

NEW DOC



LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Ave., Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lscetrans.com
Website: http://www.lscetrans.com

Forest Lakes Filing 2
Traffic Impact Analysis
(LSC #154730)

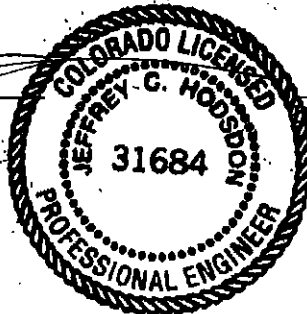
RECEIVED
APR 05 2016
BY: 1145

December 9, 2015

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

Jeffrey C. Hodsdon, P.E. #31684



Date

12/10/15

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

Jim Boulton
Mr. Jim Boulton
Classic Homes
6385 Corporate Drive
Colorado Springs, CO 80919

Date

12-10-15



LSC TRANSPORTATION CONSULTANTS, INC.
545 East Pikes Peak Avenue, Suite 210
Colorado Springs, CO 80903
(719) 633-2868
FAX (719) 633-5430
E-mail: lsc@lsctrans.com
Website: <http://www.lsctrans.com>

December 10, 2015

Mr. Jim Boulton
Classic Homes
6385 Corporate Drive
Colorado Springs, CO 80919

RE: Forest Lakes Filing 2
Traffic Impact Analysis
LSC #154730

Dear Mr. Boulton:

In response to your request, LSC Transportation Consultants, Inc. has prepared this traffic impact analysis for the Forest Lakes Filing 2 residential development in El Paso County, Colorado. As shown in Figure 1, the site is located northwest of the intersection of Hay Creek Road and Baptist Road. LSC completed a master-plan-level study for all of Forest Lakes dated August 13, 2001. LSC also prepared three letters in response to comments on the initial master plan study dated January 8, 2002, March 15, 2002, and August 5, 2002. Since the completion of the master plan study 33 lots for single-family homes have been platted as Filing 1 and 79 lots for single-family homes have been platted as Filing 3. The currently proposed Filing 2 is proposed to have 160 lots for single-family homes. At buildout Forest Lakes is planned to contain 467 single-family homes and an elementary school. This is three fewer single-family homes than was assumed in the 2001 master plan study. Access to the site will be to Forest Lakes Drive.

REPORT CONTENTS

This report is being prepared as part of a submittal to El Paso County. It identifies the traffic impacts of Forest Lakes Filing 2. The report contains the following:

- Short-term and 2040 baseline/background traffic volume estimates.
- The projected average weekday and peak-hour vehicle-trips to be generated by the site .
- The assignment of the site's projected traffic volumes to the adjacent streets and access point intersections for the short and long term and the resulting total traffic volumes for the short and long term.
- The resulting traffic impacts including level of service analysis at the access point intersections and average daily traffic volumes on Forest Lakes Drive and the internal streets.
- The recommended street classifications for the internal streets within the proposed development.
- The obligations of the project to the Countywide Fee Program and the Baptist Road Rural Transportation Authority.

LAND USE AND ACCESS

Figure 2 shows the overall Forest Lakes master plan. Filing 1 (33 lots for single-family homes) and Filing 3 (79 lots for single-family homes) have been platted but none of the homes have been constructed. The currently proposed Filing 2 is proposed to have 160 lots for single-family homes. The previous master plan study assumed 163 lots would be constructed in this area.

At buildout Forest Lakes is planned to contain 467 single-family homes and an elementary school. This is one more single family home than was assumed in the 2001 master plan study.

Figure 3 shows the detailed site plan for the currently proposed Filing 2. Access to Filing 2 is proposed at three full-movement access points to Forest Lakes Drive. Figure 3 shows the proposed spacing of the access points. The proposed access spacing meets intersection criteria contained in the *El Paso County Engineering Criteria Manual (ECM)* for an Urban Collector. The only exception is the spacing between the Forest Lakes Filing 2 middle access (Cattail Drive) and the planned Willow Springs South parcel north access. The intersection offset will be about 100 feet.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The area major roadways in the site's vicinity are shown on Figures 1 and 3 and are described below.

- **Baptist Road** is a paved two- to four-lane Principal Arterial extending east from Forest Lakes Drive to Roller Coaster Road where it continues east as Hogden Road. Baptist Road provides access to I-25. An overpass is currently under construction at the railroad (RR) crossing located between Forest Lakes Drive and Old Denver Road.
- **Forest Lakes Drive** is a 40-foot-wide two-lane Urban Collector and is designed to serve the Forest Lakes development and Willow Springs development on the east side of the road just north of Baptist Road. Forest Lakes Drive has currently been constructed from Baptist Road to Lindbergh Road but is not yet open to traffic due the railroad overpass construction on Baptist Road.

SHORT-TERM BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent streets without consideration of the proposed Filing 2 development. Background traffic includes the through traffic and the traffic generated by adjacent developments, but assumes zero traffic generated by the site. The short-term background traffic volume estimates are based on LSC's previous traffic studies in the area, including the Forest Lakes master plan traffic impact study and subsequent letters in response to comments. The short-term background volumes also used estimates of traffic projected to use the Lindbergh connection. These estimates were completed as part of the Willow Springs report.

Figure 4 shows the projected background traffic volumes for the short term (2018). These background traffic volumes assume the completion of the railroad overpass currently under construction on Baptist Road just east of the project, the connection of Lindbergh Road to Forest Lakes Drive, and buildout of Forest Lakes Filings 1 and 3.

2040 BACKGROUND TRAFFIC

Figure 5 shows the projected 20-year background traffic volumes for the year 2040. The 2040 background/baseline traffic assumes buildout of the Forest Lakes master plan and the Whispering Springs master plan located just east of the site. The 2040 background volumes assume no Mitchell Road connection/extension south to Forest Lakes Drive.

TRIP GENERATION

The site-generated vehicle-trips were estimated using the nationally published trip generation rates from *Trip Generation, 9th Edition, 2012* by the Institute of Transportation Engineers (ITE). Table 1 shows the trip generation estimates for Forest Lakes Filing 2. Table 1 also shows the trip generation for the existing platted Filings 1 and 3 and buildout of the Forest Lakes master plan.

Once the proposed elementary school is constructed within the Forest Lakes master plan a portion of the trips were assumed to occur between the residential uses and the elementary school. As shown on Table 1 about one-half of the daily school trips were assumed to be internal to the Forest Lakes master plan area.

Forest Lakes Filing 2 is expected to generate about 1,523 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour, which generally occurs for one hour between 6:30 and 8:30 a.m., about 30 vehicles would enter and 90 vehicles would exit the site. During the afternoon peak hour, which generally occurs for one hour between 4:15 and 6:15 p.m., about 101 vehicles would enter and 59 vehicles would exit the site.

DIRECTIONAL DISTRIBUTION

The directional distribution of the site-generated traffic volumes on the area roadways is an important factor in determining the site's traffic impacts. Figure 6 shows the external directional distribution estimates for the site-generated traffic volumes. The estimates are based on the following factors: the location of the site with respect to regional employment, commercial, and activity centers; the location of the site with respect to the Town of Monument, the Tri-Lakes region, and the balance of the City of Colorado Springs metropolitan area; the land use proposed for the site; the proposed access system for the site; and the roadway system serving the site.

SITE-GENERATED TRAFFIC

Figures 7 and 8 show the projected short-term and long-term site-generated traffic volumes, respectively. The site-generated traffic volumes were calculated by applying the directional distribution percentages (from Figure 6) to the trip generation estimates from Table 1. The short-term site-generated traffic volumes assume all traffic is external to the Forest Lakes development. The long-

term estimate assumes construction of the future elementary school to be located within Forest Lakes. As shown on Table 1, about seven percent of the daily trips to and from Filing 2 were assumed to travel to the elementary school in the long term. These internal trips have been assigned separately based on the location of the elementary school site.

SHORT-TERM TOTAL TRAFFIC

Figure 9 shows the projected short-term total traffic volumes. The short-term total traffic volumes are the sum of the short-term background traffic volumes (from Figure 4) plus the short-term site-generated traffic volumes from Figure 7.

2040 TOTAL TRAFFIC

Figure 10 shows the projected total traffic volumes for the year 2040. The 2040 total traffic volumes are the sum of the long-term background traffic volumes (from Figure 5a) plus the long-term site-generated traffic volumes from Figure 8.

PROJECTED LEVELS OF SERVICE

Level of service (LOS) is a quantitative measure of the level of delay at an intersection. Level of service is indicated on a scale from "A" to "F." LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 2 shows the level of service delay ranges.

Table 2 Intersection Levels of Service Delay Ranges		
Level of Service	Signalized Intersections	Unsignalized Intersections
	Control Delay (seconds per vehicle)	
A	10 sec or less	10 sec or less
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	80 sec or more	50 sec or more

The site access points to Forest Lakes have been analyzed to determine the projected future levels of service for the short-term total and 2035 total traffic volumes based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 2010 Edition* by the Transportation Research Board. Figures 4, 5, 9, and 10 show the level of service analysis results. The laneage and

traffic control assumed in the analysis is depicted on the figures. The level of service reports are attached.

All movements at the two-way stop-sign-controlled site access points to Forest Lakes Drives are projected to operate at a level of service B during the morning peak hour and LOS A during the afternoon peak hour based on the projected short-term and 2040 total traffic volumes. The opposite side-street approach from Willow Springs would operate at LOS C or better.

QUEUING ANALYSIS

A queuing analysis was performed using Synchro/SimTraffic to estimate future vehicle queues for the westbound left turn on Forest Lakes Drive approaching Long Valley Drive (north Forest Lakes Filing 2 access). A queuing analysis was performed based on the 2040 afternoon peak hour. The simulation was run five times. The queuing reports are attached.

The queuing analysis results show that the projected maximum queue length on westbound Forest Lakes Drive approaching Long Valley Drive is 49 feet. This queue can be accommodated by the existing 100-foot left-turn lane.

CONCLUSIONS AND RECOMMENDATIONS

Trip Generation

- Forest Lakes Filing 2 is expected to generate about 1,523 vehicle-trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour about 30 vehicles would enter and 90 vehicles would exit the site. During the afternoon peak hour about 101 vehicles would enter and 59 vehicles would exit the site.

Level of Service

The level of service section of this report presents the level of service analysis.

- All three full-movement site access points to Forest Lakes Drive are projected to operate at a level of service B during the morning peak hour and LOS A during the afternoon peak hour as two-way stop-sign-controlled intersections through 2040. The opposite side-street approach from Willow Springs would operate at LOS C or better.

Auxiliary Turn Lane Recommendations

- Based on the projected 2040 total traffic volumes and the criteria contained in the *El Paso County Engineering Criteria Manual* (ECM), a westbound left-turn lane would be required on Forest Lakes Drive approaching Long Valley Drive (north Filing 2 site access). The existing 100-foot westbound left-turn lane could accommodate the projected long-term queues for this movement.
- Based on the projected 2040 total traffic volumes and the criteria contained in the *El Paso County Engineering Criteria Manual* (ECM), a northbound left-turn lane would be required on

Forest Lakes Drive approaching the south site access (Pinon Ranch Drive) but not the middle site access (Cattail Drive). However, based on the existing width, Forest Lakes Drive could be striped with a center two-way left-turn lane to provide left-turn lanes at the south and middle access points.

- Based on the projected 2040 total traffic volumes, right-turn deceleration lanes would not be required on Forest Lakes Drive approaching any of the three proposed site access points.

Street Classifications

- Based on the projected buildout traffic volumes for Forest Lakes Filing 2 all the internal streets should be classifications as Urban Local.

Impact Fees

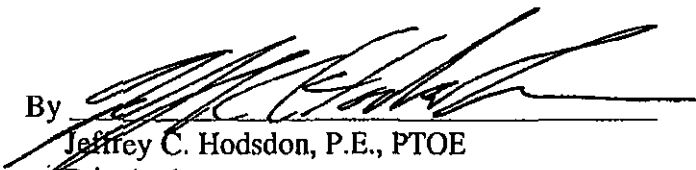
- This project has agreements in place with regard to the obligations to the Countywide Road Improvement Fee Program and the Baptist Road Rural Transportation Authority. Impact fees are also due for participation for the railroad overpass.

* * * * *

We trust this traffic impact analysis will assist you in gaining approval of the proposed Forest Lakes Filing 2. Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By 
Jeffrey C. Hodsdon, P.E., PTOE
Principal

JCH:KDF:bjwb:br

Enclosures: Table 1
Figures 1-10
Level of Service Reports
Queuing Reports

Table 1
Trip Generation Estimate
Forest Lakes Filling 2

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates ⁽¹⁾						Total Trips Generated						Total "External" Trips Generated (Following Opening of Elementary School)					
			Average Weekday Traffic	Morning Peak Hour In	Afternoon Peak Hour In	Afternoon Peak Hour Out	Average Weekday Traffic	Morning Peak Hour In	Afternoon Peak Hour In	Afternoon Peak Hour Out	Daily Internal Trips	Average Weekday Traffic	Morning Peak Hour In	Afternoon Peak Hour In	Afternoon Peak Hour Out					
Trip Generation Estimate Based on Existing, Currently Proposed and Planned Future Filings																				
Currently Proposed Filling 2																				
210	Single-Family Detached Housing	160 DU ⁽²⁾	9.52	0.19	0.56	0.63	0.37	1,523	30	90	101	59	7%	1,412	21	69	94	56		
Filings 1 and 3 (Under Construction)																				
210	Single-Family Detached Housing	112 DU	9.52	0.19	0.56	0.63	0.37	1,066	21	63	71	41	7%	989	15	48	65	39		
		Total Filings 1, 2 & 3						2,589	51	153	172	100		2,401	36	117	160	95		
Future Filings																				
210	Single-Family Detached Housing	195 DU	9.52	0.19	0.56	0.63	0.37	1,856	37	110	123	72	7%	1,721	27	84	115	68		
		Total at Buildout of Residential Portion						4,445	88	263	295	172		4,122	63	201	275	163		
Future School Site																				
520	Elementary School	500 Student	1.29	0.25	0.20	0.07	0.08	645	124	101	37	38	50%	322	62	76	28	19		
		Total at Full Buildout						5,090	212	364	332	210		4,444	125	277	303	182		
Trip Generation Estimate from 2001 Master Plan Study ⁽³⁾																				
		Current Filling 2 Area																		
210	Single-Family Detached Housing	163 DU	9.57	0.19	0.56	0.65	0.36	1,560	31	92	106	59	---	---	---	---	---	---	---	
		Change (Decrease) From 2001 Master Plan Study						-37	-1	-2	-5	0		---	---	---	---	---	---	

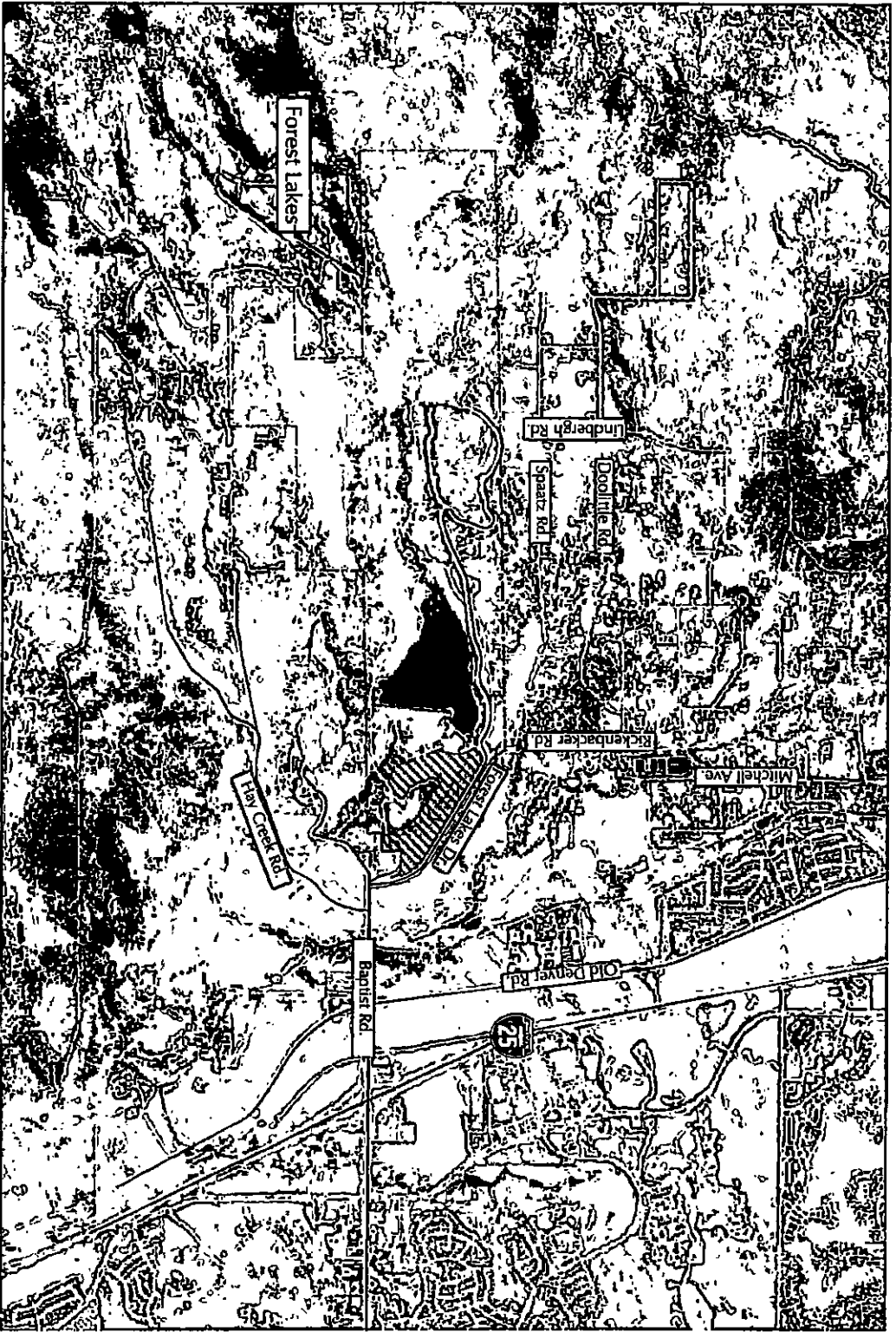
Notes:

(1) Source: "Trip Generation, 9th Edition, 2012" by the Institute of Transportation Engineers (ITE)

(2) DU = dwelling unit

(3) Source: "Forest Lakes Traffic Impact and Access Analysis" by LSC August 13, 2001

Source: LSC Transportation Consultants, Inc.

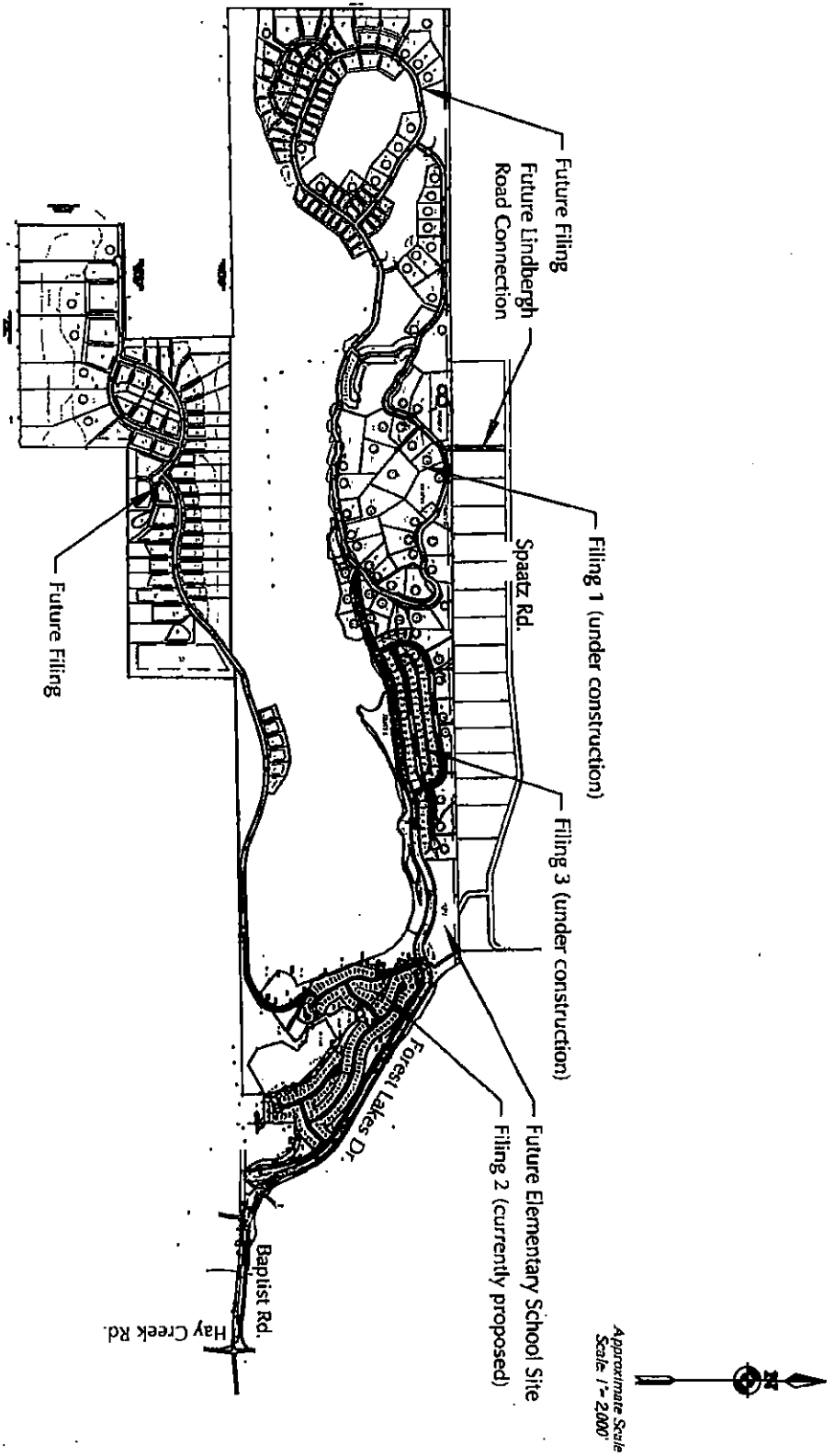


Approximate Scale
Scale 1" = 3,000'

**Vicinity
Map**

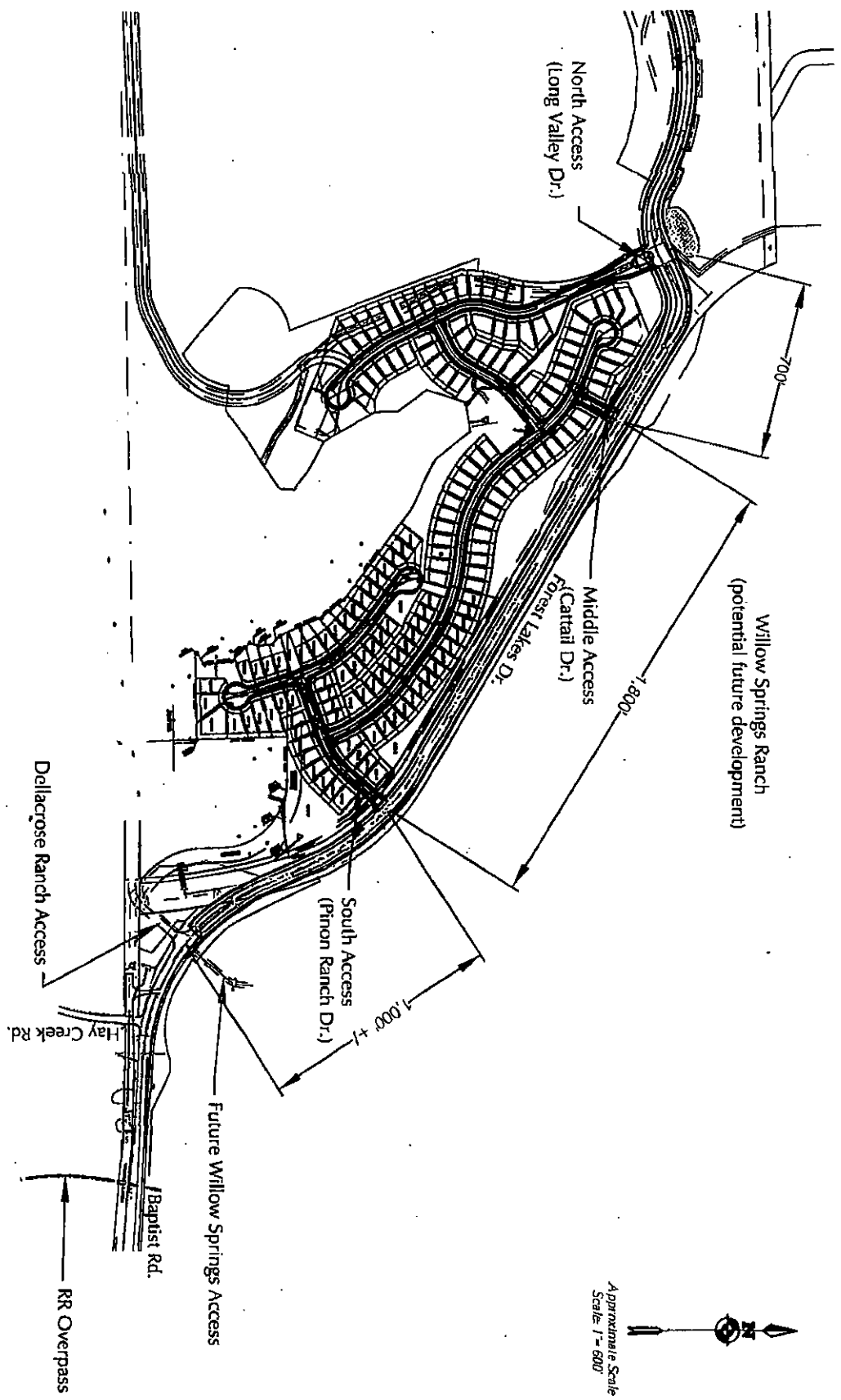
Figure 1

Forest Lakes Filing No. 12 (LSC #154730)



**Overall Forest
 Lakes P.U.D. Plan**
 Forest Lakes Filing No. 12 (LSC #154730)

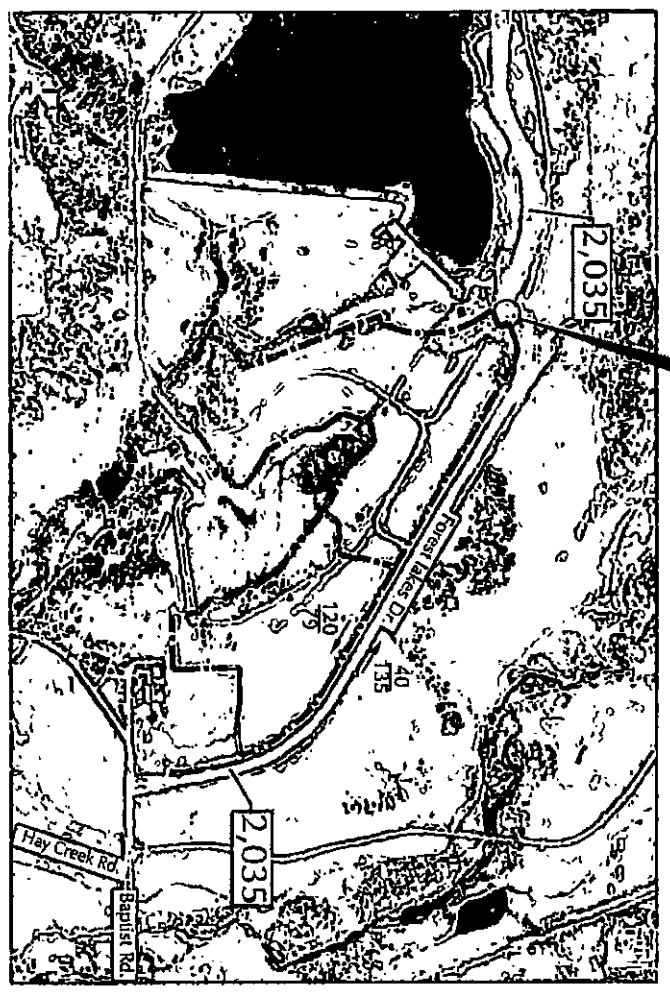
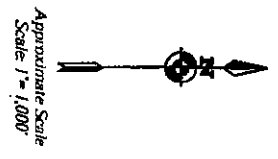
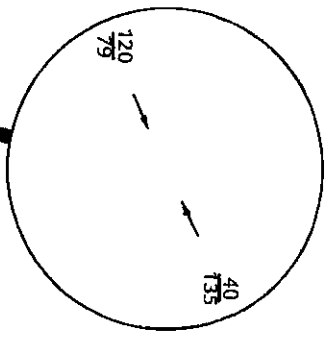
Figure 2



North

A approximate Scale
Scale: 1" = 600'

Figure 3
Filing 2
Site Plan
 Forest Lakes Filing No. 12 (LSC #154730)



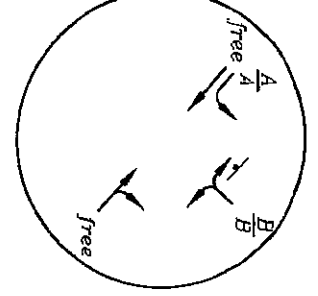
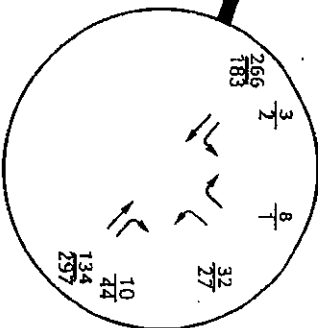
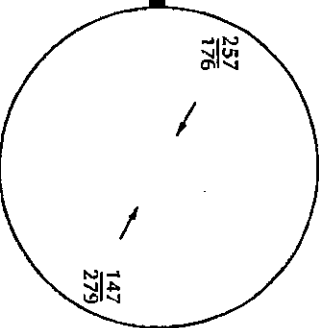
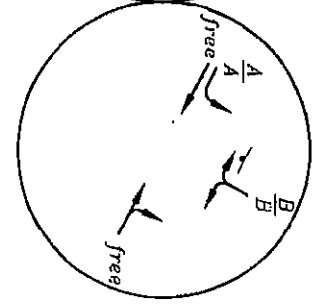
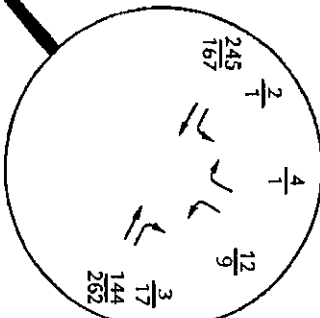
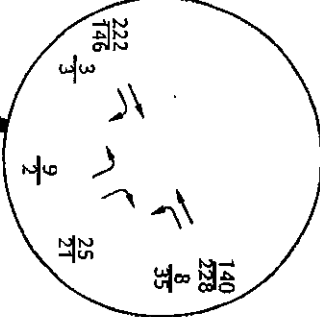
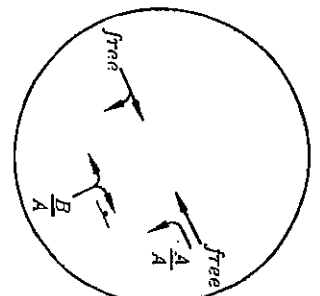
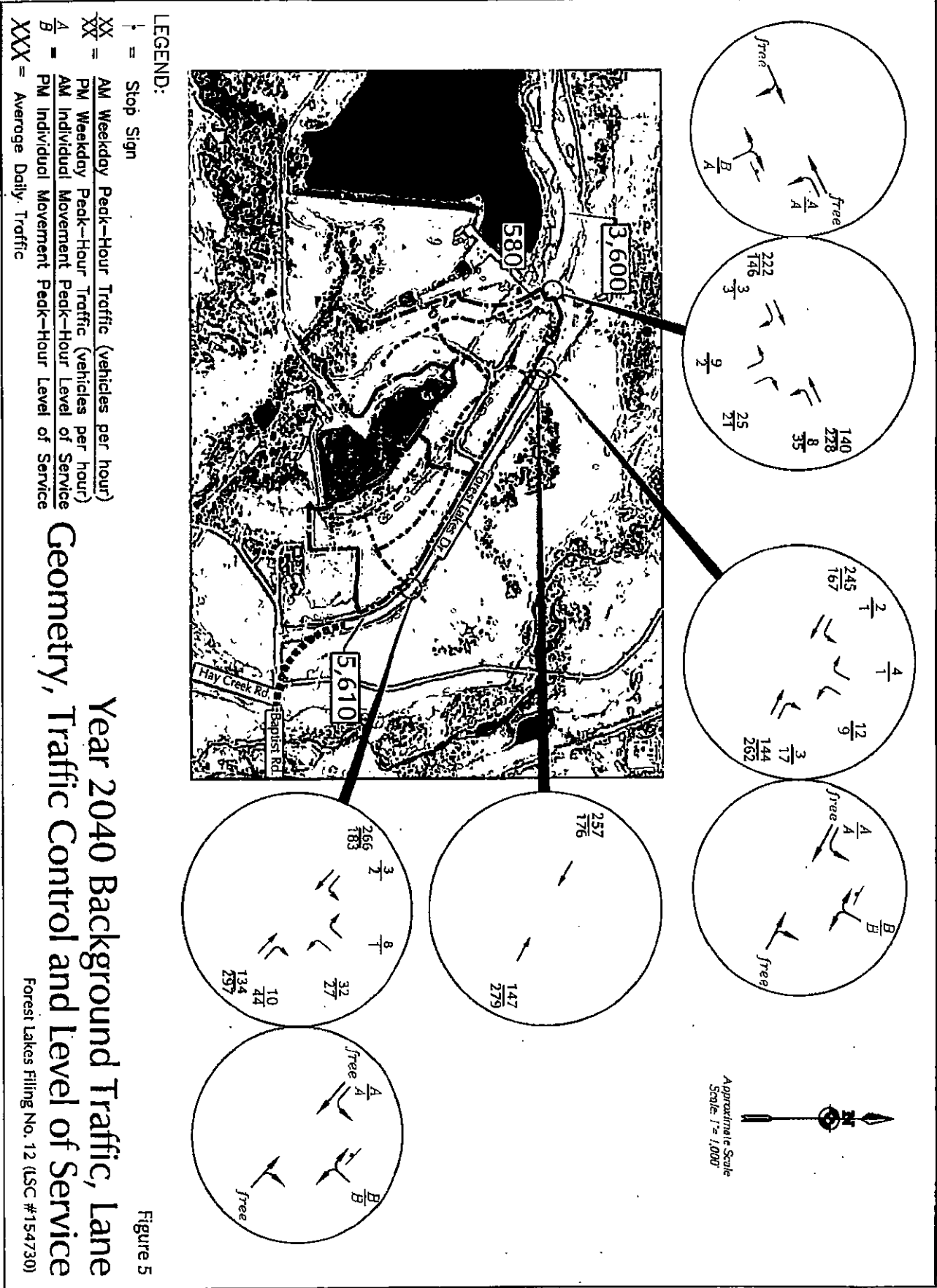
LEGEND:

- + = Stop Sign
- XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
- XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
- A = AM Individual Movement Peak-Hour Level of Service
- B = PM Individual Movement Peak-Hour Level of Service
- XXX = Average Daily Traffic

**Short-Term Background Traffic, Lane
Geometry, Traffic Control and Level of Service**

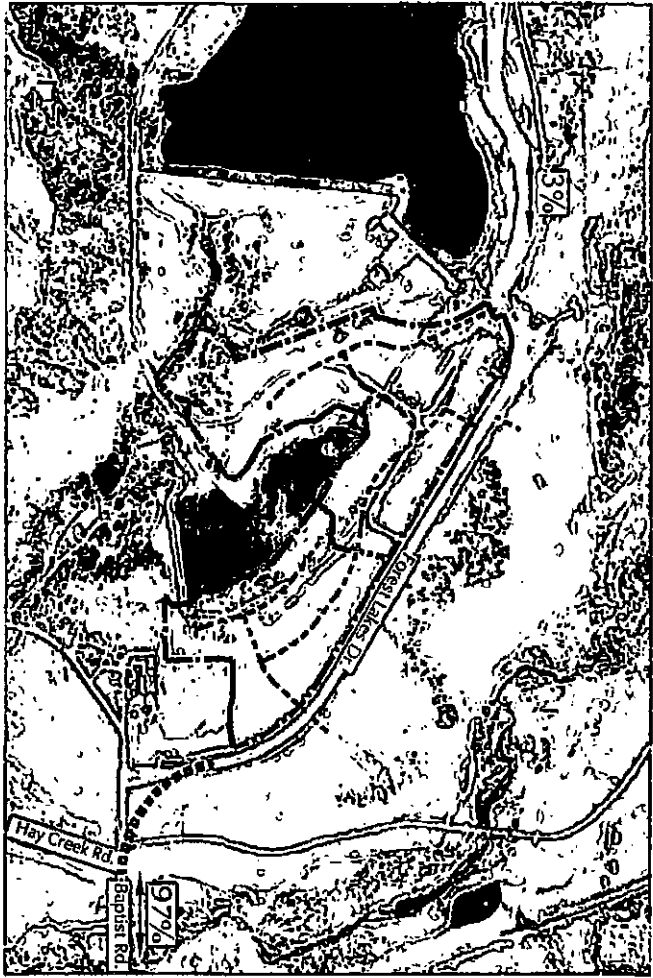
Figure 4

Forest Lakes Filing No. 12 (LSC #154730)





Approximate Scale
Scale 1" = 1,000'

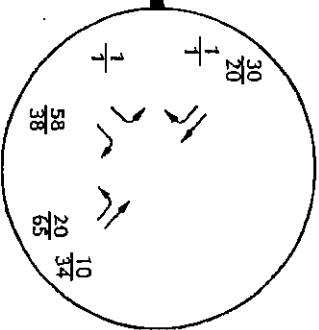
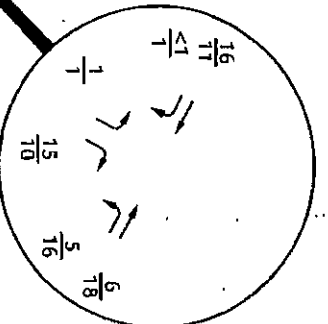
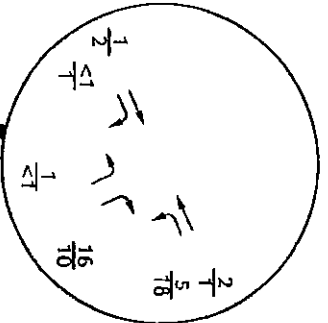
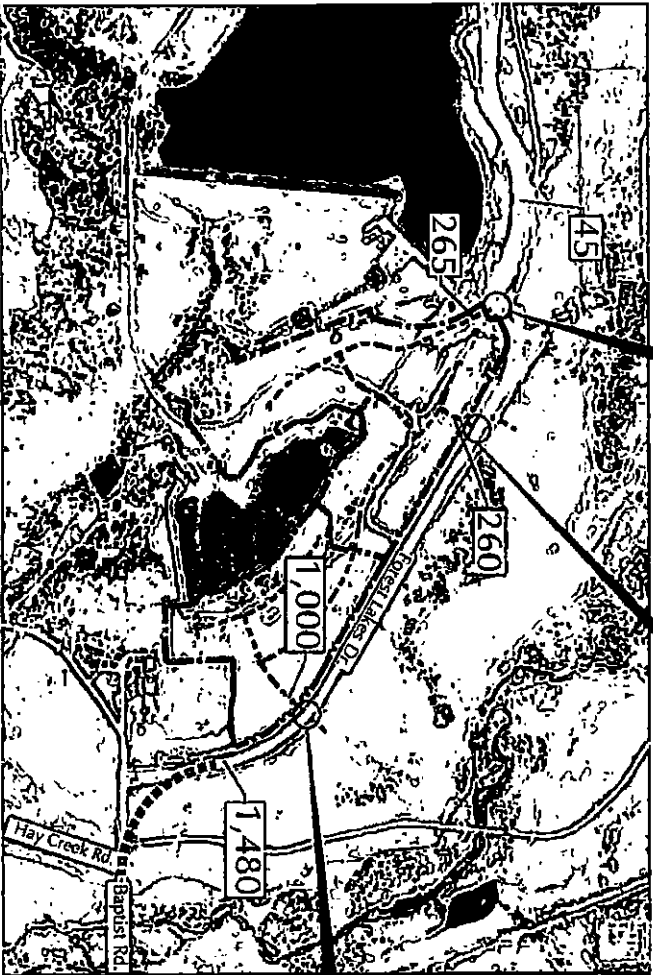


LEGEND:
35% ← = Percent Directional Distribution

**Directional Distribution
of Site-Generated Traffic**
Forest Lakes Filing No. 12 (LSC #154730)

Figure 6

LEGEND:
 XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
 XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
 XXX = Average Daily Traffic



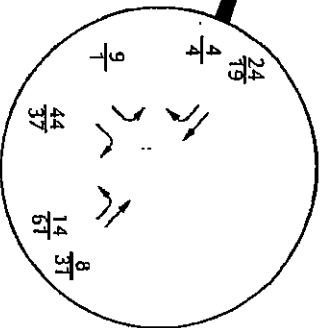
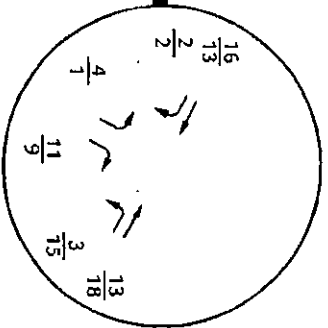
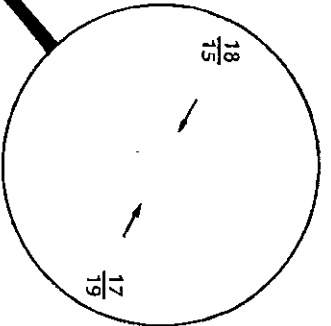
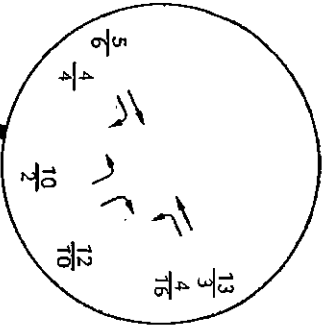
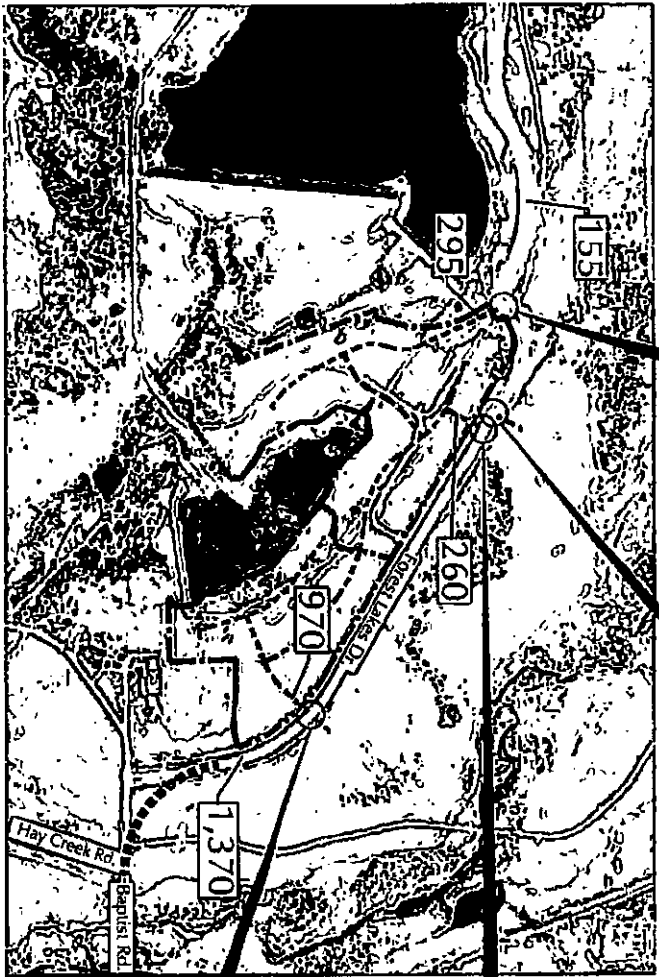
Approximate Scale
 Scale 1" = 1,000'

Short-Term Assignment of Site-Generated Traffic

Forest Lakes Filing No. 12 (LSC #154730)

Figure 7

LEGEND:
 XX = AM Weekday Peak-Hour Traffic (vehicles per hour)
 XX = PM Weekday Peak-Hour Traffic (vehicles per hour)
 XXX = Average Daily Traffic

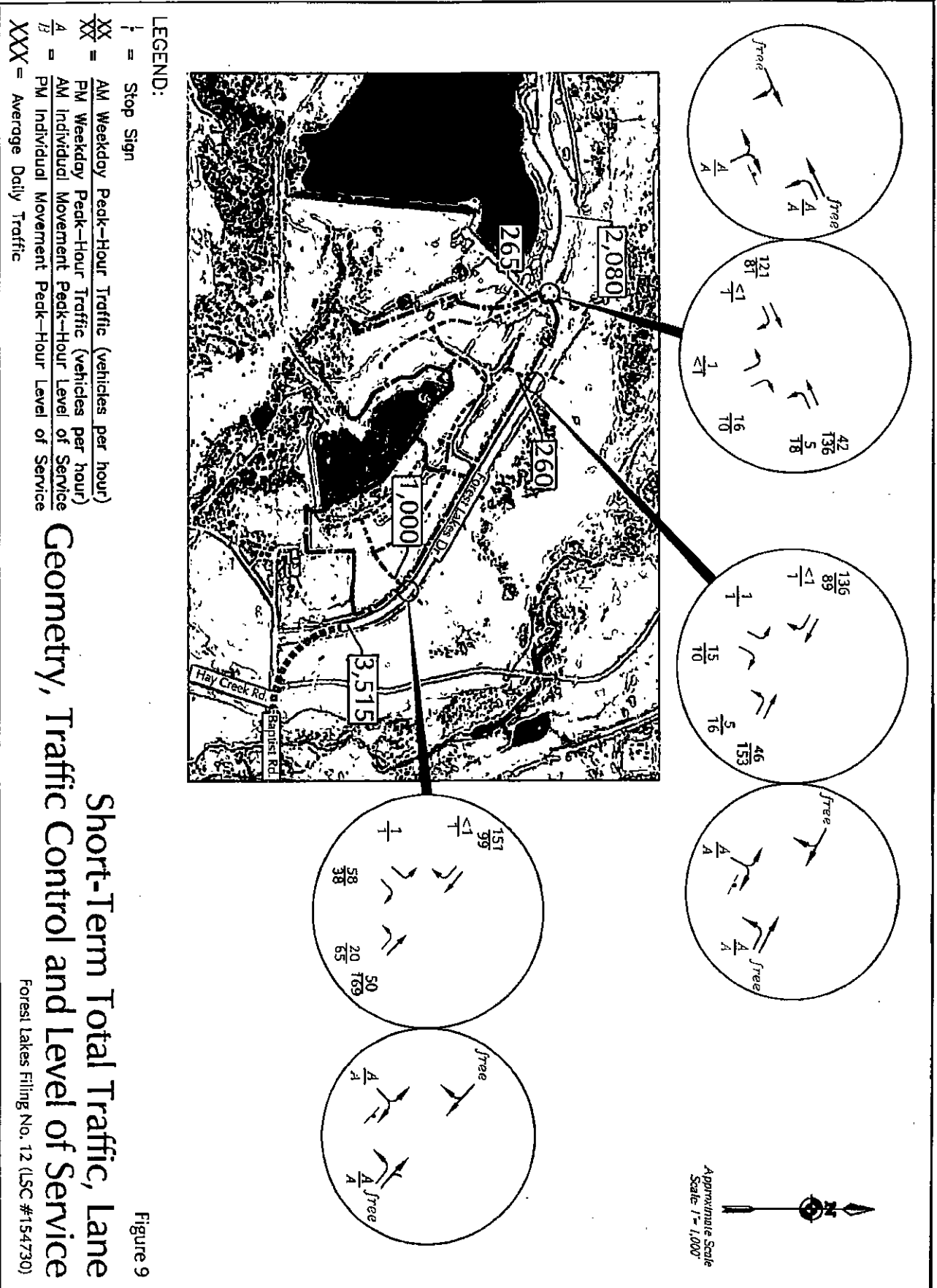


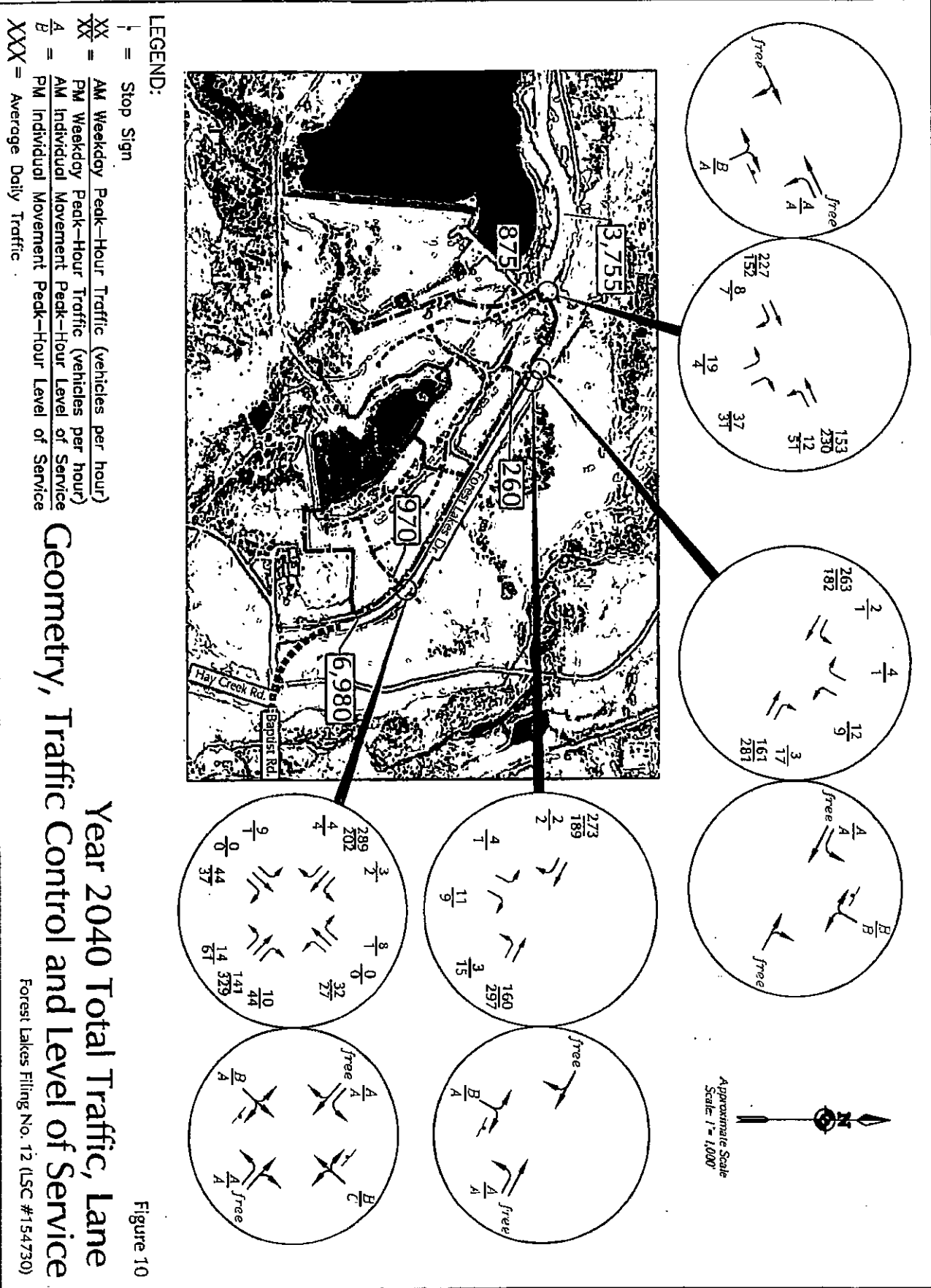
Approximate Scale
 Scale: 1" = 1,000'

Year 2040 Assignment of Site-Generated Traffic

Forest Lakes Filing No. 12 (LSC #154730)

Figure 8





HCM 2010 TWSC
 2: South Forest Lakes Fil 2 Access & Forest Lakes Dr

Short-Term Total Traffic
 AM Peak Hour

Intersection	
Int Delay, s/veh	2.5

Movement	SET	SER	NWL	NWT	NEL	NER
Vol, veh/h	151	1	20	50	1	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	164	1	22	54	1	63

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	165
Stage 1	-	-	165
Stage 2	-	-	98
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1413	726
Stage 1	-	-	864
Stage 2	-	-	926
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1413	715
Mov Cap-2 Maneuver	-	-	730
Stage 1	-	-	864
Stage 2	-	-	912

Approach	SE	NW	NE
HCM Control Delay, s	0	2.2	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	876	1413	-	-	-
HCM Lane V/C Ratio	0.073	0.015	-	-	-
HCM Control Delay (s)	9.4	7.6	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %ile Q(veh)	0.2	0	-	-	-

HCM 2010 TWSC
 3: North Forest Lakes Fil 2 Access & Forest Lakes Dr

Short-Term Total Traffic
 AM Peak Hour

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	136	0	5	46	1	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	148	0	5	50	1	16

Major/Minor	Major1	Major2	Minor1			
Conflicting Flow All	0	0	148	0	209	148
Stage 1	-	-	-	-	148	-
Stage 2	-	-	-	-	61	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1434	-	779	899
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	962	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1434	-	776	899
Mov Cap-2 Maneuver	-	-	-	-	776	-
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	959	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	890	-	-	1434	-
HCM Lane V/C Ratio	0.02	-	-	0.004	-
HCM Control Delay (s)	9.1	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
4: Long Valley & Forest Lakes Dr

Short-Term Total Traffic
AM Peak Hour

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	121	0	5	42	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	0	5	46	1	17

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	132
Stage 1	-	-	132
Stage 2	-	-	57
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1453	800
Stage 1	-	-	894
Stage 2	-	-	966
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1453	797
Mov Cap-2 Maneuver	-	-	797
Stage 1	-	-	894
Stage 2	-	-	963

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	909	-	-	1453	-
HCM Lane V/C Ratio	0.02	-	-	0.004	-
HCM Control Delay (s)	9	-	-	7.5	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
2: South Forest Lakes Fil 2 Access & Forest Lakes Dr

Short-Term Total Traffic
PM Peak Hour

Intersection

Int Delay, s/veh 2.3

Movement	SET	SER	NWL	NWT	NEL	NER
Vol, veh/h	99	1	65	169	1	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	1	71	184	1	41

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	109	433
Stage 1	-	-	108
Stage 2	-	-	325
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1481	580
Stage 1	-	-	916
Stage 2	-	-	732
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1481	552
Mov Cap-2 Maneuver	-	-	599
Stage 1	-	-	916
Stage 2	-	-	697

Approach	SE	NW	NE
HCM Control Delay, s	0	2.1	9
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NELn1	NWL	NWT	SET	SER
Capacity (veh/h)	932	1481	-	-	-
HCM Lane V/C Ratio	0.045	0.048	-	-	-
HCM Control Delay (s)	9	7.6	-	-	-
HCM Lane LOS	A	A	-	-	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	-

HCM 2010 TWSC
 3: North Forest Lakes Fil 2 Access & Forest Lakes Dr

Short-Term Total Traffic
 PM Peak Hour

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	89	1	16	153	1	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	97	1	17	166	1	11

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	98	298
Stage 1	-	-	97
Stage 2	-	-	201
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2,218	3,518
Pot Cap-1 Maneuver	-	1495	693
Stage 1	-	-	927
Stage 2	-	-	833
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1495	685
Mov Cap-2 Maneuver	-	-	685
Stage 1	-	-	927
Stage 2	-	-	824

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	8.9
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	925	-	-	1495	-
HCM Lane V/C Ratio	0.013	-	-	0.012	-
HCM Control Delay (s)	8.9	-	-	7.4	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

HCM 2010 TWSC
4: Long Valley & Forest Lakes Dr

Short-Term Total Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	81	1	18	136	0	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	1	20	148	0	11
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	0	276	89
Stage 1	-	-	-	-	89	-
Stage 2	-	-	-	-	187	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1506	-	714	969
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	845	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1506	-	705	969
Mov Cap-2 Maneuver	-	-	-	-	705	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	834	-
Approach	EB		WB		NB	
HCM Control Delay, s	0		0.9		8.8	
HCM LOS					A	
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	
Capacity (veh/h)	969	-	-	1506	-	
HCM Lane V/C Ratio	0.011	-	-	0.013	-	
HCM Control Delay (s)	8.8	-	-	7.4	-	
HCM Lane LOS	A	-	-	A	-	
HCM 95th %tile Q(veh)	0	-	-	0	-	

HCM 2010 TWSC
 2: Forest Lakes Dr & South Willow Springs Access

2040 Background Traffic
 AM Peak Hour

Intersection	
Int Delay, s/veh	1.1

Movement	SEL	SET	NWT	NWR	SWL	SWR
Vol, veh/h	3	266	134	10	32	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	289	146	11	35	9

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	157	0	447
Stage 1	-	-	151
Stage 2	-	-	296
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2,218	-	3,518
Pot Cap-1 Maneuver	1423	-	569
Stage 1	-	-	877
Stage 2	-	-	755
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1423	-	568
Mov Cap-2 Maneuver	-	-	568
Stage 1	-	-	877
Stage 2	-	-	753

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1
Capacity (veh/h)	-	-	1423	613
HCM Lane V/C Ratio	-	-	0.002	0.071
HCM Control Delay (s)	-	-	7.5	11.3
HCM Lane LOS	-	-	A	B
HCM 95th %tile Q(veh)	-	-	0	0.2

HCM 2010 TWSC
 3: Forest Lakes Dr & North Willow Springs Access

2040 Background Traffic
 AM Peak Hour

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	245	144	3	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized		None		None		None
Storage Length	100				0	
Veh in Median Storage, #		0	0		0	
Grade, %		0	0		0	
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	266	157	3	13	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	160	0	429
Stage 1	-	-	158
Stage 2	-	-	271
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1419	-	583
Stage 1	-	-	871
Stage 2	-	-	775
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1419	-	582
Mov Cap-2 Maneuver	-	-	637
Stage 1	-	-	871
Stage 2	-	-	774

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1419	-	-	-	685
HCM Lane V/C Ratio	0.002	-	-	-	0.025
HCM Control Delay (s)	7.5	-	-	-	10.4
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	222	3	8	140	9	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	241	3	9	152	10	27

Major/Minor	Major1	Major2	Mhor1
Conflicting Flow All	0	0	245
Stage 1	-	-	243
Stage 2	-	-	170
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1321	595
Stage 1	-	-	797
Stage 2	-	-	860
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1321	591
Mov Cap-2 Maneuver	-	-	591
Stage 1	-	-	797
Stage 2	-	-	854

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.2
HCM LOS	-	-	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	729	-	-	1321	-
HCM Lane V/C Ratio	0.051	-	-	0.007	-
HCM Control Delay (s)	10.2	-	-	7.7	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

HCM 2010 TWSC
2: Forest Lakes Dr & South Willow Springs Access

2040 Background Traffic
PM Peak Hour

Intersection						
Int Delay, s/veh	0.7					
Movement	SEL	SET	NWT	NWR	SWL	SWR
Vol, veh/h	2	183	297	44	27	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	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	199	323	48	29	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	371	0	550
Stage 1	-	-	347
Stage 2	-	-	203
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1188	-	496
Stage 1	-	-	716
Stage 2	-	-	831
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1188	-	495
Mov Cap-2 Maneuver	-	-	495
Stage 1	-	-	716
Stage 2	-	-	830

Approach	SE	NW	SW
HCM Control Delay, s	0.1	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	NWT	NWR	SEL	SETSWLn1
Capacity (veh/h)	-	-	1188	500
HCM Lane V/C Ratio	-	-	0.002	0.061
HCM Control Delay (s)	-	-	8	12.7
HCM Lane LOS	-	-	A	B
HCM 95th %tile Q(veh)	-	-	0	0.2

HCM 2010 TWSC
 3: Forest Lakes Dr & North Willow Springs Access

2040 Background Traffic
 PM Peak Hour

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	167	262	17	9	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	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	182	285	18	10	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	303	0	478
Stage 1	-	-	294
Stage 2	-	-	184
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1258	-	546
Stage 1	-	-	756
Stage 2	-	-	848
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1258	-	546
Mov Cap-2 Maneuver	-	-	611
Stage 1	-	-	756
Stage 2	-	-	847

Approach	EB	WB	SB
HCM Control Delay, s	0	0	10.9
HCM LOS	-	-	B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1258	-	-	-	622
HCM Lane V/C Ratio	0.001	-	-	-	0.017
HCM Control Delay (s)	7.9	-	-	-	10.9
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection

Int Delay, s/veh 1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	146	3	35	228	2	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	3	38	248	2	23

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	162
Stage 1	-	-	160
Stage 2	-	-	324
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1417	542
Stage 1	-	-	869
Stage 2	-	-	733
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1417	527
Mov Cap-2 Maneuver	-	-	527
Stage 1	-	-	869
Stage 2	-	-	713

Approach	EB	WB	NB
HCM Control Delay, s	0	1	9.4
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	1417	-
HCM Lane V/C Ratio	0.03	-	-	0.027	-
HCM Control Delay (s)	9.4	-	-	7.6	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection												
Int Delay, s/veh	2.3											
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Vol, veh/h	3	289	4	14	141	10	9	0	44	32	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	314	4	15	153	11	10	0	48	35	0	9
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	164	0	0	318	0	0	516	518	316	536	514	159
Stage 1	-	-	-	-	-	-	323	323	-	189	189	-
Stage 2	-	-	-	-	-	-	193	195	-	347	325	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1414	-	-	1242	-	-	470	462	724	455	464	886
Stage 1	-	-	-	-	-	-	689	650	-	813	744	-
Stage 2	-	-	-	-	-	-	809	739	-	669	649	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1414	-	-	1242	-	-	460	455	724	420	457	886
Mov Cap-2 Maneuver	-	-	-	-	-	-	460	455	-	420	457	-
Stage 1	-	-	-	-	-	-	688	649	-	811	735	-
Stage 2	-	-	-	-	-	-	791	730	-	623	648	-
Approach	SE			NW			NE			SW		
HCM Control Delay, s	0.1			0.7			11			13.5		
HCM LOS	B			B			B			B		
Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1					
Capacity (veh/h)	660	1242	-	-	1414	-	469					
HCM Lane V/C Ratio	0.087	0.012	-	-	0.002	-	0.093					
HCM Control Delay (s)	11	7.9	-	-	7.6	-	13.5					
HCM Lane LOS	B	A	-	-	A	-	B					
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	0.3					

HCM 2010 TWSC
 3: North Forest Lakes Fil 2 Access & Forest Lakes Dr

2040 Total Traffic
 AM Peak Hour

Intersection	
--------------	--

Int Delay, s/veh	0.4
------------------	-----

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	273	2	3	160	4	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	297	2	3	174	4	12

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	299
Stage 1	-	-	298
Stage 2	-	-	180
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1262	546
Stage 1	-	-	753
Stage 2	-	-	851
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1262	545
Mov Cap-2 Maneuver	-	-	610
Stage 1	-	-	753
Stage 2	-	-	849

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	10.3
HCM LOS	-	-	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	701	-	-	1262	-
HCM Lane V/C Ratio	0.023	-	-	0.003	-
HCM Control Delay (s)	10.3	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

HCM 2010 TWSC
4: Long Valley & Forest Lakes Dr

2040 Total Traffic
AM Peak Hour

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	227	8	12	153	19	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	247	9	13	166	21	40

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	255
Stage 1	-	-	251
Stage 2	-	-	192
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1310	572
Stage 1	-	-	791
Stage 2	-	-	841
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1310	566
Mov Cap-2 Maneuver	-	-	566
Stage 1	-	-	791
Stage 2	-	-	833

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	695	-	-	1310	-
HCM Lane V/C Ratio	0.088	-	-	0.01	-
HCM Control Delay (s)	10.7	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.3	-	-	0	-

HCM 2010 TWSC
 10: Forest Lakes Dr & Willow Springs North

2040 Total Traffic
 AM Peak Hour

Intersection	
---------------------	--

Int Delay, s/veh	0.4
------------------	-----

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	2	263	161	3	12	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	266	175	3	13	4

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	178	0	467
Stage 1	-	-	177
Stage 2	-	-	290
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2.218	-	3.518
Pot Cap-1 Maneuver	1398	-	554
Stage 1	-	-	854
Stage 2	-	-	759
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1398	-	553
Mov Cap-2 Maneuver	-	-	616
Stage 1	-	-	854
Stage 2	-	-	758

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1398	-	-	-	664
HCM Lane V/C Ratio	0.002	-	-	-	0.026
HCM Control Delay (s)	7.6	-	-	-	10.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection												
Int Delay, s/veh	2											
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Vol, veh/h	2	202	4	61	329	44	1	0	37	27	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	220	4	66	358	48	1	0	40	29	0	1

Major/Minor	Major1	Major2	Minor1	Minor2
Conflicting Flow All	405	0	0	224
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Critical Hdwy	4.12	-	-	4.12
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	2.218	-	-	2.218
Pot Cap-1 Maneuver	1154	-	-	1345
Stage 1	-	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1154	-	-	1345
Mov Cap-2 Maneuver	-	-	-	-
Stage 1	-	-	-	-
Stage 2	-	-	-	-

Approach	SE	NW	NE	SW
HCM Control Delay, s	0.1	1.1	9.8	18.3
HCM LOS			A	C

Minor Lane/Major Mvmt	NELn1	NWL	NWT	NWR	SEL	SET	SERSWLn1
Capacity (veh/h)	786	1345	-	-	1154	-	301
HCM Lane V/C Ratio	0.053	0.049	-	-	0.002	-	0.101
HCM Control Delay (s)	9.8	7.8	-	-	8.1	-	18.3
HCM Lane LOS	A	A	-	-	A	-	C
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-	0.3

HCM 2010 TWSC
 3: North Forest Lakes Fil 2 Access & Forest Lakes Dr

2040 Total Traffic
 PM Peak Hour

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	189	2	15	297	1	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	205	2	16	323	1	10

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	0	208
Stage 1	-	-	207
Stage 2	-	-	355
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1363	488
Stage 1	-	-	828
Stage 2	-	-	710
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1363	482
Mov Cap-2 Maneuver	-	-	563
Stage 1	-	-	828
Stage 2	-	-	702

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	9.6
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	795	-	-	1363	-
HCM Lane V/C Ratio	0.014	-	-	0.012	-
HCM Control Delay (s)	9.6	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	152	7	51	230	4	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	165	8	55	250	4	34

Major/Minor	Major1	Major2	Minor1
Conflicting Flow All	0	173	530
Stage 1	-	-	169
Stage 2	-	-	361
Critical Hdwy	-	4.12	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	-	2.218	3.518
Pot Cap-1 Maneuver	-	1404	510
Stage 1	-	-	861
Stage 2	-	-	705
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	1404	490
Mov Cap-2 Maneuver	-	-	490
Stage 1	-	-	861
Stage 2	-	-	677

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	9.7
HCM LOS	-	-	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	803	-	-	1404	-
HCM Lane V/C Ratio	0.047	-	-	0.039	-
HCM Control Delay (s)	9.7	-	-	7.7	-
HCM Lane LOS	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	1	182	281	17	9	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	100	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	198	305	18	10	1

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	324	0	515
Stage 1	-	-	315
Stage 2	-	-	200
Critical Hdwy	4.12	-	6.42
Critical Hdwy Stg 1	-	-	5.42
Critical Hdwy Stg 2	-	-	5.42
Follow-up Hdwy	2,218	-	3,518
Pot Cap-1 Maneuver	1236	-	520
Stage 1	-	-	740
Stage 2	-	-	834
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	1236	-	520
Mov Cap-2 Maneuver	-	-	593
Stage 1	-	-	740
Stage 2	-	-	833

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.1
HCM LOS	-	-	B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1236	-	-	-	604
HCM Lane V/C Ratio	0.001	-	-	-	0.018
HCM Control Delay (s)	7.9	-	-	-	11.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Queuing and Blocking Report

Intersection: 2: South Forest Lakes Fil 2 Access/South Willow Springs Access & Forest Lakes Dr

Movement	SE	NW	NE	SW
Directions Served	L	L	LTR	LTR
Maximum Queue (ft)	11	44	56	52
Average Queue (ft)	0	10	23	20
95th Queue (ft)	6	36	45	47
Link Distance (ft)			186	272
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	100	100		
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: North Forest Lakes Fil 2 Access & Forest Lakes Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	31	31
Average Queue (ft)	3	9
95th Queue (ft)	18	32
Link Distance (ft)		167
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Long Valley & Forest Lakes Dr

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	49	67
Average Queue (ft)	7	23
95th Queue (ft)	30	50
Link Distance (ft)		453
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Queuing and Blocking Report

Intersection: 10: Forest Lakes Dr & Willow Springs North

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	12	34
Average Queue (ft)	0	6
95th Queue (ft)	6	27
Link Distance (ft)		203
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	100	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0