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BUCKLEY GROW
TRAFFIC IMPACT ANALYSIS

City of Buckley ,WA

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February 2016

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BUCKLEY GROW
TRAFFIC IMPACT ANALYSIS

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BUCKLEY GROW
TRAFFIC IMPACT ANALYSIS

I. INTRODUCTION

This study serves to assess the impacts of the proposed Buckley Grow project. To make such assessments, a comprehensive four step study procedure is employed. The first step involves the collection of site specific roadway information, road improvement data, and peak hour traffic volumes. Next, forecasts of future traffic levels on the surrounding street system are then made. Standardized trip generation and distribution techniques are used in this step to estimate the magnitude and specific locations of project impacts. Following this forecast of traffic conditions, the future service levels for the key entrance intersections are determined. As a final step, appropriate mitigation measures and conclusions are defined. The underlying objective of this study is to ensure safe and efficient operation of traffic in the area.

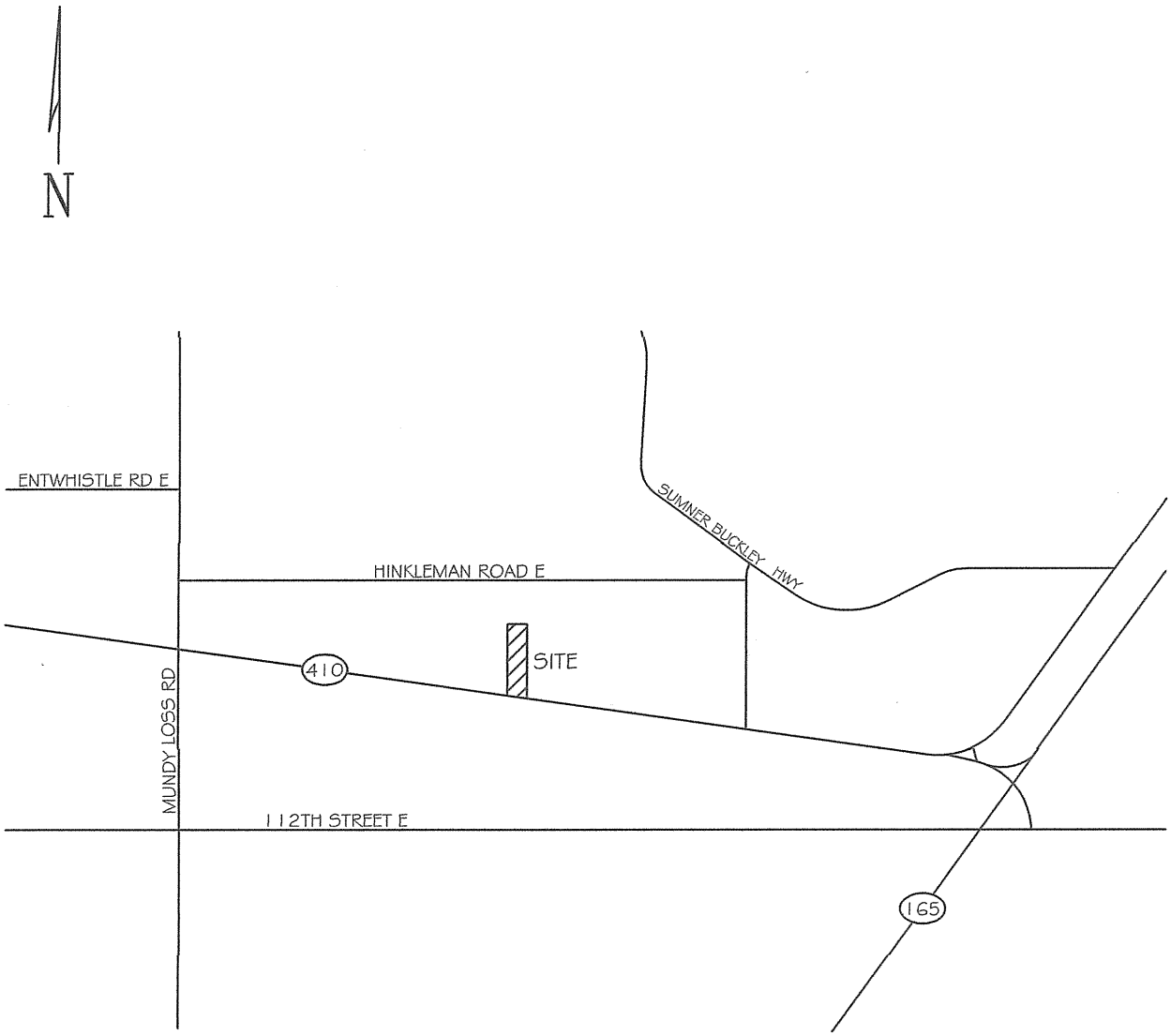
II. PROJECT DESCRIPTION

The Buckley Grow project proposes to build a 17,700 square foot warehouse. The project is located on the north side of SR-410, just east of Mundy Loss Road on tax parcel number 0619047003 in the City of Buckley. Access to the site will be provided by a new access driveway onto SR-410. The immediate area surrounding the site is primarily commercial, with some low density residential areas nearby as well. Buildout of the project is expected within the next couple of years with this report analyzing a 5 year horizon of 2021. Figure 1 shows the project location and surrounding arterials. The proposed site plan showing the overall building configuration and points of access is given in Figure 2.

III. EXISTING CONDITIONS

A. Surrounding Arterials

The main road servicing the project is SR-410. SR-410 is a generally east-west state route which borders the south side of the project. The posted speed limit in the vicinity of the project is 35 mph, and pavement surfacing consists of asphalt with asphalt shoulders. Lane widths are generally 12 feet while shoulders are 4 to 6 feet wide. Grades are generally flat. The roadway has one lane of travel in each direction across the project frontage.



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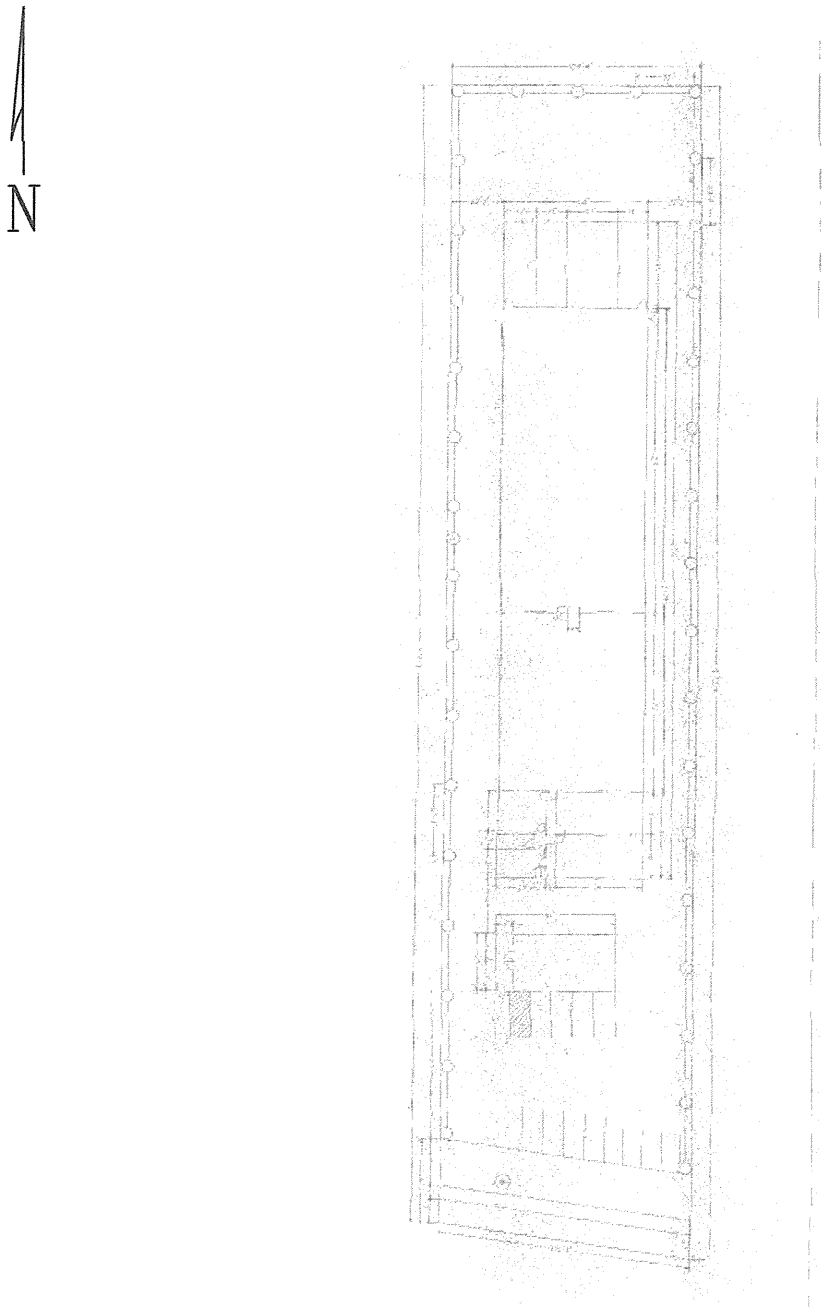
VICINITY MAP & ROADWAY SYSTEM

FIGURE 1



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SITE PLAN

FIGURE 2

B. Roadway Improvements

A review of the latest City of Buckley Transportation Improvement Plan and current WSDOT projects along SR-410 show that no roadway improvements are currently planned in the immediate vicinity of the site.

C. Peak Hour Volumes

Field data for this study was collected in January and February of 2016. The peak hour traffic counts were taken during the AM peak hours of 7 AM to 9 AM and the evening peak period between the hours of 4 PM and 6 PM at the project frontage. These peak periods are generally targeted for analysis purposes since it generally represents a worst case scenario for an overall traffic system with respect to traffic conditions. This is primarily due to the common 8 AM to 5 PM work schedule and the natural peak in evening traffic volume typically created on weekdays. Shown in Figure 3 are the AM and PM peak hour across the site. Turning movement data can be found in the appendix.

D. Non-Motorist Traffic

Based on the location of the proposed development with respect to major residential areas, only minor pedestrian and bicycle traffic would be destined toward the site. The surrounding area supports a mild amount of pedestrian traffic. No conflicts between motorist and non-motorist traffic are present and are not expected to occur in the future.

E. Transit Service

A review of the Pierce Transit regional bus schedule indicates that no transit service is currently provided in the immediate vicinity of the site.

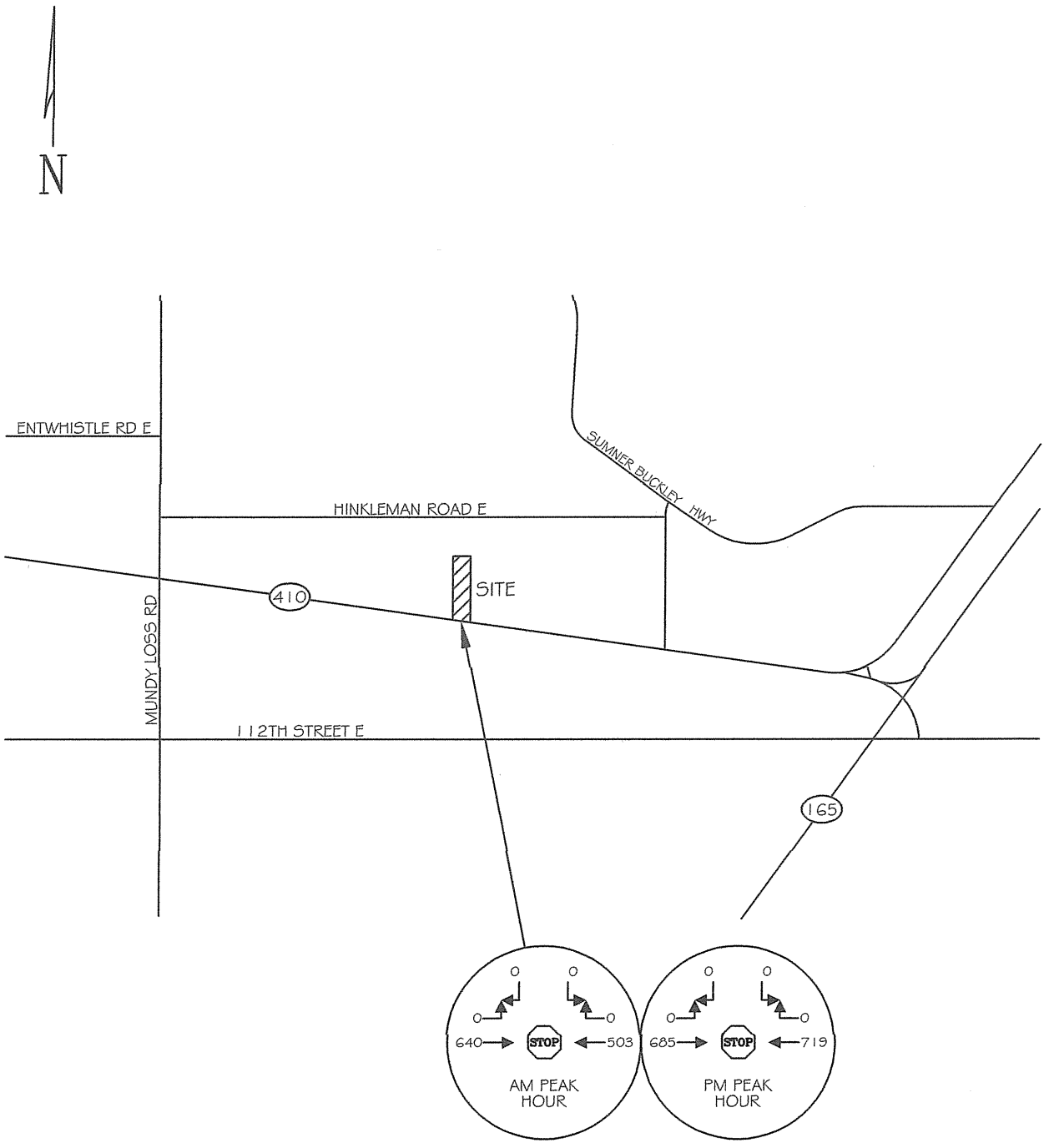
F. Sight Distance at Access Driveways

The access for the project will be on SR-410. A preliminary examination of the proposed site access was made to determine whether adequate entering and stopping sight distance could be provided for inbound and outbound project traffic. In accordance with AASHTO Green Book standards, a minimum entering sight distance of 445 feet is typically required for a 40 mph design speed. Based on field reviews of the proposed access location, it appears that this requirements would be met, with clear sight in either direction well above the minimum.

IV. FUTURE TRAFFIC CONDITIONS

A. Trip Generation

Trip generation is used to determine the magnitude of project impacts on the surrounding street system. This is denoted by the quantity or specific number of new trips that enter



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EXISTING PEAK HOUR VOLUMES

FIGURE 3

or exit a project during a designated time period, such as a specific peak hour or an entire day. Data presented in this report was taken from the Institute of Transportation Engineers (ITE) publication, *Trip Generation*, 9th edition. The designated land use for this project is defined as Warehousing (LUC 150). Table 1 shows the Average Weekday Daily Trips (AWDT), AM peak hour trips, and PM trip generation volumes for the proposed total 17,700 square feet of building space.

TABLE 1
Project Trip Generation
17,700 s.f. Warehouse

Time Period	*Volume*
AWDT	63 vpd
AM Peak Inbound	4 vph
AM Peak Outbound	1 vph
AM Peak Total	5 vph
PM Peak Inbound	5 vph
PM Peak Outbound	1 vph
PM Peak Total	6 vph

B. Distribution & Assignment

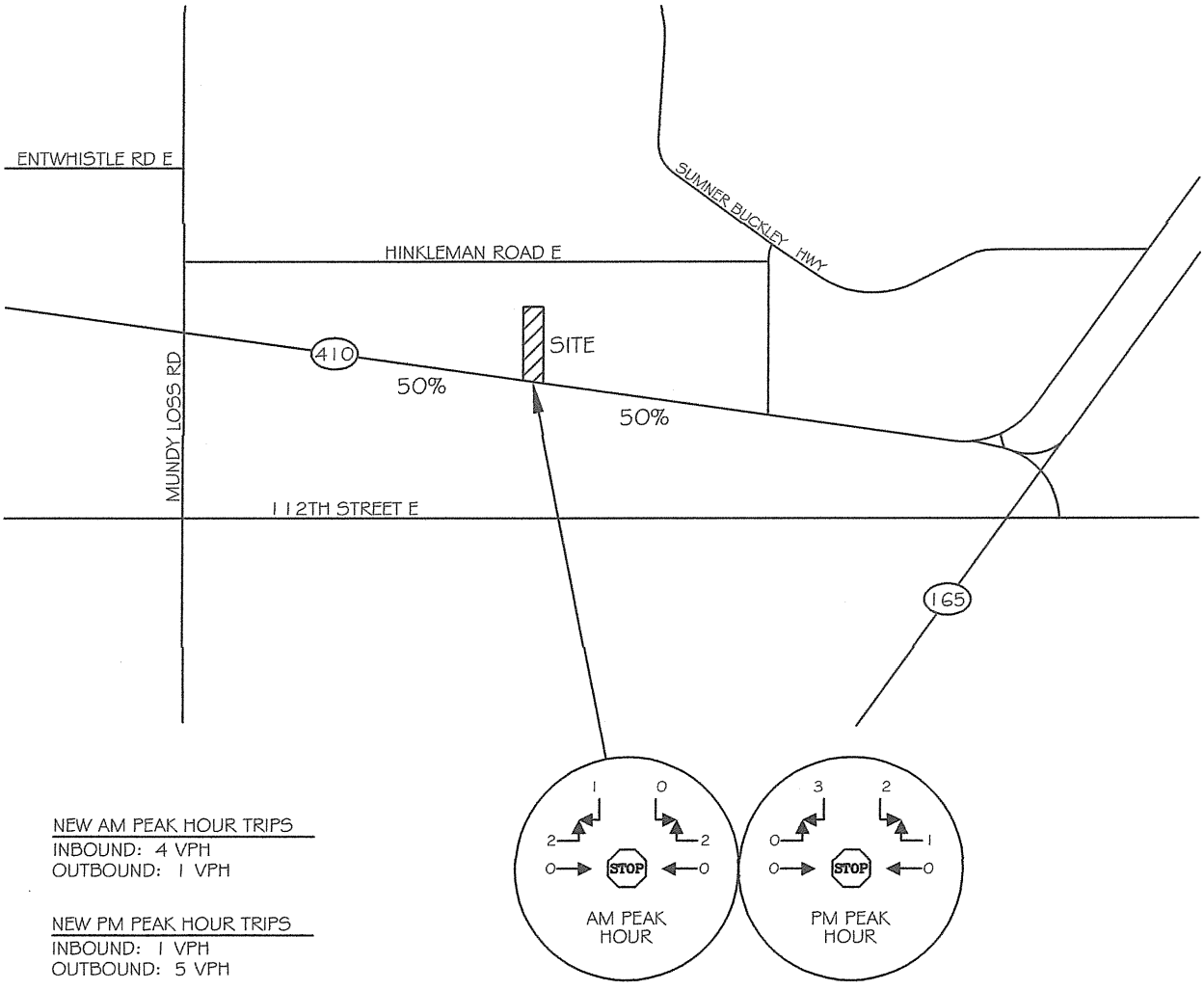
Trip distribution describes the process by which project generated trips are dispersed on the street network surrounding the site. The specific destinations and origins of the generated traffic primarily influences the key intersections, which will effectively receive the bulk of project impacts. The trips generated by the project are expected to follow the general trip pattern as shown in Figure 4 on the following page. Figure 4 gives a best guess estimate of how traffic is likely to travel to and from the site during the critical peak hour. Distribution percentages are based on existing travel patterns and the location of nearby major roadways.

C. Peak Hour Volumes

2021 was used as the horizon study year in order to assess future impacts at a five-year junction. Future 2021 traffic volumes were derived by applying a 1 percent growth rate over 5 years to the existing volumes of Figure 3. Figure 5 represents 2021 traffic without the project, while Figure 6 shows cumulative 2021 volumes with project-generated trips added. Secretary

D. Future Level of Service

Future peak hour delays were determined through the use of the *Highway Capacity Manual 2010*. Capacity analysis is used to determine level of service (LOS) which is an established measure of congestion for transportation facilities. LOS is defined for a variety of facilities including intersections, freeways, arterials, etc. A complete definition of level of service and related criteria can be found in the HCM.



NEW AM PEAK HOUR TRIPS
INBOUND: 4 VPH
OUTBOUND: 1 VPH

NEW PM PEAK HOUR TRIPS
INBOUND: 1 VPH
OUTBOUND: 5 VPH

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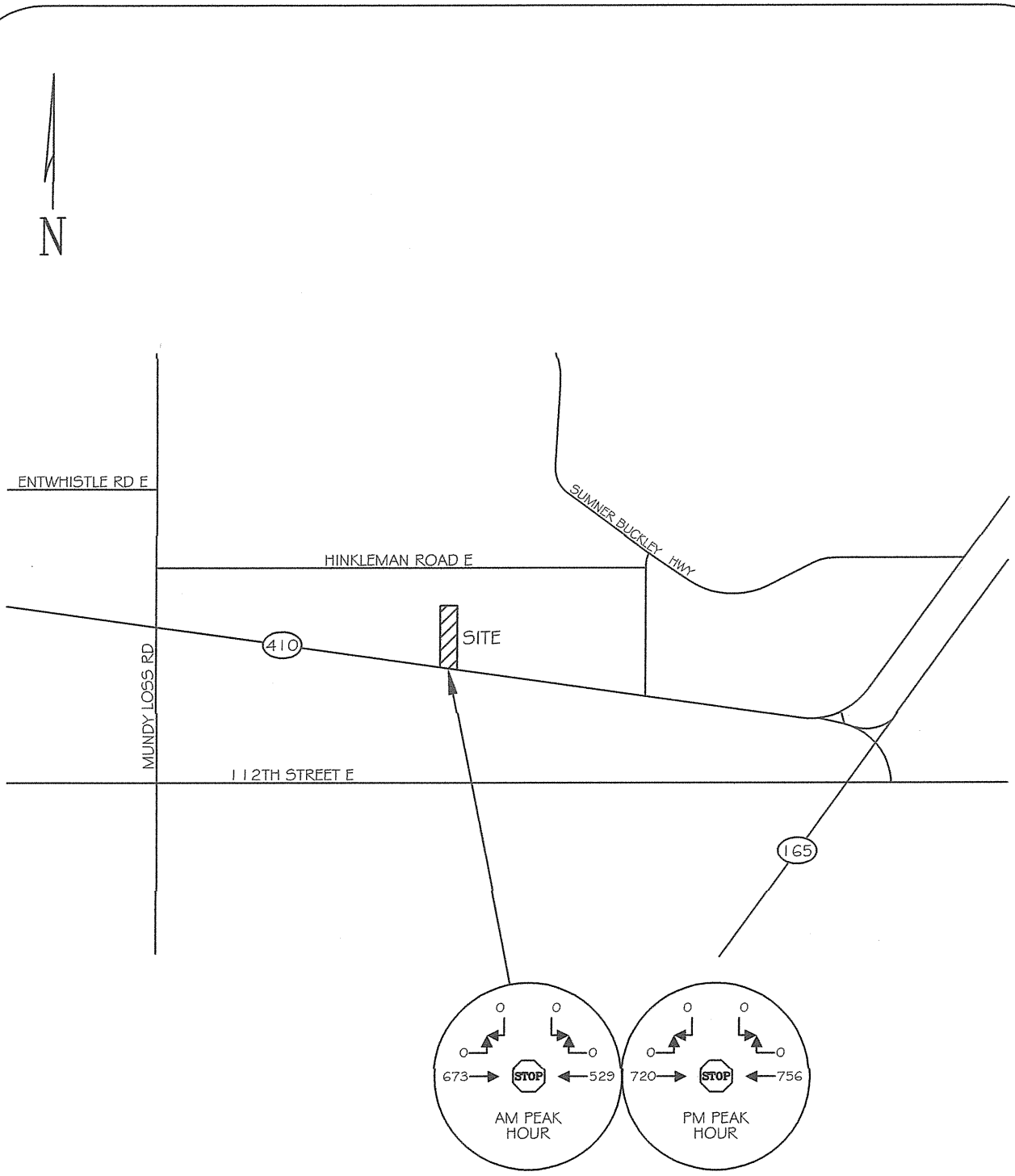
TRIP DISTRIBUTION & ASSIGNMENT

FIGURE 4



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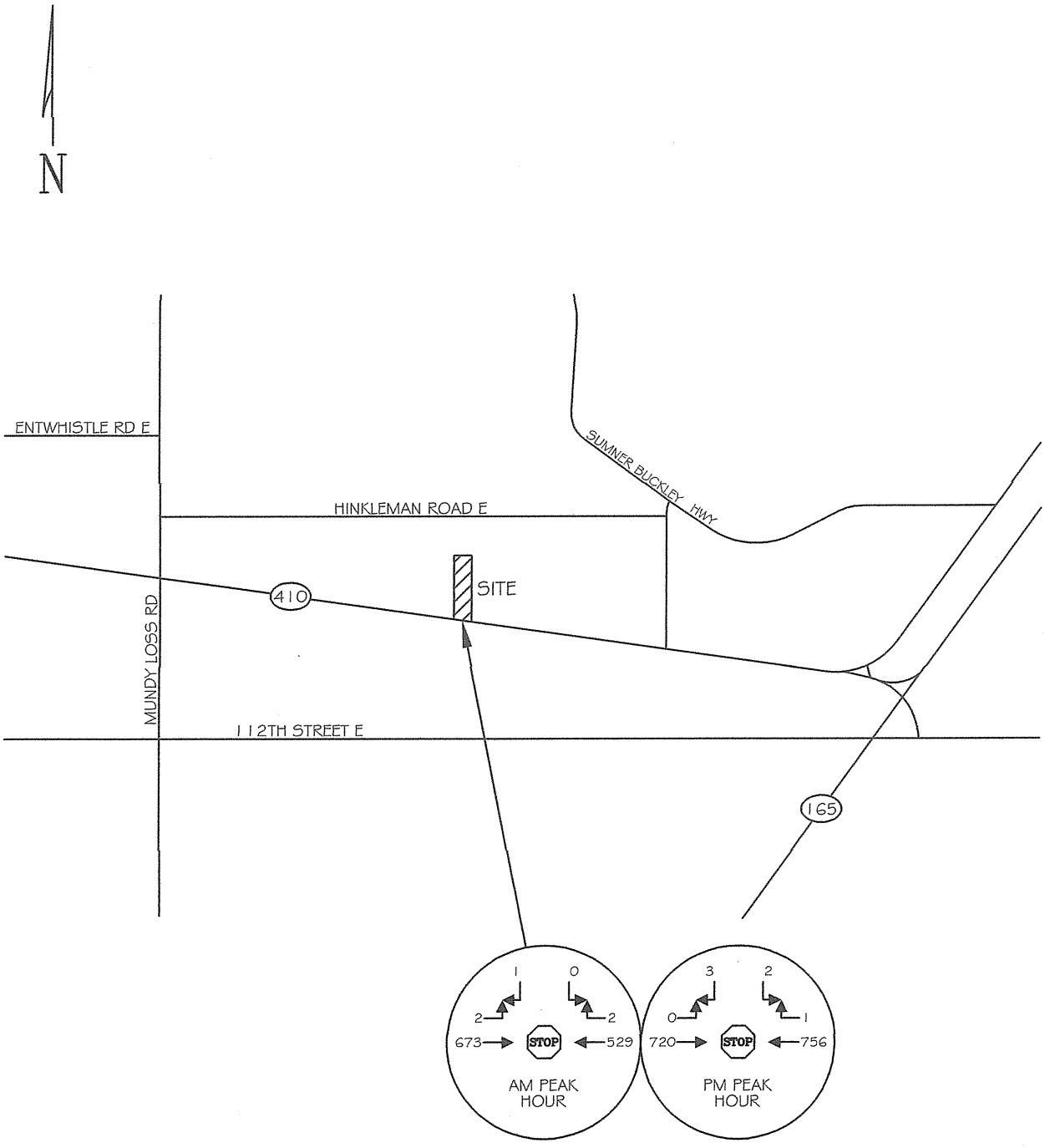
2021 PEAK HOUR VOLUMES WITHOUT PROJECT

FIGURE 5



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2021 PEAK HOUR VOLUMES WITH PROJECT

FIGURE 6

The methodology for determining the LOS at unsignalized intersections strives to determine the potential capacities for the various vehicle movements and ultimately determines the average total delay for each movement. *Potential Capacity* represents the number of additional vehicles that could effectively utilize a particular movement, which is essentially the equivalent of the difference between the movement capacity and the existing movement volume. *Total delay* is described as the elapsed time from when a vehicle stops at the end of a queue until the vehicle departs from the stop line. *Average total delay* is simply the mean total delay over the entire stream. A number of factors influence potential capacity and total delay including the availability/usefulness of gaps.

The range for intersection level of service is LOS A to LOS F with the former indicating the best operating conditions with low control delays and the latter indicating the worst conditions with heavy control delays. Detailed descriptions of intersection LOS are given in the 2010 Highway Capacity Manual. Level of service calculations were made through the use of the Synchro 9 program. Refer to the HCM for a description of the analysis. Level of service results and accompanying approach delays are shown below in Table 2. These results reflect 2021 future traffic conditions with project trips added to the street system.

TABLE 2
2021 Level of Service With Project
Delays given in Seconds Per Vehicle

Intersection	*Control*	*Geometry*	*LOS*	*Delay*
SR-410/Entrance	Stop	Southbound	B	12.7
(AM Peak Hour)		Eastbound LT	A	8.8
SR-410/Entrance	Stop	Southbound	C	23.2
(PM Peak Hour)		Eastbound LT	A	--

As the table shows, future delays at the project entrance are expected to be mild in the LOS A to LOS C range. Overall, project traffic will have a minimal impact on the local roadway system.

E. Left Turn Warrant Analysis

Left turn lanes are a means of providing necessary storage space for left turning vehicles at intersections. For a two-lane or four-lane highway with no left turn storage, delays are often created by vehicles waiting to complete the desired left turn movement. These turning vehicles typically block the heavier through movement, thereby causing some disruption to traffic flow and subsequent congestion. Methods have been developed by various agencies to determine under what circumstances a left turn lane would be needed. For this impact study, procedures described by WSDOT Design Manual (Figure 1310-15a) were used to ascertain storage requirements on SR-410 at the project entrance based on 2021 AM peak hour volumes with project traffic as the AM peak supports more inbound trips. For a conservative analysis all inbound trips were assumed to be left turns into the site. The results of this assessment indicate that a left turn lane *would not be*

warranted. Refer to the appendix for input values and the WSDOT left turn warrant chart.

V. SUMMARY & MITIGATION

The Buckley Grow project will construct a 17,700 square foot warehouse to the City of Buckley. The site is located on the north side of SR-410, between Mundy Loss Road and Hinkleman Road in the City of Buckley. On a daily basis, roughly 63 new trip movements into and out of the site would be expected. Of this total daily traffic, 5 trips would be associated with the AM peak hour and 6 trips with the PM peak hour.

Pedestrian and bicyclist volumes are negligible on the roads in the area. Entering and stopping sight distance is adequate at the project entrance. Level of Service conditions for the project accesses are outlined in Table 2. Results show that the project entrance should operate with mild delays at LOS A to LOS C under future 2021 traffic conditions. A left turn lane is not warranted at the project entrance.

Proposed mitigation for the Buckley Grow project is as follows:

1. Pay traffic impact fees as required by the City of Buckley.

No other mitigation is identified at this time.

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TRAFFIC IMPACT ANALYSIS

APPENDIX

LEVEL OF SERVICE

The following are excerpts from the *2010 Highway Capacity Manual - Transportation Research Board Special Report 209.*

Quality of service requires quantitative measures to characterize operational conditions within a traffic stream. Level of service (LOS) is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience.

Six LOS are defined for each type of facility that has analysis procedures available. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F the worst. Each level of service represents a range of operating conditions and the driver's perception of those conditions.

Level-of-Service definitions

The following definitions generally define the various levels of service for arterials.

Level of service A represents primarily free-flow operations at average travel speeds, usually about 90 percent of the free-flow speed for the arterial classification. Vehicles are seldom impeded in their ability to maneuver in the traffic stream. Delay at signalized intersections is minimal.

Level of service B represents reasonably unimpeded operations at average travel speeds, usually about 70 percent of the free-flow speed for the arterial classification. The ability to maneuver in the traffic stream is only slightly restricted and delays are not bothersome.

Level of service C represents stable operations; however, ability to maneuver and change lanes in midblock locations may be more restricted than in LOS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50 percent of the average free-flow speed for the arterial classification.

Level of service D borders on a range in which small increases in flow may cause substantial increases in approach delay and hence decreases in arterial speed. LOS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40 percent of free-flow speed.

Level of service E is characterized by significant delays and average travel speeds of one-third the free-flow speed or less. Such operations are caused by some combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections, and inappropriate signal timing.

Level of service F characterizes arterial flow at extremely low speeds, from less than one-third to one-quarter of the free-flow speed. Intersection congestion is likely at critical signalized locations, with long delays and extensive queuing.

These definitions are general and conceptual in nature, and they apply primarily to uninterrupted flow. Levels of service for interrupted flow facilities vary widely in terms of both the user's perception of service quality and the operational variables used to describe them.

For each type of facility, levels of service are defined based on one or more operational parameters that best describe operating quality for the subject facility type. While the concept of level of service attempts to address a wide range of operating conditions, limitations on data collection and availability make it impractical to treat the full range of operational parameters for every type of facility. The parameters selected to define levels of service for each facility type are called "measures of effectiveness" or "MOE's", and represent available measures that best describe the quality of operation on the subject facility type.

Each level of service represents a range of conditions, as defined by a range in the parameters given. Thus, a level of service is not a discrete condition, but rather a range of conditions for which boundaries are established.

The following tables describe levels of service for signalized and unsignalized intersections. Level of service for signalized intersections is defined in terms of average control delay. Delay is a measure of driver discomfort, frustration, fuel consumption and lost travel time, as well as time from movements at slower speeds and stops on intersection approaches as vehicles move up in queue position or slow down upstream of an intersection. Level of service for unsignalized intersections is determined by the computed or measured control delay and is determined for each minor movement.

Signalized Intersections - Level of Service

Level of Service	Control Delay per Vehicle (sec)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Unsignalized Intersections - Level of Service

Level of Service	Average Total Delay per Vehicle (sec)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

As described in the 2010 Highway Capacity Manual, level of service breakpoints for all-way stop controlled (AWSC) intersections are somewhat different than the criteria used for signalized intersections. The primary reason for this difference is that drivers expect different levels of performance from distinct kinds of transportation facilities. The expectation is that a signalized intersection is designed to carry higher traffic volumes than an AWSC intersection. Thus a higher level of control delay is acceptable at a signalized intersection for the same level of service.

AWSC Intersections - Level of Service

Level of Service	Average Total Delay per Vehicle (sec)
A	≤10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	>50

Detailed Land Use Data
For 17.7 Gross Floor Area 1000 SF of WAREHOUSE 1
(150) Warehousing

Project: Buckley Grow
Phase: -
Description:

Open Date: 2/2/2016
Analysis Date: 2/2/2016

Day / Period	Total Trips	Pass-By Trips	Avg Rate	Min Rate	Max Rate	Std Dev	Avg Size	% Enter	% Exit	Use Eq.	Equation	R2
Weekday Average Daily Trips	63	0	3.56	1.51	17	3.58	431	50	50	False	Ln(T) = 0.86 Ln(X) + 2.24	0.77
Weekday AM Peak Hour of Generator	7	0	0.42	0.12	1.93	0.74	490	65	35	False	Ln(T) = 0.70 Ln(X) + 1.11	0.75
Weekday AM Peak Hour of Adjacent Street Traffic	5	0	0.3	0.08	1.93	0.63	745	79	21	False	Ln(T) = 0.55 Ln(X) + 1.88	0.67
Weekday PM Peak Hour of Generator	8	0	0.45	0.16	1.65	0.76	511	19	81	False	Ln(T) = 0.78 Ln(X) + 0.72	0.8
Weekday PM Peak Hour of Adjacent Street Traffic	6	0	0.32	0.09	1.66	0.67	572	25	75	False	Ln(T) = 0.64 Ln(X) + 1.14	0.64
Saturday Average Daily Trips	22	0	1.23	0.59	6.52	2.12	851	50	50	False		
Saturday Peak Hour of Generator	2	0	0.13	0.06	0.67	0.4	851	64	36	False		
Sunday Average Daily Trips	14	0	0.78	0.27	5.17	1.74	851	50	50	False		
Sunday Peak Hour of Generator	1	0	0.07	0.03	0.43	0.29	851	52	48	False		

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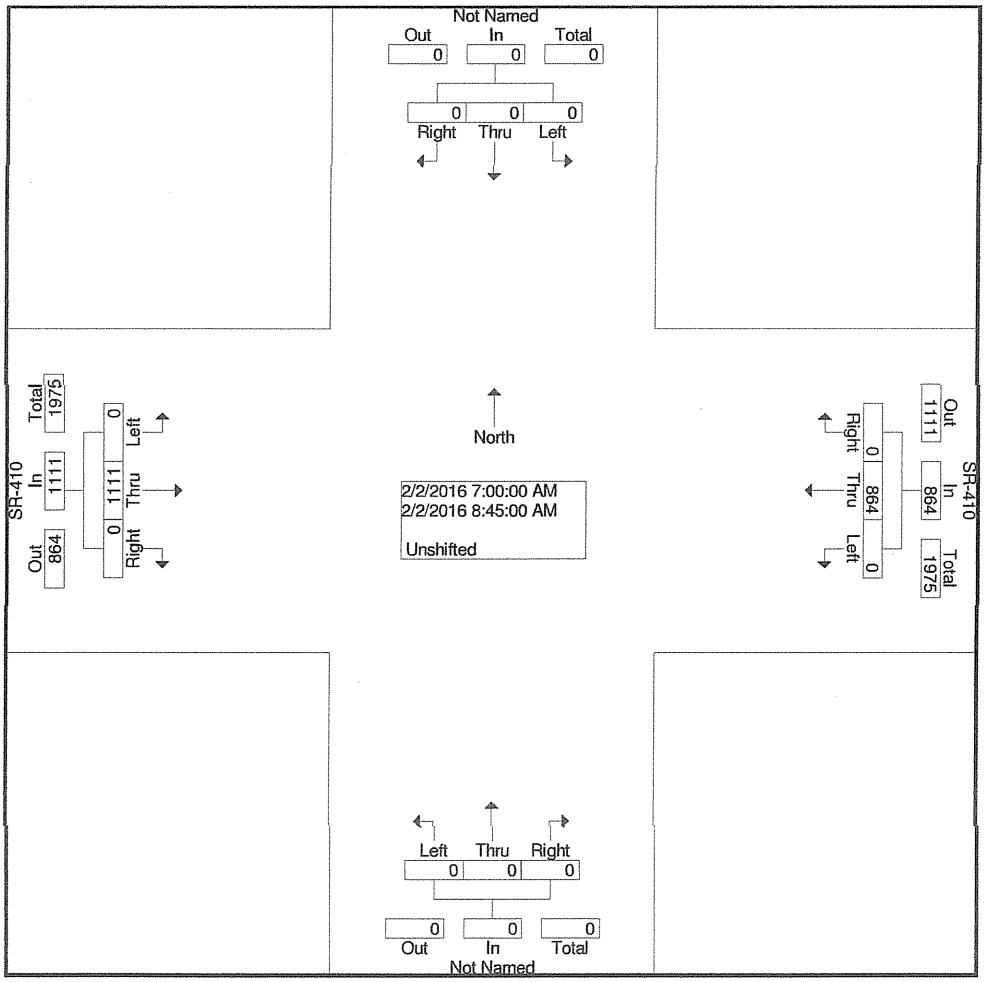
Puyallup, WA 98371

File Name : 3729b
Site Code : 00003729
Start Date : 2/2/2016
Page No : 1

Groups Printed- Unshifted

	Southbound			SR-410 Westbound			Northbound			SR-410 Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
07:00 AM	0	0	0	0	146	0	0	0	0	0	149	0	295
07:15 AM	0	0	0	0	98	0	0	0	0	0	139	0	237
07:30 AM	0	0	0	0	103	0	0	0	0	0	182	0	285
07:45 AM	0	0	0	0	156	0	0	0	0	0	170	0	326
Total	0	0	0	0	503	0	0	0	0	0	640	0	1143
08:00 AM	0	0	0	0	90	0	0	0	0	0	125	0	215
08:15 AM	0	0	0	0	87	0	0	0	0	0	122	0	209
08:30 AM	0	0	0	0	94	0	0	0	0	0	111	0	205
08:45 AM	0	0	0	0	90	0	0	0	0	0	113	0	203
Total	0	0	0	0	361	0	0	0	0	0	471	0	832
Grand Total	0	0	0	0	864	0	0	0	0	0	1111	0	1975
Apprch %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	
Total %	0.0	0.0	0.0	0.0	43.7	0.0	0.0	0.0	0.0	0.0	56.3	0.0	



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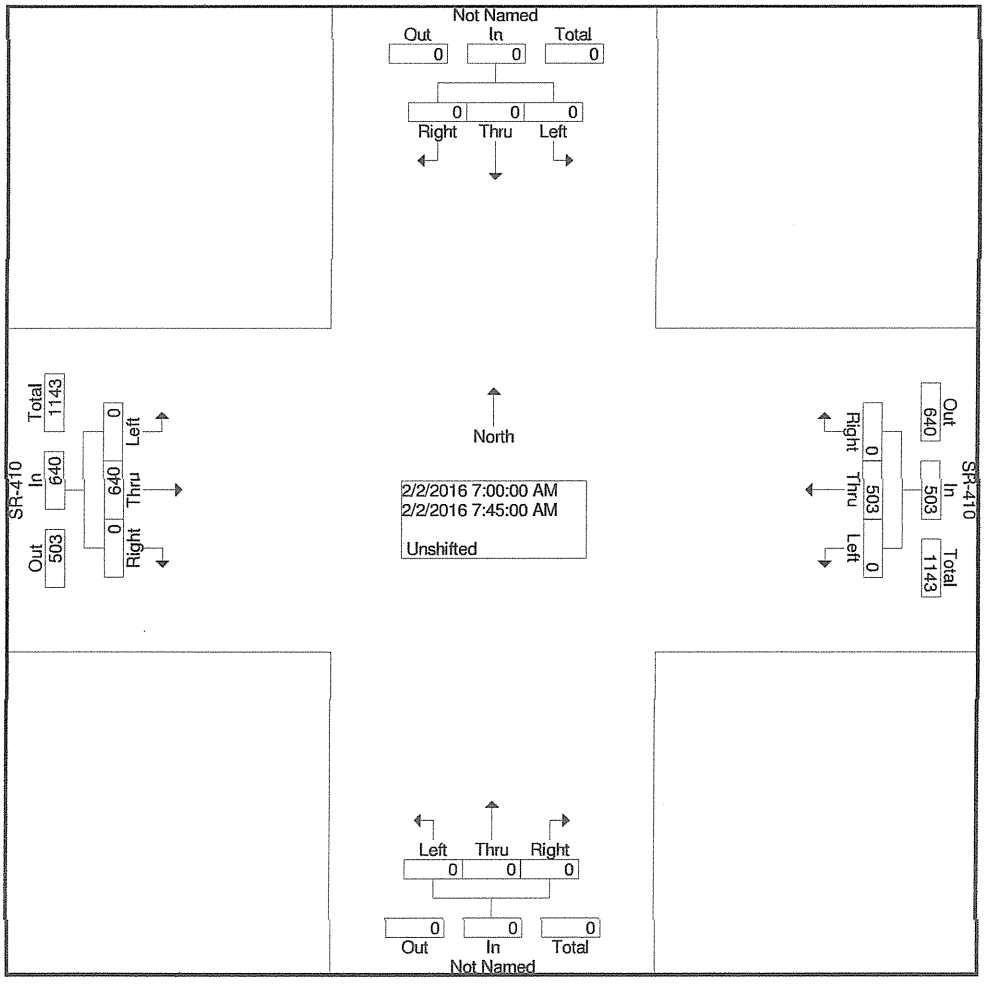
Puyallup, WA 98371

File Name : 3729b
Site Code : 00003729
Start Date : 2/2/2016
Page No : 2

	Southbound				SR-410 Westbound				Northbound				SR-410 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection 07:00 AM																	
Volume	0	0	0	0	0	503	0	503	0	0	0	0	0	640	0	640	1143
Percent	0.0	0.0	0.0		0.0	100.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
07:45 Volume	0	0	0	0	0	156	0	156	0	0	0	0	0	170	0	170	326
Peak Factor																	0.877
High Int.	6:45:00 AM				07:45 AM				6:45:00 AM				07:30 AM				
Volume	0	0	0	0	0	156	0	156	0	0	0	0	0	182	0	182	
Peak Factor								0.806								0.879	



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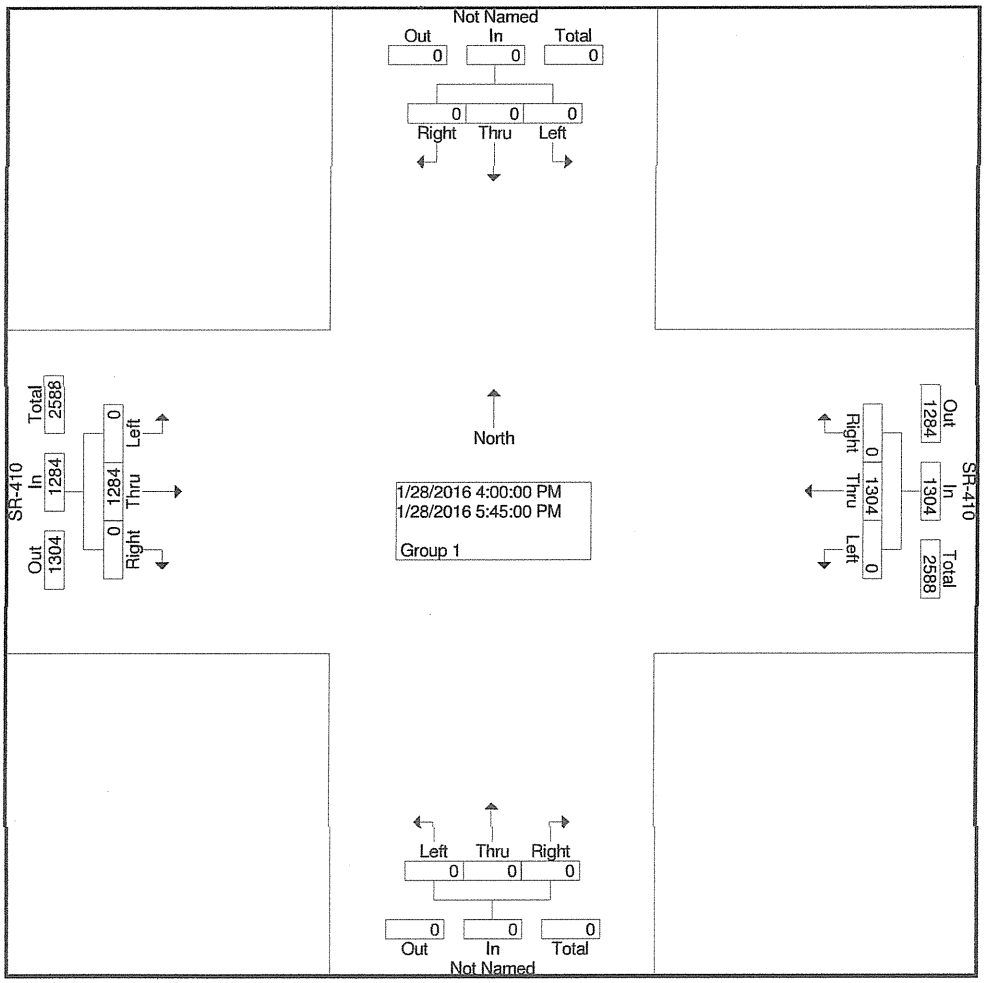
Puyallup, WA 98371

File Name : 3729a
Site Code : 00003729
Start Date : 1/28/2016
Page No : 1

Groups Printed- Group 1

	Southbound			SR-410 Westbound			Northbound			SR-410 Eastbound			
Start Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Int. Total
Factor	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
04:00 PM	0	0	0	0	155	0	0	0	0	0	161	0	316
04:15 PM	0	0	0	0	180	0	0	0	0	0	177	0	357
04:30 PM	0	0	0	0	175	0	0	0	0	0	191	0	366
04:45 PM	0	0	0	0	174	0	0	0	0	0	174	0	348
Total	0	0	0	0	684	0	0	0	0	0	703	0	1387
05:00 PM	0	0	0	0	190	0	0	0	0	0	143	0	333
05:15 PM	0	0	0	0	165	0	0	0	0	0	159	0	324
05:30 PM	0	0	0	0	131	0	0	0	0	0	141	0	272
05:45 PM	0	0	0	0	134	0	0	0	0	0	138	0	272
Total	0	0	0	0	620	0	0	0	0	0	581	0	1201
Grand Total	0	0	0	0	1304	0	0	0	0	0	1284	0	2588
Apprch %	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	
Total %	0.0	0.0	0.0	0.0	50.4	0.0	0.0	0.0	0.0	0.0	49.6	0.0	



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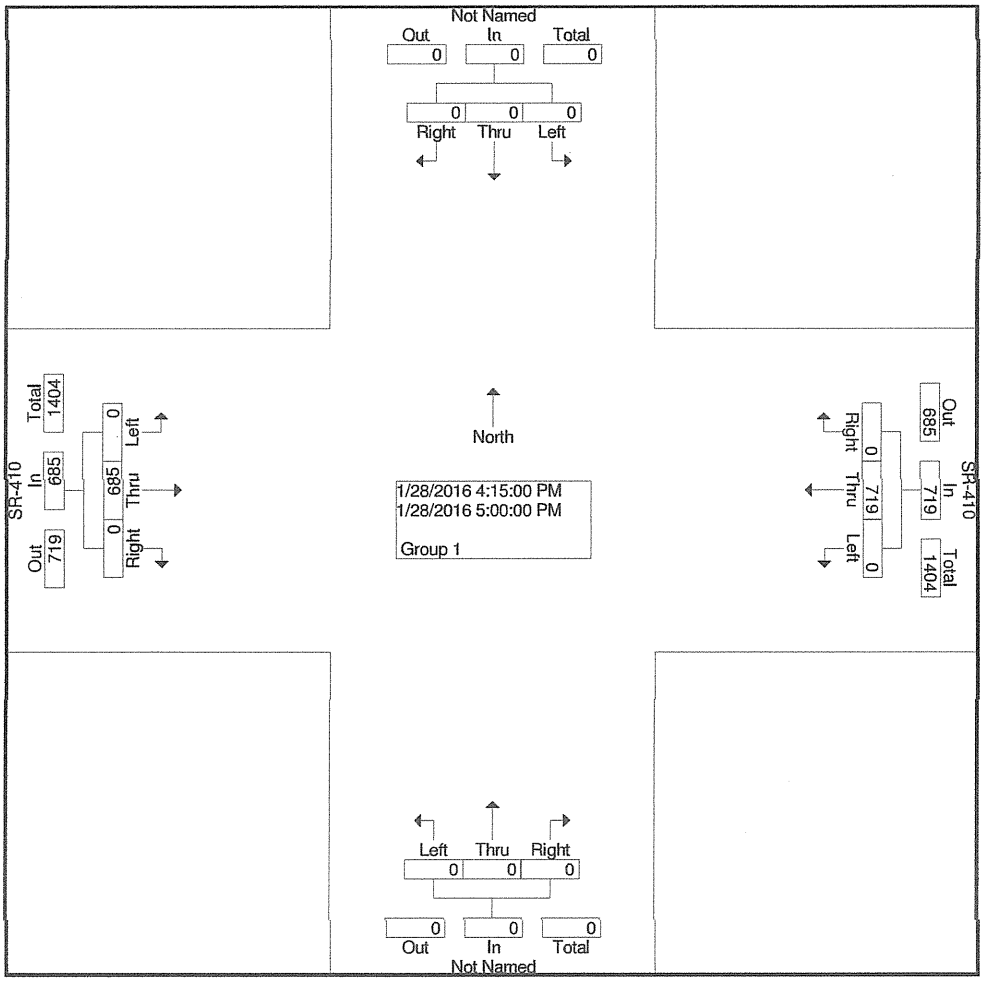
2214 Tacoma Road
Puyallup, WA 98371

File Name : 3729a
Site Code : 00003729
Start Date : 1/28/2016
Page No : 2

	Southbound				SR-410 Westbound				Northbound				SR-410 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Intersection 04:15 PM																	
Volume	0	0	0	0	0	719	0	719	0	0	0	0	0	685	0	685	1404
Percent	0.0	0.0	0.0		0.0	100.0	0.0		0.0	0.0	0.0		0.0	100.0	0.0		
04:30 Volume	0	0	0	0	0	175	0	175	0	0	0	0	0	191	0	191	366
Peak Factor																	0.959
High Int.	3:45:00 PM				05:00 PM				3:45:00 PM				04:30 PM				
Volume	0	0	0	0	0	190	0	190	0	0	0	0	0	191	0	191	
Peak Factor								0.946								0.897	



STATE OF WASHINGTON - DEPARTMENT OF TRANSPORTATION
T R I P S S Y S T E M
ANNUAL TRAFFIC REPORT

STATE ROUTE	STATE ROUTE MILEPOST	LOCATION	COUPLET	FUNCT CLASS	TRUCK PERCENTAGES SNGL	DBL	TRIPLE	TOTAL	AVERAGE DAILY TRAFFIC VOLUME 2011 UNITS	2012 UNITS	2013 UNITS	2014 UNITS
410	010.79	AFTER RAMP SR 162		1					49000	48000*	48000	50000*
410	011.46	AT 166TH AVE E BRIDGE		1					42000	39000*	40000	41000*
410	011.92	AFTER RAMP 166TH AVE E		1					49000	48000*	48000	50000*
410	013.37	BEFORE JCT 181ST/VETS MEMORIAL DR		1							48000*	49000
410	013.37	AFTER JCT 181ST/VETS MEMORIAL DR		1							39000*	39000*
410	014.63	BEFORE JCT S PRAIRIE RD E WYE CONN		1					41000	41000	43000*	41000*
410	014.66	AFTER JCT S PRAIRIE RD E WYE CONN		1					28000	28000	29000*	27000*
410	015.60	BEFORE JCT 214TH AVE E		1					26000	25000	26000*	25000*
410	015.60	AFTER JCT 214TH AVE E		1					21000	21000	21000*	20000*
410	016.05	AFTER JCT 221ST AVE E		1						19000*	20000	19000
410	016.87	AFTER 234TH AVE CT E		1						17000*	18000*	17000*
410	020.68	BEFORE JCT SR 165		1					17000	17000	17000*	17000*
410	020.73	AFTER JCT SR 165 WYE CONN		1					18000	18000	18000*	18000*
410	022.46	BEFORE JCT 244TH AVE SE		1					20000	20000	20000*	20000*
410	022.46	AFTER JCT 244TH AVE SE		1					14000	14000	15000*	14000*
410	024.14	AFTER JCT COLE ST		1					9000*	9000	9000	9200*
410	024.82	BEFORE JCT SR 164		2					9500*	9400	9500	9600
410	024.82	AFTER JCT SR 164		2					12000*	12000	12000	12000
410	025.64	BEFORE JCT FARMAN ST N*284TH AVE SE		2					8700*	8600	8700	8300
410	025.64	AFTER JCT FARMAN ST N*284TH AVE SE		2					4600*	4500	4600	4400*
410	027.91	AT WEYERHAEUSER RD		2					2400*	2400	2500	2200*
410	029.73	AFTER JCT MUD MTN RD		2					2200*	2100	2200	1800*
410	041.13	AFTER FEDERATION FOREST ST PK		2								1600*
410	047.41	AFTER JCT CHINOOK LN E		2					1900*	1900	1900	1600
410	057.49	BEFORE JCT CRYSTAL MOUNTAIN BLVD		2					1700*	1700	1700	1400
410	057.49	AFTER JCT CRYSTAL MOUNTAIN BLVD		2					1400*	1400	1400	1100
410	065.68	BEFORE JCT SR 123 WYE CONN		3					1200	1200	1200	670*
410	065.75	AFTER JCT SR 123		3					780	770	810	500*

No Growth

* BASED ON ACTUAL COUNT
+ SOURCE OF TRUCK PERCENTAGES

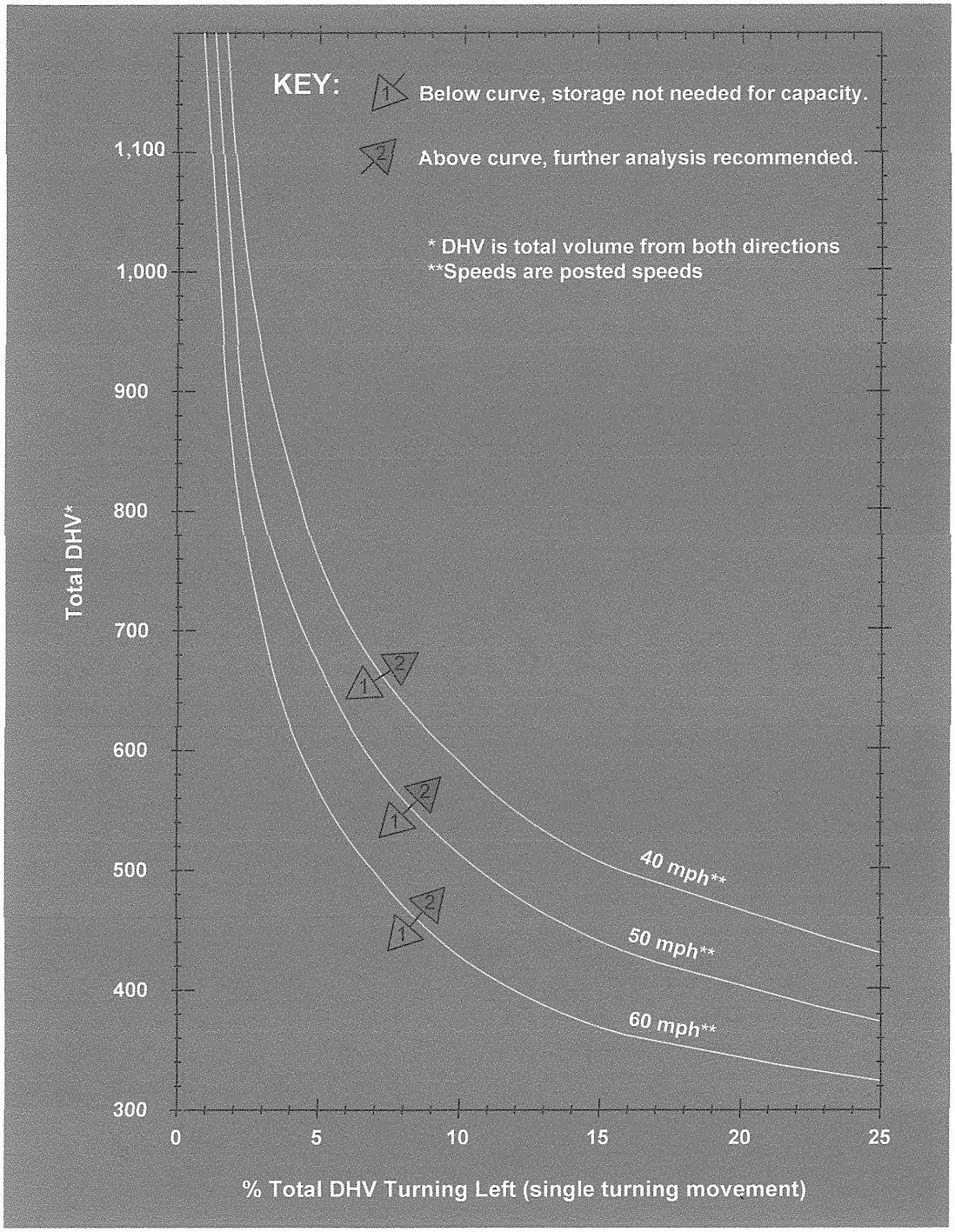
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Traffic Vol, veh/h	2	673	529	2	0	1
Future Vol, veh/h	2	673	529	2	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	88	88	81	81	85	85
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	2	765	653	2	0	1

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	656	0	-	0	1423	654
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	769	-
Critical Hdwy	4.1	-	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	-	3.5	3.3
Pot Cap-1 Maneuver	941	-	-	-	151	470
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	461	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	941	-	-	-	150	470
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	459	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	941	-	-	-	470
HCM Lane V/C Ratio	0.002	-	-	-	0.003
HCM Control Delay (s)	8.8	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0



SR-410 & Project Entrance
2021 PM Peak Hour Volumes With Project
Total DHV: 1206 vph
Left Turn %: 4/1206 = 0.3%
LEFT TURN LANE NOT WARRANTED

Left-Turn Storage Guidelines: Two-Lane, Unsignalized
Exhibit 1310-7a