FINAL REPORT

STANFORD UNIVERSITY TRAFFIC MONITORING REPORT 2000 GUP BASELINE

Prepared for:

Santa Clara County
Department of Planning Development

July 2002

Prepared by:

1570 The Alameda, Suite 222
San Jose, CA 95126
(408) 298-2929-Phone
(408)298-2970-Fax

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

Foreword from the County of Santa Clara Planning Office

Background

The purpose of this plan is to establish a baseline traffic count against which future traffic impacts will be measured at Stanford University. As the university's land use / growth and development plans proceed, growth will be measured against the established baseline.

The requirement for establishment of this traffic baseline is contained within the December 2000 Stanford Community Plan/General use Permit (GUP)/ Environmental Impact Report (EIR). The EIR established environmental mitigation requirements and a monitoring and reporting program to track those mitigation elements. This program must be implemented by Stanford and is monitored by the County. This requirement is further specified within the 2000 Stanford General Use Permit in Appendix F

Detailed background for this requirement is contained within that document, available on the County Planning Office web site (see web address at end of this foreword).

The Process

Following the adoption of the GUP by the County Board of Supervisors in December 2000, the County Planning Office selected Korve Engineering (KORVE) to conduct the monitoring process outlined in the conditions of approval. Because of the type of data to be collected (particularly license plate numbers), the data could not be collected until after the start of daylight savings time in Spring 2001. The data collection involved three, 2-week periods in the Spring and one, 2-week period in the Fall 2001.

Condition of Approval G.7 outlines the process for establishing the baseline counts and for continuing monitoring in subsequent years. The process can be summarized as follows:

- Peak hour traffic is counted at least three times per year for a two-week period each time. The three counts shall be averaged to determine the annual traffic level.
- All counts are recorded at the 16 campus entry and exit points forming a cordon around the campus.
- License plate numbers are recorded for each entering and exiting vehicles to determine the amount of non-campus traffic.
- Cordon volumes are adjusted for parking lots within the cordon used by the hospital (these volumes are subtracted from the cordon line counts) and parking lots outside the cordon used by the university (these volumes are added to the cordon line counts).
- A peak hour is then established for the campus based on the counts, adjusted for cut through and parking lot location.

Condition of Approval G.6 defines the peak commute directions as entering the campus in the morning peak commute period and leaving the campus in the evening commute period. The peak commute period is defined as the one-hour period of time between 7 AM and 9 AM and again between 4 PM and 6 PM with the highest volume of traffic, as defined by the counts. Therefore, the two peak hours are considered to be independent events. For example, an increase in AM peak traffic for two out of three years would trigger the additional elements of the monitoring program without a change, or even a decrease, in PM peak traffic, or the reverse. Also, a significant increase during one year in the AM and a sufficient increase in the PM for the following year would not trigger additional mitigation.

Future Use and Comparison of Peak Commute Traffic

Essentially, the plan is intended to provide a means of monitoring AM and PM peak commute times, for the purpose of determining increased traffic during the peak. The specific language of the mitigation program (TR-5B: Trip Reduction and Monitoring) is attached in Appendix E to this report. Stanford GUP conditions G.6, G.7, and G.9 describe the methodology for establishing the baseline and for measuring and assessing future traffic impacts are attached in Appendix F.

County Planning Office Project Management:

Ann Draper: Planning Director
Gary Rudholm: Senior Planner, Post-Approval Monitoring
Tim Heffington: Associate Planner, Project Manager: Stanford University Environmental Mitigation Monitoring and Reporting Program

County Roads and Airports Review Team:

Masoud Akbarzadeh, Traffic Engineer
Suhil Kandah, Associate Civil Engineer

Korve Engineering

Dennis Struecker, PE, Project Manager
Jay Nelson, PE, Project Engineer

Stanford Coordination Contact

Greg Gleichman, PE, Parking & Transportation Services

CONTACT INFORMATION

For further information, regarding this document or other Stanford University Community Plan and General Use Permit policy issues, contact the County Planning Office by phone or visit our web site.

PHONE: (408) 299-5784. **WEB SITE:** www.sccplanning.org

1.0 INTRODUCTION

This report established the baseline traffic counts for the monitoring of traffic at Stanford University and the procedure to be used to compare future year counts back to the baseline counts. The General Use Permit for the next 10 years of development on the Stanford campus was approved by the Santa Clara Board of Supervisors in December 2000. One of the conditions of approval of the GUP was a requirement for no net new commute trips. Condition of Approval G.4 defines the no net new commute trips standard as no increase in automobile trips during the peak commute times in the peak commute direction, as counted at a defined cordon location around the central campus. Condition of Approval G.6 defines the peak commute directions as entering the campus in the morning peak commuter period and leaving the campus in the evening peak commute period. Condition G.6 further defines the peak commuter period as the one-hour period of time with the highest volume of traffic, as determined by the counts.

The baseline traffic represents the traffic and parking data that has been collected at Stanford University by Korve Engineering in the past year (2001). Traffic data were collected for eight weeks at the University. The data collected included traffic counts at all the access points to the campus, parking lot counts and license plate surveys. The parking lot counts and license plate surveys were used to adjust the raw traffic counts in order to determine the total amount of peak hour traffic generated by Stanford University. The parking data was used to account for campus traffic that parks outside the count area and hospital employees that park inside the count area. The license plate surveys were used to calculate the amount of traffic that cuts through the campus and is not University generated traffic. The data collection methodology is described in greater detail in Section 2.0 and the data analysis is presented in Section 3.0.

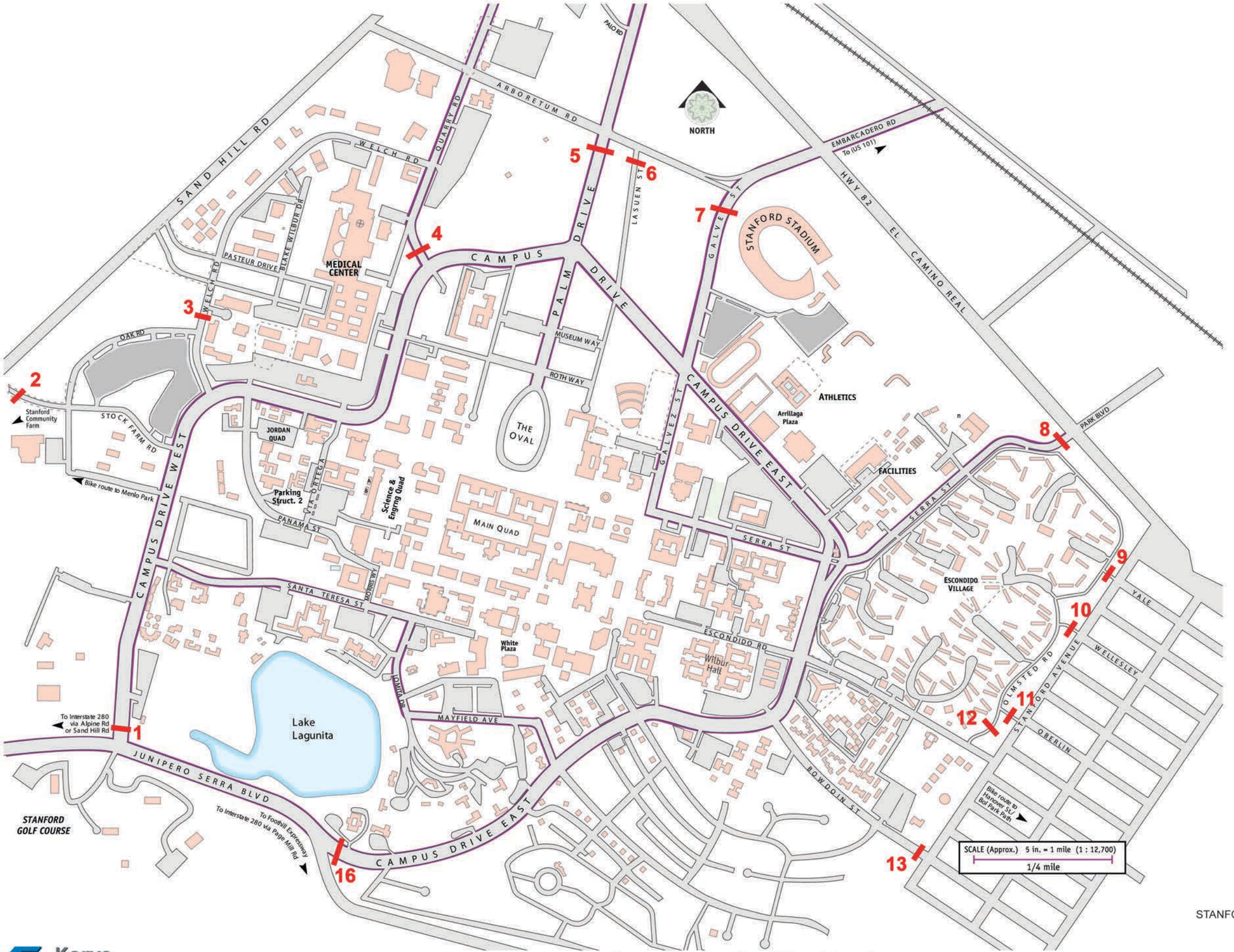
2.0 TRAFFIC MONITORING DATA COLLECTION METHODOLOGY

Data collection is an extremely critical component of the traffic-monitoring program. The following work elements were conducted to collect all relevant traffic data for the baseline program. Condition of Approval G.7 outlines in detail the counting procedure to be followed to determine the annual traffic counts for the peak commute direction. Condition G.6 states that monitoring counts shall be performed each year using the same methodology, or any alternative methodology determined by the County Planning Office to be more accurate. The procedures as outlined in Condition G.7 are outlined below.

2.1 Machine Cordon Line Traffic Counts

Directional traffic counts were collected at Stanford University for eight weeks in 2001 on each of the 16 roadways, which provide access to and from the campus. The location of the 16 cordon counts are listed below and shown graphically in Figures 1 and 2.

1. Campus Drive West, north of Junipero Serra Boulevard
2. Stock Farm Road, east of Sand Hill Road
3. Welch Road, north of Oak Road
4. Quarry Road, north of Campus Drive West
5. Palm Drive, south of Arboretum Road



Cordon Count Locations

1. Campus Drive West north of Junipero Serra Blvd.
2. Stock Farm Road east of Sand Hill Road
3. Welch Road north of Oak Road
4. Quarry Road north of Campus Drive
5. Palm Drive south of Arboretum Road
6. Lasuen Street south of Arboretum Road
7. Galvez Street south of Arboretum Road
8. Serra Street southwest of El Camino Real
9. Yale Street west of Stanford Avenue
10. Wellesley Street west of Stanford Avenue
11. Oberlin Street west of Stanford Avenue
12. Olmsted Road north of Escondido Road
13. Bowdoin west of Stanford Avenue
14. Raimundo west of Stanford Avenue
15. Santa Maria Avenue north of Junipero Serra Blvd.
16. Campus Drive East east of Junipero Serra Blvd.

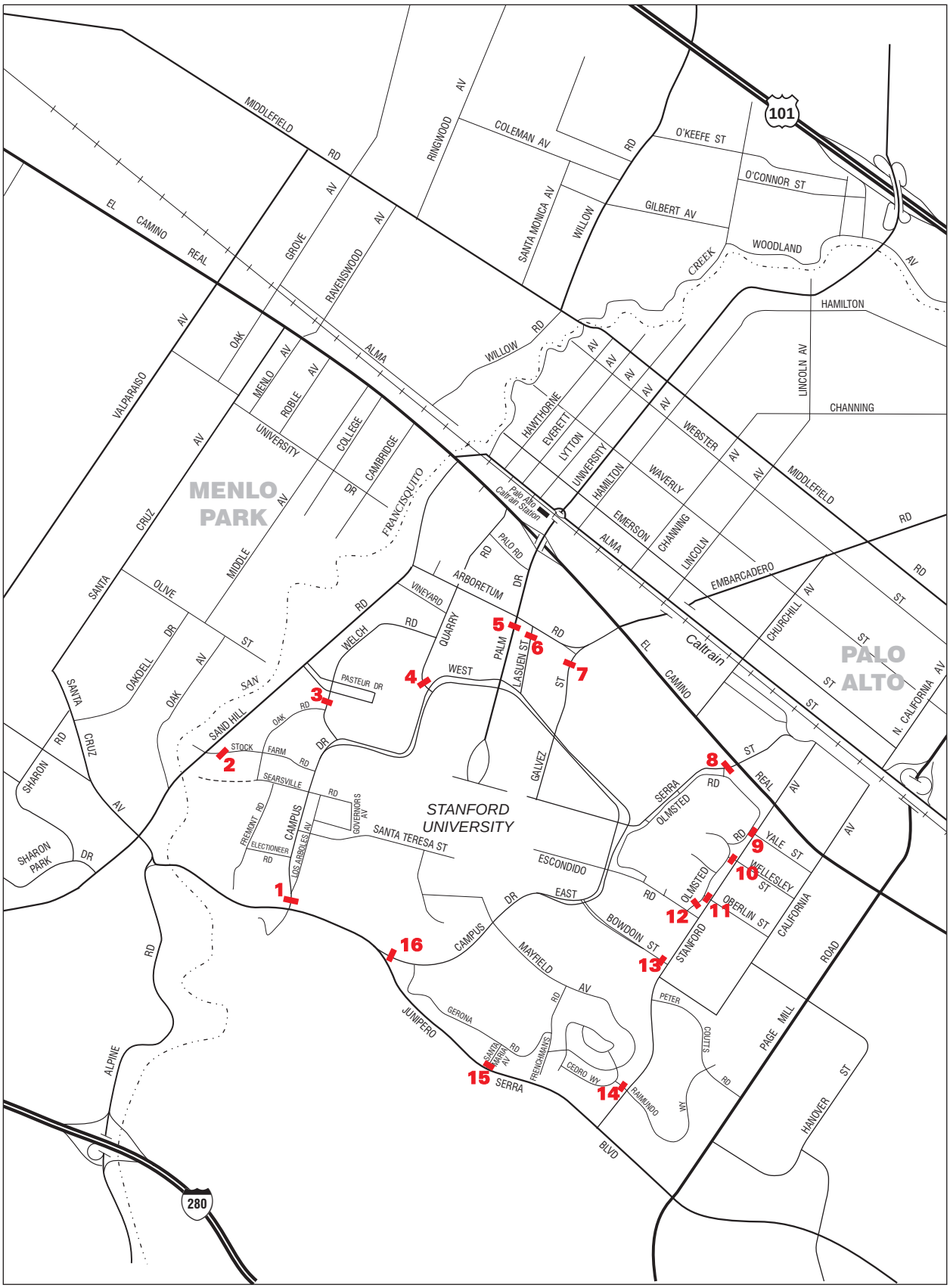
For count locations 14 and 15 see Figure 2

Korve Engineering

STANFORD UNIVERSITY TRAFFIC MONITORING REPORT

Figure 1

DAILY MACHINE CORDON COUNT LOCATIONS



Korve Engineering

STANFORD UNIVERSITY TRAFFIC MONITORING REPORT

Figure 2

DAILY MACHINE CORDON COUNT LOCATIONS

6. Lasuen Street, south of Arboretum Road
7. Galvez Street, south of Arboretum Road
8. Serra Street, southwest of El Camino Real
9. Yale Street, west of Stanford Avenue
10. Wellesley Street, west of Stanford Avenue
11. Oberlin Street, west of Stanford Avenue
12. Olmsted Road, north of Escondido Road
13. Bowdoin Street, west of Stanford Avenue
14. Raimundo Way, west of Stanford Avenue
15. Santa Maria Avenue, north of Junipero Serra Boulevard
16. Campus Drive East, east of Junipero Serra Boulevard

The detailed traffic counts at the 16 cordon locations are presented in Appendix A and are summarized in Table 1. Table 1 shows the total unadjusted traffic volume entering the campus in the AM peak and exiting the campus during the PM peak hour along with the general weather conditions for each day the traffic was monitored. As indicated in Table 1, the AM peak hour generally occurs from 8:00 to 9:00 and the PM peak hour generally occurs from 5:00 to 6:00. The unadjusted AM peak hour inbound traffic volumes ranged from 3,084 on Monday, April 30 to 5,024 on Monday, October 29, 2001 and the PM peak hour outbound traffic volumes ranged from 3,157 on Monday, April 30 to 4,969 on Wednesday, October 31, 2001.

2.2 Parking Lot Driveway Counts

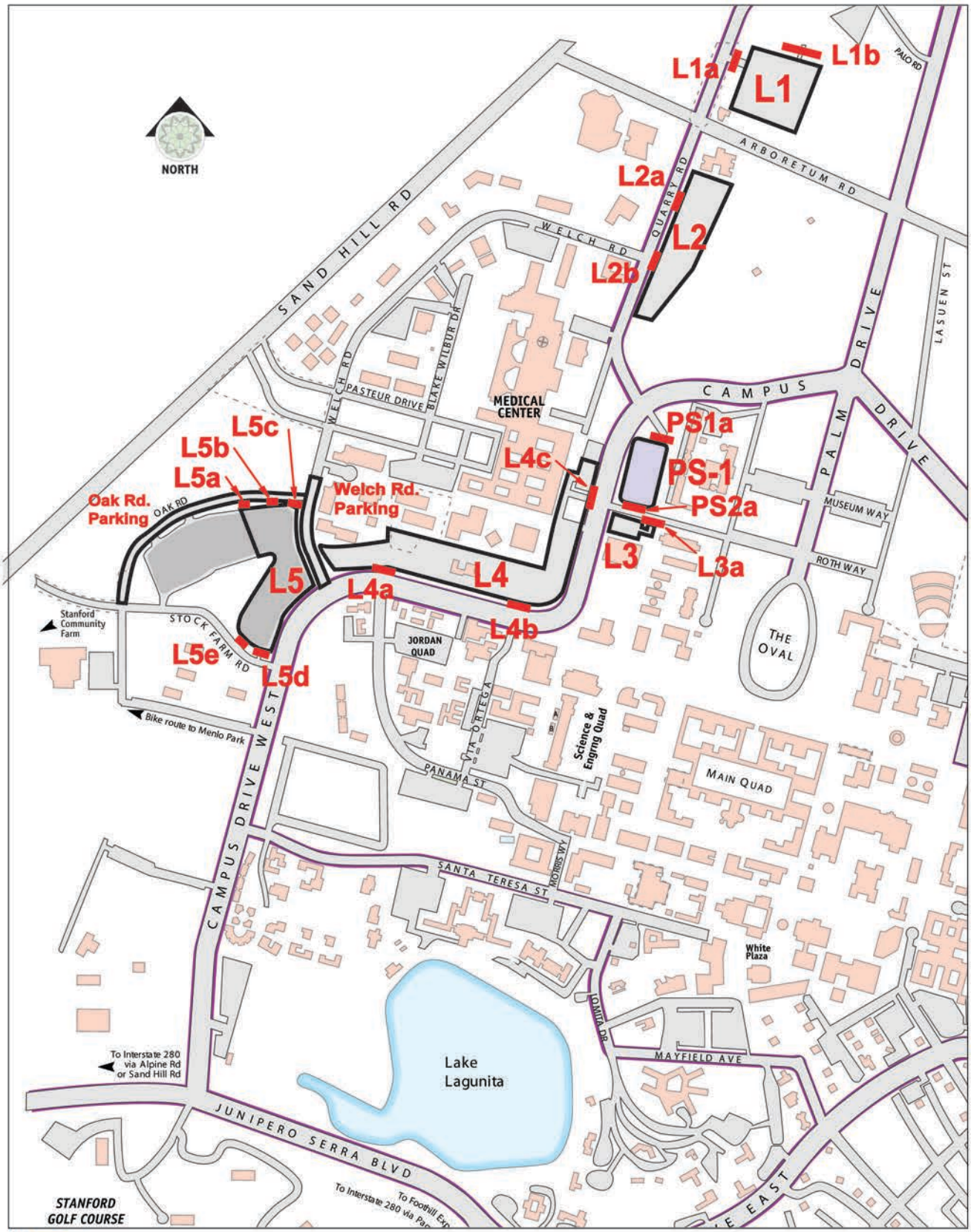
There are two parking lots (L1 – Rectangle Lot and L2 – Quarry Lot) that are outside the cordon line, but serve some campus uses. There are also several parking lots (L3 – Mudd Lot, L4 – Beckman Lot, and L5 – Stock Farm Road Lot) along with parking structure 1 (PS1) that are inside the established cordon line and serve some hospital uses. Traffic was counted by direction into and out of these parking lots during the entire count period. The detailed count sheets for the driveway traffic at these lots are presented in Appendix B.

The driveway count locations are presented below and on Figure 3.

1. PS1a – Parking Structure 1 North Access to Campus Drive
2. PS1b – Parking Structure 1 South Access to Roth Way
3. L1a – Rectangle Lot (Lot 1) Quarry Road Access
4. L1b – Rectangle Lot (Lot 1) North Access
5. L2a – Quarry Lot (Lot 2) North Access to Quarry Road
6. L2b – Quarry Lot (Lot 2) Middle Access to Quarry Road
7. L2c – Quarry Lot (Lot 2) South Access to Quarry Road (this driveway was closed during the first six weeks of data collection)
8. L3a – Mudd Lot (Lot 3) Access to Roth Way
9. L4a – Roth Way west on Campus Drive West (Lot 4)
10. L4b – Driveway to Lot 4 from Campus Drive West opposite Via Ortega
11. L4c – Driveway to Lot 4 from Campus Drive West opposite Panama Street
12. L5a – West Driveway to Lot 5 from Oak Road

Table 1 Raw Traffic Count Summary

Date	AM Inbound VOLUME	AM Inbound PERIOD	PM Outbound VOLUME	PM Outbound PERIOD	Weather Conditions
Week 1					
April 2	3687	7:45 to 8:45	3901	5:00 to 6:00	Sunny
April 3	3691	7:45 to 8:45	3899	4:45 to 5:45	Sunny
April 4	3473	8:00 to 9:00	3873	4:45 to 5:45	Sunny
April 5	3673	7:45 to 8:45	3807	5:00 to 6:00	Sunny
April 6	3220	7:45 to 8:45	3643	5:00 to 6:00	Sunny
Week 2					
April 9	3809	8:00 to 9:00	3984	4:45 to 5:45	Partly Sunny
April 10	3789	7:45 to 8:45	4002	5:00 to 6:00	Sunny
April 11	3664	8:00 to 9:00	4091	4:45 to 5:45	Rainy
April 12	3738	8:00 to 9:00	4035	4:45 to 5:45	Sunny
April 13	3625	7:45 to 8:45	4006	4:30 to 5:30	Sunny
Week 3					
April 23	3936	7:30 to 8:30	3855	4:30 to 5:30	Sunny
April 24	3977	7:30 to 8:30	3806	4:30 to 5:30	Sunny
April 25	3837	7:30 to 8:30	3894	4:45 to 5:45	Sunny
April 26	3795	7:30 to 8:30	3824	5:00 to 6:00	Sunny
April 27	3365	7:45 to 8:45	3793	4:45 to 5:45	Sunny
Week 4					
April 30	3084	7:15 to 8:15	3157	4:15 to 5:15	Sunny
May 1	3439	7:45 to 8:45	3498	5:00 to 6:00	Sunny
May 2	3305	7:45 to 8:45	3425	4:45 to 5:45	Sunny
May 3	3241	8:00 to 9:00	3378	4:45 to 5:45	Sunny
May 4	3182	8:00 to 9:00	3236	4:45 to 5:45	Sunny
Week 5					
May 7	4172	7:45 to 8:45	3937	4:45 to 5:45	Sunny
May 8	4145	8:00 to 9:00	3979	4:45 to 5:45	Sunny
May 9	4026	8:00 to 9:00	3873	4:45 to 5:45	Sunny
May 10	4011	7:45 to 8:45	3947	4:45 to 5:45	Sunny
May 11	3983	7:45 to 8:45	3682	4:45 to 5:45	Sunny
Week 6					
May 14	4017	8:00 to 9:00	3844	4:45 to 5:45	Sunny
May 15	4345	8:00 to 9:00	4070	4:45 to 5:45	Sunny
May 16	4455	8:00 to 9:00	4066	4:45 to 5:45	Sunny
May 17	4045	8:00 to 9:00	4075	5:00 to 6:00	Sunny
May 18	3815	8:00 to 9:00	3949	4:45 to 5:45	Sunny
Week 7					
October 22	3811	8:00 to 9:00	4032	5:00 to 6:00	Sunny
October 23	4549	8:00 to 9:00	4351	5:00 to 6:00	Sunny
October 24	4248	8:00 to 9:00	4513	4:45 to 5:45	Sunny
October 25	4634	8:00 to 9:00	4530	5:00 to 6:00	Sunny
October 26	4017	7:45 to 8:45	4587	4:45 to 5:45	Sunny
Week 8					
October 29	5024	8:00 to 9:00	4613	5:00 to 6:00	Clear
October 30	5003	8:00 to 9:00	4764	5:00 to 6:00	Slight Rain
October 31	4851	8:00 to 9:00	4969	5:00 to 6:00	Sunny
November 1	4786	8:00 to 9:00	4728	5:00 to 6:00	Sunny
November 2	4446	7:45 to 8:45	4829	5:00 to 6:00	Sunny
Average	3948		4011		



Korve Engineering

STANFORD UNIVERSITY TRAFFIC MONITORING REPORT

Figure 3

DRIVEWAY AND PARKING COUNT LOCATIONS

13. L5b – Center Driveway to Lot 5 from Oak Road
14. L5c – East Driveway to Lot 5 from Oak Road
15. L5d – East Driveway to Lot 5 from Stock Farm Road
16. L5e – West Driveway to Lot 5 from Stock Farm Road

Hospital trips from parking lots inside the cordon line were subtracted from the cordon counts, while campus trips from lots outside the cordon line were added to the raw counts. This was done to properly identify all the trips generated by Stanford University and not by other adjacent land uses.

2.3 Parking Permit Scanning/Count

A parking permit count was completed on one mid-week day (Tuesday, Wednesday, Thursday) during the first seven weeks of the traffic monitoring program. At the beginning and end of both the morning and evening peak period, the number of vehicles in each of the lots identified in Figure 3 was counted. Each vehicle permit was also scanned to determine if it was related to campus or hospital uses. Medical center vehicles were identified by a parking sticker with a white background, and campus vehicles were identified by a sticker with a colored background.

On-street parking on Oak Road between Stock Farm Road and Welch Road, and on Welch Road between Campus Drive West and the cordon station just north of Oak Road was counted and classified in the same manner as described above. Since these on-street parking facilities are located within the cordon line, hospital vehicles were subtracted out of the cordon count and no adjustment was made to add in campus trips. The parking lot and on-street parking occupancy data is presented at the back of Appendix B.

Korve Engineering used the driveway counts noted in 2.2 and the parking scanning noted in 2.3 to adjust the cordon counts. If campus parking permits were observed in lots outside the cordon area, they were added back into the cordon count. If hospital trips were observed inside the cordon area, they were subtracted from the cordon count. All vehicles without a parking permit were assumed to be correctly parked.

2.4 License Plate Survey

The last four digits of each license plate were recorded for all vehicles crossing the cordon line (the 16 locations identified in 2.1). This license plate survey was completed for both inbound and outbound directions on one day during each of the first seven weeks of the cordon counts. However, complete license plate data is only available for two morning peak periods and one evening peak period. All surveys were completed on a Tuesday, Wednesday, or Thursday when more "typical" travel is expected. The surveyors recorded license plates by five-minute increments so that matching of through trips could be accomplished.

3.0 TRAFFIC MONITORING DATA ANALYSIS

3.1 Cordon Count Spreadsheets

First, the raw cordon count numbers were entered into spreadsheets. Two spreadsheets – one for the AM peak period and one for the PM peak period – were created for each weekday that a cordon count was conducted. Each spreadsheet shows the inbound, outbound, and total vehicles passing all 16 cordon locations during five hourly increments. For the AM peak, the hours were 7:00-8:00, 7:15-8:15, 7:30-8:30, 7:45-8:45, and 8:00-9:00. For the PM peak, the hours were 4:00-5:00, 4:15-5:15, 4:30-5:30, 4:45-5:45, and 5:00-6:00. Since cordon counts were collected for eight weeks, there are a total of 80 daily cordon count spreadsheets (40 AM and 40 PM). These sheets are included in Appendix C of this report. This process was completed to determine the morning and evening peak hour for campus traffic for each day. Table 1 summarizes the AM and PM peak hour traffic volumes for inbound AM and outbound PM movements for each day. The peak was established independently for each day between 7:00 AM and 9:00 AM and again from 4:00 PM to 6:00 PM. The peak hour for each day is noted in Table 1.

3.2 Parking Spreadsheets

The number of vehicles coming in and out of the parking lots in the vicinity of the Stanford Medical Center was also monitored during the eight-week period. The inbound, outbound, and total volumes at all 16 lot entrances were entered into spreadsheets for the AM and PM peak periods of each day as described in 3.1. All 80 parking spreadsheets are included in Appendix D.

3.3 Cordon Count Parking Adjustments

The parking sticker counts performed at the lots were used to compute the percentage of campus and hospital vehicles present in each lot during the AM and PM peak hours.

Since a sticker survey was done at the beginning and end of each two-hour peak period count, the two values for every lot were averaged. Sticker surveys were completed for both peak hours of one day during each week, except for week 8. The sticker survey data from week 7 was used to adjust the week 8 cordon count averages.

The parking lot inbound and outbound volumes were used along with the averaged campus and hospital vehicle percentages in order to adjust the cordon counts. Since Lots 1 and 2 are outside of the cordon boundary, some campus-related vehicles will park in those lots and not get counted in the cordon count.

To add them in, the average percentage of campus vehicles in those lots was multiplied by the inbound and outbound volumes at each corresponding lot entrance, and then added to the cordon counts.

Lots 3, 4, 5, and the parking structure (PS-1) are located inside the cordon boundary. Thus, hospital-related vehicles parking in these lots should be subtracted out of the cordon counts. To do this, the average percentage of hospital-related vehicles was multiplied by the inbound and outbound volumes at each respective lot entrance and then subtracted from the cordon counts.

A parking sticker survey was also conducted at two on-street locations during the same days as the surveys for the parking lots. The streets surveyed were Oak Road and the portion of Welch Road between Campus Drive West and the cordon location just north of Oak Road. Since both streets were inside the cordon, only the hospital vehicles were of importance. If more hospital vehicles were present at the end of the period than at the beginning, the change in vehicles was subtracted from the inbound totals for that period. If fewer hospital vehicles were present at the end of the period, the difference was subtracted from the outbound totals.

3.4 Fully Adjusted Daily Average Spreadsheets

The license plate survey data was used to subtract out "cut-through" vehicles during each peak period. A survey was conducted on one day of each week during the first seven weeks of the monitoring program. However, complete data was only available for three of the surveys – week 2 AM, week 7 AM, and week 7 PM. The inbound and outbound license plate numbers were recorded in a spreadsheet, and then a computer matching program was run on the spreadsheet in order to identify vehicles with the same license plate that entered and exited the cordon within a 15-minute period. Vehicles that entered and exited through the same cordon location were not counted as matches since they apparently dropped off a passenger and are part of Stanford's trip generation.

The week 2 AM matches were applied to the week 2 counts by subtracting the number of matches from both the inbound and outbound totals. The percentage reduction found from the week 2 total numbers was applied to the AM totals for weeks 1, 3, 4, 5, and 6. Inbound and outbound values were calculated by subtracting half of the "cut-through" reduction (the difference between the original and reduced totals) from the original inbound and outbound numbers. The week 7 AM matches were used to reduce the AM totals for weeks 7 and 8. Since the only complete PM survey was during week 7, these matches were used to compute the cut-through reduction for all eight PM averages using the same process that was just described. The observed cut-through traffic was approximately ten percent during the AM peak hour and nine percent during the PM peak hour.

A summary table showing the daily averages adjusted for all factors is shown in Table 2 below. Table 2 represents the raw counts with the parking adjustments discussed above and cut-through traffic removed. Table 2 shows the adjusted inbound AM and outbound PM average traffic for the 40 data points.

Table 2 Adjusted Traffic Counts

Day	AM Inbound		PM Outbound	
	Volume	Period	Volume	Period
02-Apr-01	3036	7:45-8:45	3323	5:00-6:00
03-Apr-01	3059	7:45-8:45	3285	4:45-5:45
04-Apr-01	2884	8:00-9:00	3334	4:45-5:45
05-Apr-01	3000	7:45-8:45	3216	5:00-6:00
06-Apr-01	2610	8:00-9:00	3092	4:45-5:45
09-Apr-01	3265	8:00-9:00	3329	5:00-6:00
10-Apr-01	3141	8:00-9:00	3362	5:00-6:00
11-Apr-01	3107	8:00-9:00	3473	4:45-5:45
12-Apr-01	3081	8:00-9:00	3397	5:00-6:00
13-Apr-01	2973	8:00-9:00	3413	4:45-5:45
23-Apr-01	3285	7:45-8:45	3311	4:30-5:30
24-Apr-01	3322	7:45-8:45	3281	5:00-6:00
25-Apr-01	3186	7:30-8:30	3326	4:45-5:45
26-Apr-01	3129	7:45-8:45	3286	5:00-6:00
27-Apr-01	2723	8:00-9:00	3154	4:45-5:45
30-Apr-01	2502	7:30-8:30	2681	4:15-5:15
01-May-01	2826	7:45-8:45	2967	5:00-6:00
02-May-01	2742	7:45-8:45	2912	5:00-6:00
03-May-01	2632	8:00-9:00	2861	5:00-6:00
04-May-01	2595	8:00-9:00	2744	4:45-5:45
07-May-01	3604	8:00-9:00	3410	4:45-5:45
08-May-01	3559	8:00-9:00	3422	5:00-6:00
09-May-01	3455	8:00-9:00	3326	5:00-6:00
10-May-01	3478	8:00-9:00	3396	4:45-5:45
11-May-01	3393	8:00-9:00	3090	5:00-6:00
14-May-01	3479	8:00-9:00	3235	4:45-5:45
15-May-01	3756	8:00-9:00	3450	5:00-6:00
16-May-01	3830	8:00-9:00	3374	5:00-6:00
17-May-01	3533	8:00-9:00	3456	5:00-6:00
18-May-01	3246	8:00-9:00	3386	4:45-5:45
22-Oct-01	3221	8:00-9:00	3505	5:00-6:00
23-Oct-01	3835	8:00-9:00	3805	5:00-6:00
24-Oct-01	3550	8:00-9:00	3959	5:00-6:00
25-Oct-01	3908	8:00-9:00	3991	5:00-6:00
26-Oct-01	3371	8:00-9:00	4072	4:45-5:45
29-Oct-01	4241	8:00-9:00	4115	5:00-6:00
30-Oct-01	4251	8:00-9:00	4217	5:00-6:00
31-Oct-01	4139	8:00-9:00	4394	5:00-6:00
01-Nov-01	4037	8:00-9:00	4193	5:00-6:00
02-Nov-01	3789	7:45-8:45	4277	5:00-6:00
Average	3319		3446	

4.0 2001 BASELINE COUNTS

The 2001 Baseline Counts are based on the 40 data points collected during six weeks in the Spring and two weeks in the Fall. The AM inbound and PM outbound counts are averaged separately and an arithmetic mean is established for each peak hour. As noted in Table 2, the arithmetic mean for the AM is 3,319 vehicles entering the campus and the arithmetic mean for the PM is 3,446 vehicles leaving the campus. Figure 4 is a graph of the 40 AM peak hour data points and the mean value is indicated. Figure 5 is a graph of the 40 PM peak hour data points and the mean is indicated as well.

As noted on both Figure 4 and Figure 5, traffic varies from one day to the next. Because of this variability, a confidence interval must be established that indicates if future counts have a statistically significant difference from the baseline counts. The confidence interval is set at 90 percent. The 90 percent confidence intervals are noted on Figure 4 and Figure 5. The confidence interval is based on the variability of the baseline data and the number of data points. If, in future years, the mean of the 40 data points falls within the confidence interval established for the baseline, the future counts will assumed to comparable to the baseline and no significant change will be noted. If, on the other hand, the future mean is above the confidence interval, the requirement for a one percent increase, as noted in Condition of Approval G.9, will be tested.

The following provides the specifics of the baseline counts:

Inbound AM	
Average Count:	3,319
90% Confidence Interval:	+/- 120
Significant Traffic Increase:	3,439
1 Percent Increase Trigger	3,474
Outbound PM	
Average Count:	3,446
90% Confidence Interval:	+/- 109
Significant Traffic Increase:	3,555
1 Percent Increase Trigger	3,591

5.0 SUBSEQUENT MONITORING COUNTS

Counts in subsequent years, starting with Spring 2002, will follow the procedure used to establish the baseline counts. Three, two-week counts will be taken in the Spring and one, two-week count will be taken in the Fall. The Spring counts will occur after the start of daylight savings time and before the last day of classes. The Fall counts will occur after the start of classes and before the end of daylight savings time. Adjustments to counts to reflect medical facility personnel within the cordon or university personnel parking outside of the cordon will be coordinated with Stanford prior to each seasonal count period. Stanford personnel will point out any changes to parking patterns or permitting that has occurred since the last counts.

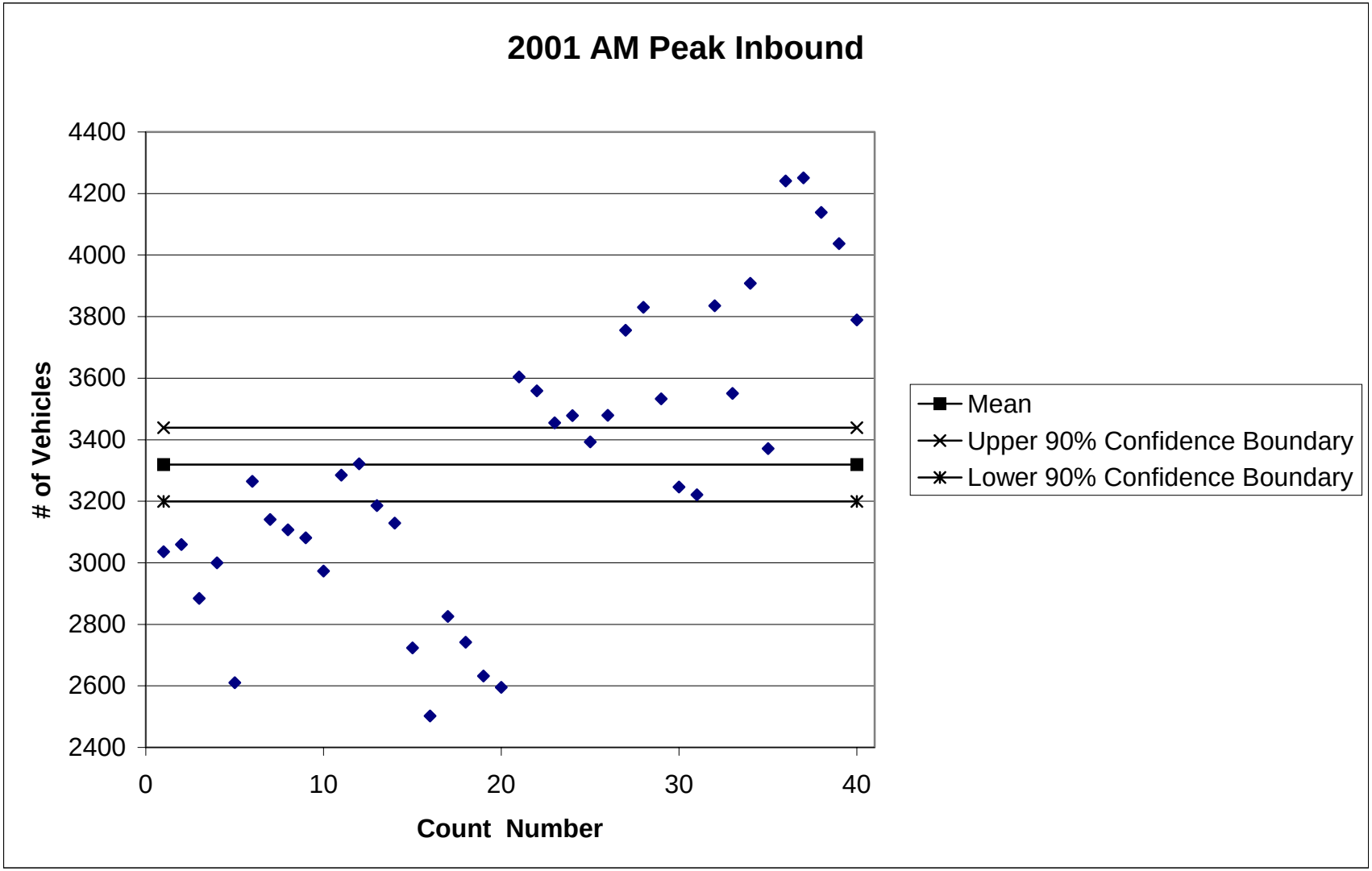


Figure 4
2001 AM Peak Outbound

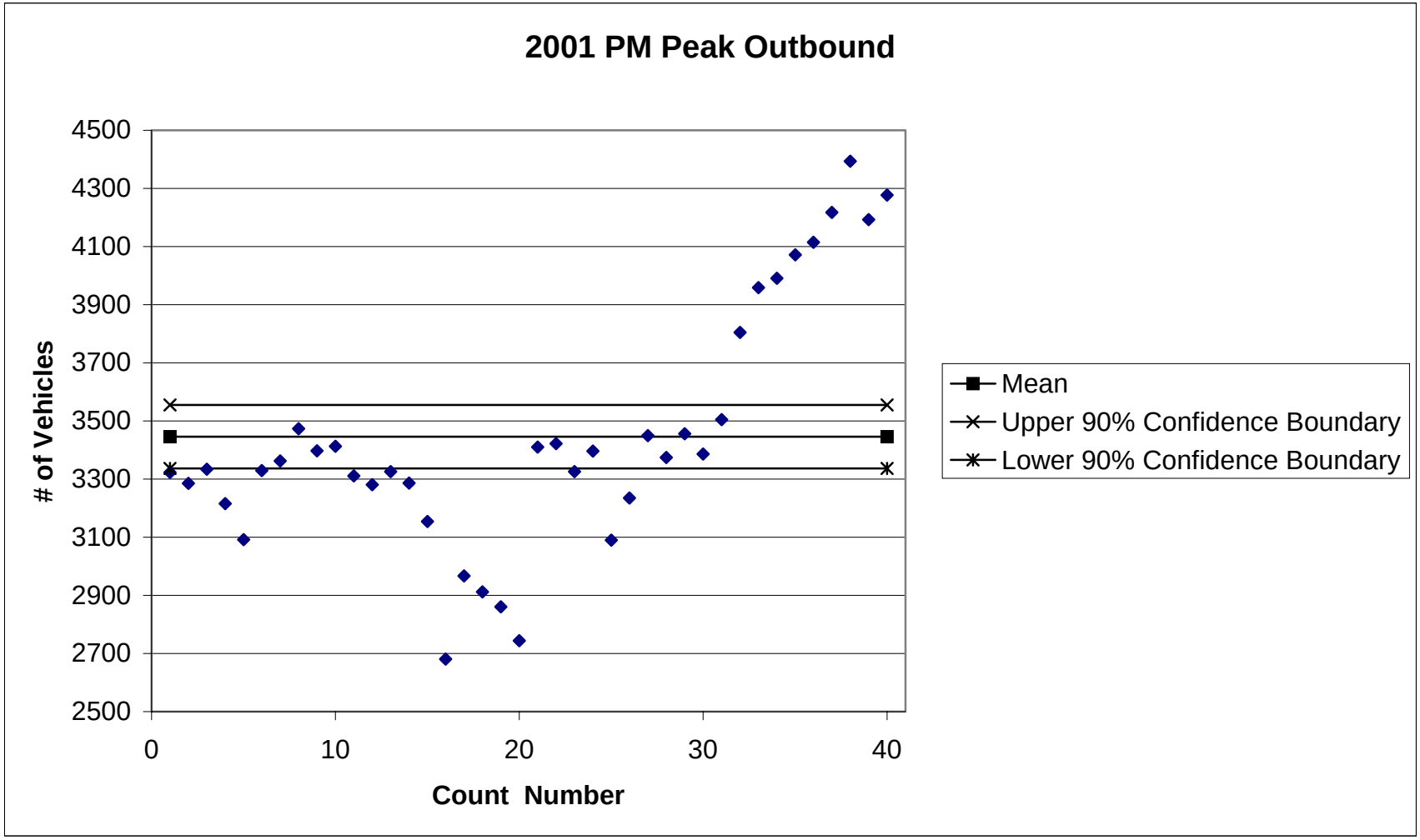


Figure 5

2001 AM Peak Outbound

Some additional adjustments to the data may be warranted. For example, severe weather may cause a single daily count to be out of proportion with other counts and a decision may be made to eliminate the count. These adjustments will be made by the County on a case-by-case basis.

6.0 SUMMARY

The 2001 baseline traffic counts as documented in this report will be used for comparison of future monitoring counts to determine if the requirements of the conditions of approval are being met. The following summary comments can be made regarding the 2001 baseline counts.

- As noted on Figures 4 and 5, traffic counts vary from day to day. The purpose of counting traffic for at least three, two-week periods is to obtain a sufficient level of data to account for daily fluctuations. Therefore, all 40 counts collected in calendar year 2001 will be used to establish the baseline for the on-going monitoring.
- The 2001 baseline includes Spring and Fall counts. The Stanford GUP was approved in the late Fall of 2000. Because of the need to collect license plate data, the count windows are restricted to when daylight is available, or after the start of daylight savings time in the Spring and prior to the end of daylight savings time in the Fall. Therefore, no monitoring counts could be collected in the Fall 2000.
- The three, two-week counts conducted in Spring 2001 were supplemented with one, two-week count in Fall 2001. While these counts were not conducted during the same academic year, they were taken during the same calendar year. Following the same count procedure for subsequent years will provide comparable results. Since the Fall represents a substantial part of the academic year, these counts are included with the Spring counts.
- AM inbound traffic and PM outbound traffic are considered as separate events for the purposes of monitoring. Standard traffic engineering practice considers AM traffic and PM traffic separately, and mitigation measures are developed independently for significant impacts in each peak hour. If AM inbound traffic experiences a significant increase (greater than one percent above statistical significance) in two out of three years, additional mitigation measures will be required. Likewise, if PM outbound traffic experiences a significant increase in two out of three years, additional mitigation measures will also be triggered. However, an increase in AM inbound in one year and an increase in PM in the following year will not trigger additional mitigation.
- Traffic counts were collected during the typical AM peak period from 7 am to 9 am to establish the AM peak hour and during the typical PM peak period from 4 pm to 6 pm to establish the PM peak hour. This procedure will be followed for subsequent monitoring. If through existing and future travel demand management strategies Stanford is able to shift their peak traffic volumes outside of the typical peak periods, the monitoring will not be shifted to those time periods. Additional roadway capacity is available outside of the typical peak periods because of a lesser demand by other users. If Stanford effectively uses this excess capacity and thereby frees up capacity during the peak that they

previously used, they will not trigger additional mitigation, even if the volumes outside the peak exceed the baseline counts established in this report.

- The AM inbound volume has been established at 3,319 vehicles with a 90 percent confidence interval of ±120 vehicles. Therefore, the AM inbound volumes could reach 3,439 vehicles and still remain within the thresholds of the base count. If the 3,439 count is exceeded by 1% for two out of three years, Tier 2 improvements would be required. Potentially, all intersections from Table 4 in Appendix E would require improvement, depending on the desires of the local jurisdictions.
- The PM outbound volume has been established at 3,446 vehicles with a 90 percent confidence interval of ±109 vehicles. Therefore, the PM outbound volumes could reach 3,591 vehicles and still remain within the thresholds of the base count. If the 3,591 count is exceeded by 1% for two out of three years, Tier 2 improvements would be required. Potentially, all intersections from Table 4 in Appendix E would require improvement, depending on the desires of the local jurisdictions.