

# **TRAFFIC IMPACT STUDY**

for

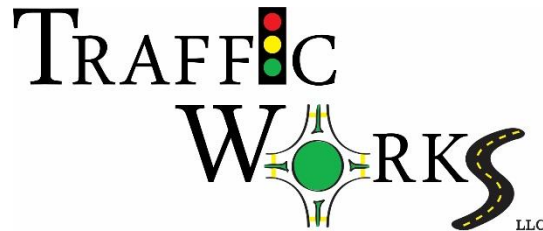
# **Kidder Creek Orchard Camp**

**(Z-14-01 & UP-11-15)**

**December 22, 2015**

**PREPARED FOR:**  
**SISKIYOU COUNTY**

**PREPARED BY:**



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## INTRODUCTION

This report presents the findings of a Traffic Impact Study completed to assess the potential traffic impacts on local roadways and intersections associated with expansion and increased guest and staff occupancy at the existing Kidder Creek Orchard Camp (KCOC). The camp is located at the west end of S. Kidder Creek Road, in the Scott Valley, approximately 2.1 miles west of State Highway 3. This traffic impact study has been prepared to document existing traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, document findings, and make recommendations to mitigate impacts, if any are found.

### *Study Area and Evaluated Scenarios*

The project location and the study area are shown in **Figure 1**. The study locations were selected through consultation with Siskiyou County staff and deemed as those most likely to be affected by the project. The following intersection was analyzed:

- Highway 3 / S. Kidder Creek Road

The following roadway segments were analyzed:

- S. Kidder Creek Road (at west end)
- S. Kidder Creek Road (at east end)

This study includes analysis of the weekend day and weekend peak hour as the peak traffic conditions currently occur on the weekends and are expected to be during the same time period in the future. The evaluated development scenarios are:

- Existing Conditions (no project)
- Plus Project Conditions
- Cumulative Plus Project Conditions

### *Analysis Methodology*

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates vehicle operations and traffic flow characteristics to letter grades “A” through “F” with “A” representing optimum conditions and “F” representing breakdown or over capacity flows. The complete methodology is established in the Highway Capacity Manual (HCM), 2010, published by the Transportation Research Board.

Intersection LOS Methodology

**Table 1** presents the delay thresholds for each level of service grade at un-signalized and signalized intersections. The LOS for a Two-Way STOP Control (TWSC) intersection is defined by the worst minor approach delay.

Level of service calculations were performed for the study intersection using the Synchro 8 software package with analysis and results reported in accordance with the 2010 HCM methodology.

**Table 1: Level of Service Definition for Intersections**

Level of Service	Brief Description	Un-signalized Intersections (average delay/vehicle in seconds)	Signalized Intersections (average delay/vehicle in seconds)
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 15	10 to 20
C	Stable conditions with significant affect from other vehicles.	15 to 25	20 to 35
D	High density traffic conditions still with stable flow.	25 to 35	35 to 55
E	At or near capacity flows.	35 to 50	55 to 80
F	Over capacity conditions.	> 50	> 80

**Source:** Highway Capacity Manual (2010), Chapters 18 and 19

Roadway LOS Methodology

Roadway level of service was calculated based on the procedures outlined in Chapter 15 – “Two-Lane Highways” of the Highway Capacity Manual (HCM), 2010 edition. Chapter 15 of the HCM defines Class II Two-Lane Highways as the following – “*Class II two-lane highways are highways where motorists do not necessarily expect to travel at high speeds. Two-lane highways functioning as access routes to Class I facilities, serving as scenic or recreational routes (and not as primary arterials), or passing through rugged terrain (where high-speed operation would be impossible) are assigned to Class II. Class II facilities most often serve relatively short trips, the beginning or ending portions of longer trips, or trips for which sightseeing plays a significant role*”. The HCM states that most collectors and local roadways are considered as Class II Highways for the purposes of capacity and LOS analysis.

Consistent with this definition, S. Kidder Creek Road should be classified as a Class II Highway for the calculations performed in this study. While it is recognized that S. Kidder Creek Road is not

officially classified as a “highway” by the County, it operates as a two-lane highway as defined by the Highway Capacity Manual, and it has a speed limit of 55 mph consistent with all unposted County roads. Hence, the roadway LOS and capacity were calculated in accordance with the procedures outlined for Class II two-lane highways in Chapter 15 (Exhibit 15-3 and Equation 15-10) of the HCM 2010.

The LOS for Class II two-lane highways is calculated based on the Percent Time Spent Following (PTSF) which “represents the freedom to maneuver and the comfort and convenience of travel. It is the average percentage of time that vehicles must travel in platoons behind slower vehicles due to the inability to pass. Because this characteristic is difficult to measure in the field, a surrogate measure is the percentage of vehicles traveling at headways of less than 3.0 s at a representative location within the highway segment. PTSF also represents the approximate percentage of vehicles traveling in platoons.” **Table 2** presents the LOS criteria for Class II two-lane highways.

**Table 2: Level of Service Criteria for Class II Highways**

LOS	PTSF (%)
A	≤40
B	>40–55
C	>55–70
D	>70–85
E	>85

Source: Highway Capacity Manual (2010), Chapter 15

### Level of Service Policy

The Level of Service policy for Siskiyou County roadways and intersections was obtained from the Siskiyou County 2010 Regional Transportation Plan (RTP) and the Siskiyou County General Plan Circulation Element (March 1988). The Circulation Element states - “The County should not accept a normal level of service of less than Level C”. Siskiyou County describes LOS “C” as “Stable flow, but speeds and maneuverability are more closely controlled by higher volumes; still fairly comfortable; recommended for urban design standards.” The RTP (Part 7b of “Local Roadway System” on page 43) states the objective to “Maintain an LOS of C outside of urban areas.” The 1988 Circulation Element Level of Service for *Two-Lane Rural Highways* recommends a LOS “B” for rural design standards (page 6). The Planning Commission and Board of Supervisors may consider this recommended LOS regarding the project.

The LOS policy for Caltrans facilities (Highway 3) was obtained from the Caltrans Guide for the Preparation of Traffic Impact Studies (December 2002). Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D”.

Considering both agency’s standards, the LOS threshold used for this study is LOS “C” for the S. Kidder Creek Road segments and also for the Highway 3 / S. Kidder Creek Road intersection.

## EXISTING CONDITIONS

### *Existing Traffic Volumes*

Daily traffic volumes were collected at two locations on S. Kidder Creek Road – at the west end near the Kidder Creek Orchard Camp entrance and at the east end near Highway 3. Data collection was performed from Friday, July 24, 2015 through Sunday, July 26, 2015. The counts were intentionally collected during one of the highest camp activity weekends of the year. The peak hours were identified using outputs of the daily volume counts. The peak hour chosen for analysis occurs from 10:20 AM to 11:20 AM on Saturday. Although the Sunday peak hour volume is slightly higher than the Saturday peak hour volume, the Saturday peak hour was chosen for analysis since Saturday has the highest outbound (eastbound) volume on S. Kidder Creek Road at Highway 3. The Saturday peak time period and associated traffic flows demonstrate the most potential impact at the study intersection since the eastbound approach is STOP controlled and would incur the greatest level of delay. This provides the most conservative analysis.

The existing Saturday peak hour traffic volumes and existing lane configurations are shown on **Figure 2**, attached. The existing daily traffic volumes are shown in **Table 3**.

**Table 3: Existing Daily & Peak Hour Traffic Volumes**

Date	Day	West End of S. Kidder Creek Road			East End of S. Kidder Creek Road		
		Daily Volume	Peak		Daily Volume	Peak	
			Hour	Total		Hour	Total
7/24/2015	Friday	138	8:02-9:01	17	281	16:31-17:30	30
7/25/2015	Saturday	338	9:52-10:51	65	414	10:21-11:20	67
7/26/2015	Sunday	275	15:43-16:42	68	390	15:36-16:35	73

### *Existing Intersection Level of Service*

Intersection LOS was determined for the existing Saturday peak hour condition. Level of service calculations were performed using the existing traffic volumes, lane configurations, and traffic controls. The results are presented in **Table 4** and the calculation sheets are provided in **Appendix T-1**, attached. The study intersection currently operates at LOS “B”.

**Table 4: Existing Conditions Intersection Level of Service Summary**

Intersection	Worst Approach	Existing	
		LOS	Delay
Highway 3/S. Kidder Creek Rd	Eastbound	B	10.3

**Existing Roadway Level of Service**

**Table 5** summarizes the existing roadway operating conditions. Level of service was calculated based on the existing volume data including a peak hour 85%/15% directional split, 0.87 Peak Hour Factor, 2% Heavy Vehicles, 1% Recreational Vehicles (conservative estimate), 20% No-Passing Zone (very conservative estimate), 10 access points per mile (conservative estimate) and flat terrain. South Kidder Creek Road currently operates at LOS “A” in both the east and westbound directions.

Applying the procedure outlined in HCM 2010, Chapter 15, Equation 15-13, the two-way capacity of S. Kidder Creek Road is estimated to be 2,000 vehicles per hour. The peak hour traffic volumes during a peak summer weekend, are currently at approximately 3.5% of the roadway’s capacity.

**Table 5: Existing Conditions Roadway Level of Service Summary**

Roadway Segment	Existing			
	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)
S. Kidder Creek Rd (West End)	338	65	A	A
S. Kidder Creek Rd (East End)	414	67	A	A

**PROJECT GENERATED TRAFFIC**

**Project Description**

Kidder Creek Orchard Camp is proposing to enhance and expand the camp facilities in order to serve additional guests and broaden the experiences offered. New or expanded elements include, larger activity areas and additional housing, an amphitheater, additional RV spaces, a new pond, hiking, horseback riding, and mountain bike trails, new parking lots, and related supporting infrastructure. The project’s Master Site Plan is shown in **Figure 3**. Expansion of the facilities will be timed based on market demand, camp enrollment, funding availability, infrastructure development, and other constraints. The camp is currently permitted for up to 165 guests (staff numbers not included) at any given time. The proposed master plan includes increasing the total number of guests and staff to a maximum occupancy of 844 persons within the camp. This number is a maximum occupancy, however it is not the intent of KCOC to operate

camp and programs at the maximum level. The Kidder Creek Camp Strategic Plan calls for continuing to run multiple smaller programs at the same time. By operating the camp in this way, it is unlikely that maximum level for each camp element will be reached simultaneously.

Future traffic volumes generated by KCOC will be most directly related to the number of campers, when they arrive and depart, and how many campers arrive per vehicle. Note that the camp currently utilizes buses and will likely continue to do so in the future, potentially expanding the bus service options and/or the number of attendees that could reasonably arrive/depart via buses. Currently, approximately 33% to 45% of guests/campers arrive by bus or van. During the peak weekend that was counted, 42.5% of the incoming and outgoing campers arrived by buses or van pools. Kidder Creek Orchard Camp anticipates increasing the bus/van rider percentage to a consistent 40 to 50% in the future. In addition, Kidder Creek Orchard Camp is also considering additional bussing options such as a drop zone and bus to/from camp that would increase the percentage of campers arriving by bus and thereby decrease the number of private vehicles on S. Kidder Creek Road.

**Trip Generation**

Trip generation for a proposed project is typically calculated using the nationally recognized Trip Generation Manual published by the Institute of Transportation Engineers (ITE). However, neither the Trip Generation Manual nor Siskiyou County Development Code provide any trip generation information for a “Summer Camp” type land use as it is very unique and trip generation values are specific to the actual activities at a particular camp. In this case, project specific trip estimates must be developed. The site specific trip generation rates and calculations are shown in **Table 6**.

**Table 6: KCOC Trip Generation Calculations**

Date	7/25/2015	Future	New Trips (Summer Saturday)
Day	Saturday	Peak	
Year	2015	Saturday	
# Campers	123	746	
# Staff	74	98	
Total Persons	197	844	
Daily Trips (west end of S. Kidder)	338	1,448	<b>1,110</b>
Daily Trips/Person (rate)	<b>1.72</b>	1.72	
Peak Hour Trips (west end of S. Kidder)	65	278	<b>213</b>
Peak Hour Trips/Person	<b>0.33</b>	0.33	

A project specific daily trip rate was determined by comparing the 338 counted daily vehicle trips at the west end of S. Kidder Creek Road (near the camp entrance) to the number of guests (123) plus the number of staff (74) who were present at the camp on that peak Saturday in July. The resultant rate is 1.72 daily trips/person (338 divided by 197). Applying the derived trip rate of 1.72 trips/person to the proposed number of persons at maximum occupancy (844) yields 1,448 daily trips on a peak summer weekend day. The project is anticipated to increase the peak daily traffic volume on S. Kidder Creek Road by up to 1,110 trips compared to the existing peak July weekend. It should be noted that significantly fewer trips would be generated by the project on weekdays and particularly during the remainder of the year (outside of summer months).

Applying the same methodology to determine a peak hour trip rate, with the proposed expansion at full capacity, the project would generate 278 trips during the weekend peak hour (approximately 20% of the daily volume). The project is anticipated to increase the summer Saturday peak hour traffic volume on S. Kidder Creek Road by up to 213 trips. Again, the number of new trips would be considerably less on weekdays and during off-season periods.

### ***Trip Distribution and Assignment***

New traffic generated by the project was distributed to the road network based on the location of the project, relative to the highway system, and current travel patterns. The following percentages were used for distributing the project generated traffic:

- 82% to/from the north via Highway 3
- 18% to/from the south via Highway 3

Project generated trips were then assigned to the adjacent roadway system and study intersection based on the distribution outlined above. The project trip assignment is shown on **Figure 4**, attached.

### ***Project Access***

The project site is accessed via S. Kidder Creek Road and is approximately 2.1 miles west of State Highway 3. All of the new and existing project trips are assumed to use S. Kidder Creek Road. Secondary access, which will be utilized for emergencies only, is via Patterson Creek Road. Patterson Creek Road is located approximately 1.8 miles south of S. Kidder Creek Road at its intersection with Highway 3. Near the western end of Patterson Creek Road, access to the site is via a private dirt road extending from the south side of KCOC.

***Proposed On-Site Parking***

As shown in the Proposed Master Site Plan (**Figure 3**), the project proposes to provide sufficient parking with construction of each expansion phase. Parking facilities will be provided at various locations within the project site as needed consistent with Siskiyou County Requirements. Since there is more than sufficient space within the site available for parking, and parking is planned with each expansion, no impacts related to parking are anticipated.

**EXISTING PLUS PROJECT CONDITIONS**

***Traffic Volumes***

Existing plus project traffic volumes were developed by adding the project generated trips (**Figure 4**) to the existing traffic volumes (**Figure 2**) and are shown on **Figure 5**, attached. The “Plus Project” condition Peak Hour Factors (PHF), vehicle mix, flow characteristics, and travel patterns were assumed to remain the same as those used in the existing conditions analysis.

***Intersection Level of Service Analysis***

**Table 7** presents the level of service analysis summary for the “Plus Project” scenario during the summer Saturday peak hour. Detailed calculation sheets are provided in **Appendix T-2**, attached.

**Table 7: Plus Project Intersection Level of Service Summary**

Intersection	Worst Approach	Existing		Plus Project	
		LOS	Delay	LOS	Delay
Highway 3/S. Kidder Creek Rd	Eastbound	B	10.3	B	12.9

The proposed project is anticipated to have very little affect on the Highway 3 / S. Kidder Creek Road intersection operations. As shown in **Table 6**, the study intersection is anticipated to operate at the same level of service as it does today (LOS B) and well within the County’s LOS thresholds. The average delay is anticipated to increase by less than 3.0 seconds per vehicle with the addition of the project traffic.

***Roadway Level of Service Analysis***

The highest future daily traffic volume is anticipated to occur on a summer Saturday. Hence, the “Plus Project” conditions roadway LOS was calculated for that condition. The highest counted daily traffic volume under existing conditions is 338 vehicles per day near the KCOC entrance and 414 vehicles per day at the east end of S. Kidder Creek Road. Daily traffic could potentially

increase to about 1,448 vehicles per day near the KCOG entrance and 1,524 vehicles per day near Highway 3 with the addition of the project traffic. **Table 8** summarizes the roadway LOS analysis.

**Table 8: Plus Project Roadway Level of Service Summary**

Roadway Segment	Existing				Plus Project			
	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)
S. Kidder Creek Rd (West End)	338	65	A	A	1,448	278	A	B
S. Kidder Creek Rd (East End)	414	67	A	A	1,524	280	A	B

South Kidder Creek Road will continue to operate at LOS “B” or better conditions with the addition of the project traffic, well within the LOS thresholds.

As previously stated, the two-way capacity of S. Kidder Creek Road is estimated to be 2,000 vehicles per hour based on 2010 HCM methodology. With the camp in fully session and an occupancy of 844 persons, the Saturday peak hour traffic volumes are anticipated to be at approximately 14% of the roadway’s capacity.

### CUMULATIVE PLUS PROJECT CONDITIONS

Cumulative conditions analysis was performed to evaluate long-term development conditions in the project area and the resulting total traffic volumes that could be anticipated in a 20-year horizon. There are an estimated 17 legal lots that access S. Kidder Creek Road which are currently vacant but could be developed under existing zoning policy. These parcels can all be permitted with one single-family dwelling unit. In addition, the County also allows second dwellings where parcels are over 5 acres in size and there is adequate space for necessary septic/leach fields/well separation.

It can be assumed that within the phased Kidder Creek Orchard Camp build-out time-frame (10 to 20 years), homes could be constructed on the 17 vacant lots. It was estimated that 10% of the 52 total lots that access S. Kidder Creek Road would have a second dwelling unit. The cumulative conditions analysis therefore includes 23 additional single-family residential units in the project area.

### Traffic Volumes

Trip generation rates for new residential units were obtained from the Trip Generation Manual, 8th Edition, published by the Institute of Transportation Engineers. Traffic generated by the

potential 23 single-family units (17 vacant lots and 6 second dwellings) was added to the “Existing Plus Project Conditions” daily volumes to determine the “Cumulative Plus Project Conditions” daily volumes. The buildable lots are anticipated to generate 248 vehicles per day on S. Kidder Creek Road on a Saturday, increasing the total volume to 1,772 vehicles per day at the east end of S. Kidder Creek Road. The buildable lots are anticipated to generate 21 trips during the Saturday peak hour. Note that very few new residential based trips would be added at the west end of the roadway since it ends at the Kidder Creek Orchard Camp and there are few developable lots west of the S. Kidder Loop. The cumulative conditions residential based trip assignment is shown in **Figure 6** and the Saturday peak hour cumulative conditions volumes are shown in **Figure 7**.

It should be noted that the 1980 Circulation Element estimates an average of 7.5 total trips for each dwelling per day for residential development (page 69). The ITE standard rate used in this study (9.57 trips per day per residence) provides a higher estimate and conservative analysis.

A background growth rate of 1% per annum was applied for northbound and southbound through movements on Highway 3. Historic counts obtained from the Caltrans Traffic Census Program show a stagnant or negative growth rate on Highway 3 over the past 10 years. However, a 1% per annum conservative growth rate was applied to through movements on Highway 3 for the purposes of cumulative conditions analysis.

**Intersection Level of Service Analysis**

**Table 9** presents the level of service analysis summary for the “Cumulative Plus Project” scenario during the future Saturday peak hour. Detailed calculation sheets are provided in **Appendix T-3**, attached.

**Table 9: Cumulative Plus Project Intersection Level of Service Summary**

Intersection	Worst Approach	Existing		Plus Project		Cumulative Plus Project	
		LOS	Delay	LOS	Delay	LOS	Delay
Highway 3/S. Kidder Creek Rd	Eastbound	B	10.3	B	12.9	B	14.2

The Highway 3 / S. Kidder Creek Road intersection is anticipated to operate at acceptable level of service conditions (LOS “B”). The average delay is anticipated to increase by less than 1.5 second per vehicle compared to “Plus Project” conditions. This small change in delay would not be perceived by most drivers. The total increase in delay of 4 seconds is not significant within acceptable level of service categories (LOS “C” or better).

**Roadway Level of Service Analysis**

**Table 10** compares roadway LOS between the Existing, Plus Project, and Cumulative Plus Project conditions on S. Kidder Creek Road.

**Table 10: Cumulative Plus Project Roadway Level of Service Summary**

Roadway Segment	Existing				Plus Project				Cumulative Plus Project			
	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)	Daily Volume	Peak Hour Volume	LOS (WB)	LOS (EB)
S. Kidder Creek Rd (West End)	338	65	A	A	1,448	278	A	B	1,448	278	A	B
S. Kidder Creek Rd (East End)	414	67	A	A	1,524	280	A	B	1,772	301	A	B

South Kidder Creek Road is anticipated to operate at LOS “B” conditions under the “Cumulative Plus Project” scenario. Under “Cumulative Plus Project” conditions the peak hour traffic volumes are anticipated to reach approximately 15% of the roadway’s capacity.

**OTHER CONSIDERATIONS**

**Roadway Width**

The Siskiyou County General Plan Circulation Element (page 7) states “A two-lane rural highway shall have a minimum of 18 feet of paved traveled way.” **Table 11** shows the existing roadway widths at various mile-points/locations along S. Kidder Creek Road. The existing roadway satisfies the County’s minimum roadway width requirements as it has a paved roadway width of more than 18 feet from Highway 3 to the Kidder Creek Orchard Camp entrance (end of County road).

**Table 11: Roadway Widths along S. Kidder Creek Road**

Location/Mile Point (miles from Hwy 3)	Paved Roadway Width (ft)	Location/Mile Point (miles from Hwy 3)	Paved Roadway Width (ft)
0.1	23.00	1.2	20.50
0.2	22.00	1.3	20.50
0.3	23.00	1.4	20.50
0.4	24.00	1.5	20.50
0.5	24.50	1.6	21.00
0.6	24.00	1.7	20.50
0.7	24.50	1.8	20.50
0.8	25.00	1.9	21.00
0.9	24.75	2.0	20.00
1.0	24.00	2.1	19.00
1.1	21.50		

### ***Stopping Sight Distance***

Stopping Sight Distance (SSD) is the viewable distance required for a driver to see an object in the roadway, react, and make a complete stop in the event of an unanticipated hazard. SSD is made up of two components, Braking Distance and Perception-Reaction Time. South Kidder Creek Road was reviewed for, and has, sufficient Stopping Sight Distance as it meets the minimum required Stopping Sight Distance criteria specified in Exhibit 5-2. Design Controls for Stopping Sight Distance and for Crest and Sag Vertical Curves published in “A Policy on Geometric Design of Highways and Streets, 2004” by the American Association of State Highway and Transportation Officials (AASHTO).



**Existing Advisory Speed Signage**

The curvilinear segment of S. Kidder Creek Road (approximately mile post 1.0 to milepost 1.5) has a posted advisory speed of 20 miles per hour. The Stopping Sight Distance for a 20 mile per hour travel speed is 115 feet. The shortest measured sight line on the tightest curve identified along S. Kidder Creek Road is 125 feet, which provides at least the minimum Stopping Sight Distance. All the other curves within the curvilinear segment of S. Kidder Creek Road also satisfy the requirements as they have more than 115 feet of Stopping Sight Distance.

### ***Safety Analysis***

Crash data for the previous ten (10) consecutive years (January 2005 to December 2014) was obtained from the Statewide Integrated Traffic Records System (SWITRS) Caltrans database and Transportation Injury Mapping System (TIMS) mapping function. Based on the data obtained, and shown in **Table 12**, three crashes were reported on S. Kidder Creek Road between January 2005 and December 2014.

**Table 12: Summary of Collision History on S. Kidder Creek Road (Jan 2005 to Dec 2014)**

Year	# Collision(s)	Fatality	Injury	Property Damage Only
2007	1	0	0	1
2008	1	0	0	1
2009	1	0	1	0

It should be noted that there were no reported collisions within the latest five year period (2010 to 2014). The past incidents occurred at three different locations along S. Kidder Creek Road. Since the incidents were at three different locations, no patterns or specific safety concerns associated with the roadway itself can be identified. All three reported collisions involved a single vehicle hitting a “Fixed Object”, which is a common accident type in rural, low traffic volume environments. There were no vehicle to vehicle collisions reported.

A driving road safety assessment was also performed by Traffic Works’ Principal Engineer who is a Federal Highway Administration (FHWA) trained Road Safety Auditor. The review did not identify any significant safety concerns for the project’s ingress and egress route as the roadway configuration and conditions are typical of rural county roadways and the sight line/sight distance criteria were found to be met. The reviewer’s only notable finding was that vegetation along the sides of the roadway should be regularly cut back from the edge of pavement. This was noted as an on-going roadway maintenance item that would likely be addressed by Siskiyou County. Being a typical maintenance item on an existing roadway, this is not considered a project impact. Long-term roadway maintenance on S. Kidder Creek Road is under review by the Siskiyou County Public Works Department and a Condition of Approval requiring participation by KCOC may be considered by the County Commission and Board of Supervisors.

## CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

- The Highway 3 / S. Kidder Creek Road intersection currently operates at LOS “B” during the weekend peak hour. The S. Kidder Creek Road segments currently operate at LOS “A”.
- The Highway 3 / S. Kidder Creek Road intersection is anticipated to operate at acceptable level of service conditions (LOS “B”) with the addition of the project traffic. The increase in average delay is anticipated to be less than 3 seconds per vehicle, a difference that is negligible within LOS “B”.
- S. Kidder Creek Road will operate at LOS “B” with the additional project traffic. Existing Plus Project traffic volumes would be at approximately 14% of the roadway’s capacity.
- S. Kidder Creek Road is anticipated to operate at LOS “B” under “Cumulative Plus Project” conditions. Total traffic volumes could reach approximately 15% of the roadway’s capacity. The S. Kidder Creek Road / Hwy 3 intersection would continue to operate at LOS “B” in the 20-year horizon.
- Sufficient parking can easily be provided within the large project site.
- The project has a secondary emergency only access.
- S. Kidder Creek Road has sufficient width per Siskiyou County design standards.
- Adequate Stopping Sight Distance is available on S. Kidder Creek Road.
- Three accidents have been reported within the past 10 years, with none occurring in the last 5 years. No patterns or specific safety concerns related to the roadway itself were identified as the incidents were reported at three different locations along S. Kidder Creek Road.
- Vegetation growing along the sides of S. Kidder Creek Road should be regularly cut back to maintain full travel lane widths and adequate sight lines. This recommendation applies to the full roadway length, with particular attention dedicated to locations proximate to intersections, private driveways, and within curved roadway segments.

## REFERENCES

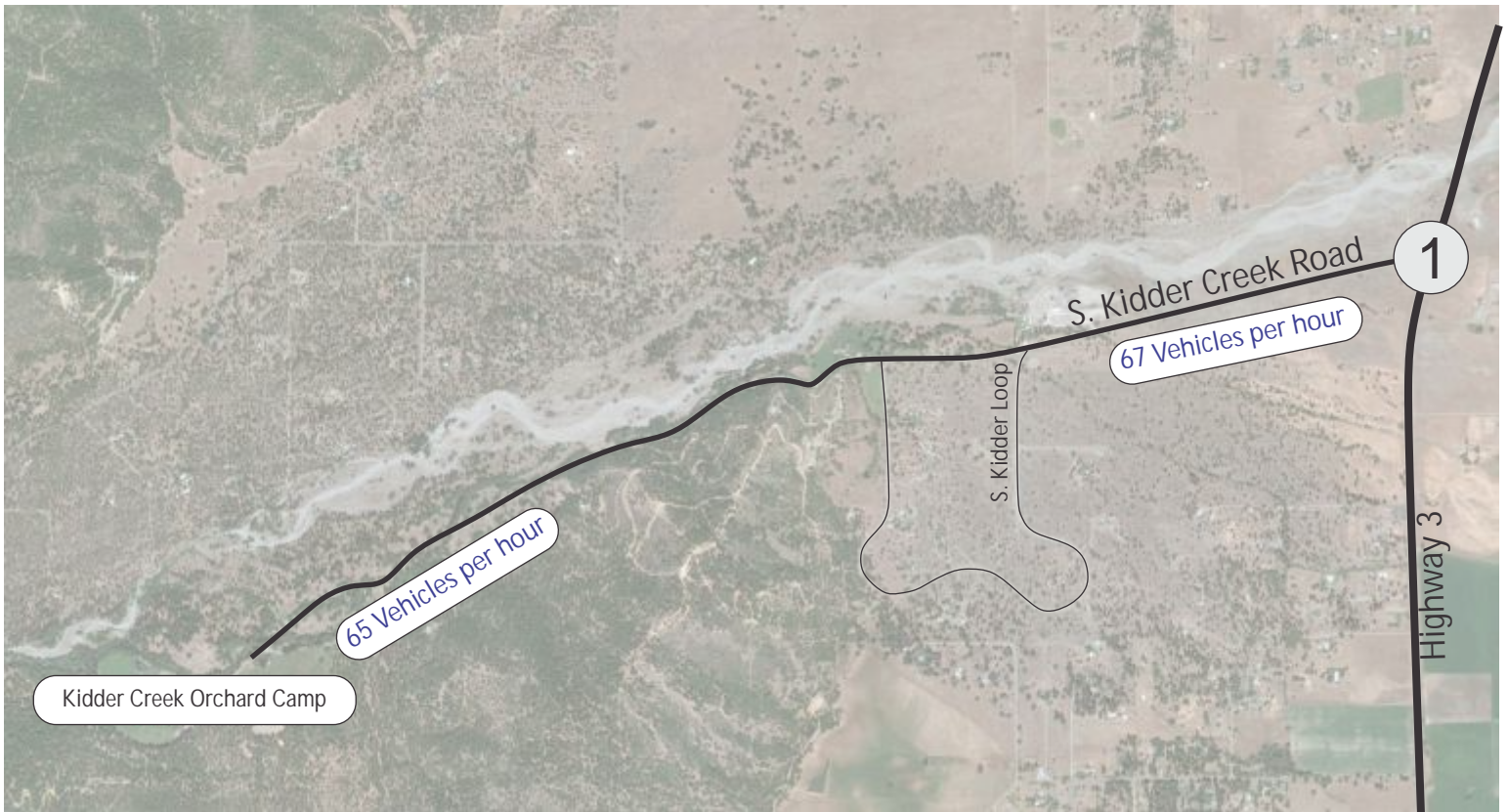
1. Highway Capacity Manual – 2010, Transportation Research Board
2. Siskiyou County General Plan Circulation Element – March 1988, Siskiyou County
3. 2010 Regional Transportation Plan – April 2011, Siskiyou County Local Transportation Commission
4. Guide for the Preparation of Traffic Impact Studies – December 2002, Caltrans
5. A Policy on Geometric Design of Highways and Streets – 2004, American Association of State Highway and Transportation Officials

# Study Intersection

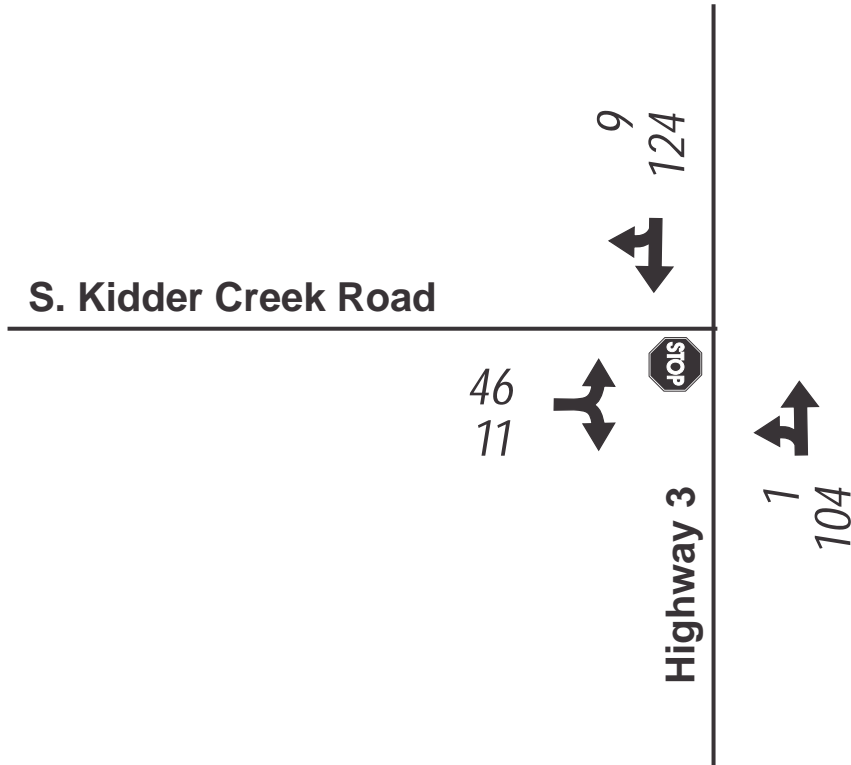
1 Highway 3/S. Kidder Creek Road



Count Location



1 Highway 3/S. Kidder Creek Road



LEGEND

- xx -Weekend Peak Hour Volumes    (XXX) - Segment Peak Hour Volume
- ← - Lane Configuration    STOP - STOP Sign

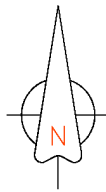
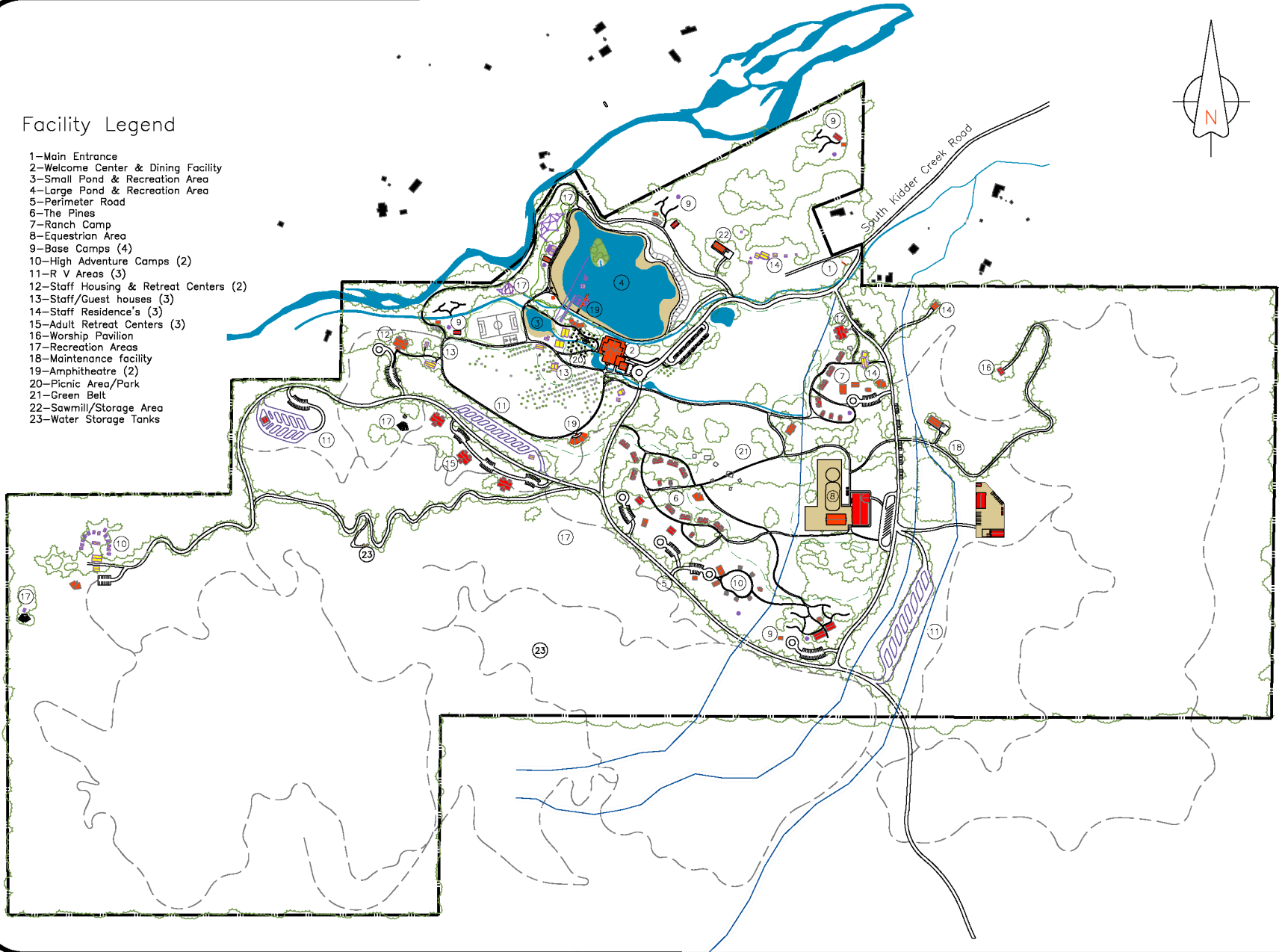


Figure 2

Kidder Creek Orchard Camp  
Traffic Impact Study  
**Existing Traffic Volumes**

### Facility Legend

- 1—Main Entrance
- 2—Welcome Center & Dining Facility
- 3—Small Pond & Recreation Area
- 4—Large Pond & Recreation Area
- 5—Perimeter Road
- 6—The Pines
- 7—Ranch Camp
- 8—Equestrian Area
- 9—Base Camps (4)
- 10—High Adventure Camps (2)
- 11—R V Areas (3)
- 12—Staff Housing & Retreat Centers (2)
- 13—Staff/Guest houses (3)
- 14—Staff Residence's (3)
- 15—Adult Retreat Centers (3)
- 16—Worship Pavilion
- 17—Recreation Areas
- 18—Maintenance facility
- 19—Amphitheatre (2)
- 20—Picnic Area/Park
- 21—Green Belt
- 22—Sawmill/Storage Area
- 23—Water Storage Tanks



# Master Site Plan Proposed

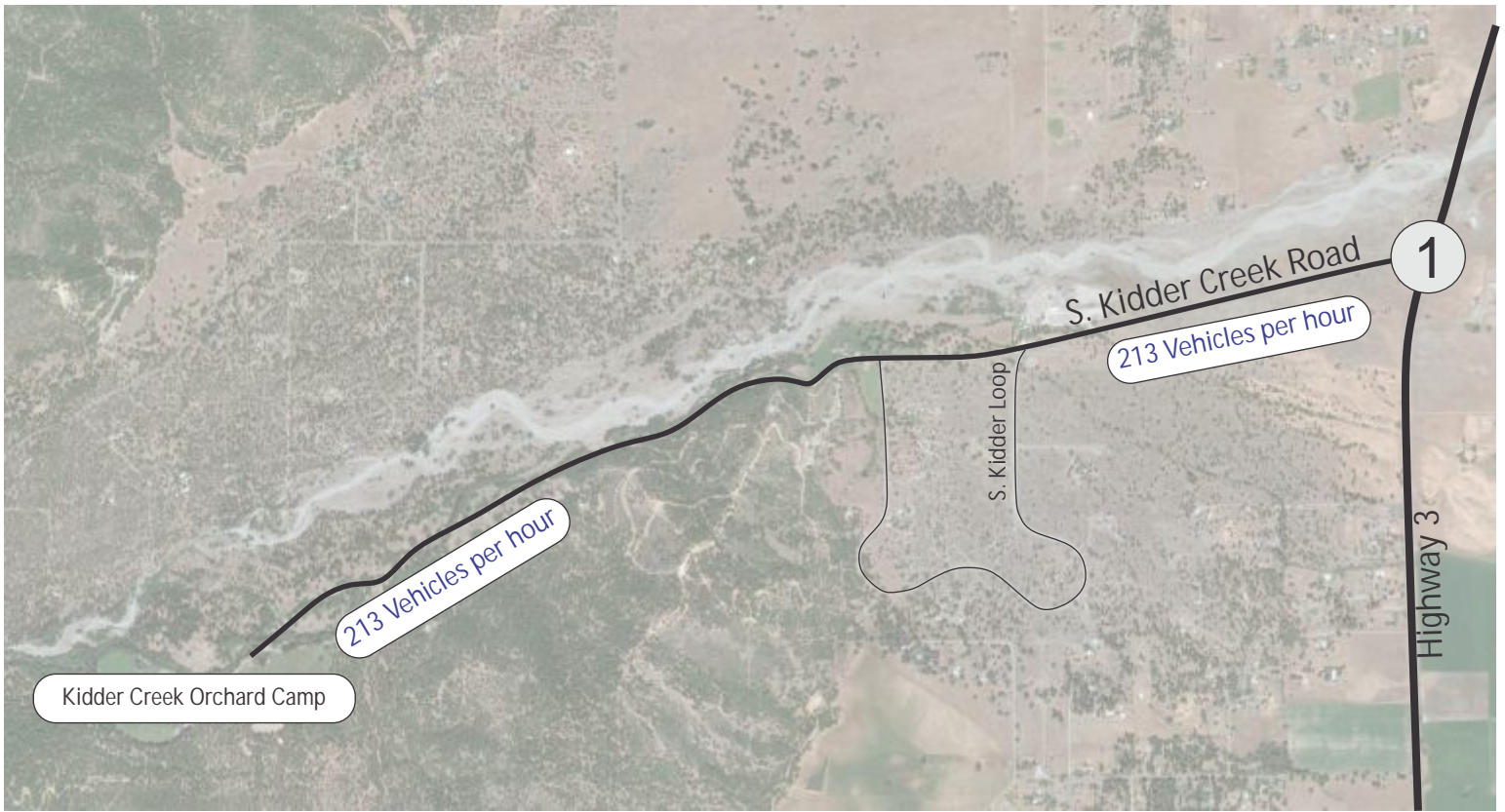
No.	Revision/Issue	Date

Kidder Creek Camp  
 2700 S. Kidder Creek Rd.  
 PO Box 208  
 Greenview, CA 96027  
 530-467-3265

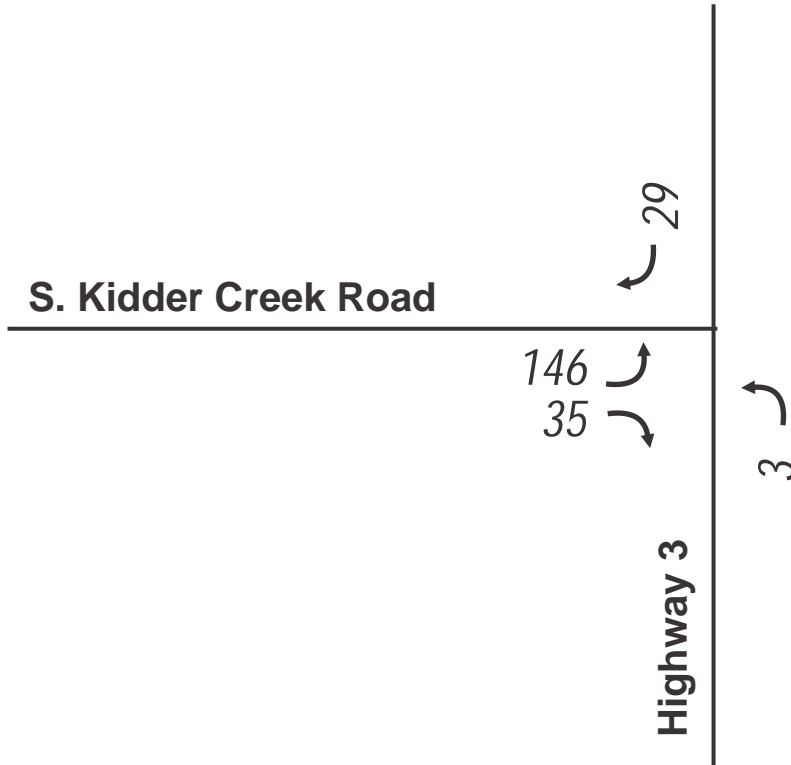
Project	Sheet
Date 1/15/14	4
Scale 1" = 575'	



**Figure 3**  
 Kidder Creek Orchard Camp  
 Traffic Impact Study  
 Site Map



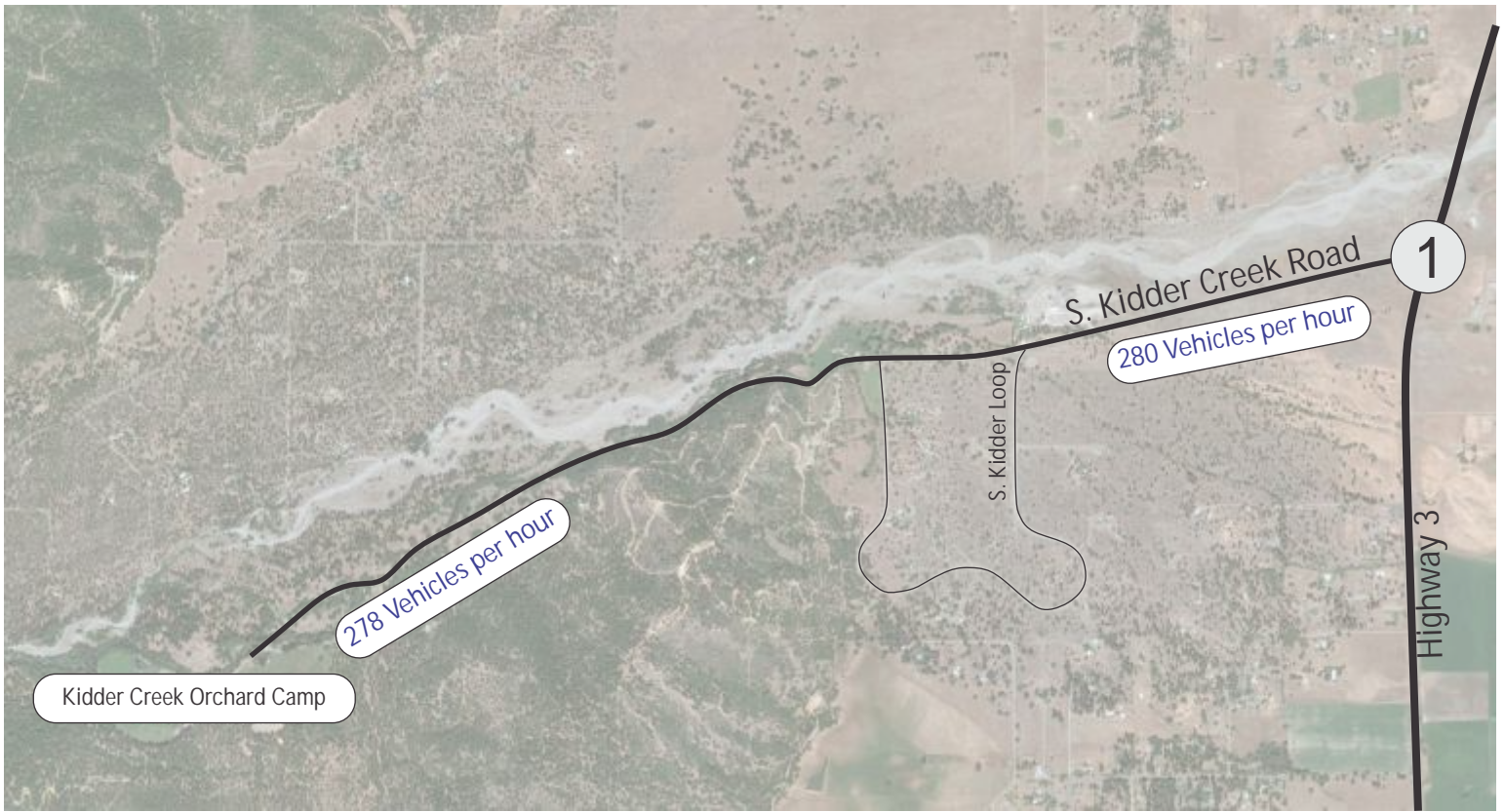
1 Highway 3/S. Kidder Creek Road



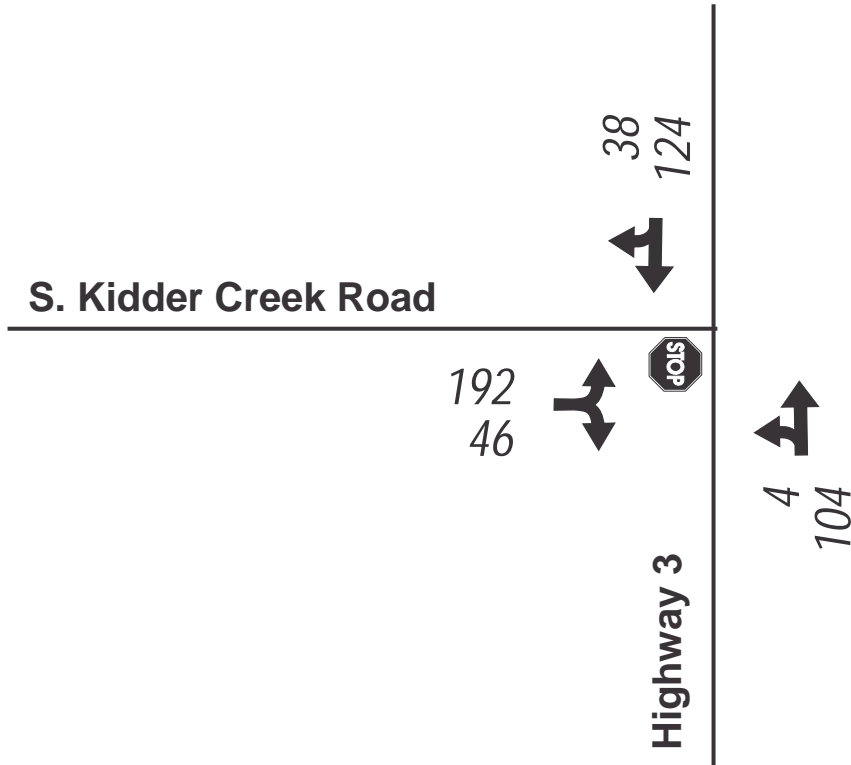
**LEGEND**  
 XX -Peak Hour Project Trips  
 (XXX) - Peak Hour Segment Project Trips



**Figure 4**  
 Kidder Creek Orchard Camp  
 Traffic Impact Study  
*Project Trip Assignment*



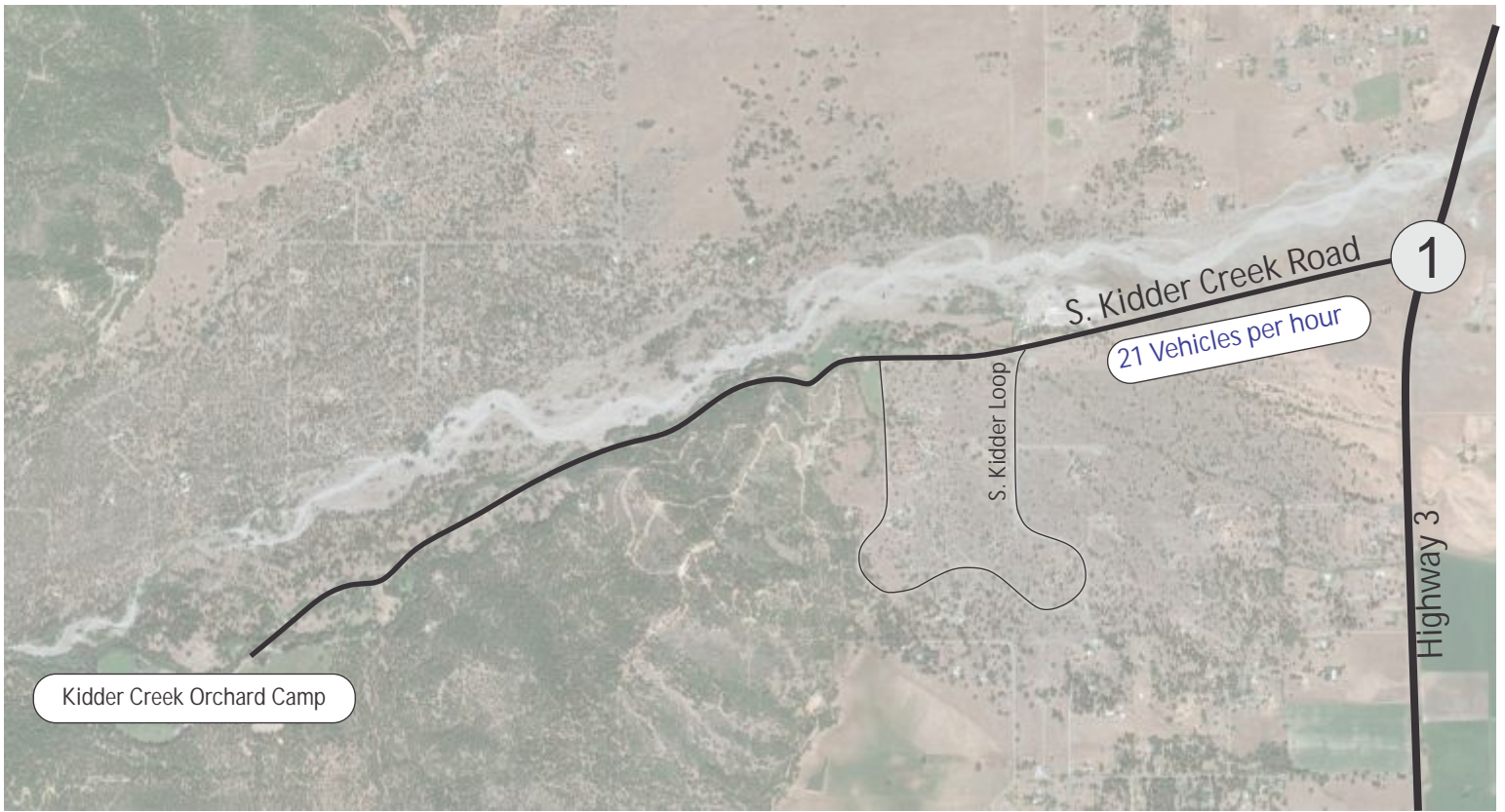
① Highway 3/S. Kidder Creek Road



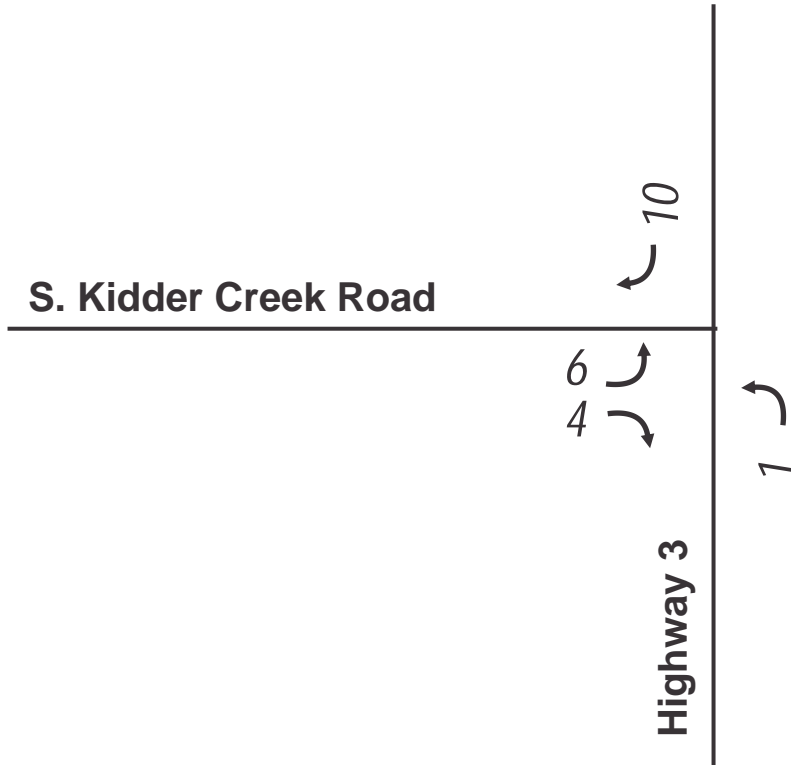
**LEGEND**  
 XX - Weekend Peak Hour Traffic Volumes  
 (XXX) - Weekend Peak Hour Segment Volume  
 ← - Lane Configuration    STOP - STOP Sign

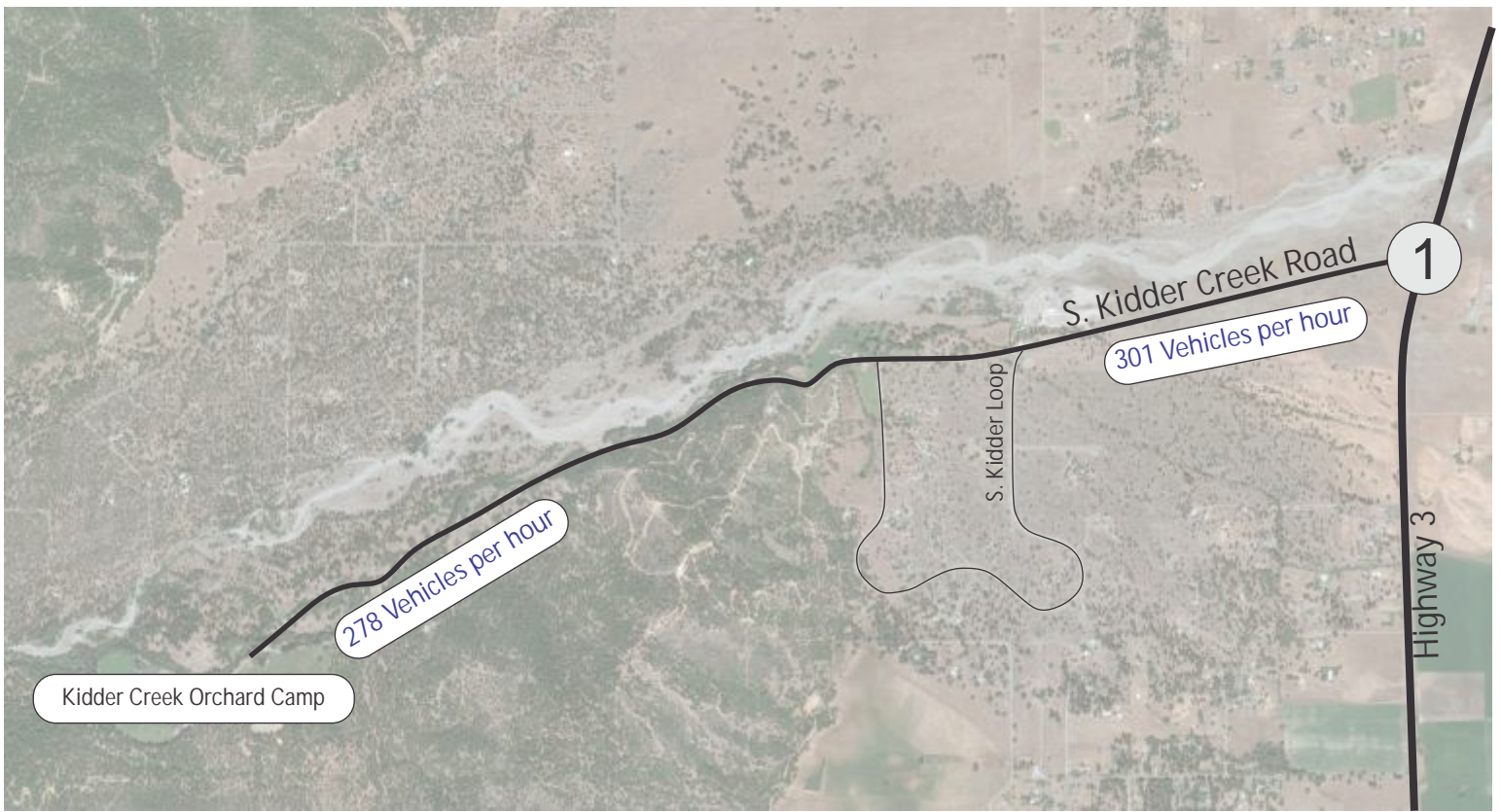
NO SCALE

**Figure 5**  
 Kidder Creek Orchard Camp  
 Traffic Impact Study  
 Plus Project Peak Hour Traffic Volumes

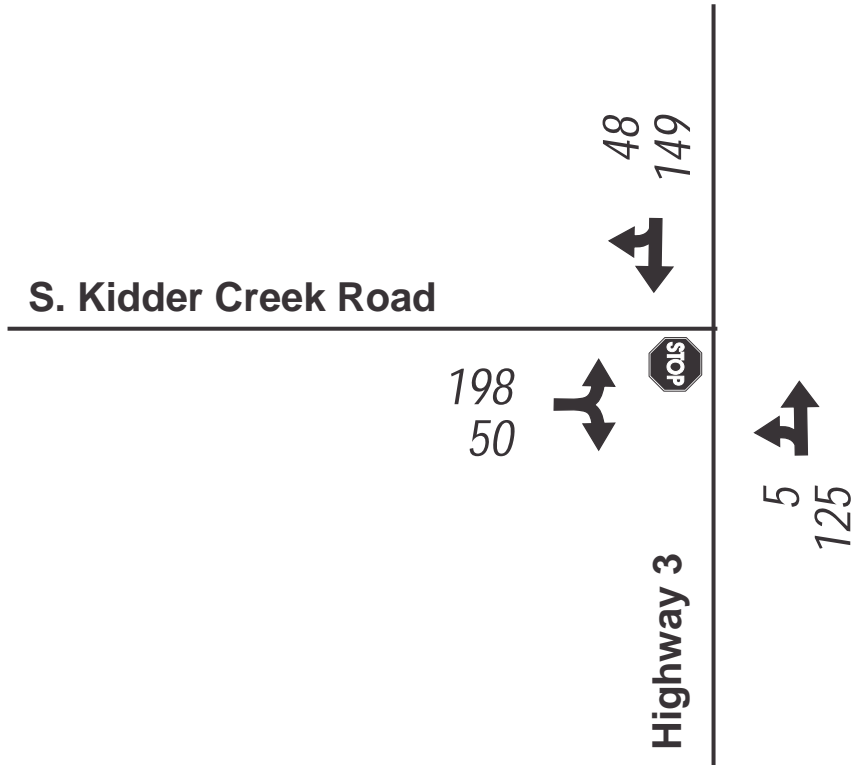


① Highway 3/S. Kidder Creek Road





① Highway 3/S. Kidder Creek Road



**LEGEND**  
 XX - Weekend Peak Hour Traffic Volumes  
 (XXX) - Weekend Peak Hour Segment Volume  
 ← - Lane Configuration    STOP - STOP Sign

NO SCALE

**Figure 7**  
 Kidder Creek Orchard Camp  
 Traffic Impact Study  
**Cumulative Peak Hour Traffic Volumes**

## **Appendix T-1**

### **Existing Conditions Intersection LOS Calculations**

**Intersection**

Int Delay, s/veh 2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	46	11	1	104	124	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	13	1	120	143	10

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	270	148	153 0
Stage 1	148	-	- -
Stage 2	122	-	- -
Critical Hdwy	6.42	6.22	4.12 -
Critical Hdwy Stg 1	5.42	-	- -
Critical Hdwy Stg 2	5.42	-	- -
Follow-up Hdwy	3.518	3.318	2.218 -
Pot Cap-1 Maneuver	719	899	1428 -
Stage 1	880	-	- -
Stage 2	903	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	718	899	1428 -
Mov Cap-2 Maneuver	718	-	- -
Stage 1	880	-	- -
Stage 2	902	-	- -

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

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1428	-	747	-	-
HCM Lane V/C Ratio	0.001	-	0.088	-	-
HCM Control Delay (s)	7.5	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

## **Appendix T-2**

### **Plus Project Conditions Intersection LOS Calculations**

**Intersection**

Int Delay, s/veh 6.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	192	46	4	104	124	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	221	53	5	120	143	44

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	293	164	186 0
Stage 1	164	-	- -
Stage 2	129	-	- -
Critical Hdwy	6.42	6.22	4.12 -
Critical Hdwy Stg 1	5.42	-	- -
Critical Hdwy Stg 2	5.42	-	- -
Follow-up Hdwy	3.518	3.318	2.218 -
Pot Cap-1 Maneuver	698	881	1388 -
Stage 1	865	-	- -
Stage 2	897	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	695	881	1388 -
Mov Cap-2 Maneuver	695	-	- -
Stage 1	865	-	- -
Stage 2	893	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1388	-	725	-	-
HCM Lane V/C Ratio	0.003	-	0.377	-	-
HCM Control Delay (s)	7.6	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.8	-	-

## **Appendix T-3**

### **Cumulative Conditions Intersection LOS Calculations**

**Intersection**

Int Delay, s/veh 6.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	198	50	5	125	149	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	228	57	6	144	171	55

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	354	199	226 0
Stage 1	199	-	- -
Stage 2	155	-	- -
Critical Hdwy	6.42	6.22	4.12 -
Critical Hdwy Stg 1	5.42	-	- -
Critical Hdwy Stg 2	5.42	-	- -
Follow-up Hdwy	3.518	3.318	2.218 -
Pot Cap-1 Maneuver	644	842	1342 -
Stage 1	835	-	- -
Stage 2	873	-	- -
Platoon blocked, %			- -
Mov Cap-1 Maneuver	641	842	1342 -
Mov Cap-2 Maneuver	641	-	- -
Stage 1	835	-	- -
Stage 2	869	-	- -

Approach	EB	NB	SB
HCM Control Delay, s	14.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1342	-	673	-	-
HCM Lane V/C Ratio	0.004	-	0.424	-	-
HCM Control Delay (s)	7.7	0	14.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	2.1	-	-