Ave across Santa Ynez River to Rt.246 as a 2-Lane Minor Arterial

Impact on Central Avenue

- Because the Central Avenue Extension provides a direct access to the Central Avenue and the City from SR246 and Highway 101, a significant amount of traffic originally destined for the City via SR246 and Ocean Avenue would be diverted onto this new roadway segment with traffic forecast at 14,200 ADT. However, this traffic level is substantially less than the November 2005 forecast of 21,000 ADT, which was because of the 4-lane widening on SR246.

- The Central Avenue Extension together with the operational improvements on SR246 will facilitate an efficient E-W truck route linking Lompoc, the Santa Ynez Valley, and Highway 101.

- The Central Avenue Extension will load more traffic on Central. At the location east of H Street, traffic is forecast to reach 23,200 ADT, an increase of approximately 12% on top

of the 2030 forecast (Alt. 1). Traffic on Central east of O Street is forecast at 27,300 ADT, an addition of 11% on top of the 2030 forecast.

Impact on SR246 and Purisima

- Traffic on SR246 east of Purisima is expected to remain at similar level as Alt. 1 (24,700 ADT).

- Traffic on SR246, at the entrance to the City of Lompoc near Route 1, traffic is expected to drop by 54% due to a diversion to the Central Avenue Extension.

- As discussed earlier, traffic on Purisima is forecast at 15,600 ADT under Alt. 1. With the Central Avenue Extension, lower volume (12,600 ADT) on Purisima is expected due to the availability of the Central Avenue Extension to access the northern part of Lompoc.

Impact on Route 1

- Traffic on Route 1 south of Purisima Road Intersection is forecast at 42,100 ADT, approximately 10% less than Alt 1 since some traffic on Route 1 would choose the Central Avenue Extension and Rucker Road for access to the northern unincorporated residential communities. However, traffic on this roadway segment would still be the heaviest in the study area with some congestion and slower speeds expected when approaching Route 1/Purisima intersection during peak hours.

- Traffic on Route 1 south to Highway 101 is forecast at 19,000 ADT, representing a drop of approximately 3,000 ADT when compared with Alt. 1. The Central Avenue Extension is expected to capture some interregional traffic from the South Coast that will now travel on SR246.

Impact on Rural Collectors and Downtown Lompoc

- Traffic on Rucker Road is forecast at 9,500 ADT, an increase of 34% over Alt. 1. Traffic on Harris Grade Road is reduced from 14,200 ADT to 11,700 ADT, a 18% drop, indicating that some traffic from downtown Lompoc would choose to use the Central Avenue Extension and Rucker Road as an alternate route to Mesa Oaks and Mission Hills rather than using Harris Grade Road.

- Future traffic on Ocean Avenue is reduced. At location east of 7th Street, traffic is reduced by 52% over Alt. 1 (from 23,700 to 11,400 ADT). Traffic on Ocean east of H Street is projected at 19,200 ADT, some 29% less than the 2030 Baseline alternative.

- In central downtown of Lompoc, traffic is only marginally affected. Traffic on H Street north of College is similar to Alt. 1, at 21,900 ADT. Traffic on H Street north of Central is reduced by approximately 10% since some traffic from downtown would be captured by the Central Avenue Extension and Rucker Road for access to Mesa Oaks and Mission Hills.

Comparison with Prior Forecasts

- Comparing with the November 2005 draft report, less traffic is projected on SR246 (23,700 ADT vs. 27100 ADT), mainly due to the elimination of SR246 widening.

- Additional scenarios which assumed a full 4-lane widening of SR246 were considered. It appears that higher traffic volumes, mostly interregional traffic, on this route could only be achieved when there is a substantial increase in capacity, e.g., a full 4-lane widening. Operational improvements such as construction of passing lanes at specific locations would not contribute significant increases in traffic on this route. Only with a full widening of SR246 would significant interregional traffic be diverted from Route 1 to Route 246.

Exhibit V-2 summarizes the traffic impacts of Alt. 2.

Alt 3 - Extend Central Ave across Santa Ynez River to SR246 as a 4-Lane Minor Arterial

In general, traffic forecast for Alt. 3 is virtually identical to Alt. 2. The following highlights the traffic impacts on major roadways.

Impact on Central Avenue

- The 4-lane arterial alternative would capture the same traffic volumes as the 2-lane arterial alternative. Increasing the capacity on the Central Avenue Extension does not necessarily increase demand on Central. However, substantial increase in capacity on SR246 which attracts interregional traffic from Route 1 between Highway 101 and Lompoc would increase demand on Central.

Impact on SR246 and Purisima

- Traffic on SR246 east of Ocean Ave would remain the same as Alt. 2. Future traffic on Purisima would remain the same as Alt 2 as well.

- Widening Central Avenue Extension does not increase the demand on SR246 or Purisima nor provide any traffic circulation benefits. Such finding is different from the previous forecast report. It would only make a difference if Route 246 between Purisima and Domingos Road is a 4-lane facility.

Impact on Route 1

- Traffic forecast for Route 1 is also similar to Alt. 2. It is likely however, that some motorists would choose to use SR246 and the widened Central Avenue Extension for Lompoc as a more comfortable route choice.

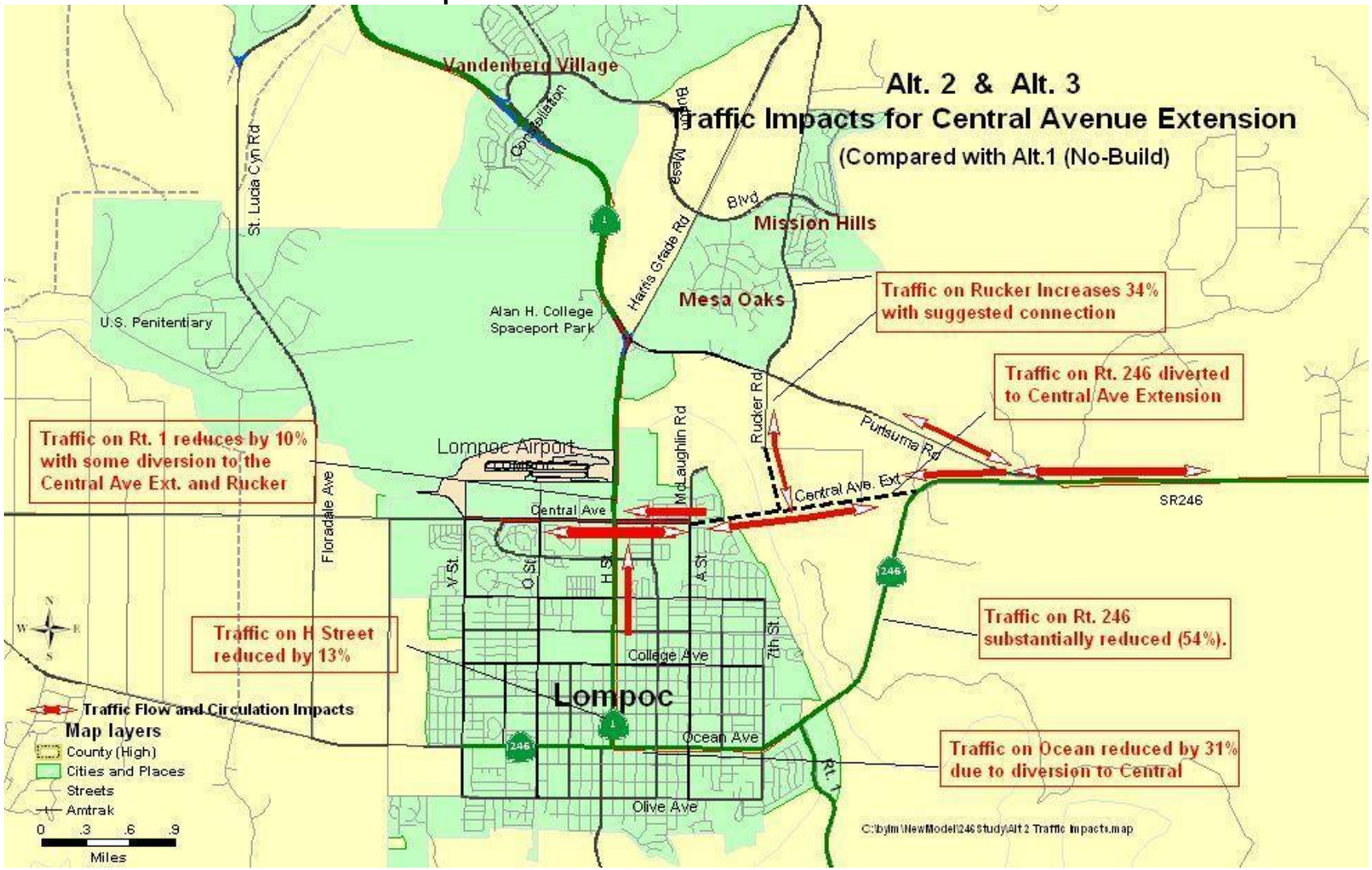
Impact on Rural Collectors and Downtown Lompoc

- Traffic on Rucker Road north of Purisima and Harris Grade Road is the same as Alt 2. A 4-lane Central Avenue Extension would provide a convenient alternative for traffic from

Downtown Lompoc to Mesa Oaks and Mission Hills due to the increase in the capacity on Central Avenue Extension. **Exhibit V-2** presents the traffic impacts for both Alt. 2 and Alt. 3

.

Exhibit V-2: Alt.2 & Alt. 3 - Traffic Impacts for Central Avenue Extension



Alt 4 - Widen SR246 east of Route 1 as a 4-Lane Minor Arterial

The forecast outcome for Alt. 4 is slightly different from Alt. 1. The following highlights the findings of this alternative.

Impact on Central Avenue

- Without the Central Avenue Extension, the forecast for Central Avenue would remain at similar level (20,500 ADT) as the, Alt. 1.

Impact on SR246 and Purisima

- Traffic on SR246 east of Purisima is slightly less than Alt.1 (23,900 ADT). Widening Route 246 northeast of Route 1 at Ocean from a 2-lane to a 4-lane facility, without the Central Avenue Extension, does not increase demand on this roadway segment. Because Route 246 between Lompoc and Domingos Road essentially remains a 2-lane facility, with passing lanes, the capacity of the facility and its potential to divert interregional trips on Highway 101 from Route 1 to Route 246 is limited.

- Traffic on Purisima is expected to remain the same as Alt. 1.

Impact on Rural Collectors and Downtown Lompoc

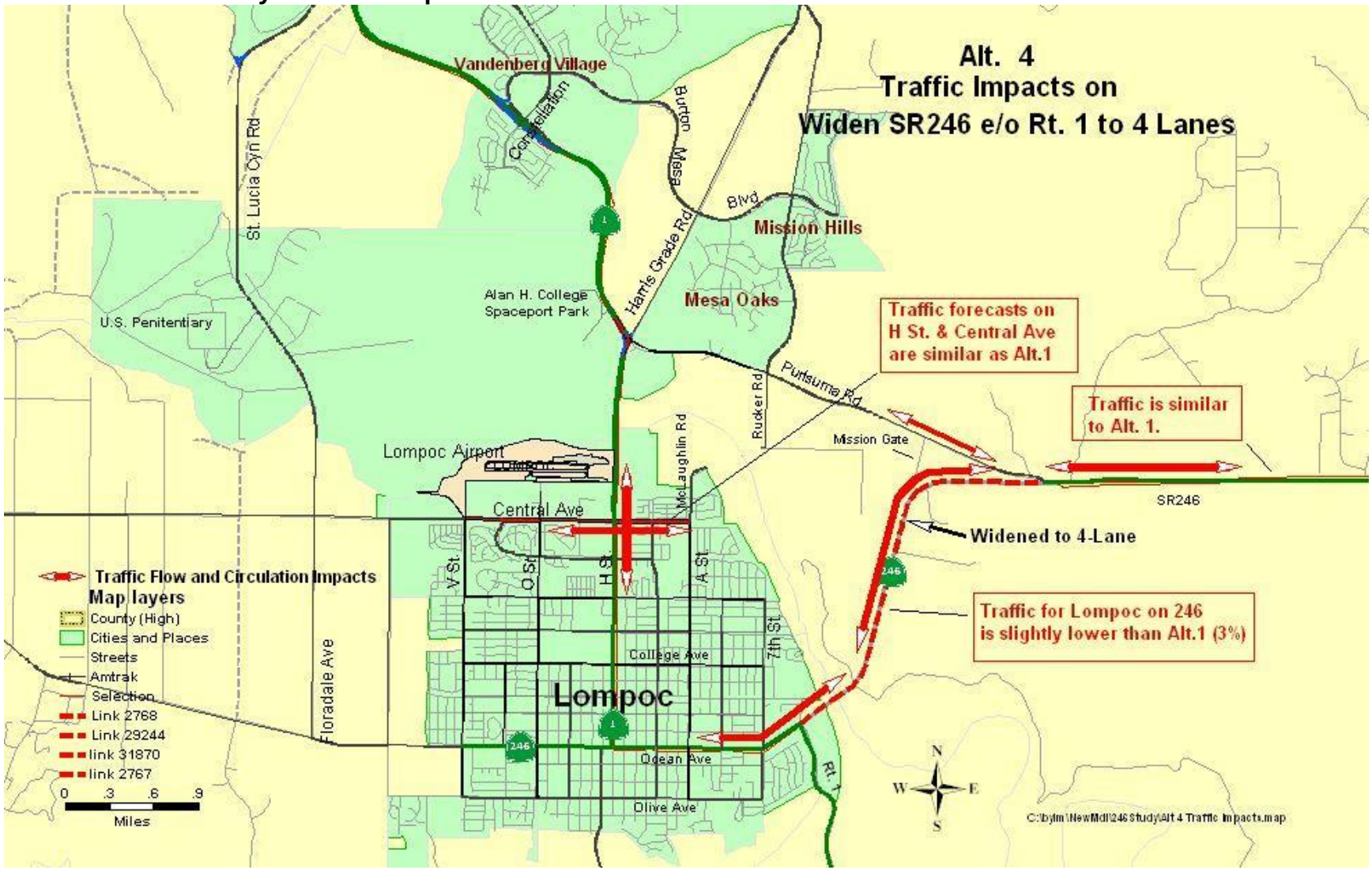
- Given no Central Avenue and Rucker Road extensions, traffic on rural collectors (Rucker Road, Harris Grade Road, etc.) and the arterials from downtown Lompoc (H Street, Central Avenue, and Ocean Avenue) would remain essentially the same as Alt. 1.

Exhibit V-3 summarizes the traffic impacts for Alt. 4.

Exhibits V-4, 5, and 6 provide a summary comparison of daily traffic impacts between Alt. 1 and Alt 2. Exhibit V-4 compares traffic impacts on the Central Ave Extension, Ocean Avenue and Route 246. Exhibit V-5 compares traffic impacts on Central Avenue Extension, Route 1, and Route 1. Exhibit V-6 compares traffic impacts on the City's roadways and Exhibit V-7 compares traffic impacts on unincorporated areas.

.

Exhibit V-3: Summary of Traffic Impacts for Alt. 4



.

Exhibit V- 4

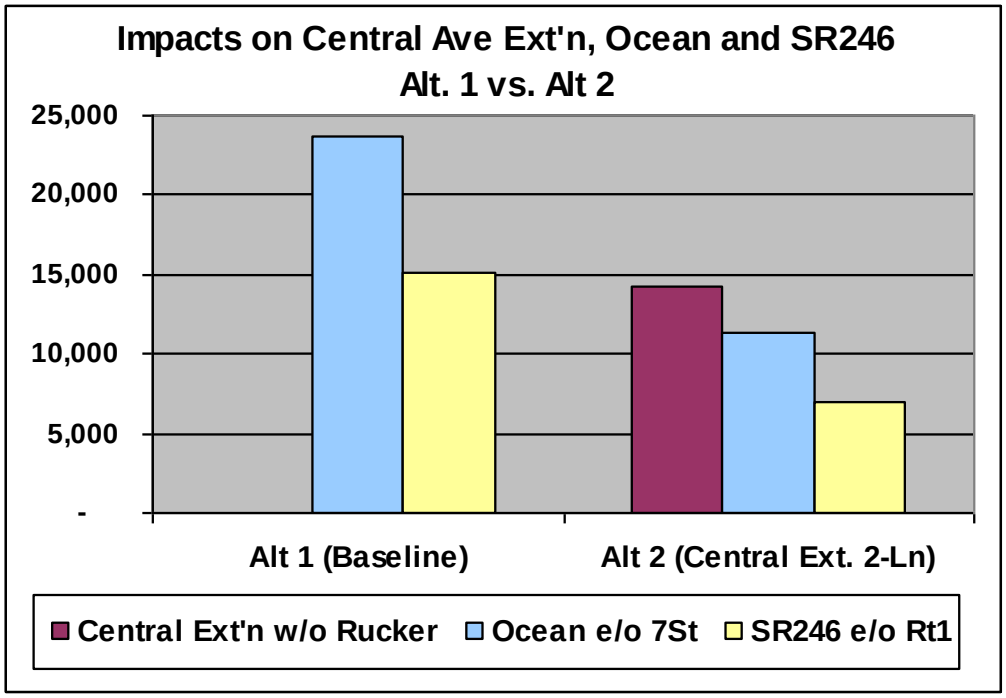


Exhibit V- 5

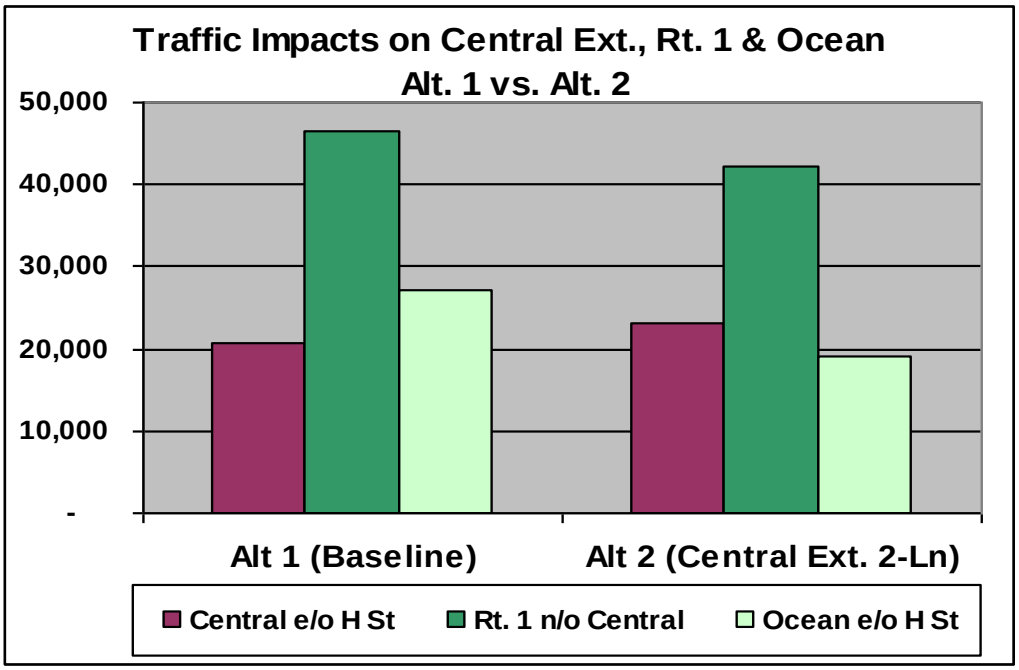


Exhibit V- 6

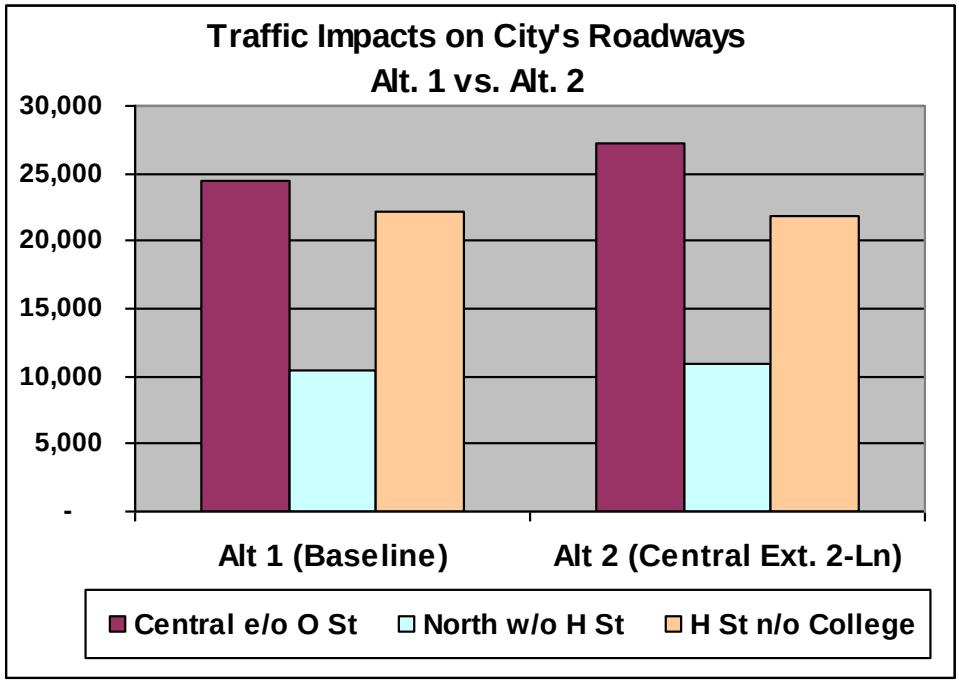
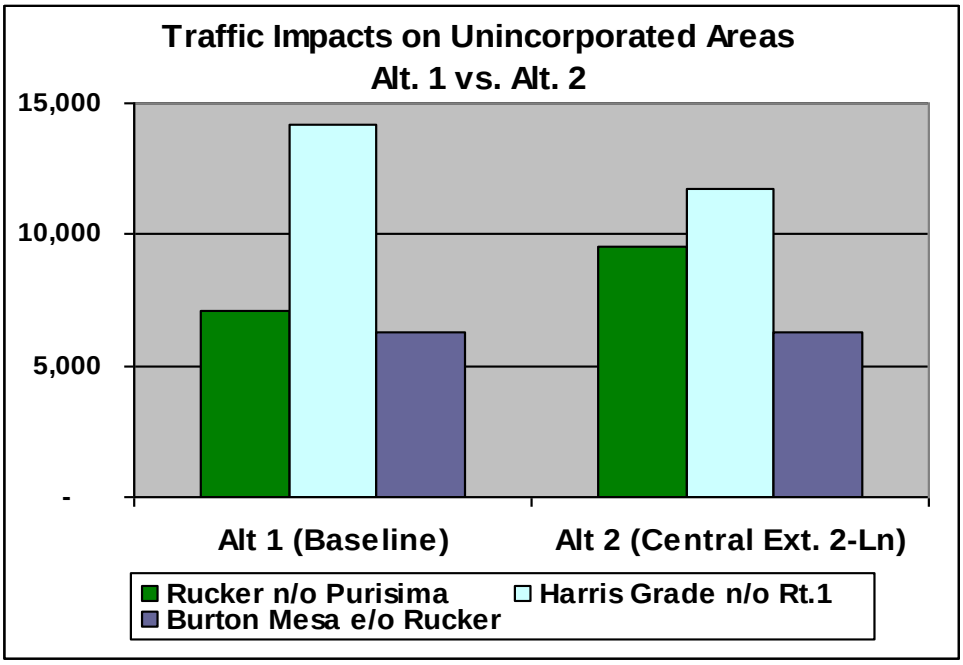


Exhibit V- 7



Travel Time Savings

A real time flowing-car survey analysis was conducted to compare the relative travel times during PM peak hour (4:30 – 5:30 PM) based on the following route choices:

- Path 1: (Alt.2 and Alt.3): Traveling from Route 246/Purisima intersection via the Central Avenue Extension to the Central Avenue/H Street intersection.

- Path 2: (Alt.1 and Alt.4): Traveling from Route 246/Purisima intersection via Purisima Road and Route 1 to Central Avenue/H Street intersection.

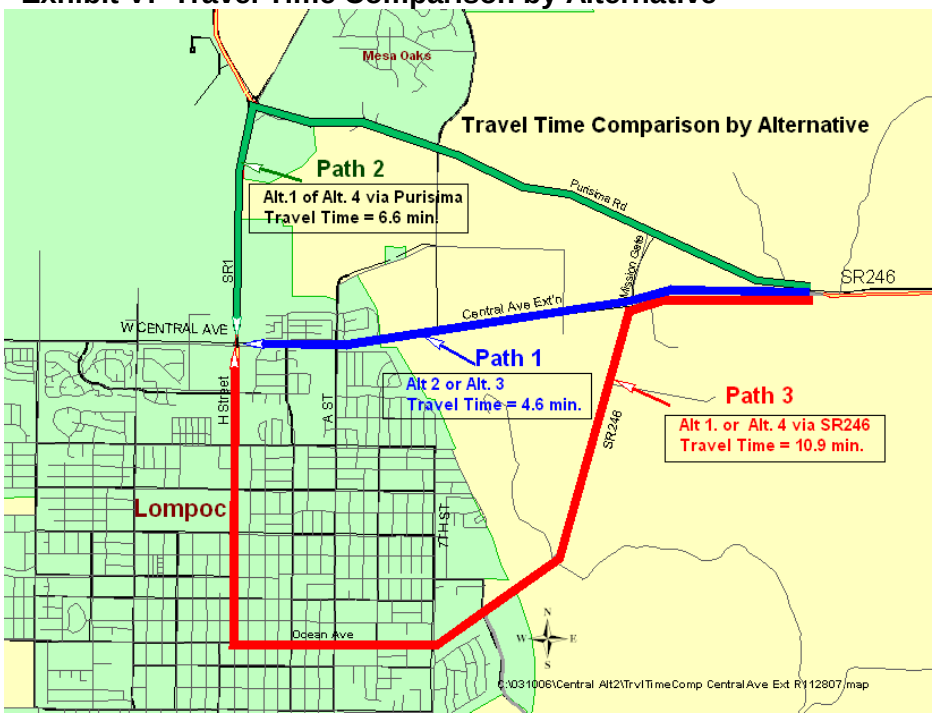
- Path 3: (Alt 1 and Alt.4): Traveling from Route 246/Purisima intersection via Route 246 east of Route 1, Ocean, and H Street to the Central Avenue/H Street intersection.

The analysis indicates that with the Central Avenue Extension (Alt. 2 or Alt. 3), approximately 4.4 to 6.3 minutes could be saved per vehicle trip. Given approximately 7,600 to 8,100 vehicles trips could be diverted to this roadway segment, approximately 557 to 850 hours of travel time savings could be realized in an average work day. **Table V-3** and **Exhibit V-7** summarize the travel time findings.

Table V-3: Travel Time Comparison by Alternative

Travel Time Evaluation By Alternative Purisima/246 Jct to Central/H St	Travel Time (Mins)	Travel Time Saved Per Veh. Trip	Total Veh. Trips Diverted to Central Ave Ext'n	Total Time Saved (hrs/Av. Day)
Path 1 (Via Central Ave Extn) (Alt.2 or Alt. 3)	4.6	6.3	8100	850.5
Path 2 (Via Purisima & Rt.1) (Alt. 1 or Alt 4)	6.5	4.4	7600	557.3
Path 3 (Via Rt.246 e/o Rt.1) (Alt.1 or Alt. 4)	10.9	0.0	0.0	0.0

Exhibit V: Travel Time Comparison by Alternative



VI. 2030 PM Peak Hour Forecast and Intersection LOS Analysis

PM Peak Hour Analysis

PM peak hour refers to the period between 4:00 and 5:00 PM. Because of daily commute, PM peak hour is generally depicted as the critical period for level of service analysis. In the study area, current PM peak traffic accounts for approximately 8% of total daily traffic. By 2030, this percentage is forecast between 8 to 10%. Rural collectors are generally projected to be higher (8.5 to 9.8%). Burton Mesa Blvd. is forecast to maintain the highest PM peak percentage (approximately 12.6%).

PM peak hour analysis was conducted to compare how the PM peak demand compared with the roadway capacity for 2030 under each of the four alternatives. Roadway capacities for major arterials and rural collectors in the study area were calculated based on the number of lanes, functional classification, area type (urban or rural), geographical constraints, and assumed roadway improvements. The resulting capacities were compared to the 2030 PM peak demand to determine whether there is adequate roadway capacity available for each of the alternative.

Most roadway capacities in the study area range from 3,200 vehicles per hour (vph) for a 2-lane arterial to 4,800 vehicle per hour (vph) for a 2-lane arterial with passing lane. Central Avenue has the highest capacity of 7,200 vph since it is classified as a principal arterial within the urban area. However, the capacity of the Central Avenue Extension is lower (between of 3,200 for a 2-lane arterial to 6,400 vph for a 4-lane arterial) since it is classified as a minor arterial within the rural area. For rural collectors, the roadway capacity is between 1,400 to 3,100 vph, depending on the number of lanes, functional class and other factors described above.

In general, PM peak hour analysis indicated that adequate roadway capacity on Central, Route 1, SR246 south of Purisima appear to be available to meet the PM peak demand for each of the four alternatives.

Level of Service Analysis for Ten Critical Intersections

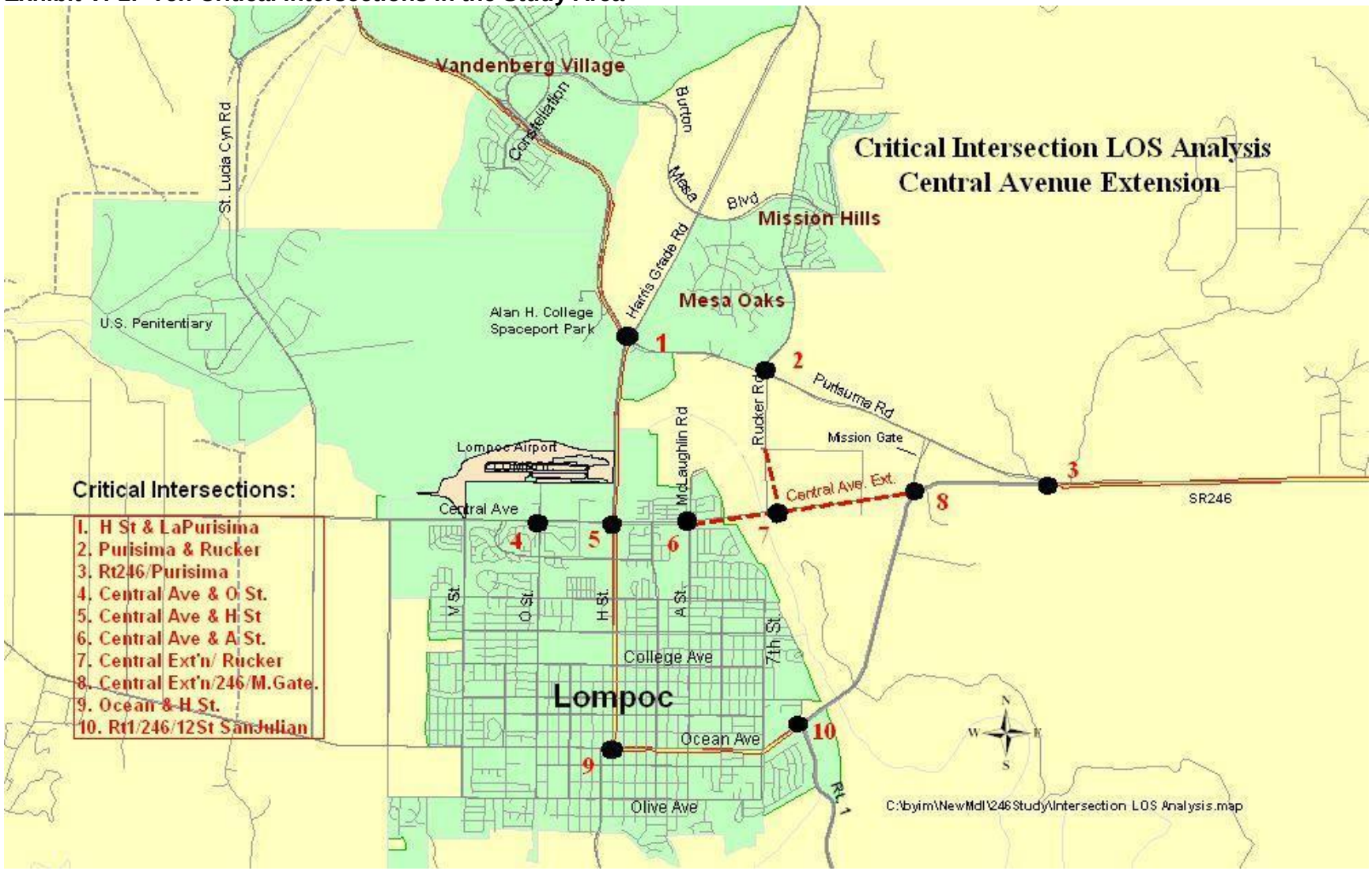
In order to identify the adverse effect of each of the alternatives, a more detailed analysis of PM peak hour operations at ten critical intersections in the area for 2030 was conducted. The study-area intersections are summarized in **Table VI-1** and **Exhibit VI-1.**

Table VI-1: **Study-Area Intersections**

Intersection	Jurisdiction	Existing Control Type
1. Purisima Rd. / H St.(Rt.1) -Harris Grade Rd.	County of Santa Barbara / Caltrans	Signal
2. Purisima Rd. / Rucker Rd.	County of Santa Barbara	4-Way Stop
3. Purisima Rd. / SR 246	County of Santa Barbara / Caltrans	1-Way Stop
4. Central Ave. / O St.	City of Lompoc	Signal
5. Central Ave. / H St.-SR 1	City of Lompoc / Caltrans	Signal
6. Central Ave. / A St.	City of Lompoc	Signal
7. Central Ave. / Rucker Rd. (future)	County of Santa Barbara	n/a
8. Central Ave. / SR 246 (future)	County of Santa Barbara / Caltrans	n/a
9. Ocean Ave. / H St.	City of Lompoc / Caltrans	Signal
10. Ocean Ave. / 12th St.-SR 1	City of Lompoc / Caltrans	Signal

.

Exhibit VI-1: Ten Critical Intersections in the Study Area



Methodology

Intersection Turning Movements

The turning movement volumes for the each of the scenarios and intersections listed above were derived by developing growth factors from SBCAG's Expanded Model and applying them to existing (Years 2002-2007) turning movement count data. Traffic volumes at the Central Avenue/A Street intersection (where the extension would connect with Central Avenue on the west) were further augmented using data contained in the Riverbend Park and Bike Trail Master Plan Traffic and Circulation Study (Associated Transportation Engineers, July 2004). The traffic volumes contained in that study for the southbound approach, the eastbound left-turn, the northbound through, and westbound right-turn movements were used, since the north leg of the intersection is not included in the model.

Lane Geometry

A variety of planned improvements (such as those contained in existing environmental documents such as the Wye Specific Plan EIR) and recommended improvements that could easily be provided within existing rights-of-way were developed by staff and included in the LOS analysis. This was done assuming that the City and County will attempt to maintain their respective LOS standards going into the future. These improvements are summarized below in **Table VI-2**.

Table VI-2: **Lane Geometry Assumptions**

Intersection	Improvement
Alternatives 1 & 4	
1. Purisima Rd. / H St.-Harris Grade Rd.	Widen H St. south of intersection; add one SB through lane *
2. Purisima Rd. / SR 246	Signalize *
5. H St. / Central Ave.	Add one NB and one SB left-turn lanes *
Alternatives 2 & 3	
1. Purisima Rd. / H St.-Harris Grade Rd.	Widen H St. south of intersection; add one SB through lane *
2. Purisima Rd. / SR 246	Signalize *
5. H St. / Central Ave.	Add one NB and one SB left-turn lanes *
6. A St. / Central Ave.	Signalize Lane geometry: NB Approach = L L TR SB Approach = same EB Approach = L T RR WB Approach = L T TR
7. Rucker Rd. / Central Ave.	One-way stop (SB approach) Lane geometry: SB Approach: L R EB Approach: L T (L TT for Alt. 3) WB Approach: T R (TT R for Alt. 3)
8. SR 246 / Central Ave.	Signalize Lane geometry: NB Approach: L T SB Approach: T R EB Approach: L R

* Improvement specified in Wye Specific Plan EIR (Endo Engineering, 2003).
L = Exclusive left-turn lane; T = Through lane; R = Right-turn lane; TR/LT = shared lane

PM Peak Hour Traffic Volume Changes

Construction of the Central Avenue extension would trigger changes in PM peak hour traffic volumes on major roadways throughout the study-area. **Table VI-3** shows the percent changes in PM peak hour volumes on the major study-area roadway links if the Central Avenue extension were to be constructed.

Table VI-3: **Percent Changes on Major Study-Area Roadway Links**

Location	Year 2030 PM Peak Hour 2-Way Volumes		% Change With Extension
	No Extension (Alts. 1 & 4) 1/	With Extension (Alts. 2 & 3) 1/	
Purisima Road			
West of Rucker Rd.	950	690	-27%
West of SR 246	725	510	-30%
Central Avenue			
West of O St.	1,245	1,400	12%
West of H St.	2,500	2,975	19%
East of H St.	1,560	2,010	29%
West of A St.	1,830	2,010	10%
Harris Grade Road-H Street			
North of Purisima Rd.	1,355	1,150	-15%
North of Central Ave.	3,980	3,715	-7%
South of Central Ave.	3,005	3,260	8%
North of Ocean Ave.	1,930	1,415	-27%
A Street			
South of Central Ave.	1,700	1,830	8%
State Route 246			
East of Purisima Rd.	1,770	1,825	3%
North of Central Ave.	1,060	1,335	26%
South of Central Ave.	1,060	645	-39%
Ocean Avenue			
East of H Street	2,335	1,540	-34%

1/ 2030 PM peak hour volumes were developed based on application of model growth factors to intersection turning movement counts completed in Years 2003-2006.

As shown, the Central Avenue Extension would decrease PM peak hour volumes on Purisima Road, Harris Grade Road, H Street (except the segment south of Central Ave.), SR 246 (south of the proposed extension), and Ocean Avenue. The extension would increase PM peak hour volumes on Central Avenue and SR 246 (between Purisima Road and the proposed extension).

Intersection Operations

Level of service (LOS) for the study-area intersections was evaluated using TRAFFIX software. The LOS methodology used for signalized and stop-sign intersections is discussed in further detail below.

Signalized Intersection LOS Methodology

While it is understood that the City of Lompoc and Caltrans utilize the Highway Capacity Manual (HCM) methodology for CEQA level traffic impact analyses at signalized intersections, the ICU method is used for evaluating intersection operations under the Congestion Management Program (CMP), which SBCAG administers. Therefore, the Intersection Capacity Utilization (ICU) methodology was used for this analysis. At the October Steering Committee meeting, a request was made to include an assessment of LOS using the HCM methodology for the signalized intersections. Staff completed this task, and the results are summarized in Attachment 2 of this report.

The ICU method is a simple way to calculate an intersection's LOS by taking the sum of each pair of critical intersection turning movements (the northbound left-turn plus the southbound through movement, for example) and dividing that value by the intersection's saturation flow rate (capacity). The saturation flow rate for intersections on the County's CMP network is 1,600 vehicles per lane per hour. Each critical movement's volume to capacity ratio is then summed and a 10% factor (0.10) for lost time is added to this sum to derive the intersection volume to capacity ratio and subsequent LOS grade for the peak hour. The LOS ranges for signalized intersections are summarized in **Table VI-4**.

Stop-Sign Intersection LOS Methodology

Levels of service for the stop-sign intersections were calculated utilizing the HCM methodologies for two-way and all-way stop-sign intersections. The HCM methodology calculates LOS using a series of equations relating to factors such as lane width, peak hour factor, percent heavy vehicles, volumes, and lane geometry to calculate an average delay per vehicle. The LOS ranges for stop-sign intersections are also summarized in **Table VI-4.**

Table VI-4: **LOS Ranges for Signalized and Stop-Sign Controlled Intersections**

LOS	Signalized Intersections [a]	Stop-Sign Controlled Intersections [b]
A	0.00 – 0.60 V/C	0 – 10.0 seconds per vehicle
B	0.61 – 0.70 V/C	10.1 – 15.0 sec./veh.
C	0.71 – 0.80 V/C	15.1 – 25.0 sec./veh.
D	0.81 – 0.90 V/C	25.1 – 35.0 sec./veh.
E	0.91 – 1.00 V/C	35.1 – 50.0 sec./veh.
F	$\geq$ 1.01 V/C	$\geq$ 50.1 sec./veh.

[a] Intersection Capacity Utilization (ICU) method.
[b] Highway Capacity Manual (HCM) method.

LOS Results

Table VI-5 shows the results of the LOS analysis. As shown, the study-area intersections would benefit with the Central Avenue extension in place.

Table VI-5: Year 2030 P.M. Peak Hour Intersection LOS

Intersection	Control	V/C or Delay / LOS		
		Alt. 1	Alts. 2 & 3	Alt. 4
1. Purisima Rd. / H St.(Rt.1) - Harris Grade Rd.	Signal	**1.02 / F***	0.74 / C*	**1.01 / F***
2. Purisima Rd. / Rucker Rd.	All-Way Stop	**>50.0 sec. / F**	26.4 sec. / D	**>50.0 sec. / F**
3. Purisima Rd. / SR 246	Signal	0.52 / A*	0.77 / C*	0.52 / A*
4. Central Ave. / O St.	Signal	0.69 / B	0.69 / B	0.67 / B
5. Central Ave. / H St.-SR 1	Signal	0.90 / D*	**1.00 / E***	**0.91 / E***
6. Central Ave. / A St.	Stop-sign (Alts. 1 & 4) Signal (Alts. 2 & 3)	**>50.0 sec. / F**	0.75 / C*	**>50.0 sec. / F**
7. Central Ave. / Rucker Rd.	One-Way Stop	n/a	7.1 sec. / A*	n/a
8. Central Ave. / SR 246	Signal	n/a	0.66 / B*	n/a
9. Ocean Avenue / H St.	Signal	0.74 / C	0.61 / B	0.76 / C
10. Ocean Ave. / 12th St.-SR 1	Signal	0.90 / D	0.68 / B	**0.92 / E**

Bold indicates deficient locations according to SBCAG's CMP thresholds.
* LOS includes improvements outlined in Table VI-2.

The **Purisima Road/H Street-Harris Grade Road** intersection would operate at LOS F under Alternatives 1 & 4. The **Central Avenue/H St.-Rt.1** intersection would operate at LOS E under Alternatives 2, 3, and 4. The **Central Avenue/A Street** intersection would operate at LOS F under Alternatives 1 and 4. The **Ocean Avenue/12th Street-Rt.1** intersection would operate at LOS E under Alternative 4. Potential capacity-increasing improvements at these locations were identified and are summarized below.

Purisima Road/H Street-Harris Grade Road

In Alts. 1 and 4, the model forecasts show 1,200 northbound left-turns at this intersection during the PM peak hour in the Year 2030, which accounts for approximately 40% of the total critical movement capacity. Widening the northbound approach to provide two left-turn lanes, two through lanes, and one right-turn lane would significantly improve the LOS at the intersection.

Intersection	Alternative 1 V/C / LOS		Alternative 4 V/C / LOS	
	No Improvement	With Recommended Improvement	No Improvement	With Recommended Improvement
1. Purisima Rd. / H St.- Harris Grade Rd.	1.02 / LOS F	0.86 / LOS D	1.01 / LOS F	0.86 / LOS D

Purisima Road / Rucker Road

The heavy vehicle delays at this intersection can be attributed to the westbound peak hour trips required to stop at the one-lane stop sign approach. This location would warrant a traffic signal by the Year 2030, according to the Caltrans methodology, and would significantly decrease vehicle delays.

Intersection	Alternative 1 V/C / LOS		Alternative 4 V/C / LOS	
	4-Way Stop-Sign Control	Traffic Signal Control	4-Way Stop-Sign Control	Traffic Signal Control
2. Purisima Rd. / Rucker Rd.	>50.0 sec. / LOS F	0.62 / LOS B	>50.0 sec. / LOS F	0.63 / LOS B

Central Avenue / H Street

The Central Avenue/H Street intersection would operate at LOS E under Alternatives 2, 3, and 4. Additionally, the intersection is operating extremely close to LOS E (V/C = 0.90) under Alternative 1. These improvements would bring up the LOS to D:

- Widening the northbound approach to provide exclusive dual left-turn lanes, two through lanes and one right-turn;
- Widening Central Avenue to provide one additional eastbound right-turn lane and one additional westbound left-turn lane.

Intersection	Alternative 1		Alternatives 2 & 3		Alternative 4	
	Existing Geometry	With Widened Approaches	Existing Geometry	With Widened Approaches	Existing Geometry	With Widened Approaches
5. Central Ave./H St.	0.90 / D	0.87 / D	1.00 / E	0.90 / D	0.91 / E	0.86 / D

Central Avenue / A Street

The stop-sign controlled intersection of Central Avenue / A Street is forecast to operate at LOS F under Alternatives 1 and 4. The following improvements would bring the LOS to B:

- Installation of traffic signal control would significantly reduce vehicle delays for northbound and eastbound vehicles.
- An additional lane would need to be provided for the northbound left-turn movement (806 P.M. PHT). This can be accommodated within the existing right-of-way by re-striping the northbound approach to provide one left-turn lane and one shared left-through lane. Split phasing for the north and south approaches would be required with this configuration.

Intersection	Alternative 1 V/C / LOS		Alternative 4 V/C / LOS	
	Stop-Sign Control	Traffic Signal Control	Stop-Sign Control	Traffic Signal Control
6. Central Ave. / A St.	>50.0 sec. / LOS F	0.62 / LOS B	>50.0 sec. / LOS F	0.63 / LOS B

Ocean Avenue / 12th St.-Rte. 1

The intersection is forecast to operate at LOS E under Alternative 4. Additionally, the intersection is operating close to LOS E (0.90 V/C = LOS D) under Alternative 1. Widening the northbound approach to provide dual left-turn lanes, one through lane and one right-turn lane would improve the LOS to D.

Intersection	Alternative 1		Alternative 4	
	Existing Geometry	With Widened NB Approach	Existing Geometry	With Widened NB Approach
10. Ocean Ave./12th St.-Rte. 1	0.90 / D	0.82 / D	0.92 / E	0.86 / D

Findings

- An extension of Central Avenue would significantly reduce PM peak hour volumes on Purisima Road (down approximately 30%), Harris Grade Road north of Purisima Road (down 15%), H Street north of Ocean Avenue (down 27%), Route 1 south of the proposed Central Avenue extension (down 40%), and Ocean Avenue east of H Street (down 34%) by the Year 2030.

- The Central Avenue extension would increase PM peak hour volumes on Central Avenue (between O Street and A Street) approximately 15-30% by the Year 2030.

- With adequate capacity improvements in place, most of the study-area intersections would operate more efficiently with the Central Avenue Extension, with the exception of the Central Avenue/H Street intersection.

VII. Conclusions

2030 Traffic Forecasts and Impacts on Major Roadways

- Alt. 1 (Baseline) provides slightly higher 2030 traffic growth among all four alternatives. By 2030, traffic on Route 1 (H Street) north of Central Avenue is forecast to increase 57%, reaching 46,600 ADT. Because of the ongoing residential development on Route 1 north of Central and in the Wye areas, congestion and slow moving traffic is expected at the Route 1/Purisima intersection.

- Alt. 2 (Central Avenue Extension to SR246 as a 2-Lane Minor Arterial) provides a direct access for traffic, particularly trucks, from SR246 to the City of Lompoc. It also provides a favorable alternative route for traffic between Central Avenue and areas of Mesa Oaks and Mission Hills.

- The Central Avenue Extension would divert a significant amount of traffic from SR246 originally destined for Ocean Avenue and the City of Lompoc to Central Avenue. By 2030, traffic on the Central Avenue Extension is forecast at 14,200 ADT. Traffic from Downtown Lompoc would be able to use the Central Avenue Extension and the improved Rucker Road as an alternate route to the northern unincorporated residential areas. This 2-lane arterial alternative appears to provide enough capacity to meet the 2030 forecast demand.

- Because of the strategic importance of the Central Avenue Extension, this route would likely become a primary truck route for goods movement from SR246 and the Santa Ynez Valley. Current truck traffic on Central Avenue accounts for approximately 8.6% of all daily trips. Extending Central Avenue as a 2-lane arterial to SR246 would provide an efficient truck access from the Santa Ynez Valley and Highway 101 to the City of Lompoc.

- Traffic on Route 1, south of Purisima Road and Harris Grade, would be the heaviest traveled roadway segment in the study area. In Alt. 2, traffic is about 10% less than Alt. 1 (42,100 ADT) because some traffic on Route 1 would be attracted to use the Central Avenue Extension and Rucker Road to access to Mesa Oaks and Mission Hills. However, some congestion and slow moving traffic during PM peak conditions would still be expected.

- Alt. 3 (Central Avenue Extension as a 4-Lane Minor Arterial) appears identical to Alt. 2. Similar traffic diversion from SR246 to Central Avenue Extension is expected. From the modeling standpoint, a 4-lane Central Avenue Extension does not appear to increase traffic demand on this 4-lane roadway segment, except for providing marginal operational benefits.

- Alt. 4 (widening SR246 northeast of Route 1 to 4-Lane) is identified as the “least preferred” alternative. Traffic on this SR246 segment appears to be slightly less than, if not similar to, Alt. 1. Doubling the capacity on this SR246 segment would not attract any additional traffic to Ocean Avenue and Southern Lompoc areas. The model results also indicated that as long as SR246 between Purisima and Domingos Road remains a 2-lane arterial, widening SR246 northeast of Route 1 to 4-lane does not increase traffic on this route or provide any circulation benefits. Future forecasts for Central Avenue, Downtown Lompoc, and the rural collectors in the study area appear to remain the same as Alt. 1 (Baseline).

- A travel time analysis indicated that with the Central Avenue Extension (Alt. 2 or Alt. 3), approximately 3 to 4 minutes could be saved per vehicle trip. Given approximately 7,600 to

8,100 daily vehicles trips could be diverted from SR246 to the Central Avenue Extension, approximately 380 to 540 hours of travel time savings could be realized in an average work day.

- Additional scenarios which assumed a full 4-lane widening of SR246 between Purisima and Domingos Road were considered. It appears that higher traffic volumes, mostly interregional traffic, on SR246 could only be achieved when there is a substantial increase in capacity, e.g., a full 4-lane widening. Operational improvements such as construction of passing lanes at specific locations would not contribute significant increases in traffic on SR246. Only with a full widened SR246 would significant interregional traffic be diverted from Route 1 to SR246.

2030 PM Peak Hour Intersection LOS Analysis

- By 2020, an extension of Central Avenue would significantly reduce PM peak hour volumes on Purisima Road for approximately 30%, Harris Grade Road north of Purisima Road for approximately 15%, H Street north of Ocean Avenue for approximately 27%, Route 1 south of the proposed Central Avenue extension for approximately 40%, and Ocean Avenue east of H Street for approximately 34%.

- The Central Avenue Extension would increase PM peak hour volumes on Central Avenue between O Street and A Street for approximately 15-30%.

- With adequate capacity improvements in place, most of the study-area intersections would operate more efficiently with the Central Avenue extension, with the exception of the Central Avenue/H Street intersection.

Attachment 1

The SBCAG Travel Demand Model

The SBCAG model is a state-of-the-art travel forecasting model developed in October 2001. The model was developed to replace the old model used prior to 2001 under the SBCAG model replacement and update project. The model incorporated significant improvements in the model network, database, and modeling capabilities, including the use of the most versatile travel demand software, TransCAD, a state-of-the-art GIS and travel demand software under one complete package. Part of the significant improvements is its full GIS functionality which allows enhanced GIS graphics and presentation capabilities. The socioeconomic database for the entire county incorporates the Census 2000 data. The network employs the TIGER files as the network background. The network was refined based on the 2000 aerial photos with roadway centerline alignment accuracy within 3-meter deviation. A new transit network was developed providing transit ridership forecasts. The model output includes average daily traffic (ADT), a 3-time peak period forecasts designed to provide traffic estimates under AM (7:00 to - 8:00 am), PM (4:00 to 5:00 PM) and Midday (noon to 1:00PM) periods. The results of model calibration and validation exceed federal and state standards in modeling. Model output is also used for air quality and conformity analysis purposes.

The SBCAG model employs the traditional socioeconomic data-base approach. Generation of person trips by trip purpose is based on the socioeconomic factors such as population, household, employment, and income on a countywide basis. This approach is predominant among most Metropolitan Planning Organizations (MPOs) and Regional Planning Transportation Agencies (RTPAs) simply because socioeconomic factors such as households and employment offer more direct and reliable relationships with vehicular travel. The SBCAG Regional Growth Forecast 2000 (RGF2000) also provides a comprehensive demographic forecast database on a consistent countywide basis.

The model's employment database was based on the InfoUSA data, a nationwide employment database that tracks employer statistics such as employer addresses, employment categories and number of employees. This employment database was further refined to reflect the self employment through in-house research and field surveys to ensure accuracy. The employment database was then distributed in terms of Traffic Analysis Zones (TAZ), a geographical boundary used to define homogeneous land uses for purposes of transportation modeling.

4-step Modeling

The SBCAG model follows the traditional 4-step modeling procedure - Trip Generation, Trip Distribution, Mode Choice, and Assignment. Trip generation predicts the number of person trips that are generated by and attracted to each zone. Cross-classification sub-models are applied to predict trip productions and regression sub-models are employed for trip attractions. The SBCAG defines person trips into eight trip purposes:

- Home-Based Work (HBW)
- Home-Based Shop (HBS)
- Home-Based Other (HBO)
- Home-Based School (HBSc)
- Non-Home-Based Work (NHBW)
- Non-Home-based Other (NHBO)
- External/Internal and Internal/External (IX/XI), and
- Visitor

A balancing mechanism is applied to ensure the number of productions equals attractions over a 24-hour period.

Trip Distribution models are used to predict the spatial pattern of trips between origin and destinations. The SBCAG model employs a traditional gravity model calibrated with impedance parameters to reflect distances and travel times between zones. The trip distribution model is calibrated based on the trip length frequency distribution data from the 2000 Caltrans Household Travel Survey.

Mode Choice models are used to analyze and predict the choices of travel mode in trip making. The goal is to predict the share or the absolute number of trips made by each mode. The SBCAG mode choice model employs a multi-layer nested legit model structure. Travel modes are generally categorized into motorized and non-motorized modes. The next layer further separates motorized trips into auto, carpool, and transit, in order to predict shares of person trips by mode before they are converted to vehicle trips for highway and transit network assignments.

The SBCAG transit model incorporates various transit networks in the county including SBMTD, SMAT, COLT, Clear Air and Coastal Express, etc. The transit route system incorporates various transit operator's route structure, frequency, route stops, fares, and transit accessibility parameters. The output of the transit model predicts the number of daily and annual transit ridership (boardings) for various transit operators.

Prior to the assignment step, a P-A to O-D transformation procedure is conducted to convert production and attraction person trip matrices to origin and destination vehicle trips through the use of vehicle occupancy factors.

In the assignment procedure, traffic volumes, roadway characteristics, travel times, etc. are considered to calculate assignment loading on the available roadway network to provide vehicle trips or "flows. The key behavioral assumptions are that every traveler has perfect information concerning the network alternatives, and travelers choose routes that minimize their travel time. The model provides "flows" in terms of vehicle trips under average daily traffic (ADT) and peak hour traffic by network link segments.

The SBCAG Expanded Model

Over the last three years, the SBCAG Travel Demand Model has gone through several updates. During November 2005 when the preliminary draft SR246/Central Avenue Extension/Purisima Traffic Study was completed, the initial version SBCAG Expanded Model was employed. This version incorporated the High Occupancy Vehicle (HOV) lane on the South Coast Highway 101 between Milpas and the Ventura County Line in order to prepare the 2030 forecast for use in the 101 In-Motion (101IM) Study. At the completion of 101IM Study in September 2006, all final recommendations of the 101IM Study were incorporated in the Expanded Model. The network was modified to reflect the Program of Projects listed in the 2004 Metropolitan Transportation Plan (2004 MTP). In January and in August 2007, the SBCAG Expanded Model was modified once again for two major reasons: The Measure D Renewal necessitated another round of revision of the Program of projects for the 2030 in the upcoming 2008 RTP. Two most significant network modifications were incorporated: 1/ the Highway 101 6-lane widening including one HOV lane on each direction between Mussel Shoals in Ventura County and Casitas Pass, and 2:/ replacement of a Route 246 widening with the operational improvements on Route 246 which includes construction of passing lanes at three separate locations between Purisima/246 intersection and Domingos Road. Other modifications were made to account for new transit services.

Peak spreading is generally not part of modeling effort since it is recognized that drivers would likely adjust their departure times to congested roadway conditions and that the "worst case" peak period may be alleviated by these behavioral adjustments. Therefore peak spreading assumptions were not considered in this study.

For purposes of this study, the latest version (August 2007) of the SBCAG Expanded Model was employed for this study.

ATTACHMENT 2

Intersection Level of Service Analysis – Highway Capacity Manual Methodology

At the October 2007 Steering Committee meeting, there was a request that the study include an assessment of intersection operations using the 2003 Highway Capacity Manual (HCM) methodology. Staff completed the HCM analysis by utilizing the HCM module in the Traffix software.

The HCM method to determine level of service (LOS) at signalized intersections is to calculate an average delay per vehicle for the intersection. This is accomplished by introducing a variety of inputs, including geometric (lane configuration, lane width, grade, etc.), traffic (turning movement volumes, peak hour factors, percent heavy vehicles), and signalization (cycle length, phasing plan) conditions. The Traffix software allows the user to enter the relevant information and bypass the numerous equations that are required to determine the LOS. The LOS ranges for signalized and unsignalized intersections, as detailed in the HCM, are shown below.

LOS Ranges for Signalized and Stop-Sign Controlled Intersections – HCM Methodology

LOS	Signalized Intersections	Stop-Sign Controlled Intersections
A	≤ 10.0 seconds per vehicle	0 – 10.0 seconds per vehicle
B	> 10.1 – 20.0 sec./veh.	10.1 – 15.0 sec./veh.
C	> 20.1 – 35.0 sec./veh.	15.1 – 25.0 sec./veh.
D	> 35.1 – 55.0 sec./veh.	25.1 – 35.0 sec./veh.
E	> 55.1 – 80.0 sec./veh.	35.1 – 50.0 sec./veh.
F	> 80.0 sec./veh.	≥ 50.1 sec./veh.

Staff completed the LOS analysis using the HCM methodology, the results of which are summarized below.

Year 2030 P.M. Peak Hour Intersection LOS – HCM Methodology

Intersection	Control	Delay (Seconds per Vehicle) / LOS		
		Alt. 1	Alts. 2 & 3	Alt. 4
1. Purisima Rd. / H St.-Harris Grade Rd.	Signal	40.3 sec. / D	21.2 sec. / C	38.6 sec. / D
2. Purisima Rd. / Rucker Rd.	All-Way Stop	**>50.0 sec. / F**	26.4 sec. / D	**>50.0 sec. / F**
3. Purisima Rd. / SR 246	Signal	9.7 sec. / A	8.3 sec. / A	10.7 sec. / B
4. Central Ave. / O St.	Signal	21.9 sec. / C	20.5 sec. / C	21.7 sec. / C
5. Central Ave. / H St.-SR 1	Signal	28.7 sec. / C	43.7 sec. / D	31.7 sec. / C
6. Central Ave. / A St.	Stop-sign (Alts. 1 & 4) Signal (Alts. 2 & 3)	**>50.0 sec. / F**	27.9 sec. / C	**>50.0 sec. / F**
7. Central Ave. / Rucker Rd.	One-Way Stop	n/a	7.1 sec. / A*	n/a
8. Central Ave. / SR 246	Signal	n/a	23.0 sec. / C	n/a
9. Ocean Avenue / H St.	Signal	22.1 sec. / C	21.7 sec. / C	25.6 sec. / C
10. Ocean Ave. / 12th St.-SR 1	Signal	29.0 sec. / C	23.3 sec. / C	32.5 sec. / C

Bold indicates deficient locations according to SBCAG's CMP thresholds.
* LOS includes improvements outlined in Table VI-2.

The results indicate that the Central Avenue extension would result in lower vehicle delays at all intersections, except for the Central Avenue / H St.-Route 1 intersection, where vehicle delays would be 12-13 seconds higher per vehicle with the increased east-west traffic volumes on Central Avenue.

Staff noted that the LOS grades are different at some intersections when compared with the LOS results derived from the ICU method (shown in Table VI-5). This is sometimes the case, as you have different measures of operations (volume-to-capacity vs. delay per vehicle). Regardless, the Highway Capacity Manual acknowledges that "the analysis must consider the results of both the capacity analysis and the LOS analysis to obtain a complete picture of existing or projected intersection operations".

Attachment 3

MEMORANDUM

Date: June 10, 2004

To: Project Steering Committee (SR 246/Central/Purisima Traffic Study)
From: Bill Yim/ SBCAG

Re: **SR 246/Central/Purisima Kickoff Meeting Minutes, June 9, 2004**

Attendees

Michael Powers	Deputy Director, SBCAG
Jim Damkowitch	Transportation Planner, SBCAG
Larry Bean	Public Works, City of Lompoc
Kevin McCune	City Engineer, City of Lompoc
Peggy Woods	Community Development, City of Lompoc
William Robertson	Public Works, County of Santa Barbara
Josh McDonnell	Planning and Development, County of Santa Barbara
George Amoon	Planning and Development, County of Santa Barbara
Pat Mickelsen	Caltrans, Planning
Dan Herron	Caltrans, Planning
Keith Hinrichsen	Caltrans, Planning
Dick DeWees	City of Lompoc, Mayor
Mike Siminski	City of Lompoc, City Council Member

Introduction Roles & Responsibilities

No comments.

Review Project Objectives

In response to Lompoc staff, SBCAG indicated that although development of SBCAG's travel model is behind schedule, it will be complete in time to be used as part of this study.

Review Existing Data / Identify Data Needs

City of Lompoc will provide SBCAG with the Home Depot traffic study.

County of Santa Barbara will provide SBCAG with the South Providence Landing traffic analysis (although this data may be outside study area).

The City of Lompoc indicated that truck traffic is a concern and should be addressed in some fashion as part of this analysis. The City will examine the possibility of performing vehicle classification counts on two or three significant arterials (e.g., H Street, Central Ave., Ocean Ave., etc) to supplement existing truck traffic data.

As a side note, SBCAG recommended that the City review the Highway 166 Truck Study performed last year for the City of Santa Maria – given similar truck and pedestrian conflict issues exist within the downtown areas for both cities.

SBCAG indicated that the Caltrans Highway Performance Monitoring System (HPMS) Office contracted a number of vehicle classification counts within the county this year. SBCAG will contact the Caltrans HPMS Office to identify the location of these classification counts.

Caltrans will attempt to ascertain for SBCAG the precise hour and day of the 2003 peak hour traffic counts recently released by Caltrans HQ (2003 State Highway Traffic Volumes).

Review SBCAG Model Data / Identify Issues

In response to the City of Lompoc, SBCAG indicated that the model results presented today still reflect the network coding error for Rte. 246 (modeled as a 4-lane facility rather than a 2-lane facility). SBCAG will correct this error in its revised forecast anticipated later this month.

In response to questions concerning Purisima Road improvements, the County indicated that it is currently involved in a feasibility study to assess a range of potential improvements for this facility. Potential improvements include: shoulder improvements; bike lanes; and, widening. Grades and the presence of cultural resources within the ROW are considered the primary limiting factors in terms of the feasibility assessment.

The City of Lompoc circulated handouts from its' General Plan depicting the future build-out roadway network, truck route network and bicycle network. City staff provided an overview of past modeling performed by SBCAG at part of the General Plan Circulation Element Update in 1995-97.

After discussing the agricultural characteristics (i.e., prime land under Williamson contract) of the area to be traversed by the proposed Central Avenue Extension, the County of Santa Barbara recommended that the Farm Bureau be notified of - and invited to participate in - the development of this study.

Caltrans conveyed the Farm Bureau's opinion of the Central Avenue Extension documented during the Rte. 246 Transportation Concept Report public outreach effort. These opinions were characterized as:

- not pleased with the roadway improvement proposals – but understand the City and County's purpose and need for examining them; and,
- supportive of the alternative that minimizes loss of agricultural land.

It was agreed to by the Steering Committee that analysis of agricultural impacts are beyond the scope of this study and will be more appropriately addressed as part of future work (e.g., Lompoc Corridor Study and/or project level CEQA requirements).

The City of Lompoc identified a network discrepancy for McLaughlin Road - depicted as a through road connecting Purisima Road (via Rucker Road) to McLaughlin Road. This connection is separated by a fair weather crossing effectively precluding through traffic via Purisima – Rucker - McLaughlin. The County of Santa Barbara indicated that it does not plan to upgrade/improve this crossing in the future. SBCAG agreed to correct this network discrepancy for both the Base Year model and all future year forecasts.

Identify List of Improvements

The City of Lompoc indicated that the Central Avenue Extension and the Rucker Road Connection are not mutually exclusive and should not be analyzed separately under any scenario.

The following alternatives were identified by the Steering Committee:

1. 2030 Existing Programmed (includes existing roadway network plus currently programmed projects – depicts Rte. 246 as a 2-lane facility between Purisima Road and Rte. 1);
2. 2030 Central Avenue Extension (same as 2030 Existing Programmed network but includes a 2-lane Central Avenue Extension to Rte. 246 near Mission Gate with the Rucker Road connection and upgrade to minor arterial);

3. 2030 Central Avenue Extension (same as 2030 Existing Programmed network but includes a 4-lane Central Avenue Extension to Rte. 246 near Mission Gate with the Rucker Road connection and upgrade to minor arterial); and,
4. 2030 4-lane Rte. 246 (same as 2030 Existing Programmed network but shows Rte. 246 as a 4-lane facility between Purisima and Rte. 1).

The need to include a Purisima Road Improvement alternative will be determined after the County of Santa Barbara completes its feasibility study.

After discussing conceptual alignments of future intersections (e.g., Central Ave. at Rte. 246) and improvements at existing intersections (e.g., Purisima Rd. at Rte. 246), the Steering Committee discussed the need to model the specific intersection alignments/improvements under the four modeled alternatives. The committee concluded that the network modifications required to reflect these improvements should not affect the model's traffic assignment. The City of Lompoc emphasized that the purpose and need for specific intersection alignments and improvements will come to bear upon analyzing the model results and not from assuming, a-priori, configurations as model inputs. The Steering Committee concurred with this approach.

It was decided that a 6-lane H Street widening improvement and an A Street modification improvement should not be considered as part of this study given that these projects are currently not listed in the RTP.

Review Project Schedule

Next steps: 1) develop meeting minutes and circulate to Steering Committee members – including the Farm Bureau; 2) follow up on tasks identified by each respective agency during this meeting; and, 3) begin work on network configurations for each alternative – to be brought back to Steering Committee by SBCAG for final approval in July or August.

Schedule Next Meeting

TBD

File # TP 13-4-1

Attachment 4

MEMORANDUM

December 8, 2005

To: Steering Committee, SR246/Central Avenue Extension/Purisima Road Traffic Study

From: Bill Yim/SBCAG

Re: **SR246/Central/Purisima Traffic Study Draft Report Meeting Minutes**

Attendees:

Michael Powers	Deputy Director, SBCAG
William Yim	Transportation Planner, SBCAG
Kevin McCune	City Engineer, City of Lompoc
Larry Bean	Public Works Director, City of Lompoc
Mike Siminski	City Council member, City of Lompoc
William Robertson	County of SB, Traffic Div., Public Works
Dan Herron	Caltrans Planning
Pat Mickelson	Caltrans Planning
Josh McDonnell	County of Santa Barbara, CEO Office

Minutes:

After a roundtable introduction, Michael started the meeting with an overview of the project status and process. Bill presented the report and findings to the steering committee. Presentation handouts were distributed.

Larry asked if VAFB traffic was included in the results. Bill responded that the modeling was conducted on a countywide basis. The results included inter-regional traffic impacts including traffic to and from VAFB through roadways in the study area. However, the socioeconomic data provided in the report focused on the study area only. Larry indicated that clarification should be made at the beginning of the presentation that the findings of the draft report that were based on a countywide modeling perspective with sub-regional results focusing on the study area.

William Robertson indicated that the exhibits should include counts on Purisima. More up-to-date counts are available from the Purisima Shoulder Feasibility Study currently being conducted by the County's PW Engineering Department (Diana Estorga, 739-8763). He indicated that the study should look at options of improving Purisima, and that the title of the study "Traffic Study" may not be appropriate since it may imply a full project level analysis including intersection LOS, and other impact analyses. As a member of the steering committee, he also indicated that he did not receive a copy of the draft report nor he knew about this meeting.

Larry indicated that this is a planning study, a first step of the process focusing on the traffic impacts of various roadway improvement alternatives based on the modeling results. The next step is the LOS analysis of the study area. This study is not meant to be a full engineering study at project-level detail. Michael pointed out that the draft report clearly stated the purpose of the study and that other impacts such as natural resources, floor control, economic, safety, noise and capital cost were beyond the scope of the study. Michael apologized that SBCAG may have overlooked in sending a copy of the report to him.

Bill Yim indicated that the workscope of the study followed the Steering Committee's recommendations as discussed in initial project meeting, in which William Robertson attended. Counts and modeling results are included in the tables in the study. However, Purisima information will be added into the presentation exhibits. At the time of complying the minutes, staff confirmed that two copies of the draft report were

sent to the County of Santa Barbara, directly addressing to Bret Stewart and William Robertson on November 22.

William Robertson suggested that the methodology used for the intersection LOS analysis should use HCM methodology. Bill responded that at this time, the CMP intersection analysis methodology based on the ICU approach as agreed by all local jurisdictions would probably be used because of consistency with the CMP. However, it is also possible the HCM methodology would also be used for unsignalized intersections. In addition, some assumptions would have to be made in coordination with the City and County with respect to the intersection geometry and future turning movement percentages, etc. in order to complete the task.

Dan Herron commented that the draft report is a good study. The report clearly identifies which roadway improvement alternative is better. He suggested that SBCAG should consider adding a general discussion on the different reactions of the community from the historical perspective and how people are divided on the project. He also indicated that some kind of cost/benefit analysis such as travel time savings would help.

Larry indicated concerns that using 2002 traffic counts of 33,470 ADT at the location of H Street north of Central Ave based on the Wye Project EIR (Ando Engineering), and consequently higher 2030 forecast (49,700 ADT) is too high. There are also discrepancies at this location since truck count shows otherwise. Staff will clarify this issue and work with Lompoc staff to finalize the current traffic volumes at this location. The 2030 forecast at this location will re-adjusted accordingly.

Kevin asked the question of whether the study should better use the 2000 base year since counts are more comprehensive. Staff will consider this suggestion. He also indicated that similar bar graphic comparisons between Alt. 2 and Alt 1 would be useful

Finally, the following intersections are added to the suggested list for future intersection LOS analysis:

- Purisima/Rucker
- Ocean / H Street
- H Street/La Purisima Rd

The next step includes responses to comments on the draft report from steering members and revision to the draft report. The next meeting date is certain, but will include presentations of a revised report and the completion of the LOS intersection analysis in the study area.

Meeting adjourned at 12:00 noon.

Attachment 5

Memorandum

October 25, 2007

To: Project Steering Committee, SR246/Central/Purisima Travel Study

From: Bill Yim/SBCAG

Re: Meeting Minutes

Attendees:

Michael Powers	Deputy Director, SBCAG
William Yim	Transportation Planner II, SBCAG
Andrew Orfila	Transportation Planner II, SBCAG
Kevin McCune	City Engineer, City of Lompoc
Larry Bean	Public Works Director, City of Lompoc
William Robertson	County of SB, Traffic Div., Public Works
Dan Herron	Caltrans Planning
Pat Mickelson	Caltrans Planning

Minutes:

Michael started the meeting with an overview of the project status and process. Bill summarized the draft travel report and findings to the Steering Committee. Andrew presented the intersection LOS analysis and suggested improvements on some of the critical intersections.

Larry indicated that it was a challenge to obtain accurate peak hour intersection counts at the Central/H Street intersection due to the size of the intersection and the various directional turning movements at that location.

Larry and Will commented that the travel time results are unrealistic. For example, vehicles using Path 3 traveling from the 246/Purisima intersection to the Central/H Street intersection using Ocean and H Street would need some 12 to 15 minutes instead of /8 minutes as indicated from the model. While the methodology in the report is valid, the model results of travel times are under-estimated. They results need to be validated by field surveys during PM peak times. Staff would amend the report with field findings.

Will asked whether the HCM methodology would be available as part of the critical intersection analysis. Andrew indicated that staff will provide such information in the report.

Larry asked why the 2030 traffic on Route 1 showed a 3% reduction whereas the intersection LOS analysis indicated a more congested situation. Andrew responded that this was due to heavy left turn traffic coming from Route 1 for Route 246 as demonstrated by the model.

Dan indicated the draft Traffic Study was a good report. Pat suggested that she would send the draft report to Caltrans Traffic Operations for comments in order to expedite process. She also suggested that the Steering committee for the Feasibility Study should include a Caltrans staff from Traffic Operations. Larry welcomed the idea.

Larry indicated that the Traffic Study was reasonable and that it clearly indicated the traffic outcome regarding the Central Avenue Extension. The City and Steering Committee are now ready to proceed forward with the Feasibility Study and environmental portion of the study.

Larry indicated that additional discussion is necessary on the introduction and the need to expand the discussion on Page 4 of the MOU regarding the need for improvements on the Robinson Bridge. The issue was that there would only be one route (Route 1 via Purisima from the north) to access and get out of the City of Lompoc in event of Route 1 closure and the bridge flooding.

He also recommended adding one more alternative on the Proposal to show the feasibility of "upgrading the existing roadway alignment" of Route 246 between Purisima and south Route 1 including the associated costs of raising the bridge level.

Regarding the economic impacts of the Central Avenue Extension, Larry indicated that the merchants might not necessary suffer a significant loss due to the amount of traffic diversion because there would still be substantial amount of growth of traffic by 2030. In addition, there would also be traffic destined for those businesses along Ocean and southern Lompoc.

Michael indicated that the County would need to "commit" funding to the project. Will indicated that such commitment was understood and would be based on the Measure D funds but indicated that the County would provide the funds when they are needed, not in advance. Will also stated that Scott McGolpin is now Public Works Director of the Public Works department.

Dan indicated that it is uncertain at this point that there would be matching funds available from Caltrans. Pat indicated that the "Partnership Planning Grant" might be a possibility but that award of those funds would probably be about a year from now. However, the Traffic Study and the Feasibility Study would greatly cut down the amount of work necessary for any eventual PSR for a 246/Central Ave Extension.

When asked whether $100,000 would be sufficient for the Feasibility Study, Michael was uncertain. However, the scope of the project could not be reduced in order to save cost. Larry suggested that the consultant(s) could possibly reduce their attention on alternatives that have already shown to have no practical advantage. The partnership grant could be a contingency and Larry indicated that some small amount of additional funds might be available.

Michael requested detailed mark ups on the Traffic Study, MOU, and RFP within the month. Pat stated that it would take a while to get all internal Caltrans comments. Michael replied that following everyone's comments the material would be revised.

The Meeting adjourned at 4:00 PM

File: RegProg\246 Study\Report Presentation\Meeting Minutes 102507F.doc