APPENDIX F: TRAFFIC IMPACT ANALYSIS

Glen Helen Specific Plan Amendment

Traffic Impact Analysis

Prepared For
San Bernardino County Department of Public Works

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Prepared by

Simon Lin, EIT
Sina Salehipour
Alex J. Garber,
Megan Macias, T.E.

techservices@EPDsolutions.com

EPD SOLUTIONS, INC

949.794.1180
3333 Michelson Drive, Suite 500
Irvine, CA 92612

EPDSolutions.com

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1 EXECUTIVE SUMMARY

This Traffic Impact Analysis (TIA) has been prepared by EPD Solutions, Inc. (EPD) to analyze the potential traffic-related impacts of the proposed Glen Helen Specific Plan Amendment (Project) located south of the intersection of Interstate 215 (I-215) and Interstate 15 (I-15) in the County of San Bernardino (County).

The Project site consists of three out of the six Subareas located within the Glen Helen Specific Plan including: North Glen Helen, Devore, and Sycamore Flats. The proposed amendment would rezone 79 acres of Destination Recreation (DR), 31.8 acres of Commercial/Trailer Services (C/TS) and 48.7 acres of Single-Family Residential (SFR-SF) to 80.5 acres designated for Corridor Industrial (CI) and 79 acres designated for Truck Trailer Parking.

- Within the North Glen Helen Subarea, the proposed amendment would rezone 79 acres of Destination Recreation (DR) to 79 acres designated for Truck Trailer Parking.
- Within the Devore Subarea, the proposed amendment would rezone 19.2 acres of Destination Recreation (DR) to 19.2 acres designated for Corridor Industrial (CI).
- Within the Sycamore Flats Subarea, the proposed amendment would rezone 12.6 acres of Destination Recreation (DR) and 48.7 acres designated for Single-Family Residential (SFR-SF) to 61.3 acres designated for Corridor Industrial (CI).

The proposed Project is estimated to generate approximately net -9,199 daily PCE trips where the AM peak hour would result in 646 PCE trips (593 trips in, 55 trips out), and -933 PCE trips in the PM peak hour (-740 trips in, -192 trips out).

Due to the Project only having a net positive trip generation in the AM peak hour, only the AM peak hour traffic operations would be analyzed in this document.

The following study area intersections were evaluated during the AM peak hours, which is defined as the hours with the highest traffic volumes during the 6 AM to 9 AM peak commute period.

1. Glen Helen Pkwy/I-215 NB On Ramp (AWSC)
2. Glen Helen Pkwy/I-215 SB On Ramp (AWSC)
3. Glen Helen Pkwy/Cajon Blvd (AWSC)
4. Glen Helen Pkwy/Glen Helen Rd (TWSC)
5. Glen Helen Pkwy/Clearwater Pkwy (Signalized)
6. Glen Helen Pkwy/I-15 NB On Ramp (Signalized)
7. Glen Helen Pkwy/I-15 SB On Ramp (TWSC)

AM peak hour traffic operations were evaluated for the following scenarios:

- Existing Conditions
- General Plan Buildout Conditions
- General Plan Buildout Plus Project Conditions

Existing AM Intersection Analysis Results

The following intersection would result in an unsatisfactory LOS:

- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp

General Plan Buildout Conditions AM Intersection Analysis Results

The following intersections would result in an unsatisfactory LOS:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp
- Intersection 3. Glen Helen Pkwy/Cajon Blvd
- Intersection 6. Glen Helen Pkwy/ I-15 NB On Ramp
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp

General Plan Buildout Plus Project Conditions AM Intersection Analysis Results

The following intersections would result in significant deficiency:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp
- Intersection 3. Glen Helen Pkwy/Cajon Blvd
- Intersection 4. Glen Helen Pkwy/Glen Helen Rd
- Intersection 6. Glen Helen Pkwy/I-15 NB On Ramp
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp

Project Improvement

The addition of Project trips to the study area intersections would result in a significant deficiency, based on the County of San Bernardino Guidelines[1], at five intersections in the General Plan Buildout Plus Project Conditions. The following improvements are recommended:

- Intersection 2 Glen Helen Pkwy/I-215 SB On Ramp: Implement a traffic signal with split phasing for eastbound approach and protected left turn phasing for southbound approach. Restripe the eastbound approach to 1-Shared Left-Thru-Right lane and 1-Right turn lane.
- Intersection 3 Glen Helen Pkwy/Cajon Blvd: Implement a traffic signal with protected left turn phasing for northbound and southbound approaches and protected-permissive left turn phasing for eastbound and westbound approaches. Restripe the northbound approach to 1-Left, 1-Thru, 1-Right turn lane. Restripe the southbound approach to 2-Left and 1-Shared Thru-Right lane. Restripe the westbound approach to 1-Left, 1-Thru and 1-Right turn lane and add westbound right-turn overlap phasing.

[1] County of San Bernardino Transportation Impact Study Guidelines, July 2019

- For Intersection 4 Glen Helen Pkwy/Glen Helen Rd: Implement a traffic signal with protected left turn phasing for northbound and southbound approaches, and permissive left turn phasing for eastbound and westbound approaches.
- For Intersection 6 Glen Helen Pkwy/I-15 NB On Ramp: Optimize the traffic signal to implement split phasing on all approaches.
- For Intersection 7 Glen Helen Pkwy/I-15 SB On Ramp: Implement a traffic signal with split phasing for the southbound approach and protected left turn phasing for the westbound approach. Restripe the eastbound approach to 1-Shared Thru-Right and 1 Right turn lane. Restripe the westbound approach to 2-Left and 1-Thru lane.

2 INTRODUCTION

This Traffic Impact Analysis (TIA) has been prepared by EPD Solutions, Inc. (EPD) to analyze the potential traffic-related impacts of the proposed Glen Helen Specific Plan Amendment (Project). The Project is located south of the intersection of Interstate 215 (I-215) and Interstate 15 (I-15) in the County of San Bernardino (County). The scope of work for this TIA was reviewed and approved by the County of San Bernardino and is provided in *Appendix A*. The TIA was prepared according to the approved scope of work using methodologies and significance criteria consistent as per the County of San Bernardino *Transportation Impact Study (TIS) Guidelines* (July 2019).

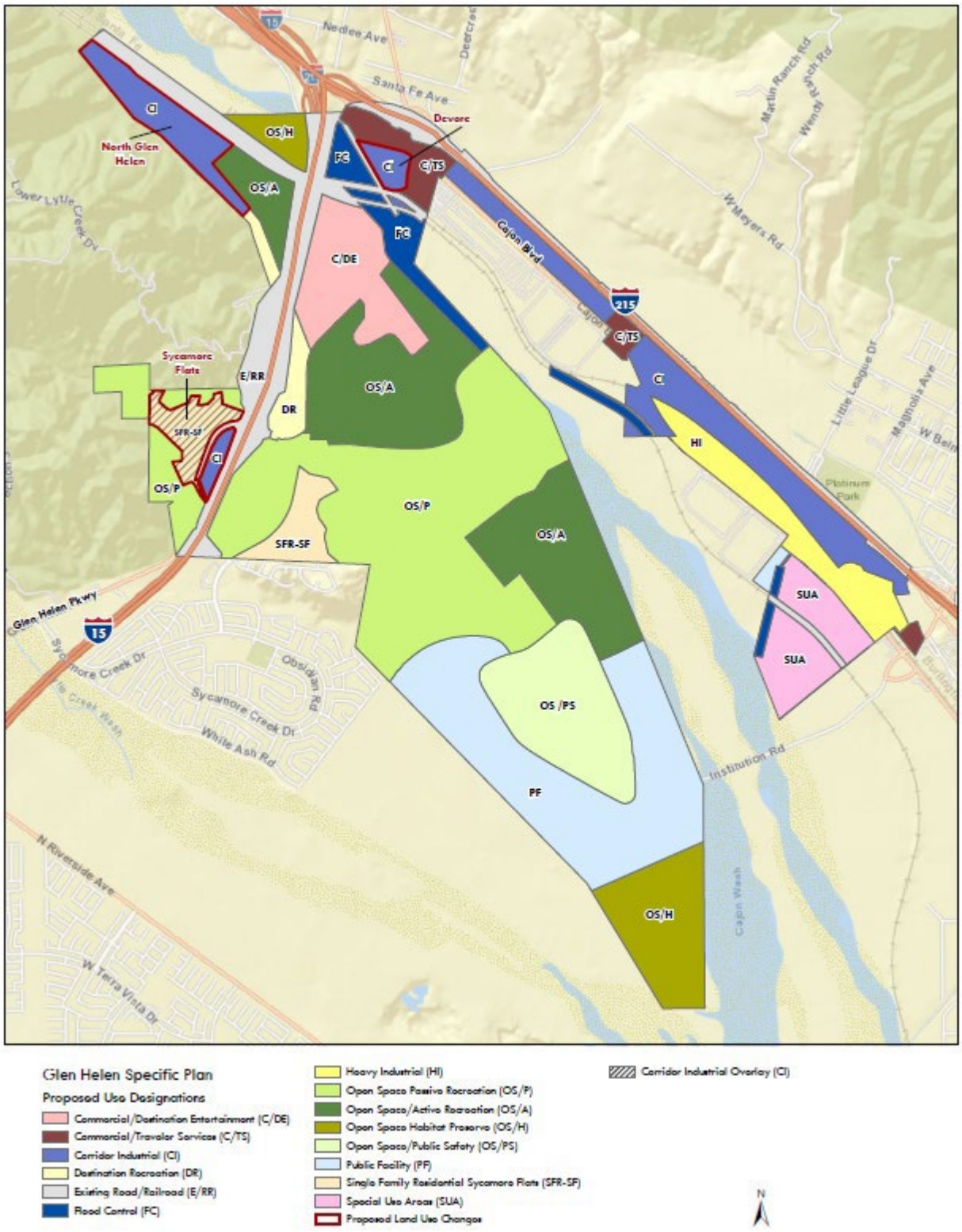
2.1 Project Description

The Project site consists of three out of the six Subareas located within the Glen Helen Specific Plan including: North Glen Helen, Devore, and Sycamore Flats. The proposed amendment would rezone 79 acres of Destination Recreation (DR), 31.8 acres of Commercial/Trailer Services (C/TS) and 48.7 acres of Single-Family Residential (SFR-SF). The Project would rezone the land use to 80.5 acres designated for Corridor Industrial (CI) and 79 acres designated for Truck Trailer Parking. The Project site is shown in Figure 2.1.

- Within the North Glen Helen Subarea, the proposed amendment would rezone 79 acres of Destination Recreation (DR) to 79 acres designated for Truck Trailer Parking.
- Within the Devore Subarea, the proposed amendment would rezone 19.2 acres of Destination Recreation (DR) to 19.2 acres designated for Corridor Industrial (CI).
- Within the Sycamore Flats Subarea, the proposed amendment would rezone 12.6 acres of Destination Recreation (DR) and 48.7 acres designated for Single-Family Residential (SFR-SF) to 61.3 acres designated for Corridor Industrial (CI).

Detailed descriptions of the Project in regard to the Floor Area Ratio (FAR) and Square Footage (SF) of different land use types within the Project site, and the designation of each type of land use within each subarea are provided in Section 4 of this document.

Figure 2.1: Glen Helen Specific Plan Land Use Map



2.2 Study Area and Analysis Scenarios

The County of San Bernardino *Transportation Impact Study (TIS) Guidelines* (July 2019) requires that the traffic and circulation impact of proposed development projects be analyzed. The study area was selected to include intersections at which the project would add 50 or more peak hour trips. This TIA includes the analysis of signalized intersections, all-way stop-control (AWSC) intersections, and two-way stop-control (TWSC) intersections. The following intersections were included in the analysis:

1. Glen Helen Pkwy/I-215 NB On Ramp (AWSC)
2. Glen Helen Pkwy/I-215 SB On Ramp (AWSC)
3. Glen Helen Pkwy/Cajon Blvd (AWSC)
4. Glen Helen Pkwy/Glen Helen Rd (TWSC)
5. Glen Helen Pkwy/Clearwater Pkwy (Signalized)
6. Glen Helen Pkwy/I-15 NB On Ramp (Signalized)
7. Glen Helen Pkwy/I-15 SB On Ramp (TWSC)

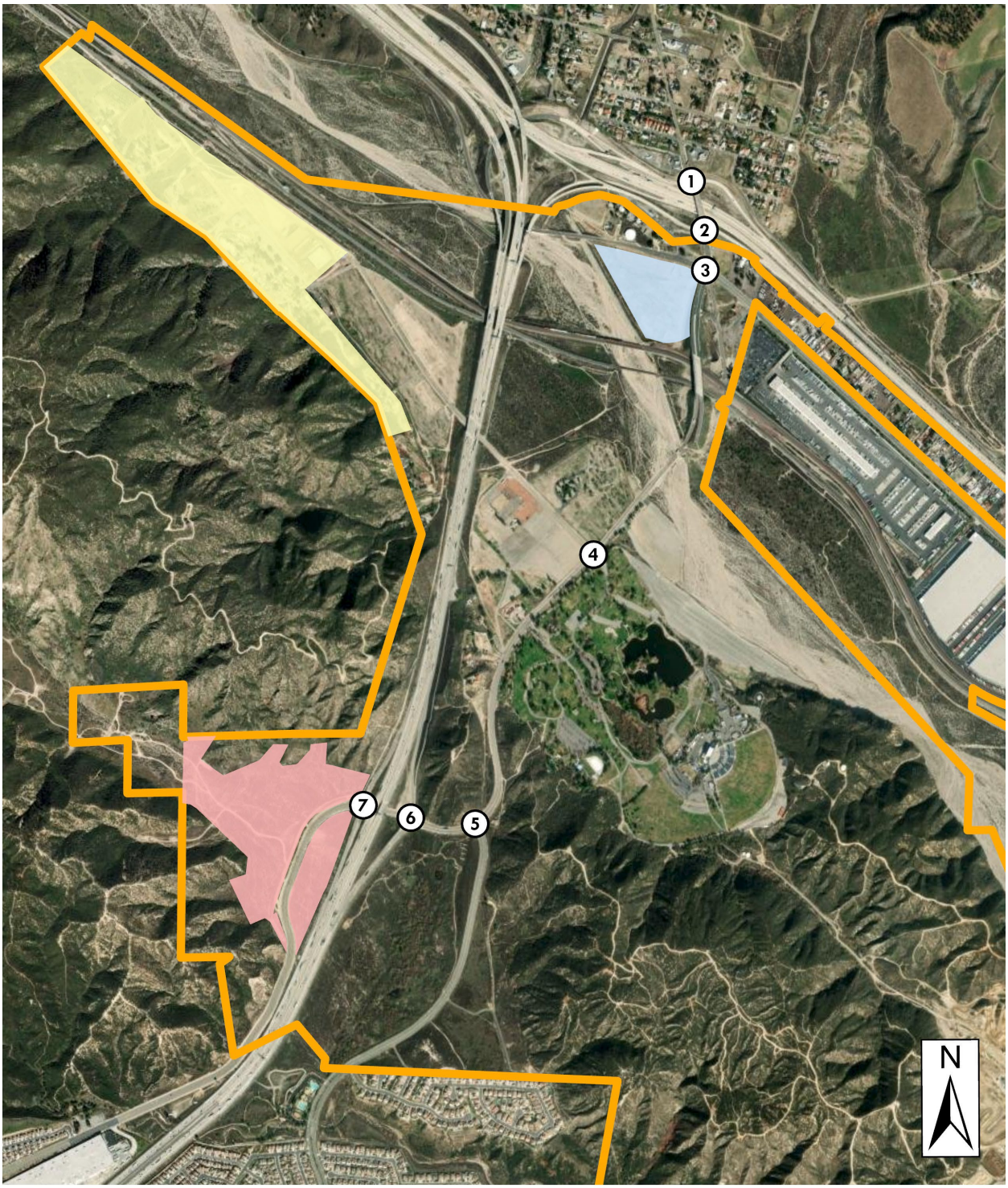
The locations of the study area intersections are shown in *Figure 2.2*. Study area intersections were evaluated during the AM peak hours, which are defined as the hour with the highest traffic volumes during the 6 AM to 9 AM commute period. AM peak hour traffic operations were evaluated for the following scenarios:

- Existing Conditions
- General Plan Buildout (2040)
- General Plan Buildout (2040) Plus Project Conditions

EPD collected counts for the study intersections on Thursday, March 2nd, 2023. As per the County of San Bernardino *TIS Guidelines* (July 2019), traffic volumes for the General Plan Buildout (2040) Conditions were forecasted using the San Bernardino Transportation Analysis Model (SBTAM) traffic model data which includes traffic volume from nearby cumulative development projects (approved and not yet built and those under review) provided by the County. Moreover, for the General Plan Buildout Plus Project Conditions, traffic volumes were forecasted by adding trips that are generated by the Project to traffic volumes for the General Plan Buildout Conditions.

All traffic count data are provided in *Appendix B*. All truck trips were converted to passenger car equivalent (PCE) in this TIA based on the PCE factors from the *San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016*.

Figure 2.2: Project Study Area



2.3 Methodology

Intersection operations are evaluated using Level of Service (LOS), which is a measure of the delay experienced by drivers on a roadway facility. LOS A indicates free-flow traffic conditions and is generally the best operating conditions. LOS F is an extremely congested condition and is the worst operating condition from the driver's perspective. In this report, LOS at signalized and unsignalized intersections is calculated using the *Highway Capacity Manual* (HCM), 7th Edition methodology.

LOS at signalized intersections is defined in terms of the weighted average control delay for the intersection as a whole. Control delay is a measure of the increase in travel time that is experienced due to traffic signal control and is expressed in terms of average control delay per vehicle (in seconds). Control delay is determined based on the intersection geometry and volume, signal cycle length, phasing, and coordination along the arterial corridor. *Table 2.1* shows the relationship between control delay and LOS.

Table 2.1: Relationship between Control Delay and LOS at a Signalized Intersection

LOS	Delay (Seconds per Vehicle)
A	≤ 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

Unsignalized intersections are categorized as either all-way stop control (AWSC) or two-way stop control (TWSC). LOS at AWSC intersections is determined by the weighted average control delay of the overall intersection. The HCM TWSC intersection methodology calculates LOS based on the delay experienced by drivers on the minor (stop-controlled) approaches to the intersection. For TWSC intersections, LOS is determined for each minor-street movement, as well as the major-street left-turns. The relationship between delay and LOS at Unsignalized intersections is shown in *Table 2.2*.

Table 2.2: Relationship between Delay and LOS an Unsignalized Intersection

LOS	Delay (seconds)
A	0-10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

2.4 Signal Warrant Analysis Methodology

This TIA utilizes the peak hour volume-based warrant (Warrant 3) from the 2014 *California Manual on Uniform Traffic Control Devices (CA MUTCD), revision 6*, effective March 30, 2021. As per the County of San Bernardino *Transportation Impact Study (TIS) Guidelines* (July 2019), the signal warrant analysis shall utilize the Caltrans peak-hour warrants (Warrant 3) for Existing conditions, General Plan Buildout conditions and General Plan Buildout Plus Project conditions. Because the study area is located at a community having a population of less than 10,000, the *CA MUTCD Figure 4C-4* (70% factor) was used to evaluate the signal warrant assessment.

2.5 Significance Criteria

County of San Bernardino

The County of San Bernardino *TIS Guidelines* (July 2019) provides the following criteria for the determination of traffic impacts. It should be noted that the project is located in the Valley region.

Signalized Intersections

"Any study intersection that is operating at a LOS A, B, C or D for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall mitigate the impact to bring the intersection back to at least LOS D.

Any study intersection that is operating at a LOS E or F for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to project traffic being added.

For scenarios which include the addition of Cumulative Project Traffic (i.e. shared impacts), study intersections shall be mitigated to LOS D or better in the Valley and Mountain regions and LOS C or better in the Desert regions of the County."

Unsignalized Intersections

"An impact is considered significant if the study determines that either section (a) or both sections (b) and (c) occur.

a) The addition of project related traffic causes the intersection to move from a LOS D or better to a LOS E or worse

OR

b) The project adds 5.0 seconds or more to an intersection that is already projected to operate at an LOS E or F with background traffic

AND

c) One or both of the following conditions are met:
    1) The project adds ten (10) or more trips to any approach
    2) The intersection meets the peak hour traffic signal warrant after the addition of project traffic"

"Once a significant impact has been identified, mitigation shall be provided as follows:

1. For scenarios involving project traffic but not Cumulative Project Traffic, the LOS shall be mitigated to either LOS D or better for case a) above or to pre-project LOS and delay for case b) above.
2. For scenarios that include Cumulative Project Traffic study intersections shall be mitigated to LOS D or better in the Valley and Mountain regions and LOS C or better in the Desert regions of the County."

California Department of Transportation (Caltrans)

The *Caltrans Guide for the Preparation of Traffic Impact Studies* (December 2002) required that State Highway facilities be analyzed when project traffic was added to the facility. These guidelines were superseded by the *Caltrans Vehicle Miles Traveled-Focused Transportation Impact Study Guide* in May 2020. As noted in the updated guidelines, Caltrans is now focused on vehicle miles traveled (VMT) as a metric for transportation analysis and states the following: "With this guidance, the Department will transition away from requesting LOS or other vehicle operations analyses of land use projects".

3 BASELINE CONDITIONS

This section discusses the baseline (without project) conditions. Baseline conditions are those conditions that exist within the study area in the existing condition and that are forecast to occur in the future, without the proposed project.

3.1 Existing Transportation System and Access

The proposed Glen Helen Specific Plan Amendment project is located in at the north end of the Valley Region in the unincorporated area of the County of San Bernardino. Roadways providing access to the Specific Plan include I-15, I-215, Cajon Boulevard and Glen Helen Parkway. The characteristics of each roadway are discussed below:

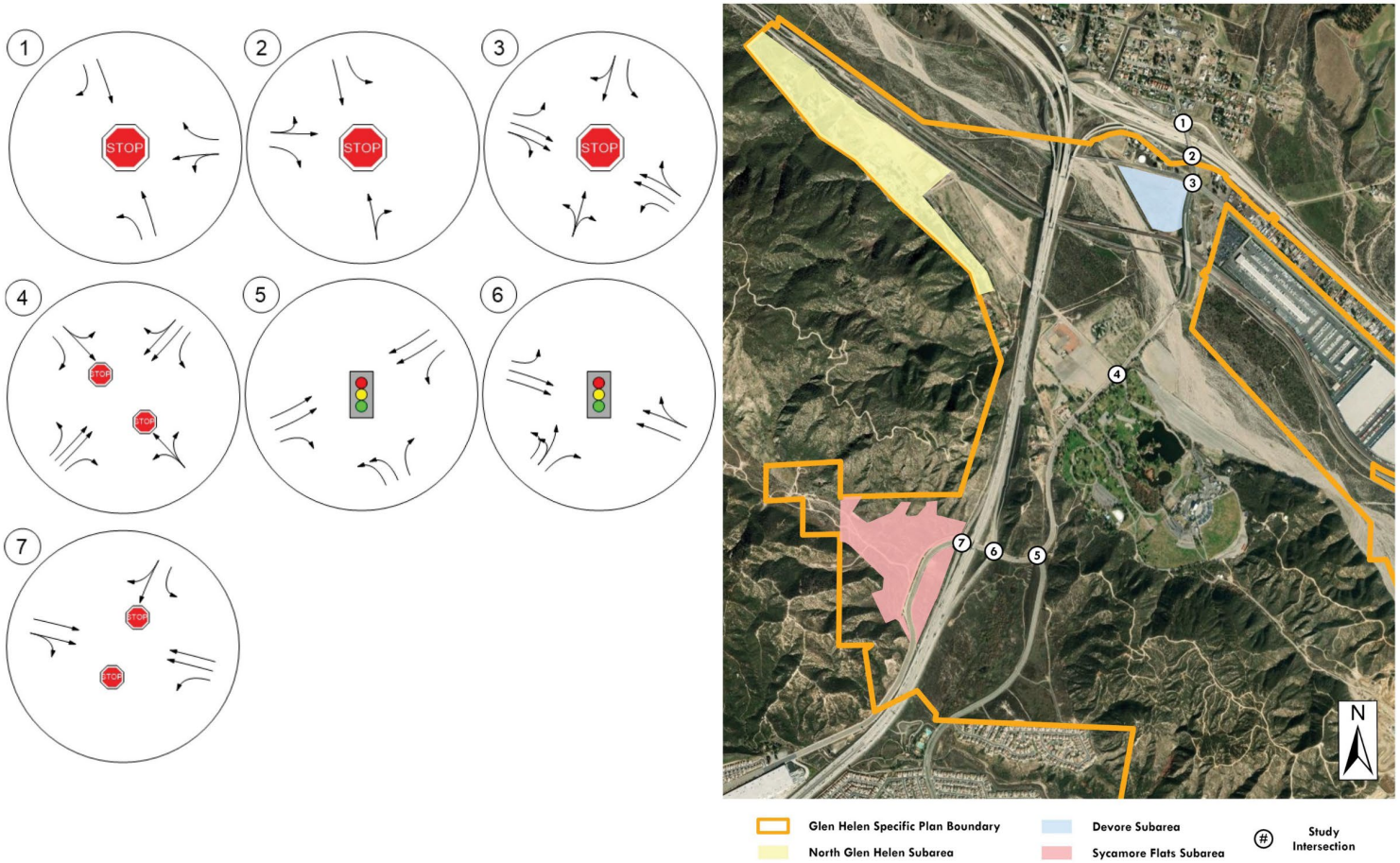
- Regional access is provided to the project via Interstate I-15, I-215, which provide connections to Riverside County, Los Angeles County and San Diego County.
- Cajon Boulevard and Glen Helen Parkway are designated as a four to six-lane undivided major arterial as per the County Policy Plan. In the vicinity of the project site, the existing Cajon Boulevard and Glen Helen Parkway are four-lane undivided major arterials.

The characteristics of each roadway are shown in *Table 3.1*. The existing traffic control and intersection geometrics at study area intersections are shown in *Figure 3.1*.

Table 3.1: Existing Roadway Characteristics within Study Area

Roadway	Existing Condition	Sidewalks?	Bike Lane?
Cajon Boulevard (E/W)	Four-lane undivided major arterial	No	Yes, Class I and Class II
Glen Helen Parkway (N/S)	Four-lane undivided major arterial.	Yes, both sides of Glen Helen Parkway between Cajon Boulevard and Santa Fe Avenue	No

Figure 3.1: Existing Lane Geometries and Traffic Control



3.2 Existing Traffic Volumes and Intersection Operations

Existing AM peak hour traffic volumes at the study area intersections are shown in *Figures 3.2*. The existing LOS at the study area intersections were determined using the HCM methodology, described previously in *Section 2.3*. *Table 3.2* shows the Existing AM peak hour levels of service at the study area intersections. All LOS calculations are provided in *Appendix C*. As shown in *Table 3.2*, all intersections operate with a satisfactory LOS during the AM peak hours in the Existing conditions except the following intersection:

- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp (F at AM peak hour)

Table 3.2: Existing AM Peak Hour Level of Service

Intersection		Jurisdiction	Traffic Control	AM Peak		Target LOS
				Delay[1]	LOS[2]	
1.	Glen Helen Pkwy/I-215 NB On Ramp	Cal	AWSC	8.8	A	D
2.	Glen Helen Pkwy/I-215 SB On Ramp	Cal	AWSC	9.2	A	D
3.	Glen Helen Pkwy/Cajon Blvd	SB	AWSC	13.3	B	D
4.	Glen Helen Pkwy/Glen Helen Rd	CSB	TWSC	11.5	B	D
5.	Glen Helen Pkwy/Clearwater Pkwy	CSB	Signal	21.2	C	D
6.	Glen Helen Pkwy/I-15 NB On Ramp	Cal	Signal	22.6	C	D
7.	Glen Helen Pkwy/I-15 SB On Ramp	Cal	TWSC	336.8	F	D

=Unsatisfactory Level of Service

CSB =County of San Bernardino

SB =City of San Bernardino

Cal =Caltrans

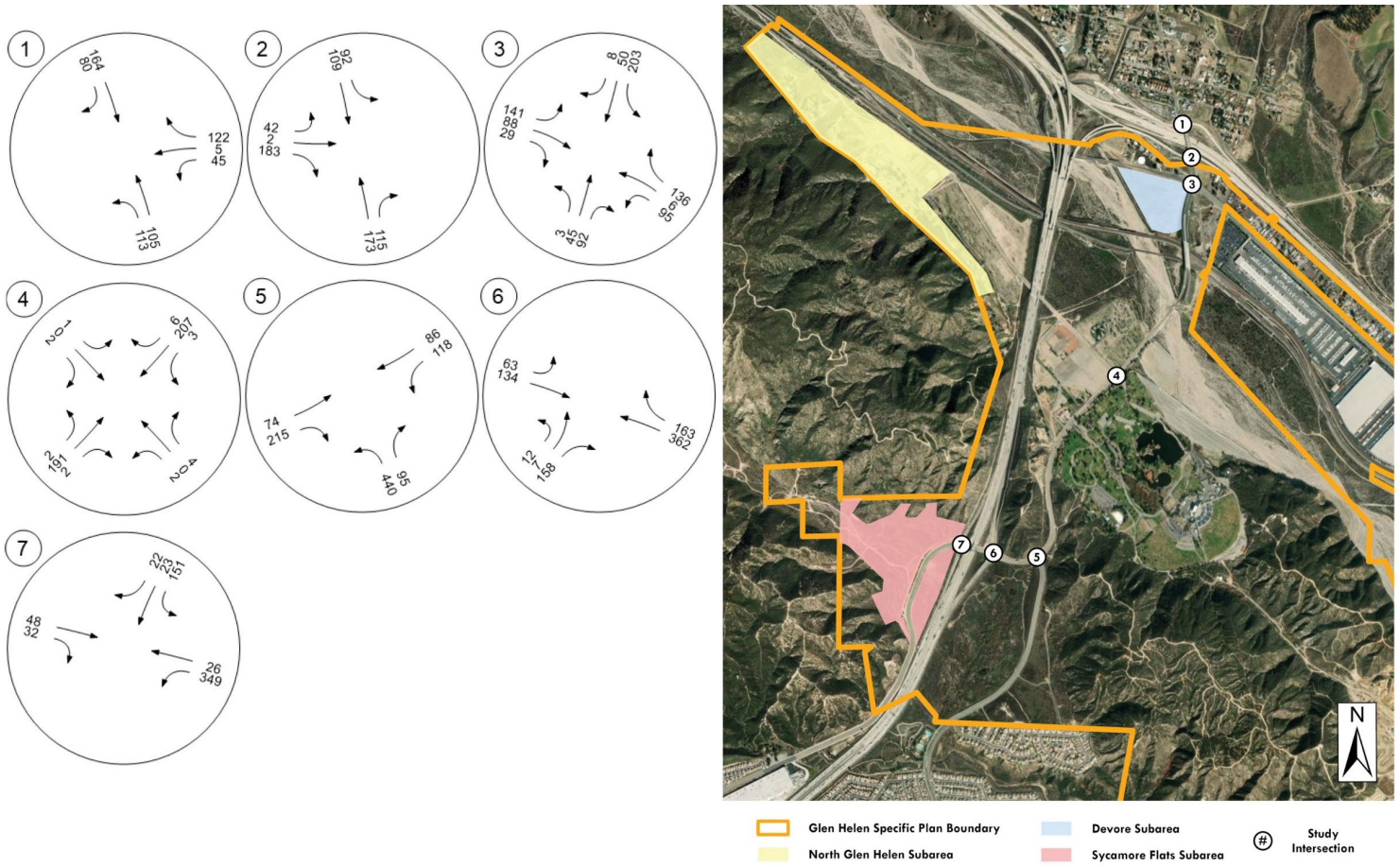
AWSC = All-Way Stop Control

TWSC = Two-Way Stop Control

[1]Delay in Seconds

[2]Level of Service

Figure 3.2: Existing AM Peak Hour Traffic Volumes



3.3 General Plan Buildout Volumes and Intersection Operation

In accordance with the approved scope of work by the City of San Bernardino, the General Plan Buildout (2040) conditions were forecasted using the San Bernardino Transportation Analysis Model (SBTAM) traffic model data. Turn movements were post-processed with the SBTAM model growth rates using the methodology outlined in NCHRP 765. Additionally, six development projects (cumulative projects) listed in the scope were coded into the General Plan Buildout (2040) model. The cumulative projects' location can be found in Figure 3.3 and trip generation can be found in Table 3.3. The trip generation for each cumulative project was calculated using trip rates from the Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition or from the *Truck Trailer Parking Trip Generation Study* from EPD Solutions Inc.

Figure 3.3: Location of Cumulative Projects

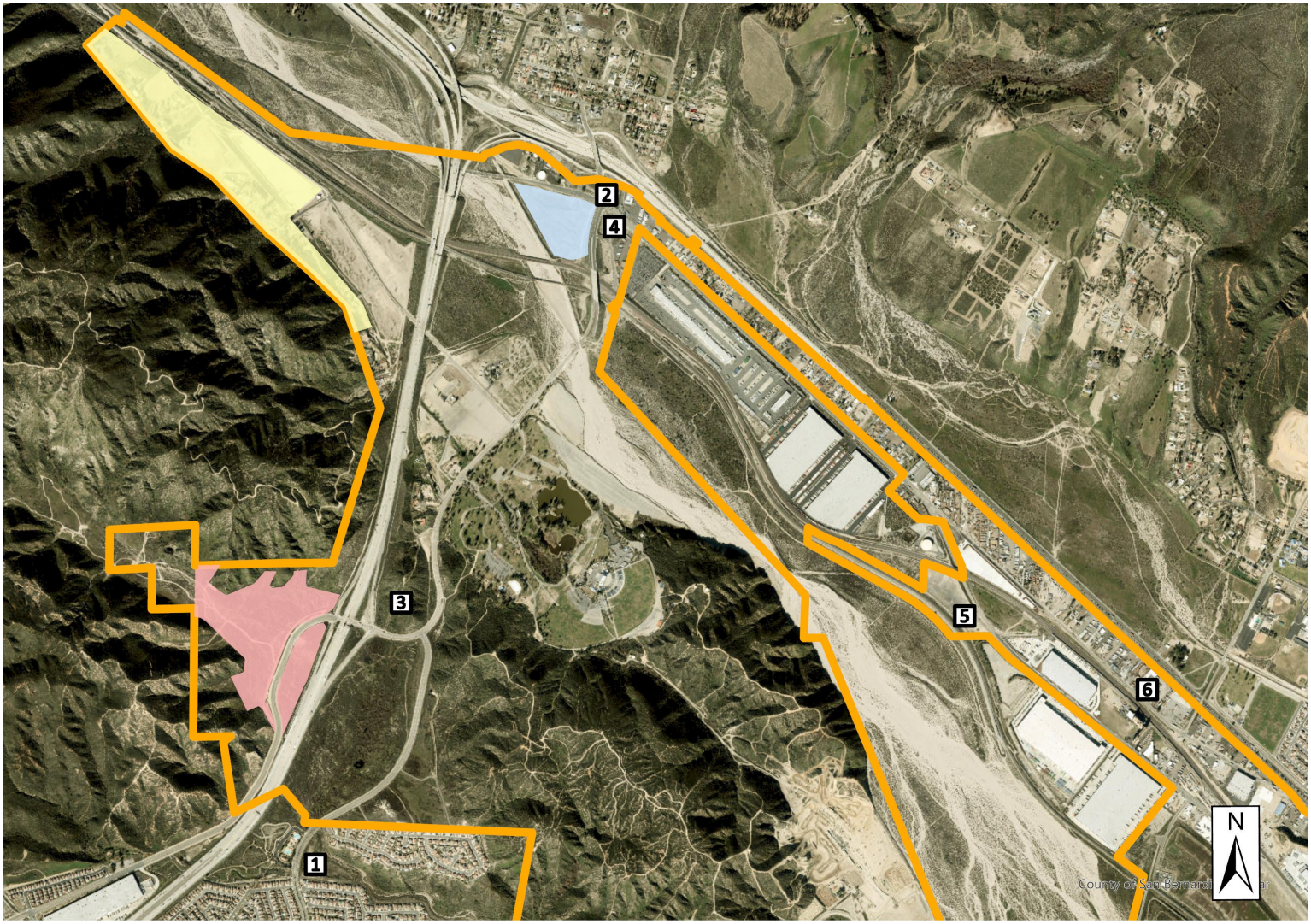


Table 3.3: Cumulative Projects Trip Generation

Land Use		Units	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates									
Shopping Plaza (40-150k)[1]		TSF	94.49	2.19	1.34	3.53	4.33	4.70	9.03
Hotel[2]		Rooms	7.99	0.26	0.20	0.46	0.30	0.29	0.59
Convenience Store/Gas Station - GFA (4-5.5k)[3]		TSF	257.13	13.52	13.52	27.04	11.38	11.38	22.76
Fast-Food Restaurant with Drive-Through Window[4]		TSF	467.48	22.75	21.86	44.61	17.18	15.85	33.03
High-Turnover (Sit-Down) Resteraunt[5]		TSF	107.20	5.26	4.31	9.57	5.52	3.53	9.05
Health/Fitness Club[6]		TSF	34.50	0.67	0.64	1.31	1.97	1.48	3.45
Fire and rescue station[7]		TSF	4.80	0.14	0.34	0.48	0.14	0.34	0.48
Single-Family Detached Housing[8]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
Truck Stop[9]		PUMPS	224.00	6.85	7.12	13.97	8.17	7.25	15.42
Truck-Trailer Parking Lot[10]		ACRES	55.66	2.41	1.92	4.33	1.37	2.14	3.51
Convenience Store/Gas Station - GFA (2-4k)[11]		TSF	265.12	8.03	8.03	16.06	9.21	9.21	18.42
High-Cube Transload and Short-Term Storage Warehouse[12]		TSF	1.4	0.0616	0.018	0.08	0.03	0.072	0.1
1. PROJ-2021-00148[6]									
Single-Family Detached Housing[8]	175	DU	**1650**	**31**	**92**	**123**	**104**	**61**	**165**
2. PROJ-2021-00091									
Convenience Store/Gas Station - GFA (2-4k)[11]	3.800	TSF	1007	31	31	61	35	35	70
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)				-18	-18	-37	-20	-20	-39
Fast-Food Restaurant with Drive-Through Window[4]	2.000	TSF	935	46	44	89	34	32	66
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)				-23	-22	-45	-19	-17	-36
Total Project Trip Generation			**1942**	**35**	**34**	**69**	**31**	**30**	**61**
3. PROJ-2023-00012									
Shopping Plaza (40-150k)[1]	45.5	TSF	4299	100	61	161	197	214	411
Shopping Plaza (40-150k) Pass-By Trips (40% AM, 40% PM)			-1720	-40	-24	-64	-79	-85	-164
Hotel[2]	130	Rooms	1039	33	26	60	39	38	77
Convenience Store/Gas Station - GFA (4-5.5k)[3]	10.600	TSF	2726	143	143	287	121	121	241
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)			-1526	-86	-86	-172	-68	-68	-135
Fast-Food Restaurant with Drive-Through Window[4]	22.800	TSF	10659	519	498	1017	392	361	753
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)			-5329	-259	-249	-509	-215	-199	-414
High-Turnover (Sit-Down) Resteraunt[5]	11.800	TSF	1265	62	51	113	65	42	107
High-Turnover (Sit-Down)Restaurant Pass-By Trips (43% AM, 43% PM)			-544	-27	-22	-49	-28	-18	-46
Health/Fitness Club[6]	35	TSF	1208	23	22	46	69	52	121
Fire and rescue station[7]	5.2	TSF	25	1	2	2	1	2	2
Total Project Trip Generation			**12100**	**469**	**423**	**892**	**493**	**459**	**952**
4. PROJ-2022-00213									
Convenience Store/Gas Station - GFA (2-4k)[11]	2.000	TSF	530	16	16	32	18	18	37
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)				-10	-10	-19	-10	-10	-21
Fast-Food Restaurant with Drive-Through Window[4]	1.000	TSF	467	23	22	45	17	16	33
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)				-11	-11	-22	-9	-9	-18
Truck Stop[9]	5	PUMPS	1120	34	36	70	41	36	77
Total Project Trip Generation			**2118**	**52**	**53**	**105**	**57**	**51**	**108**

5. PROJ-2022-00019									
Truck-Trailer Parking Lot[10]	10.42	ACRES	580	25	20	45	14	22	37
Vehicle Mix [10]		***Percent*** [10]							
Passenger Vehicles		32.23%	187	8	6	15	5	7	12
2-Axle truck		40.39%	234	10	8	18	6	9	15
3-Axle truck		11.05%	64	3	2	5	2	2	4
4+-Axle Trucks		16.33%	95	4	3	7	2	4	6
		100%	580	25	20	45	14	22	37
PCE Trip Generation [11]		***PCE Factor***							
Passenger Vehicles		1.0	187	8	6	15	5	7	12
2-Axle truck		1.5	351	15	12	27	9	14	22
3-Axle truck		2.0	128	6	4	10	3	5	8
4+-Axle Trucks		3.0	284	12	10	22	7	11	18
Total PCE Trip Generation			951	41	33	74	24	37	60
Truck-Trailer Parking Lot[10]			**951**	**41**	**33**	**74**	**24**	**37**	**60**
6. PROJ-2022-00174									
High-Cube Transload and Short-Term Storage Warehouse[12]	211.50	TSF	296	13	4	17	6	15	21
Vehicle Mix [10]		***Percent*** [10]							
Passenger Vehicles		69.00%	204	9	3	12	4	11	15
2-Axle truck		6.80%	20	1	0	1	0	1	1
3-Axle truck		5.50%	16	1	0	1	0	1	1
4+-Axle Trucks		18.70%	55	2	1	3	1	3	4
		100%	296	13	4	17	6	15	21
PCE Trip Generation [11]		***PCE Factor***							
Passenger Vehicles		1.0	204	9	3	12	4	11	15
2-Axle truck		1.5	30	1	0	2	1	2	2
3-Axle truck		2.0	33	1	0	2	1	2	2
4+-Axle Trucks		3.0	166	7	2	9	3	9	12
Total PCE Trip Generation			433	19	6	25	9	23	31
High-Cube Transload and Short-Term Storage Warehouse[12]			**433**	**19**	**6**	**25**	**9**	**23**	**31**
Total Cumulative Trip Generation			18824	631	627	1258	708	646	1353

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

DU = Dwelling Unit

[1]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 821 - Shopping Plaza (40-150k)

[2]Trip rates from the Institute of transportation Engineers, Trip Generation Manual,11th Edition, 2021. Land Use Code 310 - Hotel.

[3]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 945 - Convenience Store/Gas Station - GFA (4-5.5k).

[4]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 934 - Fast-Food Restaurant with Drive-Through Window.

[5]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 932 - High-Turnover (Sit-Down) Resteraunt

[6]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 492 - Health/Fitness Club. PM*10 as daily

[7]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 575 - Fire And Rescue Station. PM as AM. PM*10 as daily

[8]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 210 - Single-Family Detached Housing.

[9]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 950 - Truck Stop.

[10]Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA on

[11]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual* ,11th Edition, 2021. Land Use Code 945 - Convenience Store/Gas Station - GFA (2-4k).

[12]Trip rates from the Institute of transportation Engineers, Trip Generation Manual,11th Edition, 2021. Land Use Code 154 - High-Cube Transload and Short-Term Storage Warehouse.

The General Plan Buildout (2040) traffic volumes are illustrated in *Figure 3.4*. All post-processing worksheets of turning movement volumes under the General Plan Buildout (2040) conditions are provided in Appendix D.

Table 3.4 shows the General Plan Buildout AM peak hour LOS at the study area intersections. As shown in *Table 3.4*, the following intersections operate at an unsatisfactory LOS during the AM peak hour under the General Plan Buildout conditions:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp (F at AM peak hour)
- Intersection 3. Glen Helen Pkwy/Cajon Blvd (F at AM peak hour)
- Intersection 6. Glen Helen Pkwy/ I-15 NB On Ramp (F at AM peak hour)
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp (F at AM peak hour)

Table 3.4: General Plan Buildout AM Peak Hour Level of Service

Intersection		Jurisdiction	Traffic Control	AM Peak		Target LOS
				Delay[1]	LOS[2]	
1.	Glen Helen Pkwy/I-215 NB On Ramp	Cal	AWSC	11.7	B	D
2.	Glen Helen Pkwy/I-215 SB On Ramp	Cal	AWSC	131.3	F	D
3.	Glen Helen Pkwy/Cajon Blvd	SB	AWSC	654.0	F	D
4.	Glen Helen Pkwy/Glen Helen Rd	CSB	TWSC	18.4	C	D
5.	Glen Helen Pkwy/Clearwater Pkwy	CSB	Signal	33.7	C	D
6.	Glen Helen Pkwy/I-15 NB On Ramp	Cal	Signal	196.6	F	D
7.	Glen Helen Pkwy/I-15 SB On Ramp	Cal	TWSC	10000.0	F	D

=Unsatisfactory Level of Service

CSB =County of San Bernardino

SB =City of San Bernardino

Cal =Caltrans

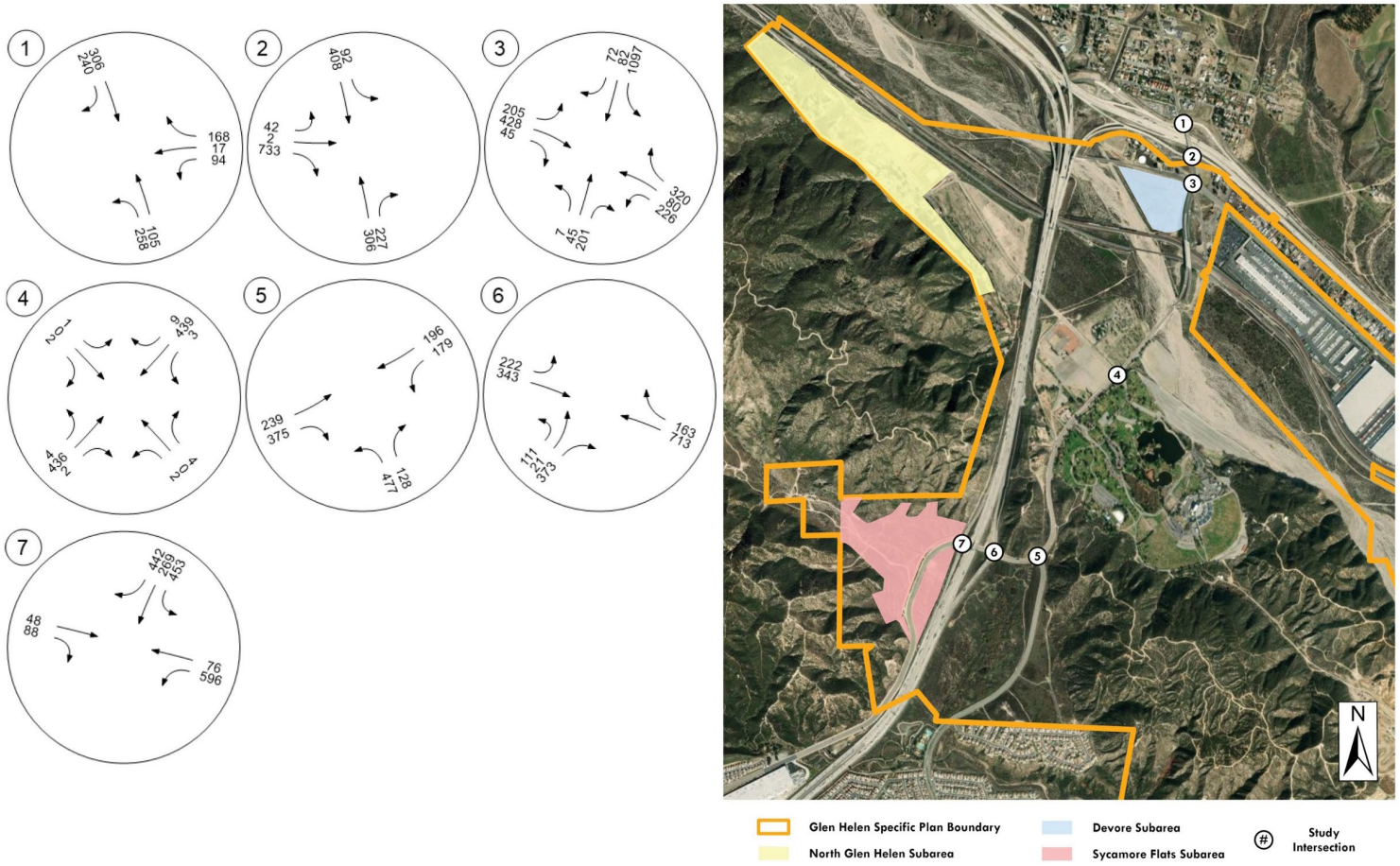
AWSC = All-Way Stop Control

TWSC = Two-Way Stop Control

[1]Delay in Seconds

[2]Level of Service

Figure 3.4: General Plan Buildout AM Peak Hour Traffic Volumes



4 PROPOSED PROJECT

As stated in *Section 2.1*, the Project proposes the amendment of three out of the six subareas within the Glen Helen Specific Plan including the North Glen Helen Subarea.

4.1 Project Trip Generation

The Project would remove the following land uses with a total acreage of 159.5 for three specific subareas including: North Glen Helen, Devore, and Sycamore Flats:

- North Glen Helen: 79 acres designated for Destination Recreation (DR)
- Devore: 19.2 acres (0.4 FAR, equating 334,541 SF) for Commercial/Traveler Services (C/TS)
- Sycamore Flats: 12.6 acres (0.4 FAR, equating 334,541 SF) for Commercial/Traveler Services (C/TS) and 48.7 acres (336 dwelling units) for Single-Family Residential (SFR-SF).

The Project would rezone the land use with a total acreage of 159.5 to the followings:

- North Glen Helen: 79 (0.03 FAR, equating 103,237 SF) acres designated for Truck Trailer Parking.
- Devore: 19.2 acres (0.5 FAR, equating 418,176 SF) acres designated for Corridor Industrial (CI)
- Sycamore Flats: 61.3 (0.5 FAR, equating 1,335,114 SF) acres designated for Corridor Industrial (CI).

Vehicle trips were generated for the Project using trip rates for the existing land use per subarea and comparing the trips to the proposed land use for the amended subareas. The proposed Project is estimated to generate approximately net -9,199 daily PCE trips where the AM peak hour would result in 646 PCE trips (593 trips in, 55 trips out), and -933 PCE trips in the PM peak hour (-740 trips in, -192 trips out).

The total trip generation of the Project is shown in Table 4.1. The trip generation totals of each subarea of the Project are discussed below.

North Glen Helen Subarea

The segment of the North Glen Helen Subarea earmarked for the proposed amendment encompasses 79 acres of land, which is currently designated for Destination Recreation (DR). The proposed amendment area in the North Glen Helen Subarea would replace the 79 acres designated for Destination Recreation (DR) with 79 (0.03 FAR, equating 103,237 SF) acres designated for Corridor Industrial, specifically Truck Trailer Parking.

This proposed amendment results in a total trip generation of 6,227 Passenger Car Equivalent (PCE) daily trips, with 485 PCE peak hour trips in the AM (243 trips in, 242 trips out), and 427 peak hour trips in the PM (181 trips in, 246 trips out). When compared to the approved Destination Recreation land use the North Glen Helen Subarea net trip generation would result in 5,832 PCE daily trips, with 468 PCE peak hour trips

in the AM (231 trips in, 237 trips out) and 395 PCE peak hour trips in the PM (170 trips in, 225 trips out). The trip generation of the North Glen Helen Subarea is shown in Table 4.2.

Devore Subarea

Situated at the southwest corner of Glen Helen Parkway and Cajon Boulevard, the Devore Subarea comprises three parcels totaling 19.2 acres. Accessible through I-15 and I-215, regional connectivity is facilitated, with the I-15/I-215 Devore junction located 0.25 miles northwest of the subarea.

The proposed amendment area in the Devore Subarea would replace the 19.2 (0.4 FAR, equating 334,541 SF) acres designated for Commercial/Traveler Services (C/TS) with 19.2 (0.5 FAR, equating 418,176 SF) acres designated for Corridor Industrial.

The proposed amendment area in the Devore Subarea would result in a total trip generation of 2,062 daily PCE trips, with 206 PCE peak hour trips in the AM (169 trips in, 37 trips out), and 206 PCE peak hour trips in the PM (46 trips in, 160 trips out). When compared to the approved Commercial/Traveler Services designated to this Subarea, the amended Devore Subarea would result in a net decrease trip generation of -10,320 daily PCE trips, with -75 PCE peak hour trips in the AM (-5 trips in, -70 trips out), and -931 PCE peak hour trips in the PM (-500 trips in, -431 trips out), thus resulting in a reduction in trips within the study area. The trip generation of the Devore Subarea is shown in Table 4.3.

Sycamore Flats Subarea

Comprising two undeveloped sections bisected by both the I-15 and Glen Helen Parkway, the connectivity of the Sycamore Flats Subarea is established through I-15, while local access is facilitated by Glen Helen Parkway, encompassing a total of 150 acres.

The proposed amendment area in the Devore Subarea would replace the 12.6 (0.4 FAR, equating 219,542 SF) acres designated for Commercial/Traveler Services (C/TS) and the 48.7 acres (336 dwelling units) designated for Single-Family Residential (SFR-SF) with 61.3 (0.5 FAR, equating 1,335,114 SF) acres designated for Corridor Industrial.

The amendment of the Sycamore Flats Subarea would result in a total trip generation of 6,583 daily PCE trips, with 660 PCE peak hour trips in the AM (540 trips in, 121 trips out), and 661 PCE peak hour trips in the PM (146 trips in, 515 trips out). When compared to the Commercial/Traveler Services designated to this Subarea, the amended Sycamore Flats Subarea would result in a net decrease trip generation of -4,711 net PCE daily trips, with 241 PCE peak hour trips in the AM (367 trips in, -125 trips out), and -401 PCE peak hour trips in the PM (-411 trips in, 10 trips out). The trip generation of the Sycamore Flats Subarea is shown in Table 4.4.

Table 4.1: Project Total Trip Generation

Land Use		Units	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Single-Family Detached Housing[3]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
SANDAG Undeveloped Park[4]		Acres	3.00	0.15	0.06	0.21	0.14	0.26	0.40
Truck/Trailer Parking[5]									
Passenger Car		Acres	9.35	0.42	0.12	0.54	0.35	0.63	0.97
2-Axle		Acres	7.78	0.48	0.27	0.75	0.32	0.46	0.79
3-Axle		Acres	9.55	0.46	0.06	0.53	0.32	0.33	0.66
4+ Axle		Acres	10.75	0.16	0.78	0.94	0.23	0.21	0.43
Total		Acres	37.43	1.52	1.23	2.76	1.22	1.63	2.85
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	-554.083	TSF	-20,507	-289	-177	-465	-904	-980	-1,884
Glen-Helen/Specific Plan - Single Family Residential-Sycamore Flats (GH/SP SFR-SF)[3]	-336	DU	-3,168	-59	-176	-235	-199	-117	-316
Destination Recreation (DR)[4]	-79.000	Acres	-395	-12	-5	-17	-11	-21	-32
Total Existing Land Use Trip Generation			**-24,070**	**-359**	**-358**	**-717**	**-1,114**	**-1,117**	**-2,232**
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[2]	1,856.527	TSF	6,256	511	120	631	139	492	631
Vehicle Mix [6]		***Percent*** [6]							
Passenger Vehicles		69.00%	4,317	352	83	435	96	340	435
2-Axle truck		6.80%	425	35	8	43	9	33	43
3-Axle truck		5.50%	344	28	7	35	8	27	35
4+-Axle Trucks		18.70%	1,170	96	22	118	26	92	118
Proposed CI Trip Generation		100%	6,256	511	120	631	139	492	631
PCE Trip Generation [7]		***PCE Factor*** [7]							
Passenger Vehicles		1.0	4,317	352	83	435	96	339	435
2-Axle truck		1.5	638	53	11	64	14	51	65
3-Axle truck		2.0	688	56	14	70	16	54	70
4+-Axle Trucks		3.0	3,510	288	66	354	78	276	354
Proposed CI PCE Trip Generation			9,153	750	173	923	203	720	923
Truck Trailer Parking[5]	79.000	Acres	2,957	120	98	218	96	129	225
Vehicle Mix [5]		***Percent*** [5]							
Passenger Vehicles		24.97%	738	32	11	43	26	51	77
2-Axle truck		20.79%	615	38	21	59	26	36	62
3-Axle truck		25.52%	755	37	5	42	26	26	52
4+-Axle Trucks		28.72%	849	13	61	74	18	16	34
Proposed Truck Trailer Trip Generation		100%	2,957	120	98	218	96	129	225
PCE Trip Generation [7]		***PCE Factor*** [7]							
Passenger Vehicles		1.0	738	32	11	43	26	51	77
2-Axle truck		1.5	923	57	32	89	39	54	93
3-Axle truck		2.0	1,510	74	10	84	52	52	104
4+-Axle Trucks		3.0	2,547	39	183	222	54	48	102
Proposed Truck Trailer PCE Trip Generation			5,718	202	236	438	171	205	376
Total Proposed Land Use Trip Generation			**14,871**	**952**	**409**	**1,361**	**374**	**925**	**1,299**
Net Trip Generation			**-9,199**	**593**	**51**	**644**	**-740**	**-192**	**-933**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 210 -Single-Family Detached Housing.

[4] Trip rates from San Diego Municipal Code Land Development Code *Trip Generation Muanul* . Land Use Code - Undeveloped Park.

[5] Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA on August 23 and August 24, 2022, 19180 Cajon Boulevard, Devore, on September 29, 2022 and September 30, 2022

[6] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[7] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

Table 4.2: North Glen Helen Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Industrial Park [1]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Truck/Trailer Parking[2]									
Passenger Car		Acres	9.35	0.42	0.12	0.54	0.35	0.63	0.97
2-Axle		Acres	7.78	0.48	0.27	0.75	0.32	0.46	0.79
3-Axle		Acres	9.55	0.46	0.06	0.53	0.32	0.33	0.66
4+ Axle		Acres	10.75	0.16	0.78	0.94	0.23	0.21	0.43
Total		Acres	37.43	1.52	1.23	2.76	1.22	1.63	2.85
SANDAG Undeveloped Park[3]		Acres	5.00	0.15	0.06	0.21	0.14	0.26	0.40
Existing Land Use Designation Trip Generation									
Destination Recreation (DR)[3]	-79.000	Acres	-395	-12	-5	-17	-11	-21	-32
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[1]	103.237	TSF	348	28	7	35	8	28	36
Vehicle Mix [4]		***Percent*** [4]							
Passenger Vehicles		69.00%	240	19	5	24	6	19	25
2-Axle truck		6.80%	24	2	1	3	1	2	2
3-Axle truck		5.50%	19	2	0	2	0	2	2
4+-Axle Trucks		18.70%	65	5	1	6	1	5	6
Proposed CI Trip Generation		100%	348	28	7	35	8	28	36
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	240	19	5	24	6	19	25
2-Axle truck		1.5	35	3	1	4	1	3	4
3-Axle truck		2.0	38	3	0	3	1	3	4
4+-Axle Trucks		3.0	195	16	2	18	4	14	18
Proposed CI PCE Trip Generation			509	42	7	49	11	39	50
Truck Trailer Parking[2]	79.000	Acres	2,957	120	98	218	96	129	225
Vehicle Mix [2]		***Percent*** [5]							
Passenger Vehicles		24.97%	738	33	9	42	27	50	77
2-Axle truck		20.79%	615	38	21	59	26	37	62
3-Axle truck		25.52%	755	37	5	42	26	26	52
4+-Axle Trucks		28.72%	849	13	61	74	18	16	34
Proposed Truck Trailer Trip Generation		100%	2,958	120	97	218	96	128	225
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	738	33	9	42	27	50	77
2-Axle truck		1.5	922	56	32	88	38	55	93
3-Axle truck		2.0	1,509	73	10	84	51	53	104
4+-Axle Trucks		3.0	2,548	38	184	223	54	49	102
Proposed Truck Trailer PCE Trip Generation			5,718	201	235	436	170	207	377
Total Trip Generation			6,227	243	242	485	181	246	427
Net Trip Generation			**5,832**	**231**	**237**	**468**	**170**	**225**	**395**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual*, 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[2] Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA on August 23 and August 24, 2022, 19180 Cajon Boulevard, Devore, on September 29, 2022 and September 30, 2022

[3] Trip rates from San Diego Municipal Code Land Development Code *Trip Generation Muanul*. Land Use Code - Undeveloped Park.

[4] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[5] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

Table 4.3: Devore Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	-334.541	TSF	-12,381	-174	-107	-281	-546	-591	-1,137
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[2]	418.176	TSF	1,409	115	27	142	32	111	143
Vehicle Mix [3]		***Percent*** [3]							
Passenger Vehicles		69.00%	972	79	19	98	22	77	99
2-Axle truck		6.80%	96	8	2	10	2	8	10
3-Axle truck		5.50%	78	6	2	8	2	6	8
4+-Axle Trucks		18.70%	264	22	4	26	6	20	26
Proposed CI Trip Generation		100%	1,409	115	27	142	32	111	143
PCE Trip Generation [4]		***PCE Factor*** [4]							
Passenger Vehicles		1.0	972	79	19	98	22	77	99
2-Axle truck		1.5	144	12	3	15	3	11	15
3-Axle truck		2.0	155	13	3	16	4	12	16
4+-Axle Trucks		3.0	791	65	13	78	18	60	78
Proposed CI PCE Trip Generation			2,062	169	37	206	46	160	206
Net Trip Generation			**-10,320**	**-5**	**-70**	**-75**	**-500**	**-431**	**-931**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[4] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

Table 4.4: Sycamore Flats Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Single-Family Detached Housing[3]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	-219.542	TSF	-8,125	-114	-70	-184	-358	-388	-746
Glen-Helen/Specific Plan - Single Family Residential-Sycamore Flats (GH/SP SFR-SF)[3]	-336	DU	-3,168	-59	-176	-235	-199	-117	-316
Total Trip Generation			-11,294	-173	-246	-419	-557	-505	-1,062
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[2]	1,335.114	TSF	4,499	368	86	454	100	354	454
Vehicle Mix [4]		***Percent*** [4]							
Passenger Vehicles		69.00%	3,105	253	60	313	69	244	313
2-Axle truck		6.80%	306	25	6	31	7	24	31
3-Axle truck		5.50%	247	21	4	25	5	20	25
4+-Axle Trucks		18.70%	841	69	16	84	19	66	84
Proposed CI Trip Generation		100%	4,499	368	86	454	100	354	454
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	3,105	253	60	313	69	244	313
2-Axle truck		1.5	459	38	8	46	10	36	46
3-Axle truck		2.0	495	42	7	49	11	39	50
4+-Axle Trucks		3.0	2,524	206	46	252	56	196	252
Proposed CI PCE Trip Generation			6,583	540	121	660	146	515	661
Net Trip Generation			**-4,711**	**367**	**-125**	**241**	**-411**	**10**	**-401**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 210 -Single-Family Detached Housing.

[4] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[5] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

4.2 Project Trips Assignment

Project trips were distributed to the study area intersections based on the location of the Project and logical routes of travel to and from the sites. Project trips were assigned to the study area intersections by multiplying the project trip generation by the trip distribution percent at each location. The Project trip assignment for the vehicles is shown in *Figures 4.1 through 4.3*. The Project peak hour trip assignment for truck trips (in PCE) is shown in *Figure 4.1*, the Project peak hour trip assignment for auto trips is shown in *Figure 4.2,* and the Project total peak hour trip assignment is shown in *Figure 4.3*. The peak hour trip assignment for each individual subarea is shown in *Appendix E*.

As the Project is anticipated to have a net negative trip generation in the PM peak hour, the PM peak hour traffic operations are not analyzed in this document.

Figure 4.1: Project AM Peak Hour Truck Trip Assignment

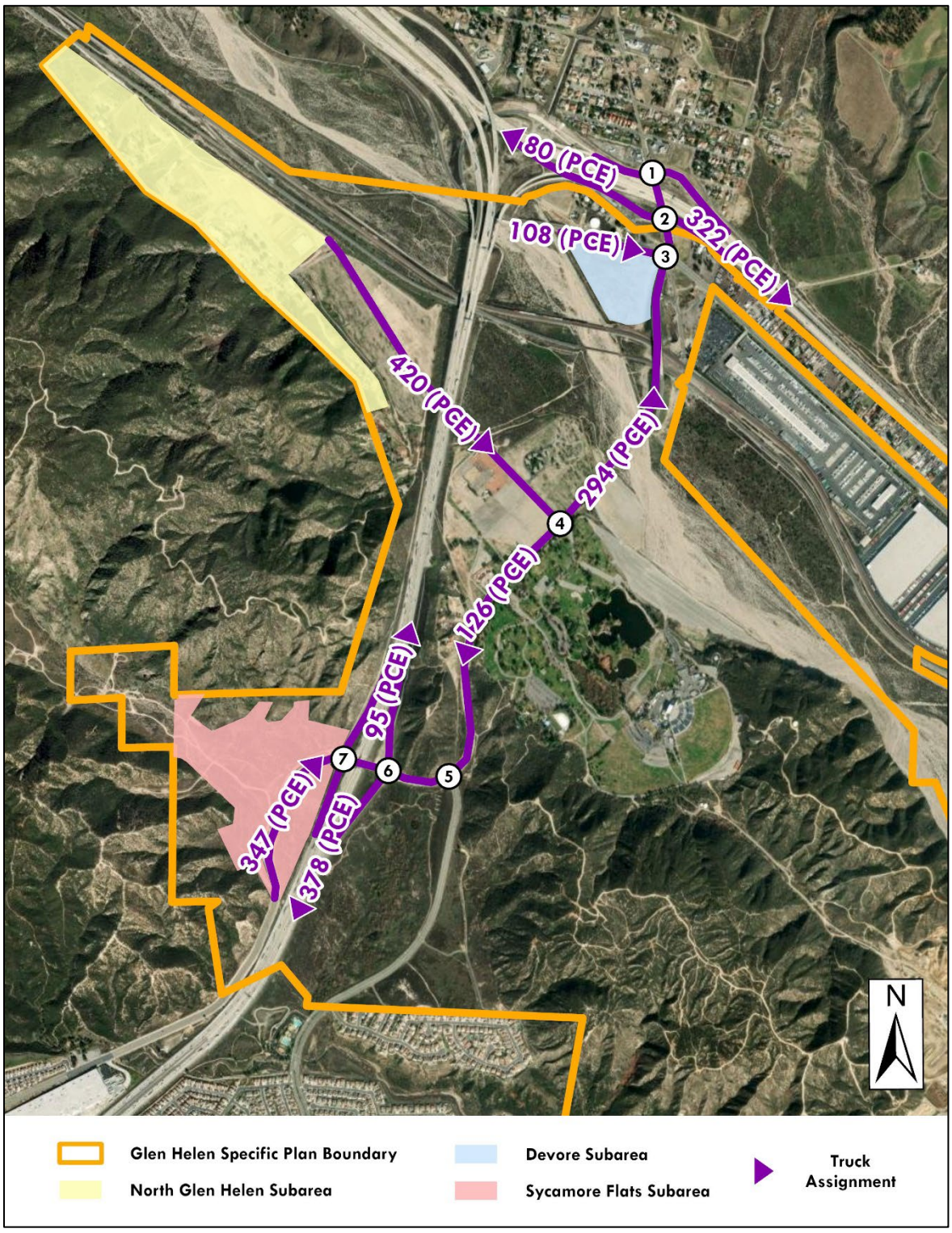


Figure 4.2: Project AM Peak Hour Auto Trip Assignment

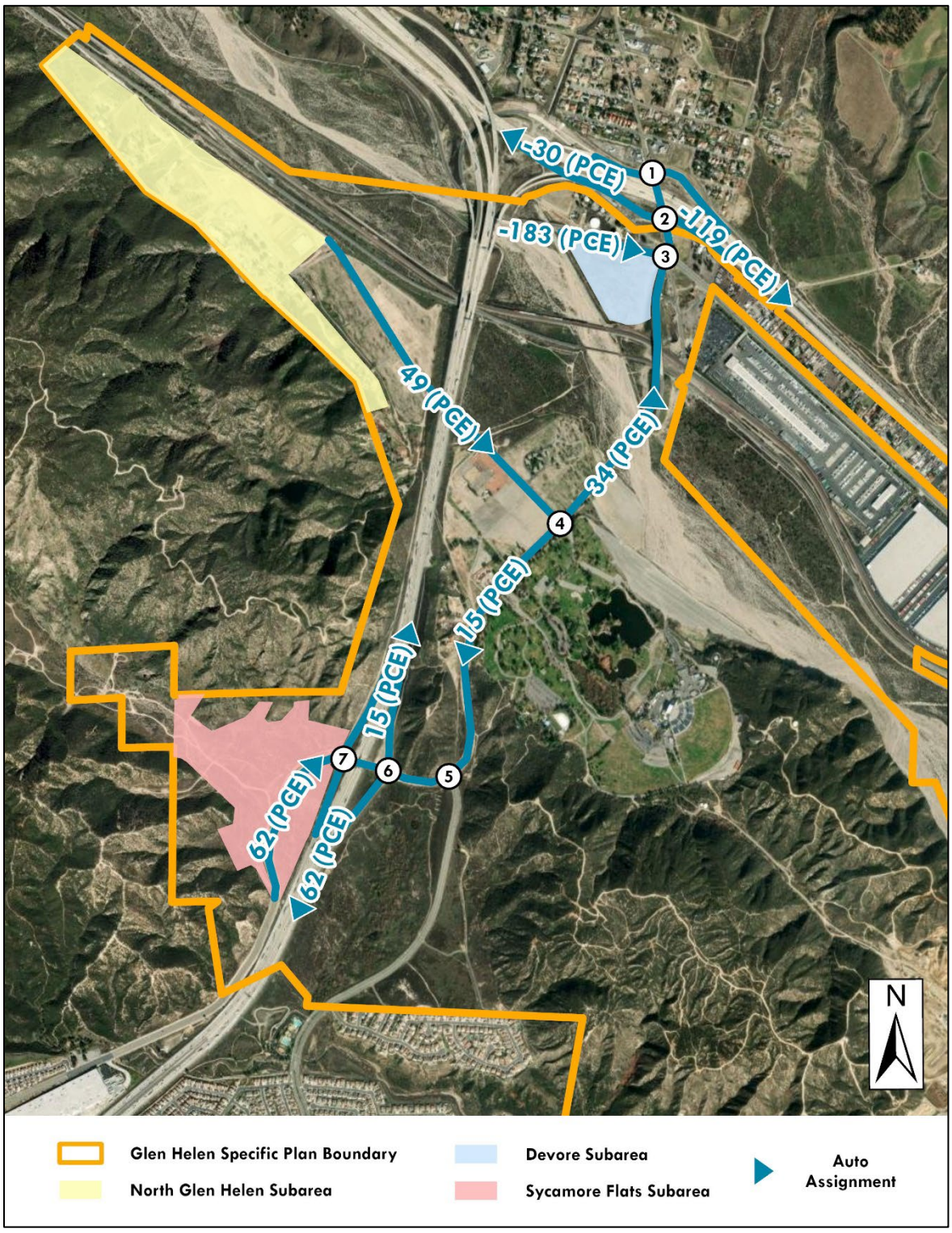
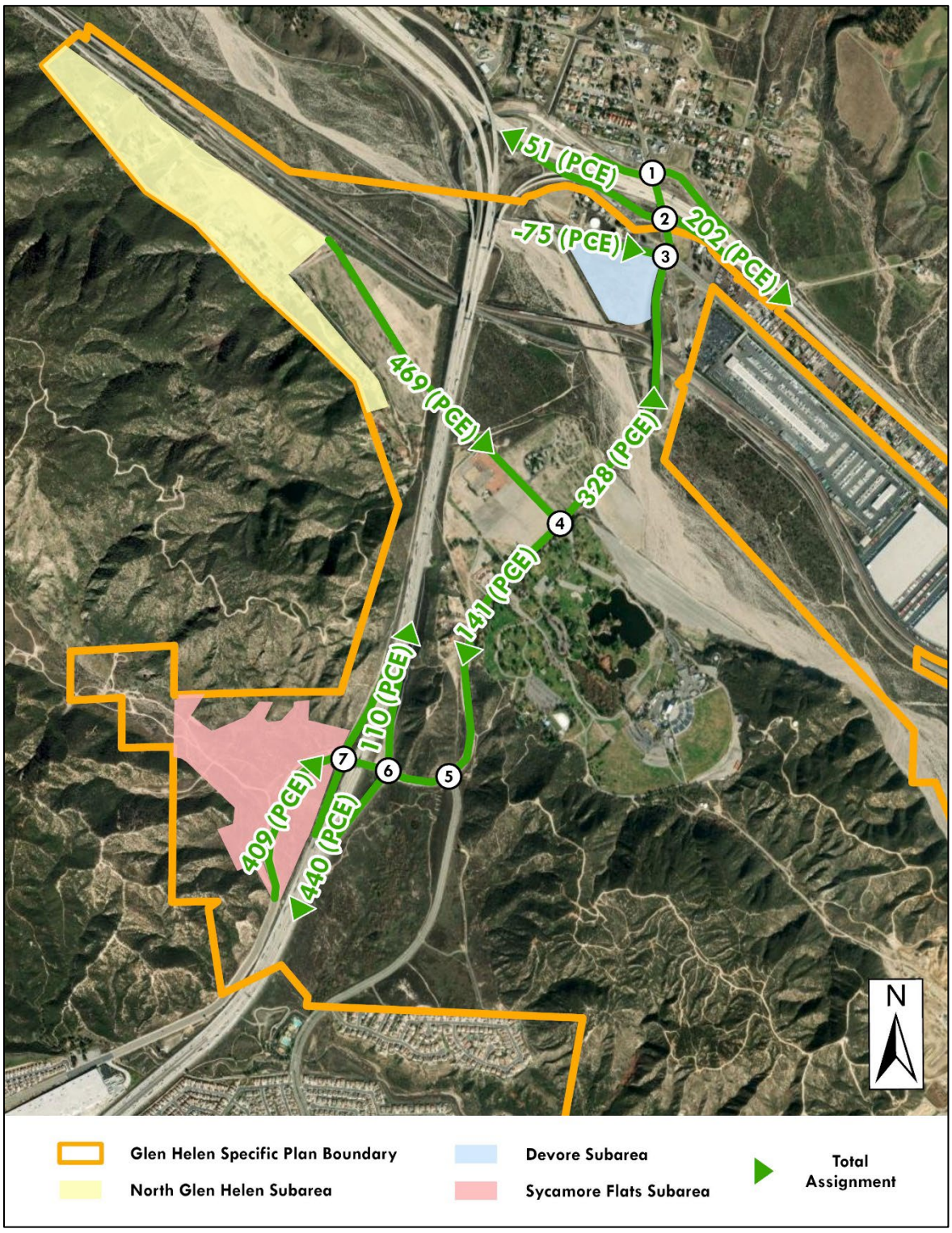


Figure 4.3: Project AM Peak Hour Total Trip Assignment



5 PROJECT LOS IMPACTS

5.1 General Plan Buildout Plus Project Volumes and Intersection Operation

In accordance with the approved scope of work by the City of San Bernardino, the General Plan Buildout Plus Project conditions were forecasted using the San Bernardino Transportation Analysis Model (SBTAM) traffic model data. Turn movements were post-processed with the SBTAM model growth rates using the methodology outlined in NCHRP 765. All approved and pending development projects listed in the scope and Project are coded into the General Plan Buildout Plus Project model. A total of six cumulative development projects are included in the General Plan Buildout Plus Project traffic volumes. The project trip generation for each cumulative project was calculated using trip rates from the Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition or from trip rates developed from surveys taken at similar sites and approved by the County. The General Plan Buildout (2040) Plus Project traffic volumes are illustrated in *Figures 5.1*.

Table 5.1 shows the General Plan Buildout Plus Project AM peak hour levels of service at study intersections. All LOS calculations are provided in *Appendix* C. As shown in *Table 5.1*, the following intersections operate at an unsatisfactory LOS during the AM peak hour under the General Plan Buildout conditions:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp (F at AM peak hour)
- Intersection 3. Glen Helen Pkwy/Cajon Blvd (F at AM peak hour)
- Intersection 4. Glen Helen Pkwy/Glen Helen Rd (F at AM peak hour)
- Intersection 6. Glen Helen Pkwy/I-15 NB On Ramp (F at AM peak hour)
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp (F at AM peak hour)

Table 5.1: General Plan Buildout Plus Project AM Peak Hour Level of Service

Intersection		Jurisdiction	Traffic Control	AM Peak		Target LOS
				Delay[1]	LOS[2]	
1.	Glen Helen Pkwy/I-215 NB On Ramp	Cal	AWSC	16.7	C	D
2.	Glen Helen Pkwy/I-215 SB On Ramp	Cal	AWSC	200.7	F	D
3.	Glen Helen Pkwy/Cajon Blvd	SB	AWSC	673.9	F	D
4.	Glen Helen Pkwy/Glen Helen Rd	CSB	TWSC	1054.7	F	D
5.	Glen Helen Pkwy/Clearwater Pkwy	CSB	Signal	31.5	C	D
6.	Glen Helen Pkwy/I-15 NB On Ramp	Cal	Signal	245.5	F	D
7.	Glen Helen Pkwy/I-15 SB On Ramp	Cal	TWSC	10000.0	F	D

=Unsatisfactory Level of Service

CSB =County of San Bernardino

SB =City of San Bernardino

Cal =Caltrans

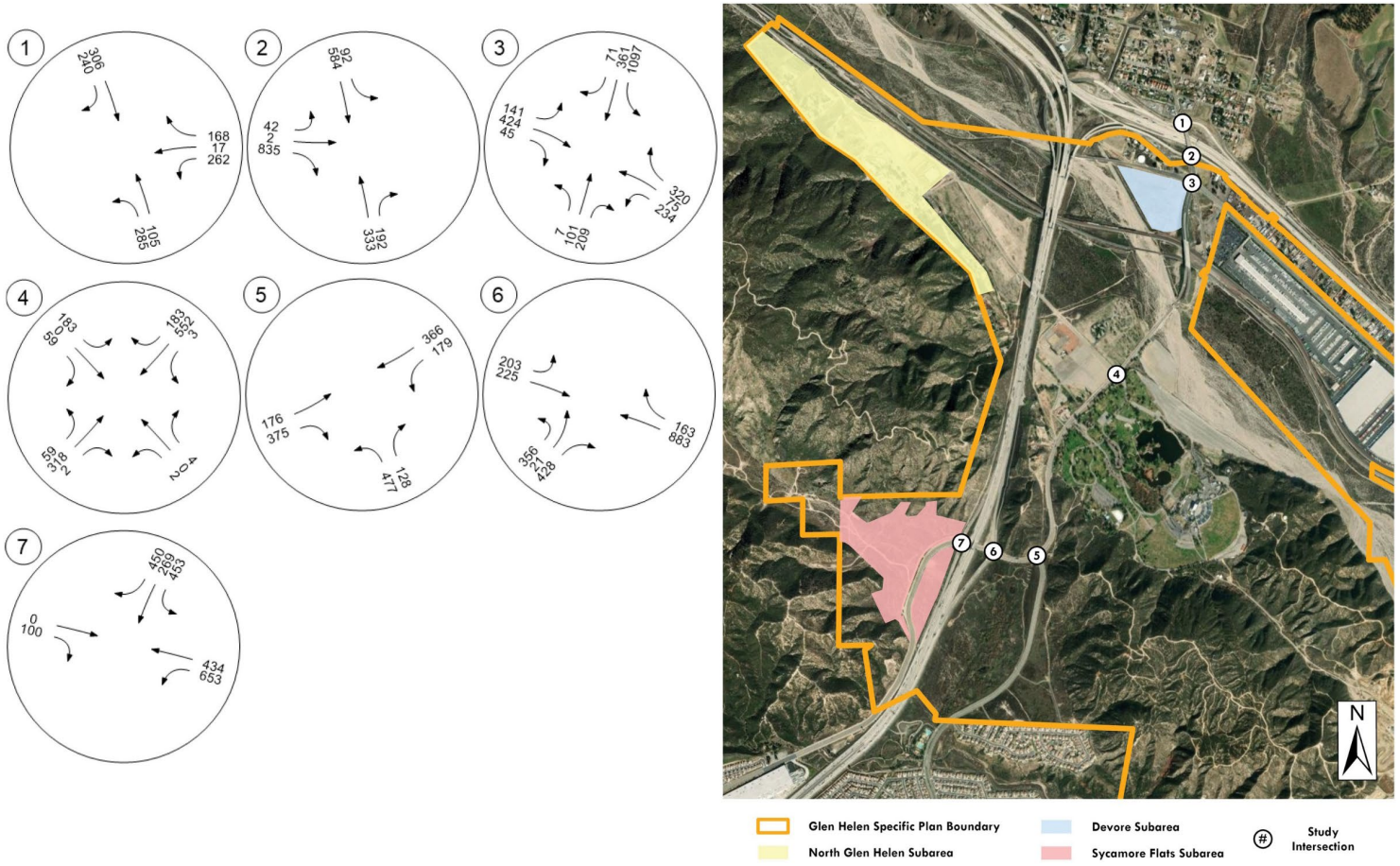
AWSC = All-Way Stop Control

TWSC = Two-Way Stop Control

[1]Delay in Seconds

[2]Level of Service

Figure 5.1 General Plan Buildout Plus Project AM Peak Hour Traffic Volume



6 PROJECT IMPROVEMENT AND CONTRIBUTION

6.1 Signal Warrant Analysis

A signal warrant assessment was prepared to analyze the applicability of modifying the intersections from a stop control to a signal control. All detailed warrant analysis sheets are provided in *Appendix F*. *Table 6.1* summarizes the results of signal warrant for every scenario. As seen in *Table 6.1*, the following intersections would meet the signal warrant:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp
- Intersection 3. Glen Helen Pkwy/Cajon Blvd
- Intersection 4. Glen Helen Pkwy/Glen Helen Rd
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp

Table 6.1: Traffic Signal Warrant Analysis Summary

Intersection		Signal Warrant Met?		
		Existing	General Plan Buildout	General Plan Buildout Plus Project
		AM Peak	AM Peak	AM Peak
2.	Glen Helen Pkwy/I-215 SB On Ramp	N/A	Yes	Yes
3.	Glen Helen Pkwy/Cajon Blvd	N/A	Yes	Yes
4.	Glen Helen Pkwy/Glen Helen Rd	N/A	N/A	Yes
7.	Glen Helen Pkwy/I-15 SB On Ramp	No	Yes	Yes

6.2 Recommended Improvements

The development of the proposed Project would result in unsatisfactory operations at the following intersections:

- Intersection 2. Glen Helen Pkwy/I-215 SB On Ramp (F at AM peak hour)
- Intersection 3. Glen Helen Pkwy/Cajon Blvd (F at AM peak hour)
- Intersection 4. Glen Helen Pkwy/Glen Helen Rd (F at AM peak hour)
- Intersection 6. Glen Helen Pkwy/I-15 NB On Ramp (F at AM peak hour)
- Intersection 7. Glen Helen Pkwy/I-15 SB On Ramp (F at AM peak hour)

The following improvements are recommended to reduce the LOS to the target LOS (LOS D):

- Intersection 2 Glen Helen Pkwy/I-215 SB On Ramp: Implement a traffic signal with split phasing for eastbound approach and protected left turn phasing for southbound approach. Restripe the eastbound approach to 1-Shared Left-Thru-Right lane and 1-Right turn lane.
- Intersection 3 Glen Helen Pkwy/Cajon Blvd: Implement a traffic signal with protected left turn phasing for northbound and southbound approaches and protected-permissive left turn

phasing for eastbound and westbound approaches. Restripe the northbound approach to 1-Left, 1-Thru, 1-Right turn lane. Restripe the southbound approach to 2-Left and 1-Shared Thru-Right lane. Restripe the westbound approach to 1-Left, 1-Thru and 1-Right turn lane and add westbound right-turn overlap phasing.

- For Intersection 4 Glen Helen Pkwy/Glen Helen Rd: Implement a traffic signal with protected left turn phasing for northbound and southbound approaches, and permissive left turn phasing for eastbound and westbound approaches.
- For Intersection 6 Glen Helen Pkwy/I-15 NB On Ramp: Optimize the traffic signal to implement split phasing on all approaches.
- For Intersection 7 Glen Helen Pkwy/I-15 SB On Ramp: Implement a traffic signal with split phasing for the southbound approach and protected left turn phasing for the westbound approach. Restripe the eastbound approach to 1-Shared Thru-Right and 1 Right turn lane. Restripe the westbound approach to 2-Left and 1-Thru lane.

Table 6.2 shows the LOS at affected intersections with implementation of the proposed improvement. All proposed improvement LOS calculations are provided in *Appendix C*. As seen in *Table 6.2*, all intersections would improve to a satisfactory LOS with the recommended improvements.

Table 6.2: General Plan Buildout Plus Project Improvement AM Peak Hour Level of Service

Intersection		GP Buildout AM Peak		GP Buildout Plus Project AM Peak		Recommended Improvements	GP Buildout Plus Project IMP AM Peak		Target LOS	Significant?
		Delay[1]	LOS[2]	Delay[1]	LOS[2]		Delay[1]	LOS[2]		
2.	Glen Helen Pkwy/I-215 SB On Ramp	131.3	F	200.7	F	Signalized intersection with split phasing for eastbound approach and protected left turn phasing for southbound approach. Restripe the eastbound approach to 1-Shared Left-Thru-Right lane and 1-Right turn lane.	39.2	D	D	No
3.	Glen Helen Pkwy/Cajon Blvd	654.0	F	673.9	F	Signalized intersection with protected left turn phasing for northbound and southbound approaches and protected-permissive left turn phasing for eastbound and westbound approaches. Restripe the northbound approach to 1-Left, 1-Thru, 1-Right turn lane. Restripe the southbound approach to 2-Left and 1-Shared Thru-Right lane. Restripe the westbound approach to 1-Left, 1-Thru and 1-Right turn lane and add westbound right-turn overlap phasing.	45.9	D	D	No
4.	Glen Helen Pkwy/Glen Helen Rd	18.4	C	1054.7	F	Signalized intersection with protected left turn phasing for northbound and southbound approaches, and permissive left turn phasing for eastbound and westbound approaches.	29.8	C	D	No
6.	Glen Helen Pkwy/I-15 NB On Ramp	196.6	F	245.5	F	Optimize the traffic signal to implement split phasing on all approaches.	41.0	D	D	No
7.	Glen Helen Pkwy/I-15 SB On Ramp	10000.0	F	10000.0	F	Signalized intersection with with split phasing for the southbound approach and protected left turn phasing for the westbound approach. Restripe the eastbound approach to 1-Shared Thru-Right and 1 Right turn lane. Restripe the westbound approach to 2-Left and 1-Thru lane.	48.1	D	D	No

=Unsatisfactory Level of Service

[1]Delay in Seconds

[2]Level of Service

APPENDIX A – SCOPE OF WORK

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Specific Plan Amendment

This Scope for Traffic Study acknowledges San Bernardino County Department of Public Works, Traffic Division requirements of traffic impact analysis for the project and is subject to change:

Project Address:	See Table Attached (Table 1)		
Project Description:	See Project Description Attached		
City:	County of San Bernardino		
Project Buildout Year:	2045	**Ambient Growth Rate per Year:**	To be calculated using SBTAM
Closest Intersection (Xtn) to the Project			
Xtn N/S Street Name:	I-215 Ramps and I-15 Ramps		
Xtn E/W Street Name:	Glen Helen Parkway		
Thomas Guide Pg+Grid:		**County Supervisorial District:**	

	Engineer	**Developer**
Company:	EPD Solutions, Inc.	Pharris Sycamore Flatts LLC
Name:	Meghan Macias, TE	
Address:	3333 Michelson Drive, Suite 500	285 West Rialto Avenue
City, State, Zip Code:	Irvine, CA 92612	Rialto, CA 92376
Phone #:	(949) 794-1180	(626) 203-3247
Fax #:		
Email:	meghan@epdsolutions.com	KLynch@LytleDC.com

By: Meghan Macias

Print Name: Meghan Macias

Consultant/Developer's Representative **Date** 12/05/23

Reviewed By:

Print Name:

Traffic Division Representative **Date**

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Specific Plan Amendment

1. Traffic Distribution: Please insert or attach Figure(s) illustrating project trip distribution in percentages and volumes at the study intersections analyzed.

2. Trip Credit: Exact amount of credit subject to approval by Traffic Division.

Transportation Demand Management (TDM)	Yes/no	
Existing Active Land Use	Yes/no	
Previous Land Use	Yes/no	See Tables Attached (2-5)
Internal Trip Reduction	Yes/no	
Pass-by Trip Reduction	Yes/no	

3. Related Projects: Consultant should check with Planning in the San Bernardino County Department of Land Use Services and planning departments of adjoining Cities. Documentation of the consultation from these agencies shall be included in the traffic study. Related projects list shall be submitted to Traffic Division for review and approval before being incorporated in the study.
The following projects will be considered for the traffic study. (See Table 6 Attached)

PROJ-2023-00012
PROJ-2022-00213
PROJ-2021-00091
PROJ-2021-00148
PROJ-2022-00019
PROJ-2022-00174

4. Freeway Analysis: The potential traffic impact on the following Freeway(s) must be considered.

No freeway segments are considered for the study.

The applicant shall consult with the State of California Department of Transportation (Caltrans) to determine the California Environmental Quality Act levels of significance with regard to traffic impacts on Caltrans' freeway facilities. This consultation shall also include a determination of Caltrans requirements for the study of traffic impacts to its facilities and the mitigation of any such impacts. This analysis must follow the most current Caltrans' Guide for the Preparation of Traffic Impact Studies (December 2002) and can be obtained from http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf. If Caltrans finds that the project has a significant impact on the freeway, Caltrans shall be requested to include the basis for this finding in their response. If fees are proposed to mitigate the freeway impact, Caltrans shall be requested to identify the specific project to which the fees will apply. These written comments from Caltrans shall be included with the traffic study and submitted to Public Works for review and approval. If a documented good faith effort is made to consult with Caltrans and written comments cannot be obtained from within a reasonable amount of time, an analysis of the freeway impact shall be made using HCM

procedures. Appendix A of the SANBAG CMP outlines allowable modifications to these procedures. The SANBAG CMP can be viewed online at: https://www.gosbcta.com/plans-projects/plans-traffic-mitigation.html

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Specific Plan Amendment

5. Trip Generation

Project trips were generated using trip generation surveys from a similar land use as well as operational data provided by the project applicant. The project generates more than 100 peak hour trips and therefore would be required to prepare a traffic study.

Trip Generation Rate(s) Source: ITE Trip Generation	**I – Institute of Transportation Engineers; S – San Diego Traffic Generators; C – County; O – Other:**	**Edition:**	10th

Land Use Code	**Land Use**	**Rate Based on**	**Qty**	***AVTE vs**	**ADT**	Weekday a.m. peak		Weekday p.m. peak		Weekend peak hour	
						In	Out	In	Out	In	Out
	See Tables 2-5										

* - Average Vehicle Trip Ends.
For ITE Land Uses provide number and name of Land Use. e.g. LU 814 - Variety Store

6. Study Intersections: At minimum, the study shall include the following intersections. The list is subject to change based on the determination of related projects, trip generation and distribution, and/or other sensitive intersections are identified based on study findings and/or concurrent

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Specific Plan Amendment

development. Consultant should check with adjoining Cities regarding their requirements in addition to the following County/City intersections. Documentation of the consultation from these agencies shall be included in the traffic study.

The project generates fewer than 100 peak hour trips and therefore would not be required to prepare a traffic study. Please see the attached trip generation memo.

Xtn #	% County	Thomas Guide Page+Grid	N/S + E/W Street Name	City	Signalized	CMP
1	0		Glen Helen Pkwy/I-215 NB On Ramp	Caltrans	Yes/no	Yes/no
2	0		Glen Helen Pkwy/I-215 SB On Ramp	Caltrans	Yes/no	Yes/no
3	0		Glen Helen Pkwy/Cajon Blvd	San Bernardino	Yes/no	Yes/no
4	100		Glen Helen Pkwy/Glen Helen Road	County	Yes/no	Yes/no
5	100		Glen Helen Pkwy/Clearwater Pkwy	County	Yes/no	Yes/no
6	0		Glen Helen Pkwy/I-15 NB On Ramp	Caltrans	Yes/no	Yes/no
7	0		Glen Helen Pkwy/I-15 SB On Ramp	Caltrans	Yes/no	Yes/no

Cities to be consulted: _____

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

7. Other:

Traffic counts may be conducted immediately per the following:
• Must be taken on Tuesdays, Wednesdays or Thursdays.
• Counts in “tourist” and/or along travel corridors shall have counts on Fridays and Sundays.
• Must exclude holidays, and the first weekdays before and after the holiday.
• Must be taken on days when local schools or colleges are in session.
• Must be taken on days of good weather, and avoid atypical conditions (e.g., road construction, detours, or major traffic incidents).
• Traffic counts used for other traffic studies in the area shall **NOT** be reused again, unless 25% of the counts conducted for that particular traffic study are validated with new counts. The difference in volumes between the old and new counts at each corresponding movement should not be more than 10%.
• New traffic counts shall be checked to ensure the difference in volumes at corresponding approaches, if applicable, between two adjacent intersections is no more than 10% unless the difference can be justified.
• For all proposed mitigation measures, a conceptual plan for the improvements shall be submitted to our Traffic Studies section for review and approval prior to the approval of the Traffic Impact Analysis. All proposed improvements shall be within the right-of-way.
• For all cumulative mitigation measures, a cost estimate for the improvement shall be submitted.

This analysis must follow the most current Traffic Impact Study Guidelines for the County as stated in the County’s Road Planning and Design Standards.

8. Fees

The County charges on an actual cost basis for review of traffic studies. An initial deposit of $2000 is required at the time that the Traffic Impact study is a land use application is filed with the Department of Land Use Services If the review costs exceed the initial deposit, the applicant will be expected to provide additional funds and the review will be suspended until the additional funds are deposited.

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

9. Contact Information:

Please submit a final copy of this scope to the Traffic Division. Draft scopes may be sent electronically or by physical mail to the contact information below.

County of San Bernardino
Dept. of Public Works, Traffic Division
825 E. 3rd Street, Rm 115
San Bernardino, CA 92415-0835

Phone: 909-387-8186
Fax: 909-387-7809
Email: Anthony.Pham@dpw.sbcounty.gov

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

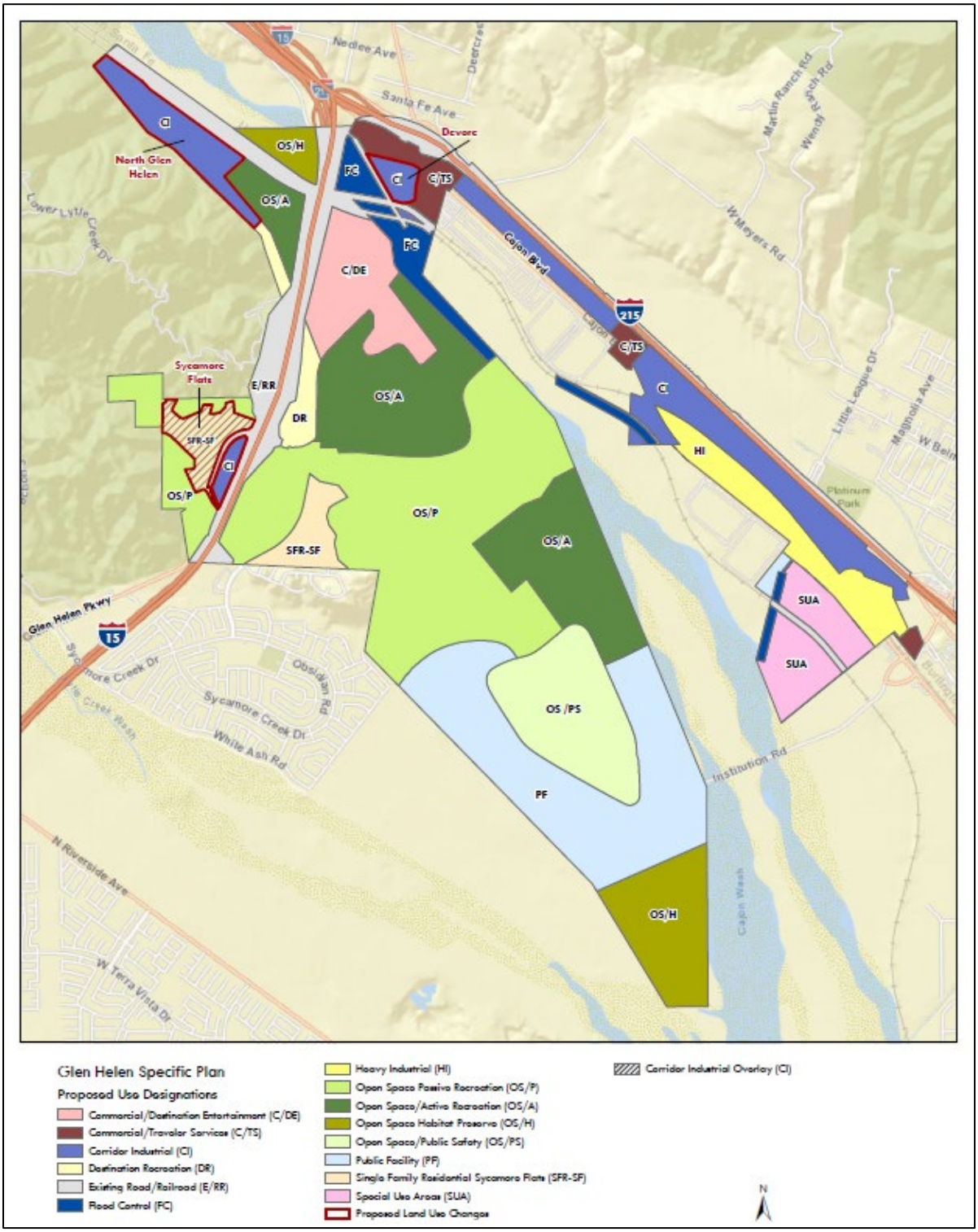
Table 1. Proposed GHSP Amendment Land Use Changes

APN	Existing GHSP Land Use	Acreage	Proposed GHSP Land Use
North Glen Helen Subarea			
0349-201-04	DR	14.7	CI
0349-201-05	DR	1.9	CI
0349-201-06	DR	7.9	CI
0349-191-21	DR	2.1	CI
0349-201-20	DR	14.5	CI
0349-201-24	DR	12.2	CI
0349-201-26	DR	8.5	CI
0349-201-29	DR	5.5	CI
0349-191-08	DR	2.8	CI
0349-201-09	DR	9.0	CI
Devore Subarea			
0349-174-03	C/TS	16.1	CI
0349-174-01	C/TS	2.6	CI
0349-174-12	C/TS	0.5	CI
Sycamore Flats Subarea			
0239-021-21	SFR-SF, O S/P	104.1	CI/O S/P
0239-031-21	SFR-SF, O S/P	6.2	CI/O S/P
0239-031-35	SFR-SF, O S/P	2.6	CI/O S/P
0239-031-36	SFR-SF, O S/P	8.8	CI/O S/P
0239-031-19	SFR-SF, O S/P	15.7	CI/O S/P
0239-031-22	C/TS (HDO)	1.4	CI
0239-031-18	C/TS (HDO)	3.4	CI
0239-031-17	C/TS (HDO)	6.8	CI
0239-021-16	C/TS (HDO)	0.3	CI
0239-021-15	C/TS (HDO)	0.2	CI
0239-031-20	C/TS (HDO)	0.1	CI
No APN	C/TS (HDO)	0.5	CI

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 1. Proposed GHSP Amendment Land Use Map



SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Table 2. Glen Helen Specific Plan Amendment Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Single-Family Detached Housing[3]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
SANDAG Undeveloped Park[4]		Acres	5.00	0.15	0.06	0.21	0.14	0.26	0.40
Truck/Trailer Parking[5]									
Passenger Car		Acres	9.35	0.42	0.12	0.54	0.35	0.63	0.97
2-Axle		Acres	7.78	0.48	0.27	0.75	0.32	0.46	0.79
3-Axle		Acres	9.55	0.46	0.06	0.53	0.32	0.33	0.66
4+ Axle		Acres	10.75	0.16	0.78	0.94	0.23	0.21	0.43
Total		Acres	37.43	1.52	1.23	2.76	1.22	1.63	2.85
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	1,676.189	TSF	62,036	873	535	1,408	2,735	2,964	5,699
Corridor Industrial(CI)[2]	2,894.562	TSF	9,755	797	187	984	216	768	984
Vehicle Mix [6]		***Percent*** [6]							
Passenger Vehicles		69.00%	6,731	550	129	679	149	530	679
2-Axle truck		6.80%	663	54	13	67	15	52	67
3-Axle truck		5.50%	537	44	10	54	12	42	54
4+-Axle Trucks		18.70%	1,824	149	35	184	40	144	184
Existing CI Trip Generation		100%	9,755	797	187	984	216	768	984
PCE Trip Generation [7]		***PCE Factor*** [7]							
Passenger Vehicles		1.0	6,731	550	129	679	149	530	679
2-Axle truck		1.5	995	81	19	100	22	78	100
3-Axle truck		2.0	1,073	88	20	108	24	84	108
4+-Axle Trucks		3.0	5,472	447	105	552	121	431	552
Existing CI PCE Trip Generation			14,271	1,166	273	1,439	316	1,123	1,439
Glen-Helen/Specific Plan - Single Family Residential-Sycamore Flats (GH/SP SFR-SF)[3]	418	DU	3,942	73	219	292	248	145	393
Destination Recreation (DR)[4]	132.800	Acres	664	20	8	28	19	35	54
Dwelling Unit	17	DU	160	3	9	12	10	6	16
Total Existing Land Use Trip Generation			**81,073**	**2,135**	**1,044**	**3,179**	**3,328**	**4,273**	**7,601**

Table 2 (Cont). Glen Helen Specific Plan Amendment Trip Generation

Proposed Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	1,122.106	TSF	41,529	584	359	943	1,831	1,984	3,815
Corridor Industrial(CI)[2]	4,751.089	TSF	16,011	1,308	307	1,615	355	1,260	1,615
Vehicle Mix [6]		***Percent*** [6]							
Passenger Vehicles		69.00%	11,047	902	212	1,114	245	869	1,114
2-Axle truck		6.80%	1,089	89	21	110	24	86	110
3-Axle truck		5.50%	881	72	17	89	20	69	89
4+-Axle Trucks		18.70%	2,994	245	57	302	66	236	302
Proposed CI Trip Generation		100%	16,011	1,308	307	1,615	355	1,260	1,615
PCE Trip Generation [7]		***PCE Factor*** [7]							
Passenger Vehicles		1.0	11,047	902	212	1,114	245	869	1,114
2-Axle truck		1.5	1,634	134	31	165	36	129	165
3-Axle truck		2.0	1,762	144	34	178	40	138	178
4+-Axle Trucks		3.0	8,982	735	171	906	198	708	906
Proposed CI PCE Trip Generation			23,425	1,916	447	2,363	519	1,844	2,363
Truck Trailer Parking[5]	79.000	Acres	2,957	120	98	218	96	129	225
Vehicle Mix [5]		***Percent*** [5]							
Passenger Vehicles		24.97%	738	32	11	43	26	51	77
2-Axle truck		20.79%	615	38	21	59	26	36	62
3-Axle truck		25.52%	755	37	5	42	26	26	52
4+-Axle Trucks		28.72%	849	13	61	74	18	16	34
Proposed Truck Trailer Trip Generation		100%	2,957	120	98	218	96	129	225
PCE Trip Generation [7]		***PCE Factor*** [7]							
Passenger Vehicles		1.0	738	32	11	43	26	51	77
2-Axle truck		1.5	923	57	32	89	39	54	93
3-Axle truck		2.0	1,510	74	10	84	52	52	104
4+-Axle Trucks		3.0	2,547	39	183	222	54	48	102
Proposed Truck Trailer PCE Trip Generation			5,718	202	236	438	171	205	376
Glen-Helen/Specific Plan - Single Family Residential-Sycamore Flats (GH/SP SFR-SF)[3]	418	DU	3,942	73	220	293	248	145	393
Destination Recreation (DR)[4]	53.800	Acres	269	8	3	11	8	14	22
Dwelling Unit	17	DU	160	3	9	12	10	6	16
Total Proposed Land Use Trip Generation			**75,043**	**2,787**	**1,273**	**4,060**	**2,786**	**4,199**	**6,985**
Net Trip Generation			**-6,031**	**652**	**230**	**882**	**-542**	**-74**	**-616**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual*, 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual*, 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual*, 11th Edition, 2021. Land Use Code 210 -Single-Family Detached Housing.

[4] Trip rates from San Diego Municipal Code Land Development Code *Trip Generation Muanul*. Land Use Code - Undeveloped Park.

[5] Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA on August 23 and August 24, 2022, 19180 Cajon Boulevard, Devore, on September 29, 2022 and September 30, 2022

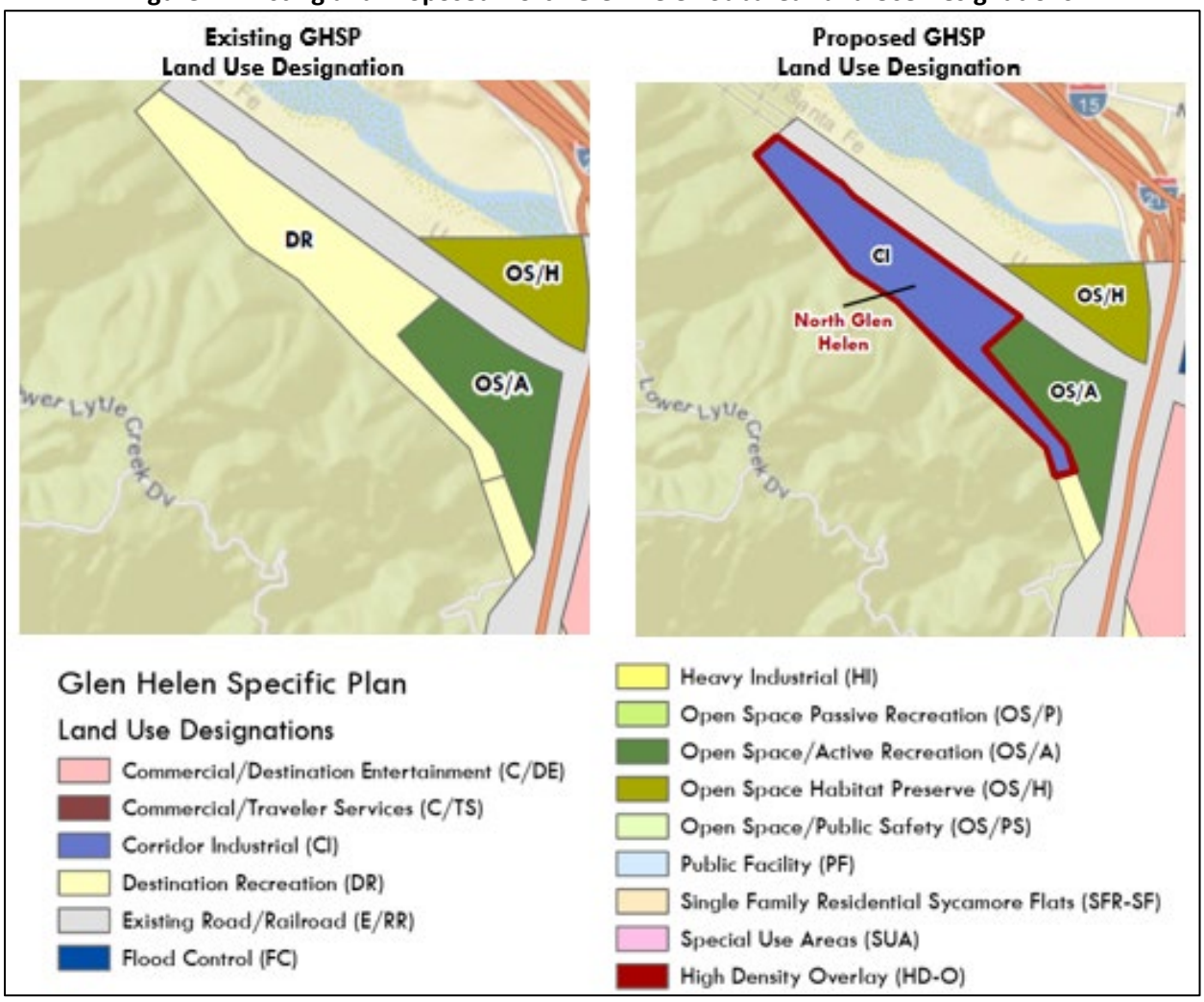
[6] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[7] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 2. Existing and Proposed North Glen Helen Subarea Land Use Designations



Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Table 3. North Glen Helen Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Industrial Park [1]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Truck/Trailer Parking[2]									
Passenger Car		Acres	9.35	0.42	0.12	0.54	0.35	0.63	0.97
2-Axle		Acres	7.78	0.48	0.27	0.75	0.32	0.46	0.79
3-Axle		Acres	9.55	0.46	0.06	0.53	0.32	0.33	0.66
4+ Axle		Acres	10.75	0.16	0.78	0.94	0.23	0.21	0.43
Total		Acres	37.43	1.52	1.23	2.76	1.22	1.63	2.85
SANDAG Undeveloped Park[3]		Acres	5.00	0.15	0.06	0.21	0.14	0.26	0.40
Existing Land Use Designation Trip Generation									
Destination Recreation (DR)[3]	-79.000	Acres	-395	-12	-5	-17	-11	-21	-32
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[1]	103.237	TSF	348	28	7	35	8	27	36
Vehicle Mix [4]		***Percent*** [4]							
Passenger Vehicles		69.00%	240	19	5	24	6	19	25
2-Axle truck		6.80%	24	2	0	3	1	2	2
3-Axle truck		5.50%	19	2	0	2	0	2	2
4+-Axle Trucks		18.70%	65	5	1	6	1	5	6
Proposed CI Trip Generation		100%	348	28	7	35	8	28	36
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	240	19	5	24	6	19	25
2-Axle truck		1.5	35	3	1	4	1	2	4
3-Axle truck		2.0	38	3	0	3	1	4	4
4+-Axle Trucks		3.0	195	16	3	18	4	15	18
Proposed CI PCE Trip Generation			509	42	9	49	11	40	50
Truck Trailer Parking[2]	79.000	Acres	2,957	120	97	218	96	129	225
Vehicle Mix [2]		***Percent*** [5]							
Passenger Vehicles		24.97%	738	33	9	42	27	50	77
2-Axle truck		20.79%	615	38	21	59	26	37	62
3-Axle truck		25.52%	755	37	5	42	26	26	52
4+-Axle Trucks		28.72%	849	13	61	74	18	16	34
Proposed Truck Trailer Trip Generation		100%	2,958	120	97	218	96	128	225
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	738	33	9	42	27	50	77
2-Axle truck		1.5	922	56	32	88	38	55	93
3-Axle truck		2.0	1,509	73	10	84	51	53	104
4+-Axle Trucks		3.0	2,548	38	184	223	54	49	102
Proposed Truck Trailer PCE Trip Generation			5,718	201	235	436	170	207	377
Total Trip Generation			**6,227**	**243**	**244**	**485**	**181**	**247**	**427**
Net Trip Generation			**5,832**	**231**	**239**	**468**	**170**	**226**	**395**

Table 3 (Cont). North Glen Helen Subarea Trip Generation

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[2] Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA on August 23 and August 24, 2022, 19180 Cajon Boulevard, Devore, on September 29, 2022 and September 30, 2022

[3] Trip rates from San Diego Municipal Code Land Development Code *Trip Generation Muanul* . Land Use Code - Undeveloped Park.

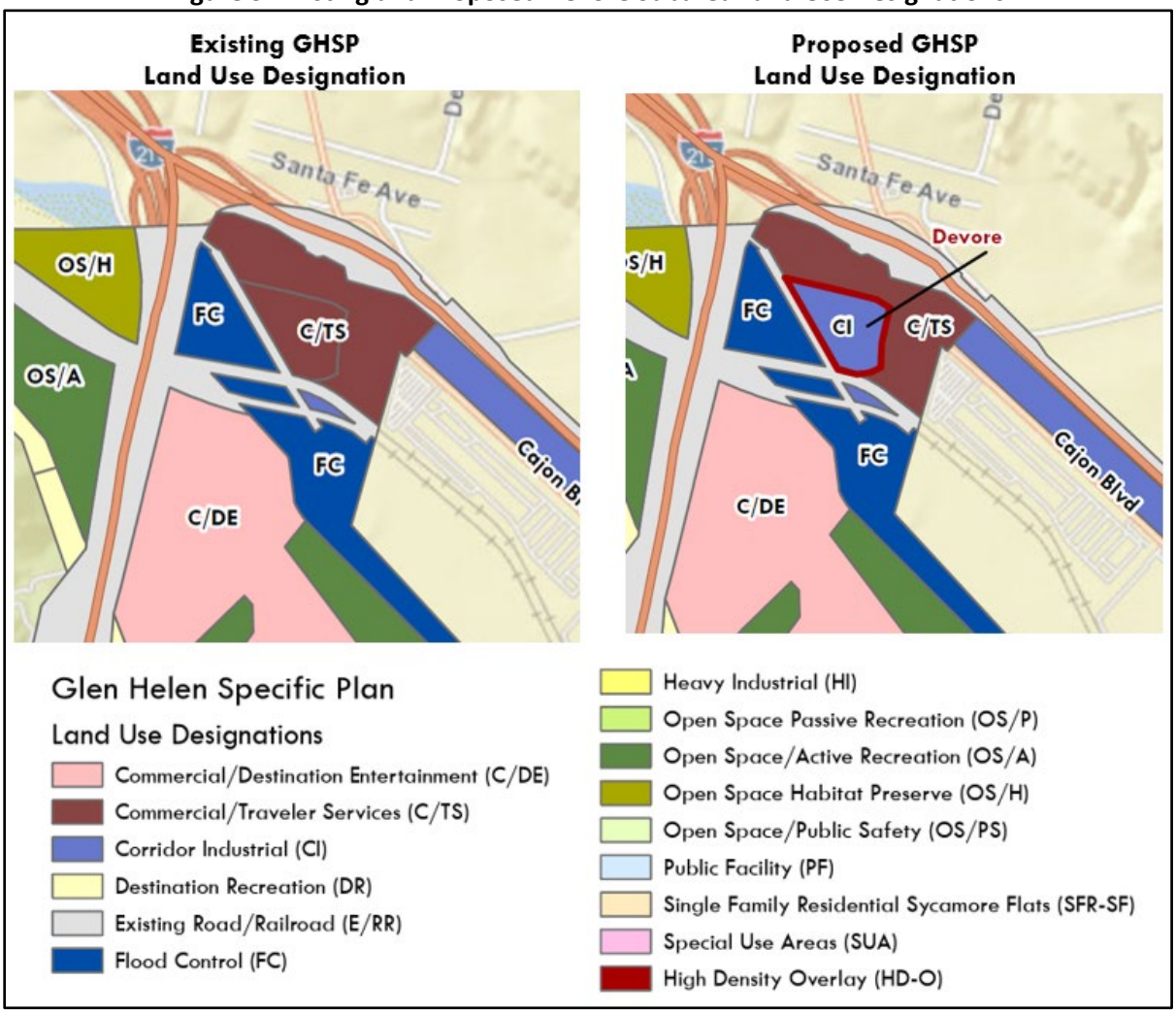
[4] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[5] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 3. Existing and Proposed Devore Subarea Land Use Designations



SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Table 4. Devore Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	-334.541	TSF	-12,381	-174	-107	-281	-546	-591	-1,137
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[2]	418.176	TSF	1,409	115	27	142	31	111	143
Vehicle Mix [3]		***Percent*** [3]							
Passenger Vehicles		69.00%	972	79	19	98	22	77	99
2-Axle truck		6.80%	96	8	2	10	2	8	10
3-Axle truck		5.50%	78	6	1	8	2	7	8
4+-Axle Trucks		18.70%	264	22	5	26	6	21	26
Proposed CI Trip Generation		100%	1,409	115	27	141	32	112	143
PCE Trip Generation [4]		***PCE Factor*** [4]							
Passenger Vehicles		1.0	972	79	19	98	22	77	99
2-Axle truck		1.5	144	12	3	15	3	11	15
3-Axle truck		2.0	155	13	2	15	3	14	16
4+-Axle Trucks		3.0	791	65	15	78	18	62	78
Proposed CI PCE Trip Generation			2,062	169	39	206	46	164	207
Net Trip Generation			**-10,320**	**-5**	**-68**	**-75**	**-500**	**-428**	**-930**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

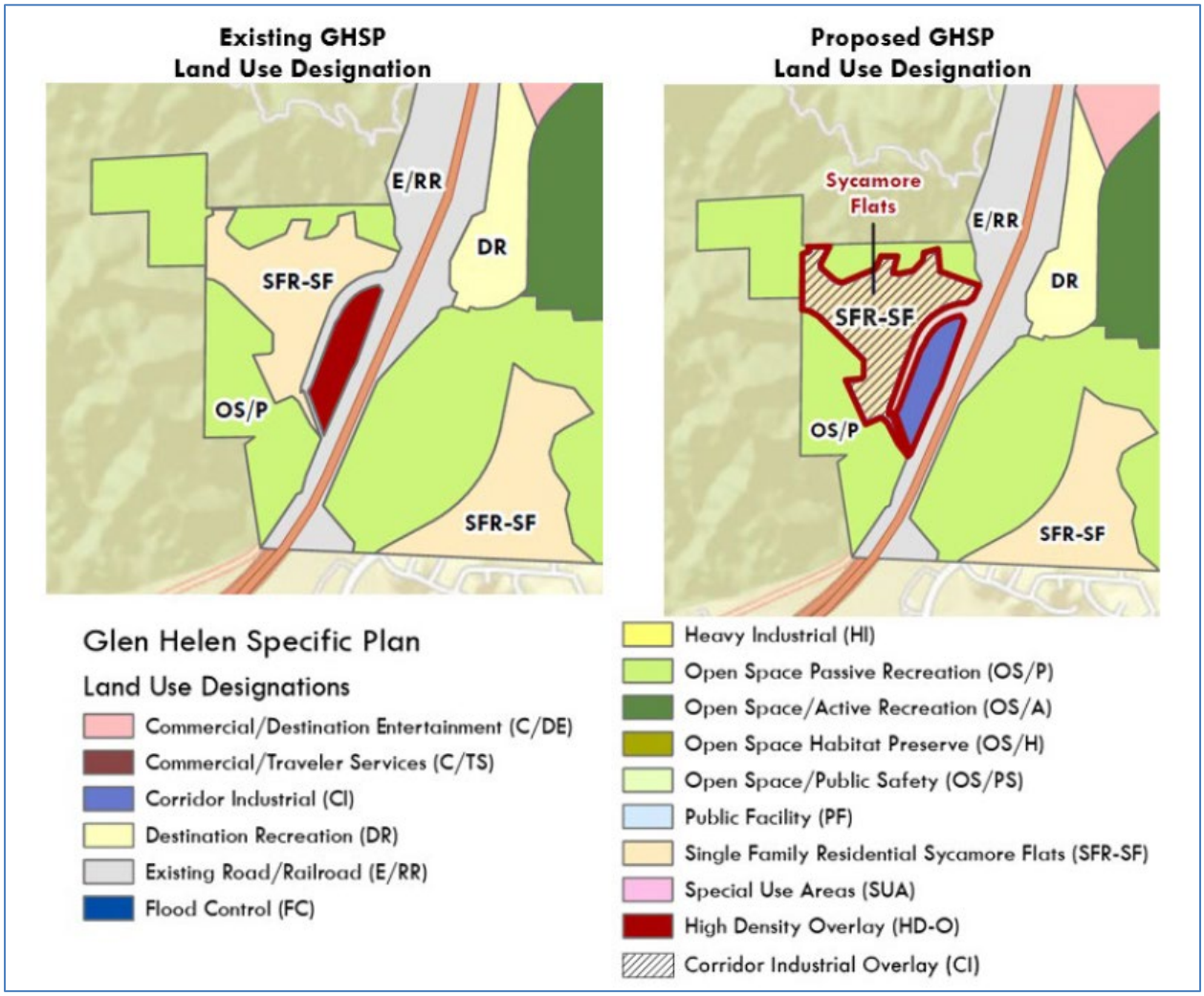
[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[4] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 4. Existing and Proposed Sycamore Flats Subarea Land Use Designations



Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Table 5. Sycamore Flats Subarea Trip Generation

				AM Peak Hour			PM Peak Hour		
Land Use		**Units**	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Trip Rates									
Shopping Center (>150k)[1]		TSF	37.01	0.52	0.32	0.84	1.63	1.77	3.40
Industrial Park [2]		TSF	3.37	0.28	0.06	0.34	0.07	0.27	0.34
Single-Family Detached Housing[3]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
Existing Land Use Designation Trip Generation									
Commercial/Traveler Services(C/TS)[1]	-219.542	TSF	-8,125	-114	-70	-184	-358	-388	-746
Glen-Helen/Specific Plan - Single Family Residential-Sycamore Flats (GH/SP SFR-SF)[3]	-336	DU	-3,168	-59	-176	-235	-199	-117	-316
Total Trip Generation			-11,294	-173	-246	-419	-557	-505	-1,062
Proposed Land Use Designation Trip Generation									
Corridor Industrial(CI)[2]	1,335.114	TSF	4,499	368	86	454	100	354	454
Vehicle Mix [4]		***Percent*** [4]							
Passenger Vehicles		69.00%	3,105	253	60	313	69	244	313
2-Axle truck		6.80%	306	25	6	31	7	24	31
3-Axle truck		5.50%	247	20	4	25	5	20	25
4+-Axle Trucks		18.70%	841	69	16	84	19	66	84
Proposed CI Trip Generation		100%	4,499	368	86	454	100	354	454
PCE Trip Generation [5]		***PCE Factor*** [5]							
Passenger Vehicles		1.0	3,105	253	60	313	69	244	313
2-Axle truck		1.5	459	38	8	46	10	36	46
3-Axle truck		2.0	495	40	9	49	11	39	50
4+-Axle Trucks		3.0	2,524	206	46	252	56	196	252
Proposed CI PCE Trip Generation			6,583	538	122	660	146	515	661
Net Trip Generation			**-4,711**	**365**	**-124**	**241**	**-411**	**10**	**-401**

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

[1] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 820 -Shopping Center (>150k).

[2] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 130 -Industrial Park.

[3] Trip rates from the Institute of Transporation Engineers, *Trip Generation Manual* , 11th Edition, 2021. Land Use Code 210 -Single-Family Detached Housing.

[4] Vehicle Mix from the SCAQMD Warehouse Truck Trip Study Data Results and Usage, July 2014. Classification: SCAQMD Composite

[5] Passenger Car Equivalent (PCE) factors from the San Bernardino County CMP, Appendix B - Guidelines for CMP Traffic Impact Analysis Reports in San Bernardino County, 2016.

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Table 6. Cumulative Projects Trip Generation

Table 6. Glen Helen Cumulative Trip Generation

Land Use		Units	Daily	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total
Trip Rates									
Shopping Plaza (40-150k)[1]		TSF	94.49	2.19	1.34	3.53	4.33	4.70	9.03
Hotel[2]		Rooms	7.99	0.26	0.20	0.46	0.30	0.29	0.59
Convenience Store/Gas Station - GFA (4-5.5k)[3]		TSF	257.13	13.52	13.52	27.04	11.38	11.38	22.76
Fast-Food Restaurant with Drive-Through Window[4]		TSF	467.48	22.75	21.86	44.61	17.18	15.85	33.03
High-Turnover (Sit-Down) Resteraunt[5]		TSF	107.20	5.26	4.31	9.57	5.52	3.53	9.05
Health/Fitness Club[6]		TSF	34.50	0.67	0.64	1.31	1.97	1.48	3.45
Fire and rescue station[7]		TSF	4.80	0.14	0.34	0.48	0.14	0.34	0.48
Single-Family Detached Housing[8]		DU	9.43	0.18	0.53	0.70	0.59	0.35	0.94
Truck Stop[9]		PUMPS	224.00	6.85	7.12	13.97	8.17	7.25	15.42
Truck-Trailer Parking Lot[10]		ACRES	55.66	2.41	1.92	4.33	1.37	2.14	3.51
Convenience Store/Gas Station - GFA (2-4k)[11]		TSF	265.12	8.03	8.03	16.06	9.21	9.21	18.42
High-Cube Transload and Short-Term Storage Warehouse[12]		TSF	1.4	0.0616	0.018	0.08	0.03	0.072	0.1
1. PROJ-2021-00148[6]									
Single-Family Detached Housing[8]	175	DU	**1650**	**31**	**92**	**123**	**104**	**61**	**165**
2. PROJ-2021-00091									
Convenience Store/Gas Station - GFA (2-4k)[11]	3.800	TSF	1007	31	31	61	35	35	70
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)				-18	-18	-37	-20	-20	-39
Fast-Food Restaurant with Drive-Through Window[4]	2.000	TSF	935	46	44	89	34	32	66
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)				-23	-22	-45	-19	-17	-36
Total Project Trip Generation			**1942**	**35**	**34**	**69**	**31**	**30**	**61**
3. PROJ-2023-00012									
Shopping Plaza (40-150k)[1]	45.5	TSF	4299	100	61	161	197	214	411
Shopping Plaza (40-150k) Pass-By Trips (40% AM, 40% PM)			-1720	-40	-24	-64	-79	-85	-164
Hotel[2]	130	Rooms	1039	33	26	60	39	38	77
Convenience Store/Gas Station - GFA (4-5.5k)[3]	10.600	TSF	2726	143	143	287	121	121	241
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)			-1526	-86	-86	-172	-68	-68	-135
Fast-Food Restaurant with Drive-Through Window[4]	22.800	TSF	10659	519	498	1017	392	361	753
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)			-5329	-259	-249	-509	-215	-199	-414
High-Turnover (Sit-Down) Resteraunt[5]	11.800	TSF	1265	62	51	113	65	42	107
High-Turnover (Sit-Down)Restaurant Pass-By Trips (43% AM, 43% PM)			-544	-27	-22	-49	-28	-18	-46
Health/Fitness Club[6]	35	TSF	1208	23	22	46	69	52	121
Fire and rescue station[7]	5.2	TSF	25	1	2	2	1	2	2
Total Project Trip Generation			**12100**	**469**	**423**	**892**	**493**	**459**	**952**
4. PROJ-2022-00213									
Convenience Store/Gas Station - GFA (2-4k)[11]	2.000	TSF	530	16	16	32	18	18	37
Convenience Store/Gas Station Pass-By Trips (60% AM, 56% PM)				-10	-10	-19	-10	-10	-21
Fast-Food Restaurant with Drive-Through Window[4]	1.000	TSF	467	23	22	45	17	16	33
Fast-Food Restaurant Pass-By Trips (50% AM, 55% PM)				-11	-11	-22	-9	-9	-18
Truck Stop[9]	5	PUMPS	1120	34	36	70	41	36	77
Total Project Trip Generation			**2118**	**52**	**53**	**105**	**57**	**51**	**108**

Table 6 (cont.). Cumulative Projects Trip Generation

5. PROJ-2022-00019									
	10.42	ACRES	580	25	20	45	14	22	37
Vehicle Mix [10]		***Percent*** [10]							
Passenger Vehicles		32.23%	187	8	6	15	5	7	12
2-Axle truck		40.39%	234	10	8	18	6	9	15
3-Axle truck		11.05%	64	3	2	5	2	2	4
4+-Axle Trucks		16.33%	95	4	3	7	2	4	6
		100%	580	25	20	45	14	22	37
PCE Trip Generation [11]		***PCE Factor***							
Passenger Vehicles		1.0	187	8	6	15	5	7	12
2-Axle truck		1.5	351	15	12	27	9	14	22
3-Axle truck		2.0	128	6	4	10	3	5	8
4+-Axle Trucks		3.0	284	12	10	22	7	11	18
Total PCE Trip Generation			951	41	33	74	24	37	60
Truck-Trailer Parking Lot[10]			**951**	**41**	**33**	**74**	**24**	**37**	**60**
6. PROJ-2022-00174									
High-Cube Transload and Short-Term Storage Warehouse[12]	211.50	TSF	296	13	4	17	6	15	21
Vehicle Mix [10]		***Percent*** [10]							
Passenger Vehicles		69.00%	204	9	3	12	4	11	15
2-Axle truck		6.80%	20	1	0	1	0	1	1
3-Axle truck		5.50%	16	1	0	1	0	1	1
4+-Axle Trucks		18.70%	55	2	1	3	1	3	4
		100%	296	13	4	17	6	15	21
PCE Trip Generation [11]		***PCE Factor***							
Passenger Vehicles		1.0	204	9	3	12	4	11	15
2-Axle truck		1.5	30	1	0	2	1	2	2
3-Axle truck		2.0	33	1	0	2	1	2	2
4+-Axle Trucks		3.0	166	7	2	9	3	9	12
Total PCE Trip Generation			433	19	6	25	9	23	31
High-Cube Transload and Short-Term Storage Warehouse[12]			**433**	**19**	**6**	**25**	**9**	**23**	**31**
Total Cumulative Trip Generation			18824	631	627	1258	708	646	1353

TSF = Thousand Square Feet

PCE = Passenger Car Equivalent

DU = Dwelling Unit

[1]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 821 - Shopping Plaza (40-150k)

[2]Trip rates from the Institute of transportation Engineers, Trip Generation Manual,11th Edition, 2021. Land Use Code 310 - Hotel.

[3]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 945 - Convenience Store/Gas Station - GFA (4-5.5k).

[4]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 934 - Fast-Food Restaurant with Drive-Through Window.

[5]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 932 - High-Turnover (Sit-Down) Resteraunt

[6]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 492 - Health/Fitness Club. PM*10 as daily

[7]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 575 - Fire And Rescue Station. PM as AM. PM*10 as daily

[8]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 210 - Single-Family Detached Housing.

[9]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 950 - Truck Stop.

[10]Trip rates and vehicle mix from surveys collected at Truck Trailer Parking lots in 14387 Valley Bvld, Fontana, CA on June 21, and June 22, 2022, 8911 Eucalyptus Avenue, Ontario, CA

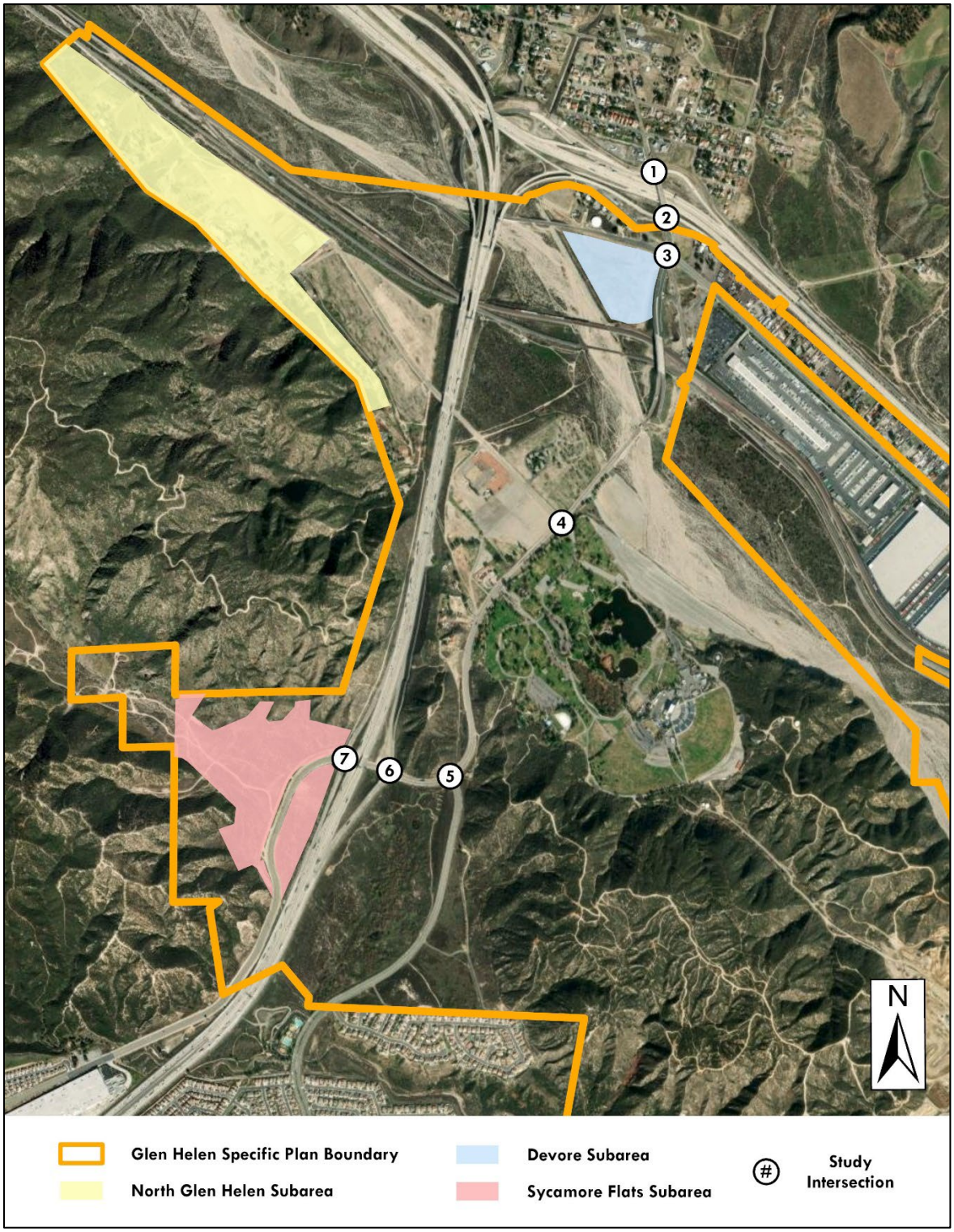
[11]Trip rates from the Institute of transportation Engineers, *Trip Generation Manual*,11th Edition, 2021. Land Use Code 945 - Convenience Store/Gas Station - GFA (2-4k).

[12]Trip rates from the Institute of transportation Engineers, Trip Generation Manual,11th Edition, 2021. Land Use Code 154 - High-Cube Transload and Short-Term Storage Warehouse.

SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

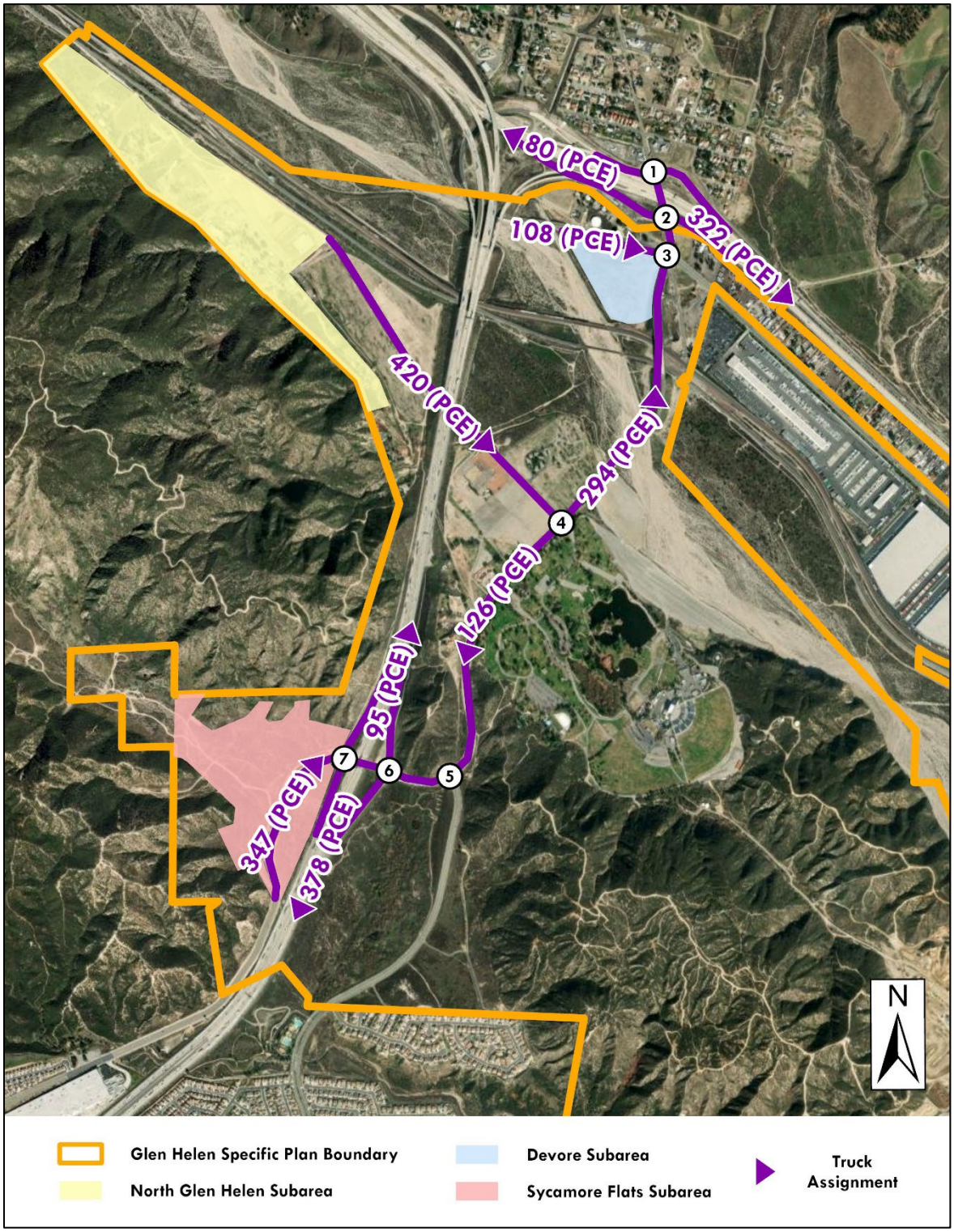
Figure 5. Study Area Intersections



SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

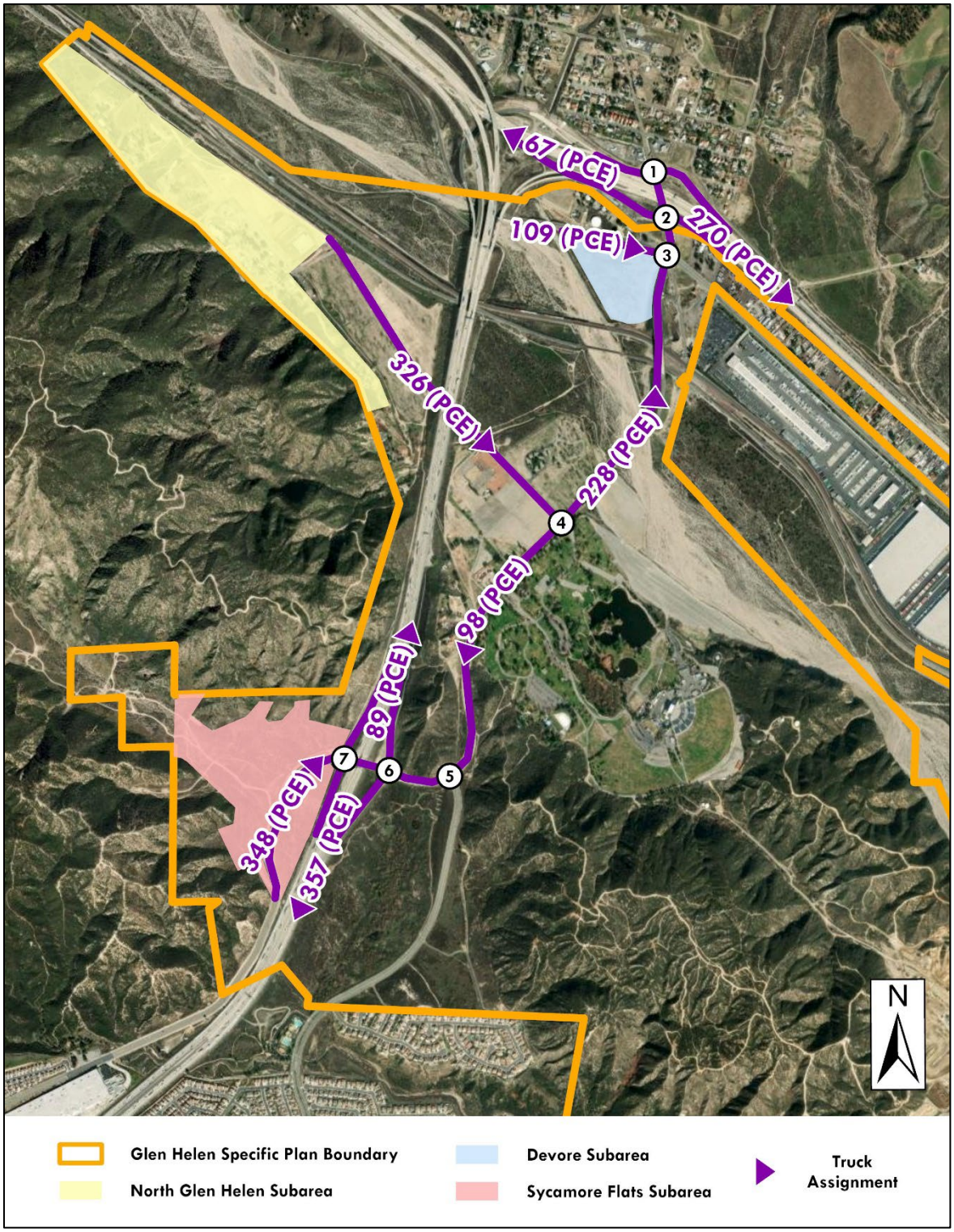
Figure 6. AM Truck Assignment



SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

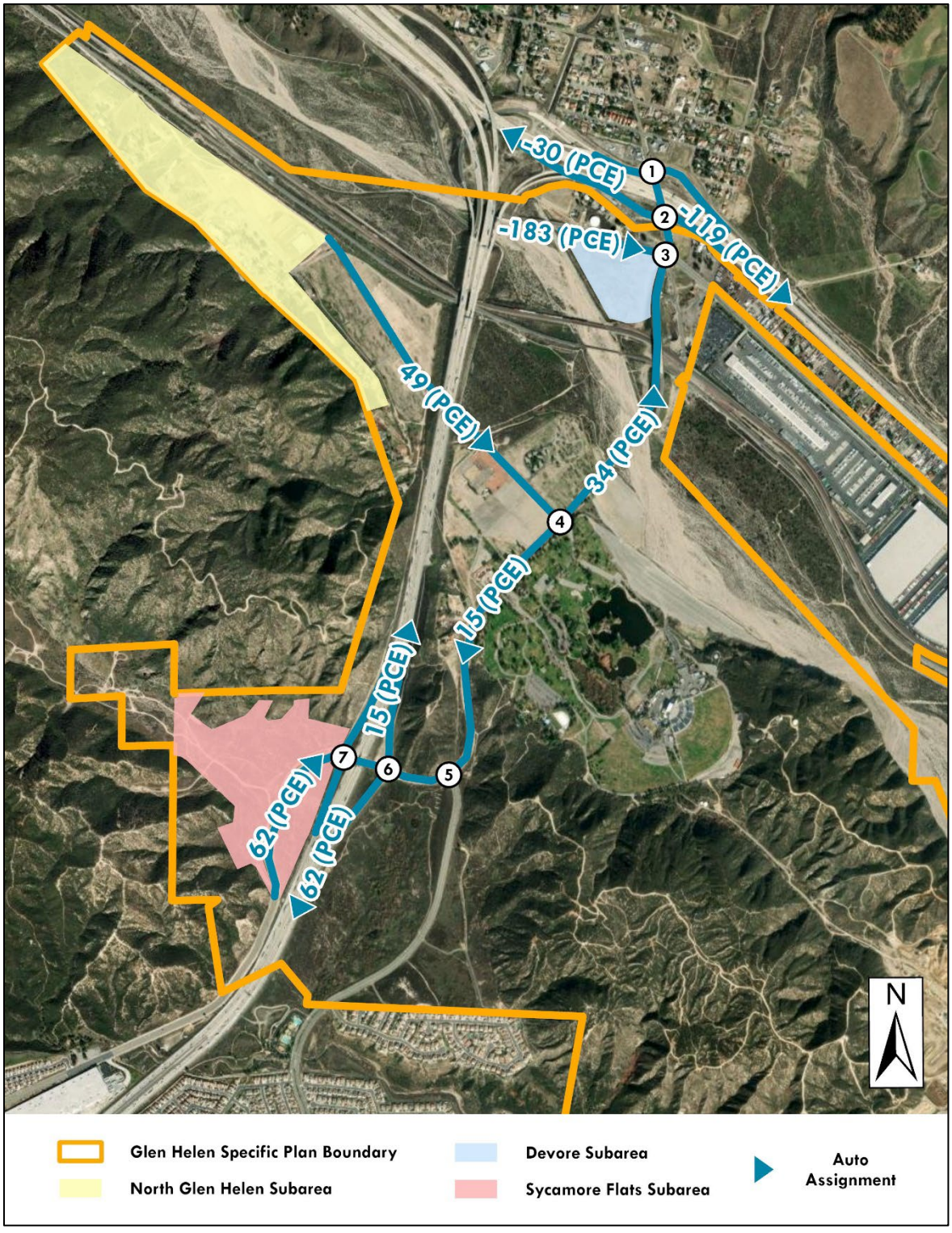
Figure 7. PM Truck Assignment



SCOPE FOR TRAFFIC STUDY

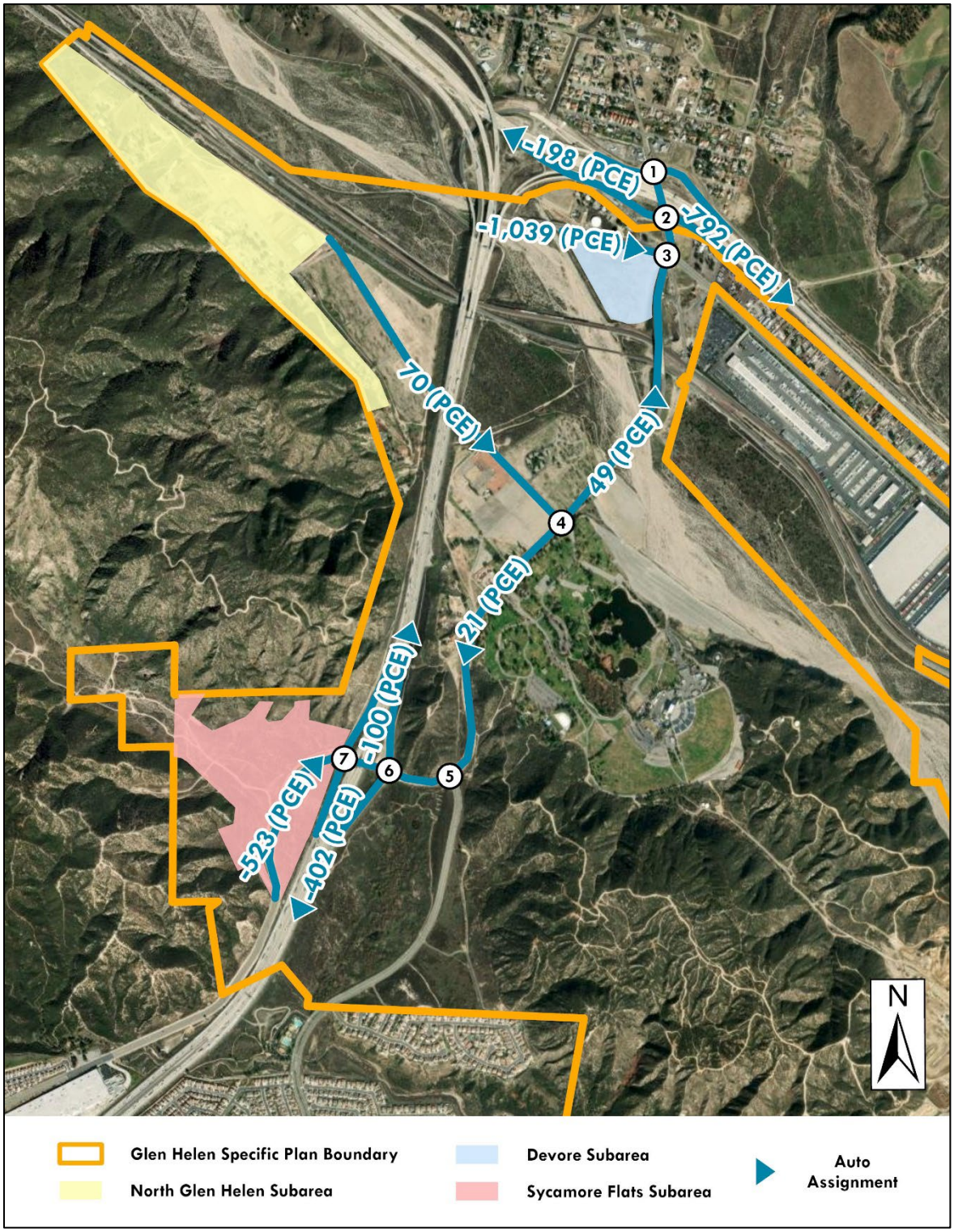
Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 8.AM Auto Assignment



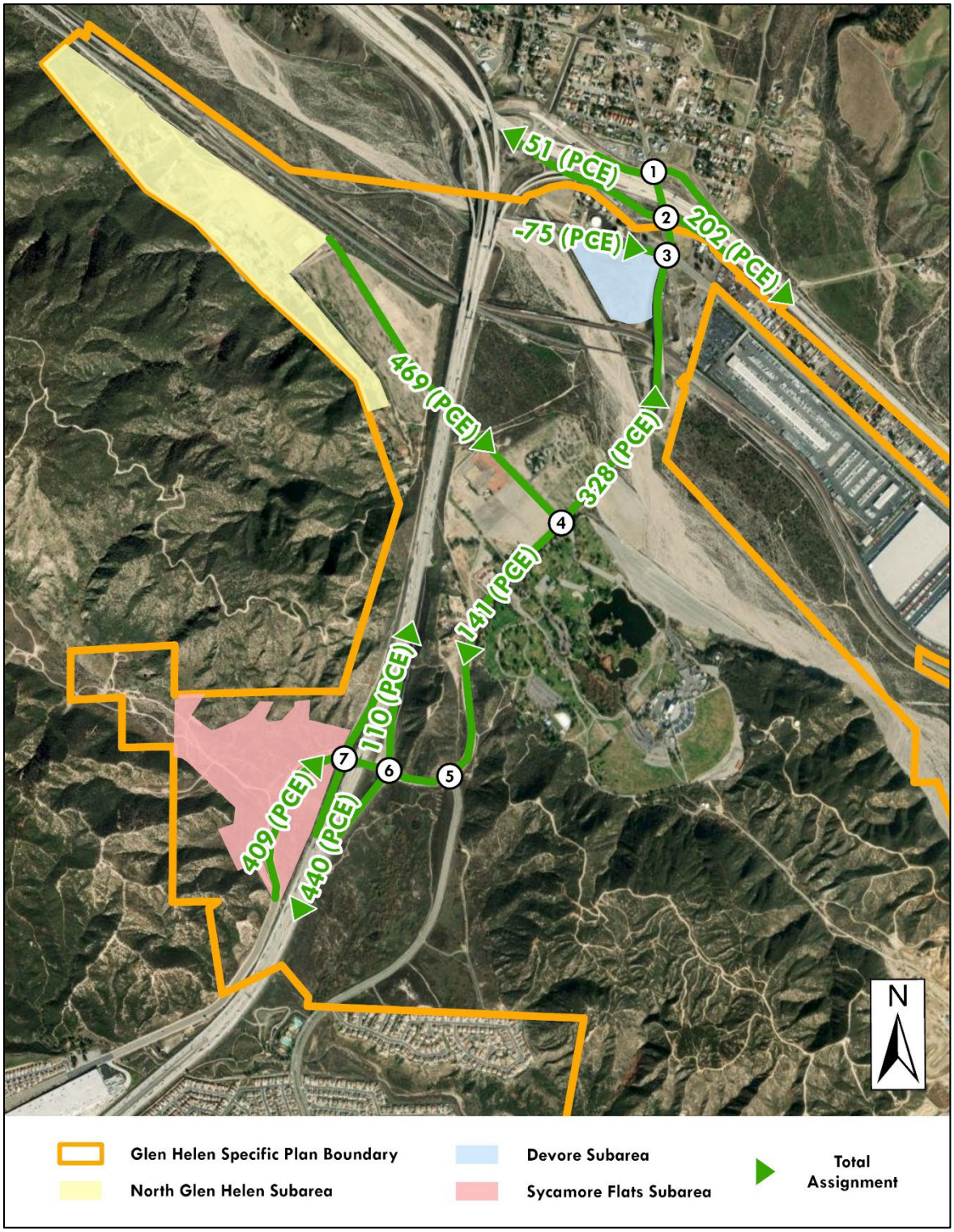
Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 9. PM Auto Assignment



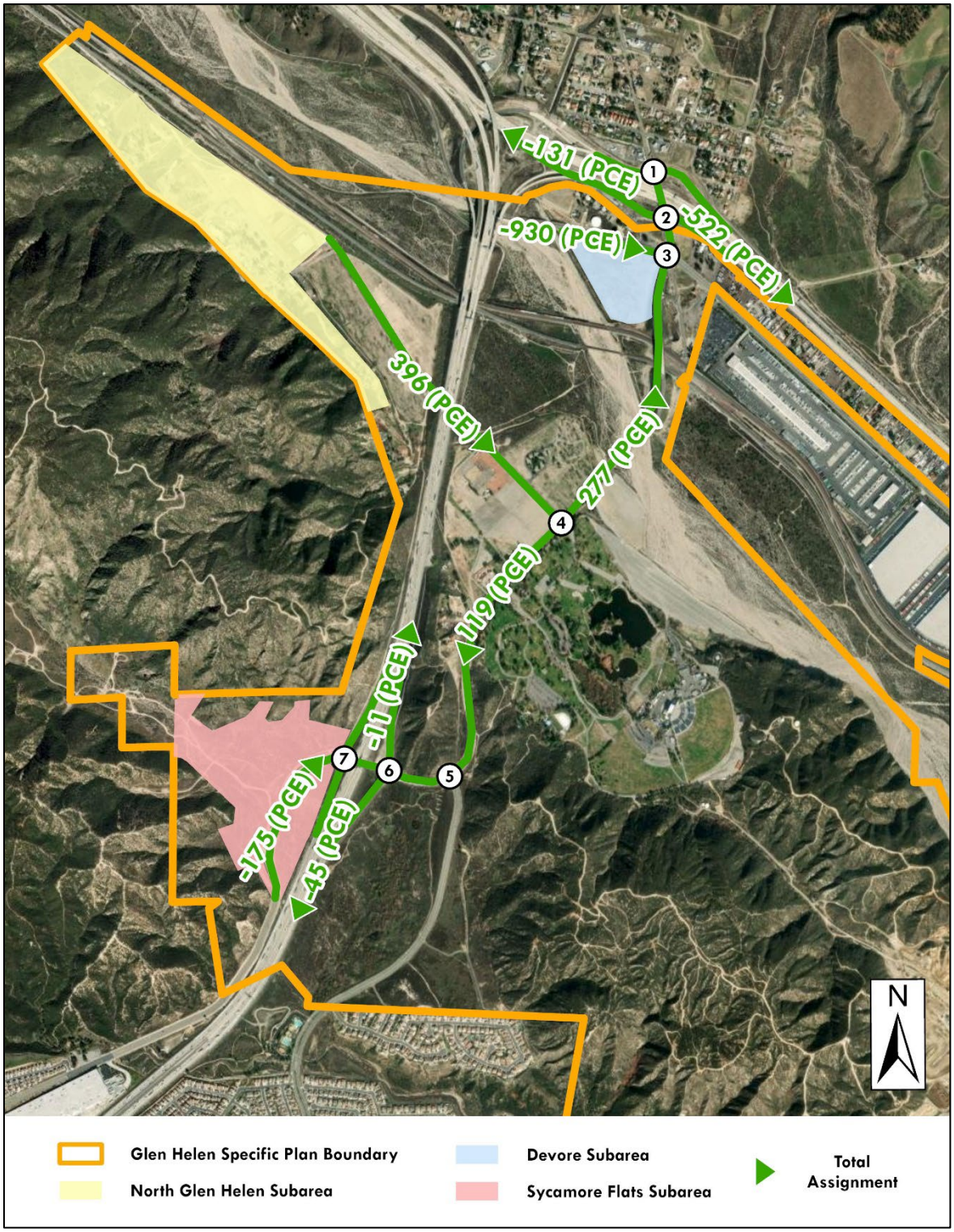
Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 10. AM Total Assignment



Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Figure 11. PM Total Assignment



SCOPE FOR TRAFFIC STUDY

Project Name:	Glen Helen Parkway Trailer Storage Lot (PTUP-2021-00040)

Attachment: Project Description

APPENDIX B – COUNT SHEETS

INTERSECTION TURNING MOVEMENT COUNTS

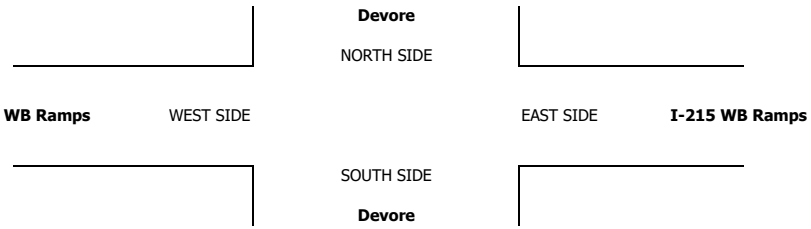
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Devore	LOCATION #:	1
THURSDAY	EAST & WEST:	I-215 WB Ramps	CONTROL:	STOP ALL

	NOTES:								
PCE Adjusted	Class	1	2	3	4	5	6		
	Factor	1	1.5	2	3	2	2		

AM / PM / MD / OTHER / OTHER — ◄ W — ▲ N — S ▼ — E ►

		NORTHBOUND Devore			SOUTHBOUND Devore			EASTBOUND I-215 WB Ramps			WESTBOUND I-215 WB Ramps				U-TURNS				
	LANES:	NL 1	NT 1	NR X	SL X	ST 1	SR 1	EL X	ET X	ER X	WL 0.5	WT 0.5	WR 1	TOTAL	NB	SB	EB	WB	TTL
AM	7:00 AM	29	9	0	0	20	27	0	0	0	18	1	15	117					0
	7:15 AM	25	14	0	0	31	29	0	0	0	25	0	17	139					0
	7:30 AM	28	11	0	0	20	27	0	0	0	23	0	12	120					0
	7:45 AM	26	14	0	0	22	19	0	0	0	33	2	22	137					0
	8:00 AM	35	32	0	0	31	12	0	0	0	10	3	20	143					0
	8:15 AM	18	32	0	0	30	27	0	0	0	16	0	31	152					0
	8:30 AM	36	22	0	0	48	25	0	0	0	12	0	50	192					0
	8:45 AM	25	20	0	0	55	17	0	0	0	8	2	22	148					0
	VOLUMES	220	152	0	0	256	181	0	0	0	144	8	187	1,146	0	0	0	0	0
	APPROACH %	59%	41%	0%	0%	59%	41%	0%	0%	0%	42%	2%	55%						
	APP/DEPART	372	/	339	437	/	400	0	/	0	338	/	408	0					
	BEGIN PEAK HR		8:00 AM																
	VOLUMES	113	105	0	0	164	80	0	0	0	45	5	122	634					
	APPROACH %	52%	48%	0%	0%	67%	33%	0%	0%	0%	26%	3%	71%						
	PEAK HR FACTOR		0.813			0.840			0.000			0.699		0.825					
	APP/DEPART	218	/	227	244	/	209	0	/	0	172	/	198	0					
PM	4:00 PM	91	129	0	0	48	78	0	0	0	42	32	94	513					0
	4:15 PM	101	140	0	0	22	85	0	0	0	32	35	77	491					0
	4:30 PM	73	150	0	0	34	106	0	0	0	33	27	64	487					0
	4:45 PM	62	142	0	0	41	89	0	0	0	33	29	84	479					0
	5:00 PM	79	138	0	0	25	69	0	0	0	42	11	87	450					0
	5:15 PM	106	148	0	0	19	106	0	0	0	22	18	75	494					0
	5:30 PM	96	133	0	0	37	85	0	0	0	15	7	51	423					0
	5:45 PM	82	115	0	0	18	97	0	0	0	22	18	62	412					0
	VOLUMES	689	1,094	0	0	243	713	0	0	0	240	176	592	3,747	0	0	0	0	0
	APPROACH %	39%	61%	0%	0%	25%	75%	0%	0%	0%	24%	17%	59%						
	APP/DEPART	1,783	/	1,686	956	/	483	0	/	0	1,008	/	1,578	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	327	560	0	0	145	358	0	0	0	140	122	319	1,969					
	APPROACH %	37%	63%	0%	0%	29%	71%	0%	0%	0%	24%	21%	55%						
	PEAK HR FACTOR		0.923			0.896			0.000			0.866		0.960					
	APP/DEPART	887	/	879	502	/	285	0	/	0	581	/	806	0					



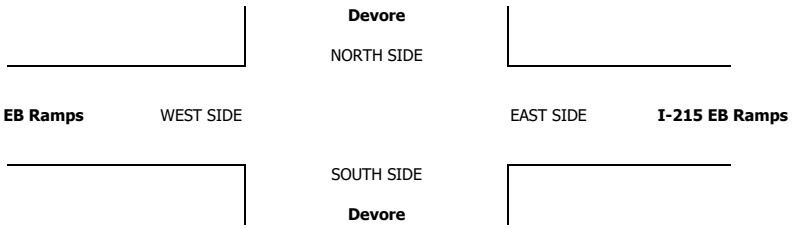
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Devore	LOCATION #:	2
THURSDAY	EAST & WEST:	I-215 EB Ramps	CONTROL:	STOP ALL

	NOTES:								AM	▲ N	
PCE Adjusted	Class	1	2	3	4	5	6		PM	◄ W	E ►
	Factor	1	1.5	2	3	2	2		MD		
									OTHER	S ▼	
									OTHER		

		NORTHBOUND Devore			SOUTHBOUND Devore			EASTBOUND I-215 EB Ramps			WESTBOUND I-215 EB Ramps				U-TURNS				
	LANES:	NL X	NT 1	NR 0	SL 1	ST 1	SR X	EL 0.5	ET 0.5	ER 1	WL X	WT X	WR X	TOTAL	NB	SB	EB	WB	TTL
AM	7:00 AM	0	28	42	14	24	0	10	1	38	0	0	0	155					0
	7:15 AM	0	32	44	22	34	0	8	4	37	0	0	0	180					0
	7:30 AM	0	34	26	17	26	0	5	5	34	0	0	0	146					0
	7:45 AM	0	34	37	18	38	0	6	1	42	0	0	0	174					0
	8:00 AM	0	48	29	22	19	0	19	0	46	0	0	0	183					0
	8:15 AM	0	41	22	21	25	0	9	0	34	0	0	0	150					0
	8:30 AM	0	51	27	32	28	0	9	1	62	0	0	0	209					0
	8:45 AM	0	33	18	38	25	0	12	0	37	0	0	0	161					0
	VOLUMES	0	298	244	182	217	0	76	12	328	0	0	0	1,356	0	0	0	0	0
	APPROACH %	0%	55%	45%	46%	54%	0%	18%	3%	79%	0%	0%	0%						
	APP/DEPART	542	/	374	399	/	545	416	/	438	0	/	0	0					
	BEGIN PEAK HR		7:45 AM																
	VOLUMES	0	173	115	92	109	0	42	2	183	0	0	0	715					
	APPROACH %	0%	60%	40%	46%	54%	0%	19%	1%	81%	0%	0%	0%						
	PEAK HR FACTOR		0.927			0.838			0.798			0.000		0.857					
	APP/DEPART	288	/	215	201	/	292	227	/	209	0	/	0	0					
PM	4:00 PM	0	113	28	28	62	0	108	0	90	0	0	0	427					0
	4:15 PM	0	126	23	15	38	0	116	6	62	0	0	0	385					0
	4:30 PM	0	109	30	22	45	0	115	0	44	0	0	0	363					0
	4:45 PM	0	112	25	28	46	0	92	3	45	0	0	0	350					0
	5:00 PM	0	117	22	23	44	0	101	2	46	0	0	0	354					0
	5:15 PM	0	126	23	9	30	0	131	2	62	0	0	0	382					0
	5:30 PM	0	143	13	25	27	0	86	0	57	0	0	0	350					0
	5:45 PM	0	137	50	16	24	0	60	3	42	0	0	0	331					0
	VOLUMES	0	980	213	165	316	0	806	16	447	0	0	0	2,941	0	0	0	0	0
	APPROACH %	0%	82%	18%	34%	66%	0%	64%	1%	35%	0%	0%	0%						
	APP/DEPART	1,193	/	1,786	480	/	762	1,268	/	393	0	/	0	0					
	BEGIN PEAK HR		4:00 PM																
	VOLUMES	0	459	105	93	191	0	429	9	240	0	0	0	1,525					
	APPROACH %	0%	81%	19%	33%	67%	0%	63%	1%	35%	0%	0%	0%						
	PEAK HR FACTOR		0.948			0.792			0.858			0.000		0.893					
	APP/DEPART	563	/	888	284	/	431	678	/	207	0	/	0	0					



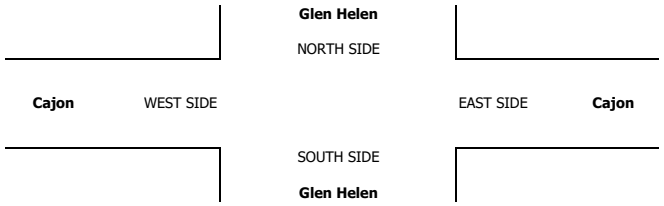
INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Glen Helen	LOCATION #:	3
THURSDAY	EAST & WEST:	Cajon	CONTROL:	STOP ALL

	NOTES:									
PCE Adjusted	Class	1	2	3	4	5	6			AM / PM / MD / OTHER / OTHER
	Factor	1	1.5	2	3	2	2			◄ W ▲ N S ▼ E ►

		NORTHBOUND Glen Helen			SOUTHBOUND Glen Helen			EASTBOUND Cajon			WESTBOUND Cajon				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB	SB	EB	WB	TTL
MN	12:00 AM	0	0	8	18	3	4	5	1	0	15	0	16	70					0
	12:15 AM	0	0	15	23	2	0	0	0	0	4	1	15	60					0
	12:30 AM	1	5	15	28	1	1	3	0	0	7	0	13	74					0
	12:45 AM	1	0	12	9	3	0	1	0	0	10	0	27	63					0
	1:00 AM	0	1	22	8	0	0	1	0	0	9	3	15	59					0
	1:15 AM	0	1	10	5	0	0	0	0	2	3	0	31	52					0
	1:30 AM	0	0	13	7	0	0	0	2	0	19	1	19	61					0
	1:45 AM	1	0	13	6	0	1	1	0	0	20	0	13	54					0
	2:00 AM	1	0	3	11	1	0	0	0	0	7	0	10	33					0
	2:15 AM	0	0	9	8	0	0	1	0	1	15	3	13	50					0
	2:30 AM	0	1	7	5	0	1	0	0	0	7	0	20	41					0
	2:45 AM	0	0	6	12	1	0	0	2	0	7	0	8	35					0
	VOLUMES	4	8	132	139	11	7	12	5	3	123	8	200	650	0	0	0	0	0
	APPROACH %	3%	5%	92%	89%	7%	4%	59%	26%	15%	37%	2%	61%						
	APP/DEPART	144	/	219	157	/	137	20	/	276	330	/	19	0					
	BEGIN PEAK HR		12:00 AM																
	VOLUMES	2	5	50	78	9	5	9	1	0	36	1	71	266					
	APPROACH %	4%	8%	88%	85%	10%	5%	89%	11%	0%	33%	1%	66%						
	PEAK HR FACTOR		0.689			0.767			0.432			0.730		0.905					
	APP/DEPART	57	/	84	92	/	45	10	/	129	108	/	8	0					
AM	03:00 AM	1	1	4	12	1	1	0	0	0	6	2	10	38					0
	3:15 AM	1	0	13	16	1	1	1	2	0	6	1	27	69					0
	3:30 AM	0	2	12	25	0	2	3	1	0	19	2	19	85					0
	3:45 AM	1	0	15	28	0	2	5	3	1	26	0	21	101					0
	4:00 AM	1	0	8	25	0	1	0	0	2	20	0	31	88					0
	4:15 AM	0	0	5	22	0	8	5	5	3	30	1	24	102					0
	4:30 AM	1	2	7	26	0	8	4	8	3	34	0	47	140					0
	4:45 AM	1	2	17	27	4	4	11	5	2	34	4	37	148					0
	5:00 AM	0	1	11	18	4	5	11	9	6	30	3	51	148					0
	5:15 AM	2	0	10	30	3	4	11	7	12	10	3	41	131					0
	5:30 AM	0	7	14	31	12	2	28	15	8	17	2	45	180					0
	5:45 AM	2	5	21	50	6	0	20	18	8	8	1	36	174					0
	VOLUMES	10	20	136	307	31	38	99	73	45	239	19	388	1,401	0	0	0	0	0
	APPROACH %	6%	12%	82%	82%	8%	10%	46%	34%	21%	37%	3%	60%						
	APP/DEPART	166	/	506	375	/	314	216	/	515	645	/	67	0					
	BEGIN PEAK HR		5:00 AM																
	VOLUMES	4	13	56	127	25	11	70	49	34	64	9	172	632					
	APPROACH %	5%	18%	77%	78%	15%	6%	46%	32%	22%	26%	4%	70%						
	PEAK HR FACTOR		0.652			0.736			0.745			0.734		0.878					
	APP/DEPART	73	/	255	162	/	122	152	/	232	245	/	24	0					



INTERSECTION TURNING MOVEMENT COUNTS

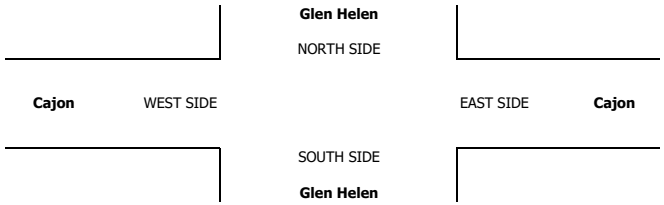
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Glen Helen	LOCATION #:	3
THURSDAY	EAST & WEST:	Cajon	CONTROL:	STOP ALL

	NOTES:									
PCE Adjusted	Class	1	2	3	4	5	6			
	Factor	1	1.5	2	3	2	2			

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND Glen Helen			SOUTHBOUND Glen Helen			EASTBOUND Cajon			WESTBOUND Cajon				U-TURNS				
	LANES:	NL 0	NT 1	NR 0	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	NB	SB	EB	WB	TTL
AM	6:00 AM	2	3	7	46	8	2	34	15	13	16	0	39	185					0
	6:15 AM	0	8	23	52	7	1	36	24	10	20	3	26	210					0
	6:30 AM	3	15	15	60	17	2	38	29	6	21	0	33	236					0
	6:45 AM	0	10	34	47	14	1	38	20	10	26	3	47	249					0
	7:00 AM	0	13	20	44	12	4	29	15	4	29	0	31	199					0
	7:15 AM	0	26	27	45	23	1	10	13	4	30	3	36	216					0
	7:30 AM	1	22	27	41	16	4	9	12	3	26	4	33	195					0
	7:45 AM	2	13	23	53	20	4	10	7	3	40	3	43	218					0
	8:00 AM	2	21	27	50	13	1	13	2	5	32	5	48	217					0
	8:15 AM	0	25	24	45	10	6	9	4	1	21	1	25	168					0
	8:30 AM	1	19	26	66	18	9	10	8	10	21	1	47	235					0
	8:45 AM	2	18	33	50	13	2	7	4	6	26	2	27	187					0
	VOLUMES	13	192	283	596	169	35	241	152	72	304	25	433	2,513	0	0	0	0	0
	APPROACH %	3%	39%	58%	75%	21%	4%	52%	33%	15%	40%	3%	57%						
	APP/DEPART	487	/	865	800	/	544	465	/	1,031	761	/	73	0					
	BEGIN PEAK HR		6:15 AM																
	VOLUMES	3	45	92	203	50	8	141	88	29	95	6	136	893					
	APPROACH %	2%	32%	66%	78%	19%	3%	55%	34%	11%	40%	3%	57%						
	PEAK HR FACTOR		0.793			0.833			0.886			0.787		0.898					
	APP/DEPART	140	/	321	260	/	173	257	/	382	236	/	17	0					
MD	09:00 AM	1	15	27	33	15	3	6	4	1	17	3	51	171					0
	9:15 AM	5	7	11	60	7	5	7	2	4	26	3	60	196					0
	9:30 AM	3	14	24	49	7	2	8	4	3	16	5	51	184					0
	9:45 AM	1	11	26	48	11	8	4	2	5	15	1	48	178					0
	10:00 AM	1	11	35	42	8	4	10	2	3	31	6	72	223					0
	10:15 AM	1	17	29	59	14	2	6	0	5	33	13	46	224					0
	10:30 AM	2	10	19	36	12	3	4	4	6	28	7	34	165					0
	10:45 AM	1	12	24	71	12	4	9	4	2	17	5	45	204					0
	11:00 AM	4	10	16	58	8	3	3	2	9	31	4	43	189					0
	11:15 AM	1	21	20	51	14	7	6	2	7	29	3	45	203					0
	11:30 AM	7	17	21	45	11	14	7	4	4	32	6	52	216					0
	11:45 AM	4	16	29	38	14	12	10	5	5	25	6	37	199					0
	VOLUMES	31	157	278	586	130	66	78	35	52	297	61	581	2,349	0	0	0	0	0
	APPROACH %	7%	34%	60%	75%	17%	8%	47%	21%	32%	32%	6%	62%						
	APP/DEPART	466	/	816	781	/	478	165	/	899	938	/	157	0					
	BEGIN PEAK HR		11:00 AM																
	VOLUMES	16	62	85	191	46	35	26	13	24	115	19	176	806					
	APPROACH %	10%	38%	52%	70%	17%	13%	41%	21%	38%	37%	6%	57%						
	PEAK HR FACTOR		0.849			0.954			0.781			0.869		0.933					
	APP/DEPART	163	/	264	271	/	185	63	/	289	310	/	70	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Glen Helen Parkway	LOCATION #:	4
THURSDAY	EAST & WEST:	Glen Helen Road	CONTROL:	STOP E/W

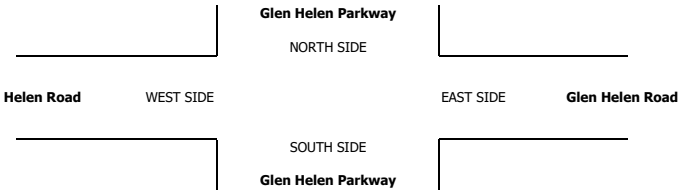
NOTES:

PCE Adjusted									
Class	1	2	3	4	5	6			
Factor	1	1.5	2	3	2	2			

AM / PM / MD / OTHER / OTHER

◄ W E ► ▲ N S ▼

		NORTHBOUND Glen Helen Parkway			SOUTHBOUND Glen Helen Parkway			EASTBOUND Glen Helen Road			WESTBOUND Glen Helen Road				U-TURNS				
	LANES:	NL 1	NT 2	NR 1	SL 1	ST 1.5	SR 0.5	EL 0	ET 1	ER 1	WL 0	WT 1	WR 0	TOTAL	NB	SB	EB	WB	TTL
MN	12:00 AM	0	18	0	0	16	0	0	0	0	0	0	0	34					0
	12:15 AM	0	6	0	0	8	1	0	0	0	0	0	0	15					0
	12:30 AM	0	17	0	0	11	0	0	0	0	0	0	0	28					0
	12:45 AM	0	16	0	0	9	1	0	0	0	0	0	0	26					0
	1:00 AM	0	20	0	0	6	0	0	0	0	0	0	0	26					0
	1:15 AM	1	13	0	0	7	0	0	0	0	0	0	0	21					0
	1:30 AM	0	12	0	0	16	0	0	0	0	0	0	0	28					0
	1:45 AM	0	14	0	0	20	0	0	0	0	0	0	0	34					0
	2:00 AM	0	5	0	0	11	0	0	0	0	0	0	0	16					0
	2:15 AM	0	8	0	0	12	0	1	0	1	0	0	0	22					0
	2:30 AM	0	10	0	0	11	0	0	0	0	0	0	0	21					0
	2:45 AM	0	6	0	0	5	0	0	0	0	0	0	0	11					0
	VOLUMES	1	144	0	0	132	2	1	0	1	0	0	0	281	0	0	0	0	0
	APPROACH %	1%	99%	0%	0%	99%	1%	50%	0%	50%	0%	0%	0%						
	APP/DEPART	145	/	145	134	/	133	2	/	0	0	/	3	0					
	BEGIN PEAK HR		12:00 AM																
	VOLUMES	0	57	0	0	44	2	0	0	0	0	0	0	103					
	APPROACH %	0%	100%	0%	0%	96%	4%	0%	0%	0%	0%	0%	0%						
	PEAK HR FACTOR		0.792			0.719			0.000			0.000		0.757					
	APP/DEPART	57	/	57	46	/	44	0	/	0	0	/	2	0					
AM	03:00 AM	0	5	0	0	13	0	0	0	0	0	0	0	18					0
	3:15 AM	0	13	0	0	6	0	0	0	1	0	0	0	20					0
	3:30 AM	0	15	0	0	18	1	0	0	1	0	0	0	35					0
	3:45 AM	0	16	0	0	27	0	0	0	1	0	0	0	44					0
	4:00 AM	0	9	0	0	18	1	0	0	0	0	0	0	28					0
	4:15 AM	0	5	0	0	32	0	0	0	0	0	0	0	37					0
	4:30 AM	1	10	0	0	32	0	0	0	2	0	0	0	44					0
	4:45 AM	0	20	0	0	41	0	0	0	0	0	0	0	61					0
	5:00 AM	0	15	0	0	37	0	0	0	0	0	0	0	52					0
	5:15 AM	1	8	0	0	32	0	0	0	0	0	0	0	41					0
	5:30 AM	0	22	0	0	33	4	0	0	5	0	0	0	64					0
	5:45 AM	0	25	0	0	20	2	1	0	3	0	0	0	51					0
	VOLUMES	2	162	0	0	308	7	1	0	13	0	0	0	492	0	0	0	0	0
	APPROACH %	1%	99%	0%	0%	98%	2%	7%	0%	93%	0%	0%	0%						
	APP/DEPART	164	/	163	315	/	321	14	/	0	0	/	9	0					
	BEGIN PEAK HR		5:00 AM																
	VOLUMES	1	70	0	0	121	5	1	0	8	0	0	0	206					
	APPROACH %	1%	99%	0%	0%	96%	4%	11%	0%	89%	0%	0%	0%						
	PEAK HR FACTOR		0.710			0.863			0.450			0.000		0.811					
	APP/DEPART	71	/	71	126	/	129	9	/	0	0	/	6	0					



INTERSECTION TURNING MOVEMENT COUNTS

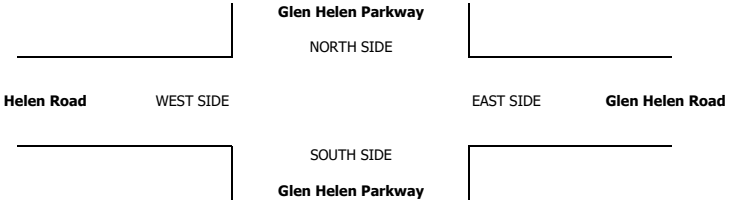
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Glen Helen Parkway	LOCATION #:	4
THURSDAY	EAST & WEST:	Glen Helen Road	CONTROL:	STOP E/W

	NOTES:									
PCE	Class	1	2	3	4	5	6			
Adjusted	Factor	1	1.5	2	3	2	2			

AM / PM / MD / OTHER / OTHER — ▲ N ◄ W E ► S ▼

		NORTHBOUND Glen Helen Parkway			SOUTHBOUND Glen Helen Parkway			EASTBOUND Glen Helen Road			WESTBOUND Glen Helen Road				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1	2	1	1	1.5	0.5	0	1	1	0	1	0						
AM	6:00 AM	0	10	0	0	32	0	1	0	1	0	0	0	44					0
	6:15 AM	0	32	0	0	38	0	0	0	2	0	0	0	72					0
	6:30 AM	1	32	1	0	38	4	0	0	2	0	0	0	78					0
	6:45 AM	2	39	0	0	44	0	5	0	0	0	1	0	91					0
	7:00 AM	0	31	0	1	51	0	3	0	0	0	0	0	85					0
	7:15 AM	0	56	0	3	56	0	1	0	1	1	0	0	118					0
	7:30 AM	0	53	1	0	42	0	0	0	1	1	0	3	101					0
	7:45 AM	2	35	0	0	62	4	0	0	0	0	0	0	102					0
	8:00 AM	0	48	1	0	48	2	0	0	0	0	0	1	100					0
	8:15 AM	0	46	0	0	32	0	5	0	0	0	0	0	82					0
	8:30 AM	0	45	0	0	45	1	4	0	0	0	0	0	95					0
	8:45 AM	2	40	0	0	41	3	1	0	4	0	0	0	90					0
	VOLUMES	7	465	3	4	525	14	20	0	11	2	1	4	1,054	0	0	0	0	0
	APPROACH %	1%	98%	1%	1%	97%	2%	64%	0%	36%	29%	14%	57%						
	APP/DEPART	474	/	488	543	/	538	31	/	7	7	/	21	0					
	BEGIN PEAK HR		7:15 AM																
	VOLUMES	2	191	2	3	207	6	1	0	2	2	0	4	420					
	APPROACH %	1%	98%	1%	1%	96%	3%	33%	0%	67%	33%	0%	67%						
	PEAK HR FACTOR		0.878			0.829			0.375			0.375		0.893					
	APP/DEPART	195	/	196	216	/	211	3	/	5	6	/	8	0					
MD	09:00 AM	0	43	1	0	32	1	0	0	0	0	0	1	78					0
	9:15 AM	3	19	0	0	40	1	6	0	1	0	0	0	69					0
	9:30 AM	4	42	1	0	20	3	3	0	1	1	0	0	74					0
	9:45 AM	0	32	0	0	33	1	1	0	0	0	0	0	67					0
	10:00 AM	0	47	0	1	34	1	7	0	3	0	0	0	92					0
	10:15 AM	0	39	0	0	52	7	1	0	2	0	0	0	100					0
	10:30 AM	2	35	0	0	37	1	1	0	4	0	0	0	80					0
	10:45 AM	2	35	1	0	37	3	1	0	3	1	0	0	82					0
	11:00 AM	4	27	0	0	45	2	1	0	6	0	0	0	83					0
	11:15 AM	2	41	0	0	49	0	1	0	0	0	0	0	93					0
	11:30 AM	0	39	1	0	40	4	2	0	3	0	0	1	90					0
	11:45 AM	0	51	1	0	42	2	0	0	7	0	0	0	102					0
	VOLUMES	16	448	5	1	457	25	23	0	28	2	0	2	1,006	0	0	0	0	0
	APPROACH %	3%	96%	1%	0%	95%	5%	45%	0%	55%	50%	0%	50%						
	APP/DEPART	469	/	473	482	/	487	51	/	6	4	/	41	0					
	BEGIN PEAK HR		11:00 AM																
	VOLUMES	6	157	2	0	175	8	4	0	15	0	0	1	367					
	APPROACH %	3%	95%	1%	0%	96%	4%	21%	0%	79%	0%	0%	100%						
	PEAK HR FACTOR		0.791			0.931			0.731			0.250		0.904					
	APP/DEPART	165	/	162	183	/	190	19	/	2	1	/	13	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

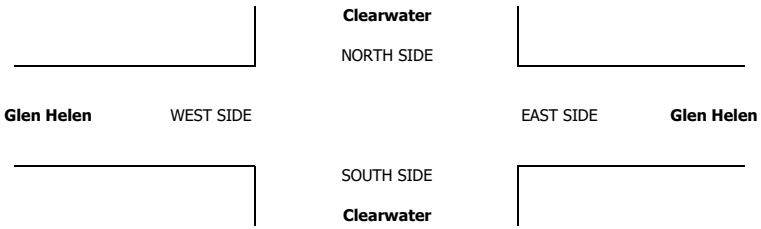
DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	Clearwater	LOCATION #:	5
THURSDAY	EAST & WEST:	Glen Helen	CONTROL:	SIGNAL

NOTES:

PCE Adjusted								
Class	1	2	3	4	5	6		
Factor	1	1.5	2	3	2	2		

AM / PM / MD / OTHER / OTHER — ▲ N, ◄ W, E ►, S ▼

		NORTHBOUND Clearwater			SOUTHBOUND Clearwater			EASTBOUND Glen Helen			WESTBOUND Glen Helen				U-TURNS				
	LANES:	NL 2	NT X	NR 1	SL X	ST X	SR X	EL X	ET 2	ER 1	WL 1	WT 2	WR X	TOTAL	NB	SB	EB	WB	TTL
AM	7:00 AM	89	0	18	0	0	0	0	16	44	19	18	0	203					0
	7:15 AM	157	0	22	0	0	0	0	20	64	38	24	0	325					0
	7:30 AM	112	0	37	0	0	0	0	20	67	23	17	0	274					0
	7:45 AM	83	0	18	0	0	0	0	18	41	38	28	0	225					0
	8:00 AM	66	0	21	0	0	0	0	21	41	18	28	0	194					0
	8:15 AM	44	0	20	0	0	0	0	32	37	9	17	0	157					0
	8:30 AM	49	0	21	0	0	0	0	31	29	16	29	0	173					0
	8:45 AM	32	0	17	0	0	0	0	24	22	16	19	0	129					0
	VOLUMES	631	0	173	0	0	0	0	180	342	176	178	0	1,679	0	0	0	0	0
	APPROACH %	78%	0%	22%	0%	0%	0%	0%	35%	65%	50%	50%	0%						
	APP/DEPART	804	/	0	0	/	517	522	/	353	353	/	809	0					
	BEGIN PEAK HR		7:00 AM																
	VOLUMES	440	0	95	0	0	0	0	74	215	118	86	0	1,026					
	APPROACH %	82%	0%	18%	0%	0%	0%	0%	26%	74%	58%	42%	0%						
	PEAK HR FACTOR		0.747			0.000			0.832			0.777		0.790					
	APP/DEPART	535	/	0	0	/	332	288	/	168	204	/	526	0					
PM	4:00 PM	32	0	13	0	0	0	0	184	66	15	94	0	403					0
	4:15 PM	54	0	27	0	0	0	0	119	42	22	112	0	374					0
	4:30 PM	45	0	23	0	0	0	2	156	36	32	172	0	464					0
	4:45 PM	44	0	24	0	0	0	0	107	23	26	151	0	374					0
	5:00 PM	66	0	26	0	0	0	1	150	31	26	119	0	418					0
	5:15 PM	54	0	46	0	0	0	4	113	30	46	151	0	443					0
	5:30 PM	44	0	26	0	0	0	6	133	24	31	116	0	378					0
	5:45 PM	63	0	32	0	0	0	3	130	30	24	126	0	407					0
	VOLUMES	400	0	216	0	0	0	16	1,089	280	220	1,039	0	3,258	0	0	0	0	0
	APPROACH %	65%	0%	35%	0%	0%	0%	1%	79%	20%	17%	83%	0%						
	APP/DEPART	615	/	16	0	/	500	1,384	/	1,305	1,259	/	1,439	0					
	BEGIN PEAK HR		4:30 PM																
	VOLUMES	208	0	119	0	0	0	7	524	119	130	592	0	1,698					
	APPROACH %	64%	0%	36%	0%	0%	0%	1%	81%	18%	18%	82%	0%						
	PEAK HR FACTOR		0.816			0.000			0.841			0.886		0.916					
	APP/DEPART	327	/	7	0	/	249	650	/	643	722	/	800	0					



INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	I-5 NB Ramps	LOCATION #:	6
THURSDAY	EAST & WEST:	Glen Helen	CONTROL:	SIGNAL

	NOTES:												
PCE Adjusted	Class	1	2	3	4	5	6			AM		▲ N	
	Factor	1	1.5	2	3	2	2			PM	◄ W		E ►
										MD		S	
										OTHER			
										OTHER		▼	

		NORTHBOUND I-5 NB Ramps			SOUTHBOUND I-5 NB Ramps			EASTBOUND Glen Helen			WESTBOUND Glen Helen				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	1.5	0.5	1	X	X	X	1	2	X	X	2	0						
MN	12:00 AM	0	0	21	0	0	0	7	3	0	0	18	1	50					0
	12:15 AM	0	4	5	0	0	0	0	1	0	0	6	0	16					0
	12:30 AM	1	6	16	0	0	0	0	9	0	0	10	2	44					0
	12:45 AM	0	0	20	0	0	0	3	8	0	0	10	0	41					0
	1:00 AM	0	3	13	0	0	0	5	5	0	0	7	1	34					0
	1:15 AM	0	0	11	0	0	0	1	1	0	0	7	1	21					0
	1:30 AM	1	6	13	0	0	0	1	0	0	0	12	2	35					0
	1:45 AM	0	0	16	0	0	0	1	3	0	0	23	0	43					0
	2:00 AM	0	0	4	0	0	0	2	3	0	0	11	0	20					0
	2:15 AM	0	0	6	0	0	0	5	3	0	0	14	0	28					0
	2:30 AM	0	0	8	0	0	0	3	1	0	0	11	1	24					0
	2:45 AM	0	0	8	0	0	0	6	2	0	0	4	2	22					0
	VOLUMES	2	19	141	0	0	0	34	39	0	0	133	10	377	0	0	0	0	0
	APPROACH %	1%	12%	87%	0%	0%	0%	46%	54%	0%	0%	93%	7%						
	APP/DEPART	162	/	63	0	/	0	73	/	180	143	/	135	0					
	BEGIN PEAK HR		12:00 AM																
	VOLUMES	1	10	62	0	0	0	10	21	0	0	44	3	151					
	APPROACH %	1%	14%	85%	0%	0%	0%	32%	68%	0%	0%	94%	6%						
	PEAK HR FACTOR		0.793			0.000			0.705			0.618		0.755					
	APP/DEPART	73	/	23	0	/	0	31	/	83	47	/	45	0					
AM	03:00 AM	0	0	9	0	0	0	0	2	0	0	15	0	26					0
	3:15 AM	0	0	14	0	0	0	4	0	0	0	9	2	29					0
	3:30 AM	0	4	17	0	0	0	4	4	0	0	13	2	44					0
	3:45 AM	0	0	13	0	0	0	2	1	0	0	31	2	48					0
	4:00 AM	0	0	7	0	0	0	13	4	0	0	29	6	59					0
	4:15 AM	0	0	6	0	0	0	7	3	0	0	39	3	58					0
	4:30 AM	0	3	10	0	0	0	10	8	0	0	41	10	82					0
	4:45 AM	0	0	24	0	0	0	13	12	0	0	50	11	109					0
	5:00 AM	0	1	18	0	0	0	15	14	0	0	42	8	97					0
	5:15 AM	0	0	13	0	0	0	15	13	0	0	33	15	88					0
	5:30 AM	2	3	32	0	0	0	15	28	0	0	46	13	139					0
	5:45 AM	1	3	62	0	0	0	25	32	0	0	30	15	167					0
	VOLUMES	3	14	222	0	0	0	122	121	0	0	377	86	944	0	0	0	0	0
	APPROACH %	1%	6%	93%	0%	0%	0%	50%	50%	0%	0%	81%	19%						
	APP/DEPART	239	/	222	0	/	0	243	/	343	462	/	380	0					
	BEGIN PEAK HR		5:00 AM																
	VOLUMES	3	7	124	0	0	0	70	87	0	0	150	50	491					
	APPROACH %	2%	5%	93%	0%	0%	0%	44%	56%	0%	0%	75%	25%						
	PEAK HR FACTOR		0.508			0.000			0.692			0.847		0.734					
	APP/DEPART	134	/	127	0	/	0	157	/	211	200	/	153	0					

I-5 NB Ramps

NORTH SIDE

Glen Helen WEST SIDE EAST SIDE **Glen Helen**

SOUTH SIDE

I-5 NB Ramps

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	I-5 NB Ramps	LOCATION #:	6
THURSDAY	EAST & WEST:	Glen Helen	CONTROL:	SIGNAL

	NOTES:												
PCE Adjusted	Class	1	2	3	4	5	6			AM		▲ N	
	Factor	1	1.5	2	3	2	2			PM	◄ W		E ►
										MD		S ▼	
										OTHER			
										OTHER			

	NORTHBOUND I-5 NB Ramps			SOUTHBOUND I-5 NB Ramps			EASTBOUND Glen Helen			WESTBOUND Glen Helen				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	1.5	0.5	1	X	X	X	1	2	X	X	2	0						
AM 6:00 AM	4	3	31	0	0	0	12	24	0	0	40	24	136					0
6:15 AM	0	0	40	0	0	0	13	24	0	0	43	24	143					0
6:30 AM	0	2	19	0	0	0	13	20	0	0	42	39	133					0
6:45 AM	4	0	45	0	0	0	9	37	0	0	45	26	165					0
7:00 AM	3	3	26	0	0	0	13	35	0	0	64	41	185					0
7:15 AM	2	0	44	0	0	0	10	40	0	0	131	51	277					0
7:30 AM	2	1	49	0	0	0	26	39	0	0	91	38	245					0
7:45 AM	5	3	40	0	0	0	15	20	0	0	77	34	193					0
8:00 AM	1	0	40	0	0	0	11	22	0	0	65	29	167					0
8:15 AM	2	3	54	0	0	0	3	15	0	0	43	18	137					0
8:30 AM	0	0	39	0	0	0	21	20	0	0	50	28	158					0
8:45 AM	0	0	28	0	0	0	13	17	0	0	36	14	108					0
VOLUMES	23	15	452	0	0	0	156	310	0	0	723	365	2,044	0	0	0	0	0
APPROACH %	5%	3%	92%	0%	0%	0%	33%	67%	0%	0%	66%	34%						
APP/DEPART	490	/	536	0	/	0	466	/	762	1,088	/	746	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	12	7	158	0	0	0	63	134	0	0	362	163	898					
APPROACH %	7%	4%	89%	0%	0%	0%	32%	68%	0%	0%	69%	31%						
PEAK HR FACTOR		0.849			0.000			0.768			0.725		0.812					
APP/DEPART	177	/	233	0	/	0	197	/	291	525	/	374	0					
MD 09:00 AM	1	0	39	0	0	0	9	15	0	0	48	23	133					0
9:15 AM	0	0	34	0	0	0	15	18	0	0	41	14	121					0
9:30 AM	0	0	43	0	0	0	6	7	0	0	40	17	113					0
9:45 AM	1	7	38	0	0	0	4	7	0	0	30	14	101					0
10:00 AM	4	0	39	0	0	0	17	15	0	0	44	6	123					0
10:15 AM	4	4	30	0	0	0	10	17	0	0	62	17	142					0
10:30 AM	0	2	35	0	0	0	7	15	0	0	51	19	127					0
10:45 AM	2	8	35	0	0	0	16	17	0	0	39	10	127					0
11:00 AM	1	3	32	0	0	0	10	10	0	0	63	18	137					0
11:15 AM	1	0	41	0	0	0	22	20	0	0	48	14	146					0
11:30 AM	2	7	28	0	0	0	14	19	0	0	54	23	146					0
11:45 AM	1	3	44	0	0	0	15	22	0	0	45	23	152					0
VOLUMES	17	33	435	0	0	0	142	180	0	0	563	196	1,565	0	0	0	0	0
APPROACH %	3%	7%	90%	0%	0%	0%	44%	56%	0%	0%	74%	26%						
APP/DEPART	485	/	371	0	/	0	322	/	615	759	/	579	0					
BEGIN PEAK HR		11:00 AM																
VOLUMES	5	13	145	0	0	0	60	71	0	0	210	77	580					
APPROACH %	3%	8%	89%	0%	0%	0%	46%	54%	0%	0%	73%	27%						
PEAK HR FACTOR		0.853			0.000			0.789			0.884		0.953					
APP/DEPART	162	/	150	0	/	0	131	/	216	287	/	215	0					

I-5 NB Ramps

NORTH SIDE

Glen Helen WEST SIDE EAST SIDE **Glen Helen**

SOUTH SIDE

I-5 NB Ramps

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	7
THURSDAY	EAST & WEST:	Glen Helen	CONTROL:	STOP S

	NOTES:											
PCE	Class	1	2	3	4	5	6			AM		▲ N
Adjusted	Factor	1	1.5	2	3	2	2			PM	◄ W	E ►
										MD		
										OTHER		S ▼
										OTHER		

		NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Glen Helen			WESTBOUND Glen Helen				U-TURNS				
		NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
	LANES:	X	X	X	1	0.5	0.5	X	2	0	1	2	X						
MN	12:00 AM	0	0	0	9	3	1	0	1	0	15	3	0	32					0
	12:15 AM	0	0	0	2	2	0	0	0	1	5	1	0	11					0
	12:30 AM	0	0	0	3	0	1	0	6	0	10	1	0	21					0
	12:45 AM	0	0	0	5	0	3	0	6	0	9	1	0	24					0
	1:00 AM	0	0	0	9	3	4	0	1	0	7	0	0	24					0
	1:15 AM	0	0	0	0	3	0	0	2	0	6	1	0	12					0
	1:30 AM	0	0	0	1	3	1	0	0	0	12	1	0	18					0
	1:45 AM	0	0	0	3	0	1	0	1	0	23	0	0	28					0
	2:00 AM	0	0	0	2	0	3	0	3	0	7	4	0	19					0
	2:15 AM	0	0	0	4	3	1	0	4	0	15	0	0	27					0
	2:30 AM	0	0	0	3	0	3	0	1	0	10	1	0	18					0
	2:45 AM	0	0	0	6	0	9	0	2	0	4	0	0	21					0
	VOLUMES	0	0	0	46	17	27	0	27	1	123	13	0	254	0	0	0	0	0
	APPROACH %	0%	0%	0%	51%	19%	30%	0%	96%	4%	90%	10%	0%						
	APP/DEPART	0	/	0	90	/	141	28	/	73	136	/	40	0					
	BEGIN PEAK HR		2:00 AM																
	VOLUMES	0	0	0	15	3	16	0	10	0	36	5	0	85					
	APPROACH %	0%	0%	0%	43%	9%	48%	0%	100%	0%	88%	12%	0%						
	PEAK HR FACTOR		0.000			0.558			0.625			0.683		0.782					
	APP/DEPART	0	/	0	34	/	39	10	/	25	41	/	21	0					
AM	03:00 AM	0	0	0	5	0	9	0	0	0	15	0	0	29					0
	3:15 AM	0	0	0	0	3	10	0	4	0	5	4	0	26					0
	3:30 AM	0	0	0	6	6	17	0	2	0	12	1	0	44					0
	3:45 AM	0	0	0	1	0	14	0	2	0	29	2	0	48					0
	4:00 AM	0	0	0	6	14	21	0	11	1	30	0	0	83					0
	4:15 AM	0	0	0	3	7	16	0	7	0	36	3	0	72					0
	4:30 AM	0	0	0	9	1	10	0	9	0	41	3	0	72					0
	4:45 AM	0	0	0	13	2	7	0	12	1	48	2	0	85					0
	5:00 AM	0	0	0	12	6	6	0	17	0	42	1	0	83					0
	5:15 AM	0	0	0	18	3	10	0	11	1	26	7	0	75					0
	5:30 AM	0	0	0	27	4	8	0	17	3	46	3	0	107					0
	5:45 AM	0	0	0	35	8	7	0	22	2	23	8	0	103					0
	VOLUMES	0	0	0	134	53	135	0	114	8	351	33	0	826	0	0	0	0	0
	APPROACH %	0%	0%	0%	42%	17%	42%	0%	93%	7%	92%	8%	0%						
	APP/DEPART	0	/	0	321	/	412	122	/	247	384	/	167	0					
	BEGIN PEAK HR		5:00 AM																
	VOLUMES	0	0	0	91	20	31	0	67	6	136	18	0	368					
	APPROACH %	0%	0%	0%	64%	14%	22%	0%	92%	8%	88%	12%	0%						
	PEAK HR FACTOR		0.000			0.722			0.771			0.794		0.860					
	APP/DEPART	0	/	0	142	/	162	73	/	158	154	/	49	0					

INTERSECTION TURNING MOVEMENT COUNTS

PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE:	LOCATION:	San Bernardino	PROJECT #:	SC3883
3/2/23	NORTH & SOUTH:	I-15 SB Ramps	LOCATION #:	7
THURSDAY	EAST & WEST:	Glen Helen	CONTROL:	STOP S

	NOTES:									
PCE	Class	1	2	3	4	5	6			AM
Adjusted	Factor	1	1.5	2	3	2	2			PM
										MD
										OTHER
										OTHER

▲ N ◄ W E ► S ▼

	NORTHBOUND I-15 SB Ramps			SOUTHBOUND I-15 SB Ramps			EASTBOUND Glen Helen			WESTBOUND Glen Helen				U-TURNS				
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB	TTL
LANES:	X	X	X	1	0.5	0.5	X	2	0	1	2	X						
AM 6:00 AM	0	0	0	29	8	4	0	7	0	35	8	0	91					0
6:15 AM	0	0	0	26	4	7	0	12	1	40	2	0	92					0
6:30 AM	0	0	0	26	6	3	0	6	0	35	6	0	82					0
6:45 AM	0	0	0	43	6	6	0	4	6	42	6	0	112					0
7:00 AM	0	0	0	43	6	7	0	6	6	53	14	0	133					0
7:15 AM	0	0	0	42	3	7	0	9	3	126	7	0	196					0
7:30 AM	0	0	0	44	11	3	0	22	18	95	2	0	192					0
7:45 AM	0	0	0	23	3	6	0	12	5	77	4	0	129					0
8:00 AM	0	0	0	23	15	4	0	9	0	61	5	0	117					0
8:15 AM	0	0	0	13	1	6	0	5	1	43	2	0	70					0
8:30 AM	0	0	0	27	12	6	0	14	3	40	10	0	111					0
8:45 AM	0	0	0	22	5	11	0	8	0	33	2	0	81					0
VOLUMES	0	0	0	358	79	68	0	112	43	677	66	0	1,402	0	0	0	0	0
APPROACH %	0%	0%	0%	71%	16%	13%	0%	72%	28%	91%	9%	0%						
APP/DEPART	0	/	0	505	/	798	155	/	470	743	/	134	0					
BEGIN PEAK HR		7:00 AM																
VOLUMES	0	0	0	151	23	22	0	48	32	349	26	0	649					
APPROACH %	0%	0%	0%	77%	12%	11%	0%	60%	40%	93%	7%	0%						
PEAK HR FACTOR		0.000			0.853			0.510			0.708		0.828					
APP/DEPART	0	/	0	195	/	403	80	/	199	375	/	48	0					
MD 09:00 AM	0	0	0	18	6	11	0	5	0	40	8	0	88					0
9:15 AM	0	0	0	18	0	1	0	16	5	36	6	0	80					0
9:30 AM	0	0	0	5	4	5	0	9	0	37	3	0	62					0
9:45 AM	0	0	0	9	0	5	0	2	3	25	6	0	50					0
10:00 AM	0	0	0	28	6	7	0	4	1	36	13	0	93					0
10:15 AM	0	0	0	19	0	3	2	8	3	58	7	0	98					0
10:30 AM	0	0	0	16	4	4	0	7	0	30	21	0	80					0
10:45 AM	0	0	0	22	5	5	0	11	2	35	6	0	85					0
11:00 AM	0	0	0	15	0	11	0	5	6	50	15	0	101					0
11:15 AM	0	0	0	33	3	17	0	9	1	47	2	0	111					0
11:30 AM	0	0	0	24	6	15	0	9	0	52	4	0	109					0
11:45 AM	0	0	0	25	4	21	0	13	1	36	10	0	110					0
VOLUMES	0	0	0	230	38	104	2	96	22	479	97	0	1,065	0	0	0	0	0
APPROACH %	0%	0%	0%	62%	10%	28%	1%	81%	18%	83%	17%	0%						
APP/DEPART	0	/	2	372	/	538	119	/	326	575	/	200	0					
BEGIN PEAK HR		11:00 AM																
VOLUMES	0	0	0	97	13	64	0	35	8	184	30	0	430					
APPROACH %	0%	0%	0%	56%	7%	37%	0%	81%	19%	86%	14%	0%						
PEAK HR FACTOR		0.000			0.818			0.768			0.834		0.973					
APP/DEPART	0	/	0	174	/	205	43	/	132	214	/	94	0					

I-15 SB Ramps
NORTH SIDE

Glen Helen WEST SIDE EAST SIDE **Glen Helen**

SOUTH SIDE
I-15 SB Ramps

APPENDIX C – LEVEL OF SERVICE CALCULATIONS

Table of Contents

Glen Helen Specific Plan Amendment

Vistro File: C:\...\Glen Helen Specific Plan Amendment_1_31_NewPath.vistro
Scenario 2 Existing AM

Report File: C:\...\EX AM.pdf
2/13/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Glen Helen Pkay/I-215 NB On Ramp	All-way stop	HCM 7th Edition	WB Left	0.255	8.8	A
2	Glen Helen Pkwy/I-215 SB On Ramp	All-way stop	HCM 7th Edition	EB Right	0.345	9.2	A
3	Glen Helen Pkwy/Cajon Blvd	All-way stop	HCM 7th Edition	SB Left	0.491	13.3	B
4	Glen Helen Pkwy/Glen Helen Rd	Two-way stop	HCM 7th Edition	EB Left	0.005	11.5	B
5	Glen Helen Pkwy/Clearwater Pkwy	Signalized	HCM 7th Edition	EB Right	0.441	21.2	C
6	Glen Helen Pkwy/I-15 NB On Ramp	Signalized	HCM 7th Edition	EB Left	0.324	22.6	C
7	Glen Helen Pkwy/I-15 SB On Ramp	Two-way stop	HCM 7th Edition	SB Left	1.514	336.8	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Glen Helen Pkay/I-215 NB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.255

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	300.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00	530.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	113	105	0	0	164	80	0	0	0	45	5	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	105	0	0	164	80	0	0	0	45	5	122
Peak Hour Factor	0.8130	0.8130	1.0000	1.0000	0.8400	0.8400	1.0000	1.0000	1.0000	0.6992	0.6992	0.6992
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	32	0	0	49	24	0	0	0	16	2	44
Total Analysis Volume [veh/h]	139	129	0	0	195	95	0	0	0	64	7	174
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	693	767	766	899		586	722
Degree of Utilization, x	0.20	0.17	0.25	0.11		0.12	0.24

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.74	0.60	1.01	0.35		0.41	0.94
95th-Percentile Queue Length [ft]	18.62	15.06	25.29	8.83		10.26	23.49
Approach Delay [s/veh]	8.79		8.41		0.00	9.38	
Approach LOS	A		A		A	A	
Intersection Delay [s/veh]	8.83						
Intersection LOS	A						

Intersection Level Of Service Report
Intersection 2: Glen Helen Pkwy/I-215 SB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.345

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	173	115	92	109	0	42	2	183	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	173	115	92	109	0	42	2	183	0	0	0
Peak Hour Factor	1.0000	0.9270	0.9270	0.8380	0.8380	1.0000	0.7980	0.7980	0.7980	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	47	31	27	33	0	13	1	57	0	0	0
Total Analysis Volume [veh/h]	0	187	124	110	130	0	53	3	229	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	900	695	769	586	725	
Degree of Utilization, x	0.35	0.16	0.17	0.10	0.32	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.55	0.56	0.61	0.32	1.35	
95th-Percentile Queue Length [ft]	38.77	14.01	15.15	7.88	33.86	
Approach Delay [s/veh]	9.09	8.57		9.85		0.00
Approach LOS	A	A		A		A
Intersection Delay [s/veh]	9.20					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 3: Glen Helen Pkwy/Cajon Blvd

Control Type:	All-way stop	Delay (sec / veh):	13.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	3	45	92	203	50	8	141	88	29	95	6	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	45	92	203	50	8	141	88	29	95	6	136
Peak Hour Factor	0.7930	0.7930	0.7930	0.8330	0.8330	0.8330	0.8860	0.8860	0.8860	0.7870	0.7870	0.7870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	14	29	61	15	2	40	25	8	30	2	43
Total Analysis Volume [veh/h]	4	57	116	244	60	10	159	99	33	121	8	173
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	546	497	540	470	504	531	473	507	563
Degree of Utilization, x	0.32	0.49	0.13	0.34	0.13	0.12	0.26	0.02	0.31

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	1.40	2.67	0.44	1.48	0.45	0.42	1.01	0.05	1.30
95th-Percentile Queue Length [ft]	34.93	66.73	11.07	36.93	11.22	10.58	25.21	1.20	32.39
Approach Delay [s/veh]	12.73	15.31		12.62			12.25		
Approach LOS	B	C		B			B		
Intersection Delay [s/veh]	13.31								
Intersection LOS	B								

Intersection Level Of Service Report
Intersection 4: Glen Helen Pkwy/Glen Helen Rd

Control Type:	Two-way stop	Delay (sec / veh):	11.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	150.00	300.00	100.00	1000.00	100.00	100.00	25.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	2	191	2	3	207	6	1	0	2	2	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	191	2	3	207	6	1	0	2	2	0	4
Peak Hour Factor	0.8780	0.8780	0.8780	0.8290	0.8290	0.8290	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	54	1	1	62	2	1	0	1	1	0	3
Total Analysis Volume [veh/h]	2	218	2	4	250	7	3	0	5	5	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.01
d_M, Delay for Movement [s/veh]	7.73	0.00	0.00	7.65	0.00	0.00	11.54	12.50	9.00	11.36	12.57	8.97
Movement LOS	A	A	A	A	A	A	B	B	A	B	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.00	0.00	0.02	0.02	0.02	0.06	0.06	0.06
95th-Percentile Queue Length [ft/ln]	0.11	0.00	0.00	0.22	0.00	0.00	0.41	0.41	0.42	1.57	1.57	1.57
d_A, Approach Delay [s/veh]	0.07			0.12			9.96			9.71		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	0.55											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 5: Glen Helen Pkwy/Clearwater Pkwy

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	220.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	440	95	74	215	118	86
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	95	74	215	118	86
Peak Hour Factor	0.7470	0.7470	0.8320	0.8320	0.7770	0.7770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	147	32	22	65	38	28
Total Analysis Volume [veh/h]	589	127	89	258	152	111
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Maximum Green [s]	16	0	17	0	15	36
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	7	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	0	21	0	19	40
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	17	17	15	36
g / C, Green / Cycle	0.27	0.27	0.28	0.28	0.25	0.60
(v / s)_i Volume / Saturation Flow Rate	0.18	0.08	0.03	0.17	0.09	0.03
s, saturation flow rate [veh/h]	3277	1506	3373	1506	1687	3373
c, Capacity [veh/h]	874	402	956	427	422	2024
d1, Uniform Delay [s]	19.67	17.62	15.83	18.59	18.55	4.96
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.14	2.06	0.19	6.24	2.38	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.32	0.09	0.60	0.36	0.05
d, Delay for Lane Group [s/veh]	23.81	19.68	16.02	24.83	20.93	5.01
Lane Group LOS	C	B	B	C	C	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.86	1.52	0.42	3.42	1.81	0.21
50th-Percentile Queue Length [ft/ln]	96.39	38.12	10.48	85.47	45.25	5.14
95th-Percentile Queue Length [veh/ln]	6.94	2.74	0.75	6.15	3.26	0.37
95th-Percentile Queue Length [ft/ln]	173.51	68.62	18.86	153.84	81.45	9.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.81	19.68	16.02	24.83	20.93	5.01
Movement LOS	C	B	B	C	C	A
d_A, Approach Delay [s/veh]	23.08		22.57		14.21	
Approach LOS	C		C		B	
d_I, Intersection Delay [s/veh]	21.19					
Intersection LOS	C					
Intersection V/C	0.441					

Emissions

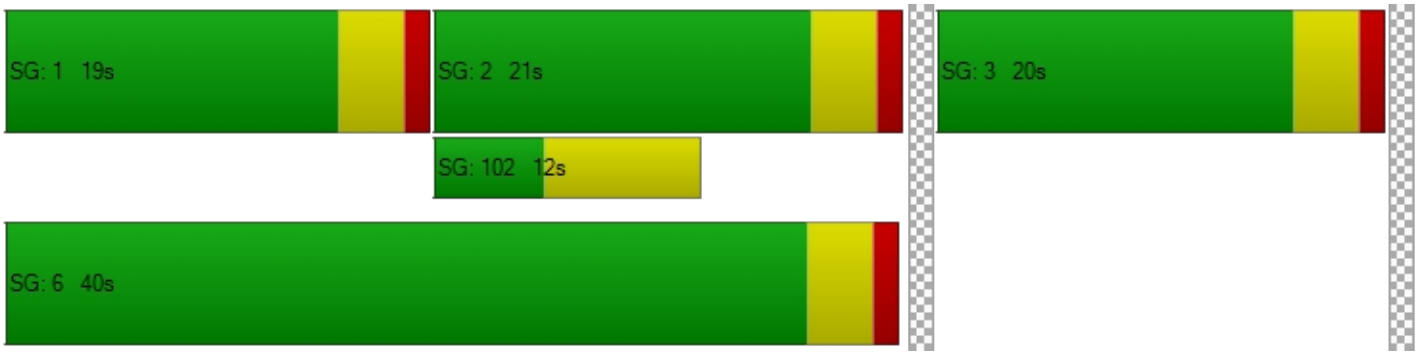
Vehicle Miles Traveled [mph]	118.32	25.51	13.37	38.76	108.54	79.26
Stops [stops/h]	462.68	91.49	50.28	205.12	108.60	24.67
Fuel consumption [US gal/h]	10.28	2.06	1.26	4.71	5.60	3.19
CO [g/h]	718.68	144.30	88.29	329.04	391.59	223.32
NOx [g/h]	139.83	28.08	17.18	64.02	76.19	43.45
VOC [g/h]	166.56	33.44	20.46	76.26	90.76	51.76

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.500	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	567	1200
d_b, Bicycle Delay [s]	16.13	15.41	4.80
l_b,int, Bicycle LOS Score for Intersection	1.560	1.846	1.777
Bicycle LOS	A	A	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Glen Helen Pkwy/I-15 NB On Ramp

Control Type:	Signalized	Delay (sec / veh):	22.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.324

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	12	7	158	0	0	0	63	134	0	0	362	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	40	0	0	0	0	0	0	0	0	41
Total Hourly Volume [veh/h]	12	7	118	0	0	0	63	134	0	0	362	122
Peak Hour Factor	0.8490	0.8490	0.8490	1.0000	1.0000	1.0000	0.7680	0.7680	1.0000	1.0000	0.7250	0.7680
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	2	35	0	0	0	21	44	0	0	125	40
Total Analysis Volume [veh/h]	14	8	139	0	0	0	82	174	0	0	499	159
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	0	0	3	8	0	0	4	3
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	0	0	12	27	0	0	11	12
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	1.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	0	0	0	0	16	31	0	0	15	16
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	5
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	3.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	C
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	30	30	30		4	22	14	14
g / C, Green / Cycle	0.50	0.50	0.50		0.06	0.37	0.24	0.24
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.08		0.05	0.05	0.18	0.20
s, saturation flow rate [veh/h]	1714	1700	1800		1700	3400	1800	1659
c, Capacity [veh/h]	856	848	898		109	1250	426	393
d1, Uniform Delay [s]	7.58	7.58	8.16		27.60	12.64	21.39	21.80
k, delay calibration	0.50	0.50	0.50		0.11	0.11	0.13	0.16
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.03	0.03	0.37		9.86	0.05	3.47	6.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.01	0.15		0.75	0.14	0.77	0.84
d, Delay for Lane Group [s/veh]	7.60	7.61	8.52		37.46	12.69	24.85	28.74
Lane Group LOS	A	A	A		D	B	C	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.06	0.06	0.85		1.36	0.67	4.18	4.60
50th-Percentile Queue Length [ft/ln]	1.53	1.57	21.14		33.92	16.74	104.57	115.05
95th-Percentile Queue Length [veh/ln]	0.11	0.11	1.52		2.44	1.21	7.53	8.12
95th-Percentile Queue Length [ft/ln]	2.76	2.82	38.05		61.06	30.13	188.23	203.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.60	7.61	8.52	0.00	0.00	0.00	37.46	12.69	0.00	0.00	26.18	28.74
Movement LOS	A	A	A				D	B			C	C
d_A, Approach Delay [s/veh]	8.40			0.00			20.63			26.80		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	22.57											
Intersection LOS	C											
Intersection V/C	0.324											

Emissions

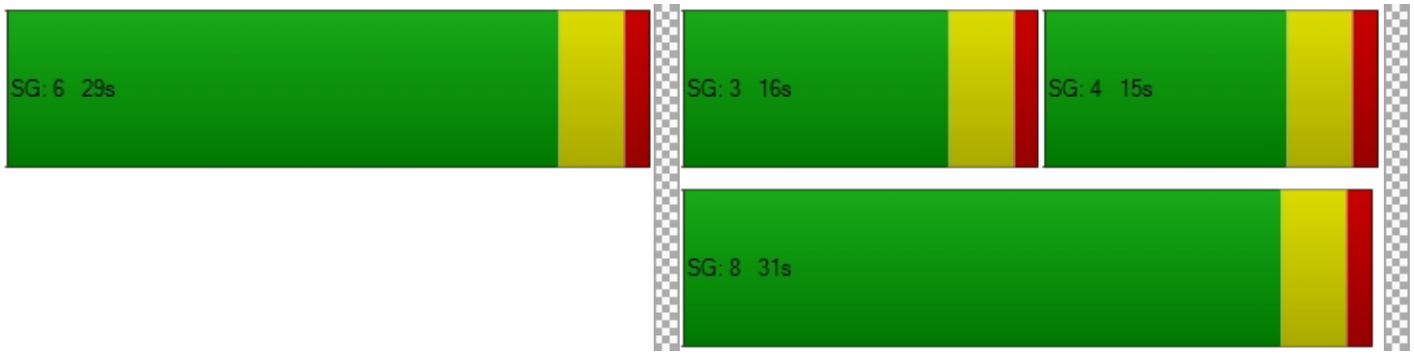
Vehicle Miles Traveled [mph]	1.90	1.94	24.29		9.42	19.98	49.43	49.43
Stops [stops/h]	3.68	3.76	50.73		81.41	80.35	250.97	276.12
Fuel consumption [US gal/h]	0.12	0.12	1.61		1.76	1.95	5.90	6.41
CO [g/h]	8.47	8.64	112.53		123.18	136.63	412.43	447.87
NOx [g/h]	1.65	1.68	21.89		23.97	26.58	80.24	87.14
VOC [g/h]	1.96	2.00	26.08		28.55	31.66	95.58	103.80

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	0	900	367
d_b, Bicycle Delay [s]	10.21	30.00	9.08	20.01
l_b,int, Bicycle LOS Score for Intersection	1.891	4.132	1.771	2.136
Bicycle LOS	A	D	A	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Control Type:	Two-way stop	Delay (sec / veh):	336.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.514

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	1000.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	151	23	22	0	48	32	349	26	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	151	23	22	0	48	32	349	26	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8530	0.8530	0.8530	1.0000	0.5100	0.5100	0.7080	0.7080	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	44	7	6	0	24	16	123	9	0
Total Analysis Volume [veh/h]	0	0	0	177	27	26	0	94	63	493	37	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane				No								
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance				No								
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	1.51	0.21	0.02	0.00	0.00	0.00	0.34	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	336.83	38.60	13.41	0.00	0.00	0.00	8.82	0.00	0.00
Movement LOS				F	E	B		A	A	A	A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	12.73	0.90	0.90	0.00	0.00	0.00	1.55	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	318.18	22.57	22.57	0.00	0.00	0.00	38.74	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			265.26			0.00			8.20		
Approach LOS	A			F			A			A		
d_I, Intersection Delay [s/veh]	71.27											
Intersection LOS	F											

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Glen Helen Specific Plan Amendment

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Scenario 7 GP AM
2/13/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Glen Helen Pkay/I-215 NB On Ramp	All-way stop	HCM 7th Edition	NB Left	0.494	11.7	B
2	Glen Helen Pkwy/I-215 SB On Ramp	All-way stop	HCM 7th Edition	EB Right	1.581	131.3	F
3	Glen Helen Pkwy/Cajon Blvd	All-way stop	HCM 7th Edition	SB Left	4.420	654.0	F
4	Glen Helen Pkwy/Glen Helen Rd	Two-way stop	HCM 7th Edition	EB Left	0.011	18.4	C
5	Glen Helen Pkwy/Clearwater Pkwy	Signalized	HCM 7th Edition	EB Right	0.631	33.7	C
6	Glen Helen Pkwy/I-15 NB On Ramp	Signalized	HCM 7th Edition	WB Right	0.720	196.6	F
7	Glen Helen Pkwy/I-15 SB On Ramp	Two-way stop	HCM 7th Edition	SB Left	31.050	10,000.0	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Glen Helen Pkay/I-215 NB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	11.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	300.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00	530.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	258	105	0	0	306	240	0	0	0	94	17	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	258	105	0	0	306	240	0	0	0	94	17	168
Peak Hour Factor	0.8130	0.8130	1.0000	1.0000	0.8400	0.8400	1.0000	1.0000	1.0000	0.6992	0.6992	0.6992
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	32	0	0	91	71	0	0	0	34	6	60
Total Analysis Volume [veh/h]	317	129	0	0	364	286	0	0	0	134	24	240
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	652	717	737	860		508	603
Degree of Utilization, x	0.49	0.18	0.49	0.33		0.31	0.40

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	2.67	0.65	2.77	1.47		1.32	1.90
95th-Percentile Queue Length [ft]	66.70	16.31	69.16	36.64		32.94	47.60
Approach Delay [s/veh]	12.03		10.81		0.00	12.73	
Approach LOS	B		B		A	B	
Intersection Delay [s/veh]	11.68						
Intersection LOS	B						

Intersection Level Of Service Report
Intersection 2: Glen Helen Pkwy/I-215 SB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	131.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.581

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	306	227	92	408	0	42	2	733	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	306	227	92	408	0	42	2	733	0	0	0
Peak Hour Factor	1.0000	0.9270	0.9270	0.8380	0.8380	1.0000	0.7980	0.7980	0.7980	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	83	61	27	122	0	13	1	230	0	0	0
Total Analysis Volume [veh/h]	0	330	245	110	487	0	53	3	919	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	836	671	741	488	919	
Degree of Utilization, x	0.69	0.16	0.66	0.11	1.58	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	5.64	0.58	4.98	0.39	49.20	
95th-Percentile Queue Length [ft]	141.06	14.58	124.59	9.66	1230.12	
Approach Delay [s/veh]	16.25	15.06		270.29		0.00
Approach LOS	C	C		F		A
Intersection Delay [s/veh]	131.28					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Glen Helen Pkwy/Cajon Blvd

Control Type:	All-way stop	Delay (sec / veh):	654.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.420

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	7	45	201	1097	82	72	205	428	45	226	80	320
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	45	201	1097	82	72	205	428	45	226	80	320
Peak Hour Factor	0.7930	0.7930	0.7930	0.8330	0.8330	0.8330	0.8860	0.8860	0.8860	0.7870	0.7870	0.7870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	14	63	329	25	22	58	121	13	72	25	102
Total Analysis Volume [veh/h]	9	57	253	1317	98	86	231	483	51	287	102	407
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	339	1317	319	308	322	326	308	321	407
Degree of Utilization, x	0.94	4.42	0.58	0.75	0.83	0.82	0.93	0.32	1.19

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	9.78	131.14	3.41	5.65	7.15	6.99	9.18	1.34	17.16
95th-Percentile Queue Length [ft]	244.42	3278.57	85.31	141.28	178.73	174.79	229.51	33.38	428.91
Approach Delay [s/veh]	68.95	1380.23		47.52			101.71		
Approach LOS	F	F		E			F		
Intersection Delay [s/veh]	653.96								
Intersection LOS	F								

Intersection Level Of Service Report
Intersection 4: Glen Helen Pkwy/Glen Helen Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.011

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	150.00	300.00	100.00	1000.00	100.00	100.00	25.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	4	436	2	3	439	9	1	0	2	2	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	436	2	3	439	9	1	0	2	2	0	4
Peak Hour Factor	0.8780	0.8780	0.8780	0.8290	0.8290	0.8290	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	124	1	1	132	3	1	0	1	1	0	3
Total Analysis Volume [veh/h]	5	497	2	4	530	11	3	0	5	5	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.02	0.00	0.01
d_M, Delay for Movement [s/veh]	8.49	0.00	0.00	8.36	0.00	0.00	18.37	21.06	9.94	17.89	21.22	9.99
Movement LOS	A	A	A	A	A	A	C	C	A	C	C	A
95th-Percentile Queue Length [veh/ln]	0.01	0.00	0.00	0.01	0.00	0.00	0.03	0.03	0.02	0.10	0.10	0.10
95th-Percentile Queue Length [ft/ln]	0.36	0.00	0.00	0.28	0.00	0.00	0.83	0.83	0.51	2.48	2.48	2.48
d_A, Approach Delay [s/veh]	0.08			0.06			13.10			12.46		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.35											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: Glen Helen Pkwy/Clearwater Pkwy

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	220.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	477	128	239	375	179	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	477	128	239	375	179	196
Peak Hour Factor	0.7470	0.7470	0.8320	0.8320	0.7770	0.7770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	160	43	72	113	58	63
Total Analysis Volume [veh/h]	639	171	287	451	230	252
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Maximum Green [s]	16	0	17	0	15	36
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	7	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	0	21	0	19	40
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	17	17	15	36
g / C, Green / Cycle	0.27	0.27	0.28	0.28	0.25	0.60
(v / s)_i Volume / Saturation Flow Rate	0.20	0.11	0.09	0.30	0.14	0.07
s, saturation flow rate [veh/h]	3277	1506	3373	1506	1687	3373
c, Capacity [veh/h]	874	402	956	427	422	2024
d1, Uniform Delay [s]	20.04	18.20	16.84	21.50	19.54	5.19
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.37	3.28	0.81	59.44	5.00	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.43	0.30	1.06	0.55	0.12
d, Delay for Lane Group [s/veh]	25.41	21.48	17.65	80.94	24.53	5.31
Lane Group LOS	C	C	B	F	C	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.36	2.17	1.46	12.17	3.03	0.49
50th-Percentile Queue Length [ft/ln]	108.95	54.19	36.42	304.22	75.63	12.22
95th-Percentile Queue Length [veh/ln]	7.78	3.90	2.62	18.47	5.45	0.88
95th-Percentile Queue Length [ft/ln]	194.54	97.54	65.56	461.86	136.14	22.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.41	21.48	17.65	80.94	24.53	5.31
Movement LOS	C	C	B	F	C	A
d_A, Approach Delay [s/veh]	24.58		56.33		14.49	
Approach LOS	C		E		B	
d_I, Intersection Delay [s/veh]	33.73					
Intersection LOS	C					
Intersection V/C	0.631					

Emissions

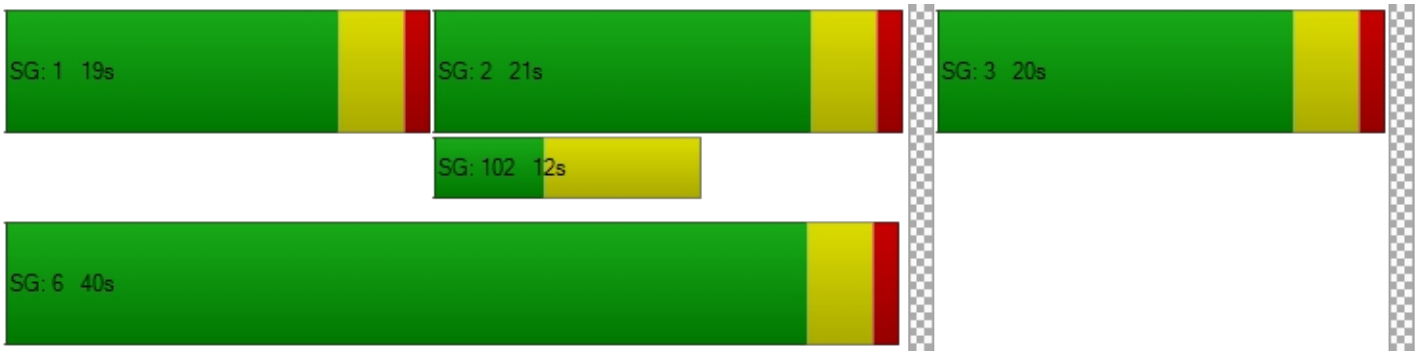
Vehicle Miles Traveled [mph]	128.36	34.35	43.12	67.76	164.24	179.95
Stops [stops/h]	522.95	130.05	174.83	730.12	181.51	58.66
Fuel consumption [US gal/h]	11.48	2.88	4.29	17.03	8.81	7.29
CO [g/h]	802.32	201.33	300.08	1190.25	616.14	509.89
NOx [g/h]	156.10	39.17	58.38	231.58	119.88	99.21
VOC [g/h]	185.94	46.66	69.55	275.85	142.80	118.17

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.571	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	567	1200
d_b, Bicycle Delay [s]	16.13	15.41	4.80
l_b,int, Bicycle LOS Score for Intersection	1.560	2.168	1.957
Bicycle LOS	A	B	A

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Glen Helen Pkwy/I-15 NB On Ramp

Control Type:	Signalized	Delay (sec / veh):	196.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	111	21	373	0	0	0	222	343	0	0	713	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	93	0	0	0	0	0	0	0	0	41
Total Hourly Volume [veh/h]	111	21	280	0	0	0	222	343	0	0	713	122
Peak Hour Factor	0.8490	0.8490	0.8490	1.0000	1.0000	1.0000	0.7680	0.7680	1.0000	1.0000	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	6	82	0	0	0	72	112	0	0	246	42
Total Analysis Volume [veh/h]	131	25	330	0	0	0	289	447	0	0	983	168
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	0	0	12	27	0	0	11	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	0	0	0	0	16	31	0	0	15	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	C
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25		12	27	11	11
g / C, Green / Cycle	0.42	0.42	0.42		0.20	0.45	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.22		0.17	0.13	0.32	0.34
s, saturation flow rate [veh/h]	1714	1741	1530		1714	3427	1800	1712
c, Capacity [veh/h]	719	730	641		336	1533	333	316
d1, Uniform Delay [s]	10.60	10.60	12.90		23.32	10.53	24.46	24.46
k, delay calibration	0.50	0.50	0.50		0.28	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.30	2.93		15.02	0.10	341.11	381.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.51		0.86	0.29	1.73	1.82
d, Delay for Lane Group [s/veh]	10.90	10.89	15.84		38.34	10.64	365.57	405.56
Lane Group LOS	B	B	B		D	B	F	F
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.58	0.58	3.20		4.90	1.53	35.68	37.45
50th-Percentile Queue Length [ft/ln]	14.39	14.59	79.92		122.55	38.20	892.06	936.19
95th-Percentile Queue Length [veh/ln]	1.04	1.05	5.75		8.53	2.75	56.11	59.19
95th-Percentile Queue Length [ft/ln]	25.90	26.25	143.85		213.33	68.76	1402.72	1479.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.90	10.89	15.84	0.00	0.00	0.00	38.34	10.64	0.00	0.00	382.15	405.56
Movement LOS	B	B	B				D	B			F	F
d_A, Approach Delay [s/veh]	14.25			0.00			21.52			385.57		
Approach LOS	B			A			C			F		
d_I, Intersection Delay [s/veh]	196.61											
Intersection LOS	F											
Intersection V/C	0.720											

Emissions

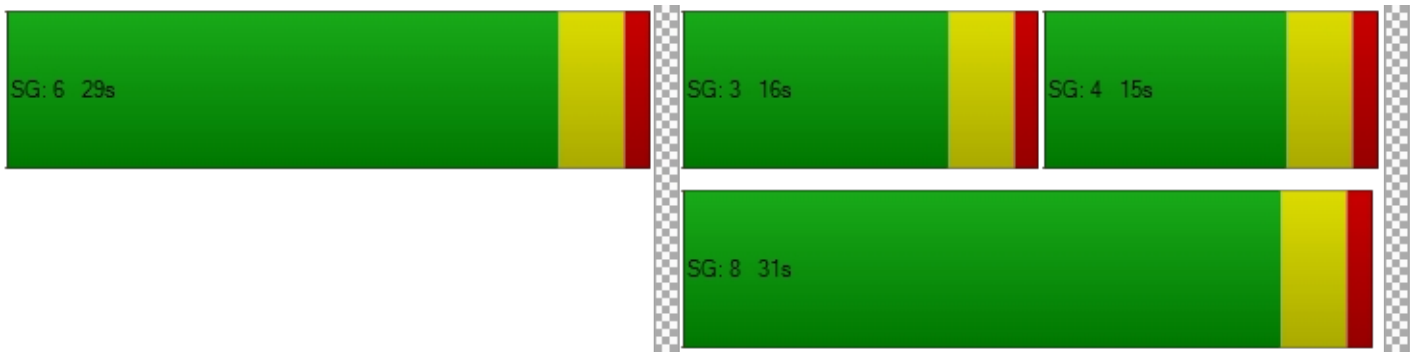
Vehicle Miles Traveled [mph]	13.53	13.74	57.68		33.19	51.33	86.47	86.47
Stops [stops/h]	34.53	35.01	191.80		294.12	183.35	2140.96	2246.85
Fuel consumption [US gal/h]	1.00	1.01	5.01		6.33	4.61	66.94	72.66
CO [g/h]	69.59	70.61	350.46		442.68	322.08	4678.78	5078.78
NOx [g/h]	13.54	13.74	68.19		86.13	62.66	910.32	988.15
VOC [g/h]	16.13	16.37	81.22		102.60	74.64	1084.35	1177.06

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	0	900	367
d_b, Bicycle Delay [s]	10.21	30.00	9.08	20.01
l_b,int, Bicycle LOS Score for Intersection	2.515	4.132	2.167	2.543
Bicycle LOS	B	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	31.050

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	1000.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	453	269	442	0	48	88	596	76	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	453	269	442	0	48	88	596	76	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8530	0.8530	0.8530	1.0000	0.5100	0.5100	0.7080	0.7080	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	133	79	130	0	24	43	210	27	0
Total Analysis Volume [veh/h]	0	0	0	531	315	518	0	94	173	842	107	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane				No								
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance				No								
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	31.05	15.85	0.51	0.00	0.00	0.00	0.64	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	10000.0	7174.24	6996.66	0.00	0.00	0.00	12.57	0.00	0.00
Movement LOS				F	F	F		A	A	B	A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	67.20	100.86	100.86	0.00	0.00	0.00	4.99	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1680.01	2521.47	2521.47	0.00	0.00	0.00	124.71	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			8206.86			0.00			11.15		
Approach LOS	A			F			A			B		
d_I, Intersection Delay [s/veh]	4342.92											
Intersection LOS	F											

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Scenario 8 GP AM plus Project
2/13/2024

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	Glen Helen Pkay/I-215 NB On Ramp	All-way stop	HCM 7th Edition	WB Left	0.800	16.7	C
2	Glen Helen Pkwy/I-215 SB On Ramp	All-way stop	HCM 7th Edition	EB Right	1.918	200.7	F
3	Glen Helen Pkwy/Cajon Blvd	All-way stop	HCM 7th Edition	SB Left	4.492	673.9	F
4	Glen Helen Pkwy/Glen Helen Rd	Two-way stop	HCM 7th Edition	EB Left	3.206	1,054.7	F
5	Glen Helen Pkwy/Clearwater Pkwy	Signalized	HCM 7th Edition	EB Right	0.631	31.5	C
6	Glen Helen Pkwy/I-15 NB On Ramp	Signalized	HCM 7th Edition	WB Right	0.803	245.5	F
7	Glen Helen Pkwy/I-15 SB On Ramp	Two-way stop	HCM 7th Edition	SB Left	97.580	10,000.0	F

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: Glen Helen Pkay/I-215 NB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	16.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1	0	0	0	0	0	1
Entry Pocket Length [ft]	300.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00	530.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	258	105	0	0	306	240	0	0	0	94	17	168
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	2.00	2.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	27	0	0	0	0	0	0	0	8	168	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	285	105	0	0	306	240	0	0	8	262	17	168
Peak Hour Factor	0.8130	0.8130	1.0000	1.0000	0.8400	0.8400	1.0000	1.0000	1.0000	0.6992	0.6992	0.6992
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	32	0	0	91	71	0	0	2	94	6	60
Total Analysis Volume [veh/h]	351	129	0	0	364	286	0	0	8	375	24	240
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	652	717	731	853		499	596
Degree of Utilization, x	0.54	0.18	0.50	0.34		0.80	0.40

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	3.23	0.65	2.80	1.48		7.49	1.94
95th-Percentile Queue Length [ft]	80.65	16.33	69.97	37.04		187.25	48.47
Approach Delay [s/veh]	12.97		10.91		0.00	25.32	
Approach LOS	B		B		A	D	
Intersection Delay [s/veh]	16.68						
Intersection LOS	C						

Intersection Level Of Service Report
Intersection 2: Glen Helen Pkwy/I-215 SB On Ramp

Control Type:	All-way stop	Delay (sec / veh):	200.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.918

Intersection Setup

Name											
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	306	227	92	408	0	42	2	733	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	27	-35	0	176	0	0	0	102	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	333	192	92	584	0	42	2	835	0	0	0
Peak Hour Factor	1.0000	0.9270	0.9270	0.8380	0.8380	1.0000	0.7980	0.7980	0.7980	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	90	52	27	174	0	13	1	262	0	0	0
Total Analysis Volume [veh/h]	0	359	207	110	697	0	53	3	1046	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	794	669	738	462	1046	
Degree of Utilization, x	0.71	0.16	0.94	0.12	1.92	

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	6.13	0.59	13.79	0.41	68.31	
95th-Percentile Queue Length [ft]	153.16	14.63	344.66	10.27	1707.71	
Approach Delay [s/veh]	17.94	37.68		414.04		0.00
Approach LOS	C	E		F		A
Intersection Delay [s/veh]	200.74					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 3: Glen Helen Pkwy/Cajon Blvd

Control Type:	All-way stop	Delay (sec / veh):	673.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.492

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	200.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	7	45	201	1097	82	72	205	428	45	226	80	320
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	56	8	0	279	-1	-64	-4	0	8	-5	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	101	209	1097	361	71	141	424	45	234	75	320
Peak Hour Factor	0.7930	0.7930	0.7930	0.8330	0.8330	0.8330	0.8860	0.8860	0.8860	0.7870	0.7870	0.7870
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	32	66	329	108	21	40	120	13	74	24	102
Total Analysis Volume [veh/h]	9	127	264	1317	433	85	159	479	51	297	95	407
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	400	1317	518	291	303	306	297	305	407
Degree of Utilization, x	1.35	4.49	1.68	0.55	0.88	0.87	1.02	0.31	1.26

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	20.24	131.73	32.29	3.06	7.90	7.73	10.85	1.30	18.67
95th-Percentile Queue Length [ft]	506.01	3293.16	807.20	76.49	197.38	193.30	271.13	32.41	466.65
Approach Delay [s/veh]	208.35	1248.10		52.53			124.24		
Approach LOS	F	F		F			F		
Intersection Delay [s/veh]	673.94								
Intersection LOS	F								

Intersection Level Of Service Report
Intersection 4: Glen Helen Pkwy/Glen Helen Rd

Control Type:	Two-way stop	Delay (sec / veh):	1,054.7
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	3.206

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	1	1	0	1	0	0	1	0	0	0
Entry Pocket Length [ft]	150.00	100.00	150.00	300.00	100.00	1000.00	100.00	100.00	25.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	1	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			40.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			Yes		

Volumes

Name												
Base Volume Input [veh/h]	4	436	2	3	439	9	1	0	2	2	0	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	55	-118	0	0	113	174	182	0	57	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	59	318	2	3	552	183	183	0	59	2	0	4
Peak Hour Factor	0.8780	0.8780	0.8780	0.8290	0.8290	0.8290	0.3750	0.3750	0.3750	0.3750	0.3750	0.3750
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	91	1	1	166	55	122	0	39	1	0	3
Total Analysis Volume [veh/h]	67	362	2	4	666	221	488	0	157	5	0	11
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.00	0.00	0.00	0.01	0.00	3.21	0.00	0.28	0.03	0.00	0.01
d_M, Delay for Movement [s/veh]	10.11	0.00	0.00	8.00	0.00	0.00	1054.65	1054.73	13.75	26.22	32.99	9.72
Movement LOS	B	A	A	A	A	A	F	F	B	D	D	A
95th-Percentile Queue Length [veh/ln]	0.28	0.00	0.00	0.01	0.00	0.00	45.96	45.96	1.12	0.13	0.13	0.13
95th-Percentile Queue Length [ft/ln]	7.11	0.00	0.00	0.25	0.00	0.00	1148.90	1148.90	28.07	3.28	3.28	3.28
d_A, Approach Delay [s/veh]	1.57			0.04			801.29			14.87		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	261.11											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 5: Glen Helen Pkwy/Clearwater Pkwy

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name						
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	1	0
Entry Pocket Length [ft]	150.00	100.00	100.00	100.00	220.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		No		No	

Volumes

Name						
Base Volume Input [veh/h]	477	128	239	375	179	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	-63	0	0	170
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	477	128	176	375	179	366
Peak Hour Factor	0.7470	0.7470	0.8320	0.8320	0.7770	0.7770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	160	43	53	113	58	118
Total Analysis Volume [veh/h]	639	171	212	451	230	471
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Permissive	Permissive	Protected	Permissive
Signal Group	3	0	2	0	1	6
Auxiliary Signal Groups						
Maximum Green [s]	16	0	17	0	15	36
Amber [s]	3.0	0.0	3.0	0.0	3.0	3.0
All red [s]	1.0	0.0	1.0	0.0	1.0	1.0
Walk [s]	5	0	5	0	0	5
Pedestrian Clearance [s]	10	0	7	0	0	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No		No			No
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	0.0	2.0	2.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	20	0	21	0	19	40
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	0	10	0	5	10
Vehicle Extension [s]	3.0	0.0	3.0	0.0	3.0	3.0
Minimum Recall	No		No		No	No
Maximum Recall	No		No		No	No
Pedestrian Recall	No		No		No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	C	R	L	C
C, Cycle Length [s]	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	17	17	15	36
g / C, Green / Cycle	0.27	0.27	0.28	0.28	0.25	0.60
(v / s)_i Volume / Saturation Flow Rate	0.20	0.11	0.06	0.30	0.14	0.14
s, saturation flow rate [veh/h]	3277	1506	3373	1506	1687	3373
c, Capacity [veh/h]	874	402	956	427	422	2024
d1, Uniform Delay [s]	20.04	18.20	16.44	21.50	19.54	5.58
k, delay calibration	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.37	3.28	0.54	59.44	5.00	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.43	0.22	1.06	0.55	0.23
d, Delay for Lane Group [s/veh]	25.41	21.48	16.98	80.94	24.53	5.85
Lane Group LOS	C	C	B	F	C	A
Critical Lane Group	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	4.36	2.17	1.04	12.17	3.03	0.99
50th-Percentile Queue Length [ft/ln]	108.95	54.19	26.12	304.22	75.63	24.67
95th-Percentile Queue Length [veh/ln]	7.78	3.90	1.88	18.47	5.45	1.78
95th-Percentile Queue Length [ft/ln]	194.54	97.54	47.01	461.86	136.14	44.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.41	21.48	16.98	80.94	24.53	5.85
Movement LOS	C	C	B	F	C	A
d_A, Approach Delay [s/veh]	24.58		60.49		11.98	
Approach LOS	C		E		B	
d_I, Intersection Delay [s/veh]	31.47					
Intersection LOS	C					
Intersection V/C	0.631					

Emissions

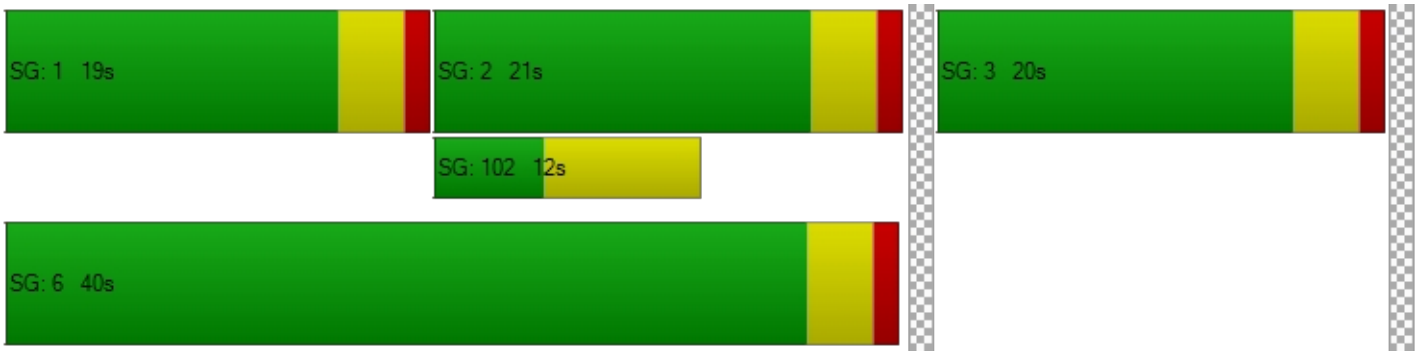
Vehicle Miles Traveled [mph]	128.36	34.35	31.85	67.76	164.24	336.33
Stops [stops/h]	522.95	130.05	125.36	730.12	181.51	118.44
Fuel consumption [US gal/h]	11.48	2.88	3.10	17.03	8.81	13.77
CO [g/h]	802.32	201.33	217.04	1190.25	616.14	962.63
NOx [g/h]	156.10	39.17	42.23	231.58	119.88	187.29
VOC [g/h]	185.94	46.66	50.30	275.85	142.80	223.10

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.68	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	2.571	0.000	0.000
Crosswalk LOS	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	533	567	1200
d_b, Bicycle Delay [s]	16.13	15.41	4.80
l_b,int, Bicycle LOS Score for Intersection	1.560	2.107	2.138
Bicycle LOS	A	B	B

Sequence

Ring 1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Glen Helen Pkwy/I-15 NB On Ramp

Control Type:	Signalized	Delay (sec / veh):	245.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	400.00	100.00	100.00	100.00	100.00	100.00	250.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00			30.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	111	21	373	0	0	0	222	343	0	0	713	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	2.00	2.00	0.00	0.00	2.00	2.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	245	0	55	0	0	0	-19	-118	0	0	170	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	107	0	0	0	0	0	0	0	0	41
Total Hourly Volume [veh/h]	356	21	321	0	0	0	203	225	0	0	883	122
Peak Hour Factor	0.8490	0.8490	0.8490	1.0000	1.0000	1.0000	0.7680	0.7680	1.0000	1.0000	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	6	95	0	0	0	66	73	0	0	304	42
Total Analysis Volume [veh/h]	419	25	378	0	0	0	264	293	0	0	1218	168
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	0	0	12	27	0	0	11	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Pattern 1

Split [s]	0	29	0	0	0	0	16	31	0	0	15	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	C
C, Cycle Length [s]	60	60	60		60	60	60	60
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25		11	27	12	12
g / C, Green / Cycle	0.42	0.42	0.42		0.18	0.45	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.25		0.15	0.09	0.39	0.40
s, saturation flow rate [veh/h]	1714	1724	1530		1714	3427	1800	1726
c, Capacity [veh/h]	718	722	641		311	1534	359	344
d1, Uniform Delay [s]	11.63	11.62	13.44		23.75	10.01	24.02	24.02
k, delay calibration	0.50	0.50	0.50		0.23	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	1.10	3.95		12.72	0.06	429.34	466.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.31	0.59		0.85	0.19	1.93	2.01
d, Delay for Lane Group [s/veh]	12.74	12.73	17.39		36.47	10.07	453.36	490.55
Lane Group LOS	B	B	B		D	B	F	F
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.84	1.85	3.90		4.32	0.95	47.26	48.88
50th-Percentile Queue Length [ft/ln]	46.05	46.13	97.42		107.88	23.75	1181.60	1221.99
95th-Percentile Queue Length [veh/ln]	3.32	3.32	7.01		7.72	1.71	74.41	77.22
95th-Percentile Queue Length [ft/ln]	82.89	83.04	175.36		193.05	42.76	1860.35	1930.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.73	12.73	17.39	0.00	0.00	0.00	36.47	10.07	0.00	0.00	469.39	490.55
Movement LOS	B	B	B				D	B			F	F
d_A, Approach Delay [s/veh]	14.88			0.00			22.58			471.95		
Approach LOS	B			A			C			F		
d_I, Intersection Delay [s/veh]	245.55											
Intersection LOS	F											
Intersection V/C	0.803											

Emissions

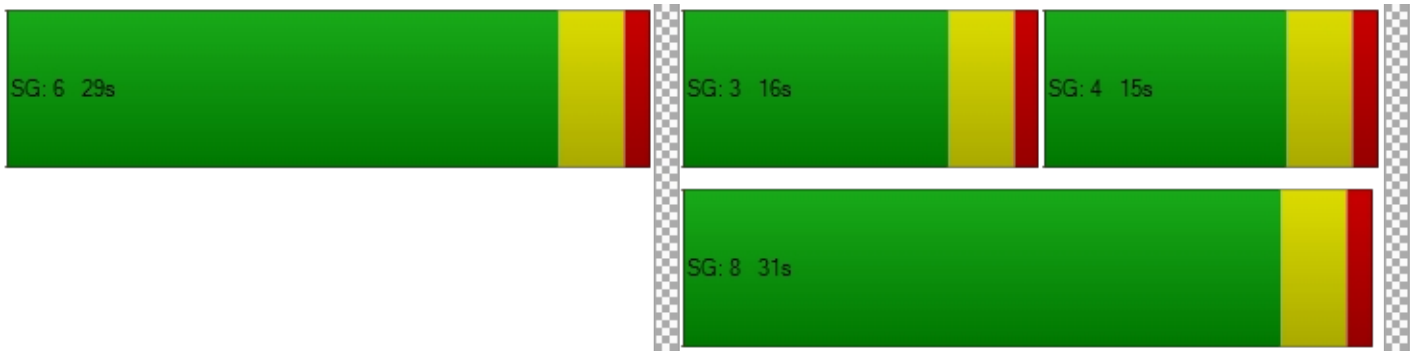
Vehicle Miles Traveled [mph]	38.75	38.86	66.07		30.32	33.65	104.12	104.12
Stops [stops/h]	110.53	110.72	233.81		258.91	114.02	2835.84	2932.77
Fuel consumption [US gal/h]	3.05	3.06	6.00		5.59	2.93	95.51	101.71
CO [g/h]	213.09	213.57	419.50		390.65	204.52	6676.18	7109.27
NOx [g/h]	41.46	41.55	81.62		76.01	39.79	1298.94	1383.21
VOC [g/h]	49.39	49.50	97.22		90.54	47.40	1547.27	1647.64

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	0.00	0.00	0.00
l_p,int, Pedestrian LOS Score for Intersectio	0.000	0.000	0.000	0.000
Crosswalk LOS	F	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	0	900	367
d_b, Bicycle Delay [s]	10.21	30.00	9.08	20.01
l_b,int, Bicycle LOS Score for Intersection	3.092	4.132	2.019	2.737
Bicycle LOS	C	D	B	B

Sequence

Ring 1	-	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	97.580

Intersection Setup

Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	1000.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	1	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name												
Base Volume Input [veh/h]	0	0	0	453	269	442	0	48	88	596	76	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	8	0	-137	12	57	358	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	453	269	450	0	0	100	653	434	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8530	0.8530	0.8530	1.0000	0.5100	0.5100	0.7080	0.7080	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	133	79	132	0	0	49	231	153	0
Total Analysis Volume [veh/h]	0	0	0	531	315	528	0	0	196	922	613	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop			Stop			Free			Free		
Flared Lane				No								
Storage Area [veh]	0			0			0			0		
Two-Stage Gap Acceptance				No								
Number of Storage Spaces in Median	0			0			0			0		

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	97.58	40.26	0.76	0.00	0.00	0.00	0.66	0.01	0.00
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	10000.0	10000.0	10000.0	0.00	0.00	0.00	12.55	0.00	0.00
Movement LOS				F	F	F		A	A	B	A	
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	68.60	105.79	105.79	0.00	0.00	0.00	5.42	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	1714.94	2644.86	2644.86	0.00	0.00	0.00	135.51	0.00	0.00
d_A, Approach Delay [s/veh]	0.00			10000.00			0.00			7.54		
Approach LOS	A			F			A			A		
d_I, Intersection Delay [s/veh]	4428.85											
Intersection LOS	F											

Option 1: Copy of Glen Helen Pkwy/I-215 SB On Ramp

Number	2											
Intersection	Glen Helen Pkwy/I-215 SB On Ramp											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	306	227	92	408	0	42	2	733	0	0	0
Total Analysis Volume [veh/h]	0	359	207	110	697	0	53	3	1046	0	0	0

Intersection Settings

Cycle Length [s]	80
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fixed time
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss
Signal Group	0	8	0	7	4	0	0	2	0	0	0	0
Auxiliary Signal Groups												
Maximum Green [s]	0	24	0	5	24	0	0	43	0	0	0	0
Amber [s]	0.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0
All red [s]	0.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	0	0
Pedestrian Clearance [s]	0	7	0	0	7	0	0	10	0	0	0	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	33	0	12	45	0	0	35	0	0	0	0
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	10	0	5	10	0	0	10	0	0	0	0
Minimum Recall		No		No	No			No				
Maximum Recall		No		No	No			No				
Pedestrian Recall		No		No	No			No				

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.36	0.10	0.51	0.39	0.39	
(v / s)_i Volume / Saturation Flow Rate	0.33	0.06	0.39	0.36	0.36	
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	
Arrival type	3	3		3		3
s, saturation flow rate [veh/h]	1691	1714	1800	1547	1539	

s, saturation flow rate [veh/h]	1691	1714	1800	1547	1530	
c, Capacity [veh/h]	613	171	923	600	593	
X, volume / capacity	0.92	0.64	0.76	0.92	0.93	
d, Delay for Lane Group [s/veh]	46.16	51.63	21.25	44.75	46.58	
Lane Group LOS	D	D	C	D	D	
Critical Lane Group	Yes	Yes	No	No	Yes	
50th-Percentile Queue Length [veh/ln]	12.91	2.77	9.99	12.36	12.65	
50th-Percentile Queue Length [ft/ln]	322.78	69.21	249.87	309.07	316.37	
95th-Percentile Queue Length [veh/ln]	18.80	4.98	15.18	18.13	18.49	
95th-Percentile Queue Length [ft/ln]	470.10	124.58	379.49	453.23	462.22	

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	46.16	46.16	51.63	21.25	0.00	44.75	44.75	45.71	0.00	0.00	0.00
Movement LOS		D	D	D	C		D	D	D			
Critical Movement		No	No	Yes	No		No	No	No			
d_A, Approach Delay [s/veh]		46.16			25.39			45.66			0.00	
Approach LOS		D			C			D			A	
d_I, Intersection Delay [s/veh]	39.16											
Intersection LOS	D											
Intersection V/C	0.759											

Option 1: Copy of Glen Helen Pkwy/Cajon Blvd

Number	3											
Intersection	Glen Helen Pkwy/Cajon Blvd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	7	45	201	1097	82	72	205	428	45	226	80	320
Total Analysis Volume [veh/h]	9	127	264	1317	433	85	159	479	51	297	95	407

Intersection Settings

Cycle Length [s]	110
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap
Signal Group	1	6	6	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Maximum Green [s]	5	47	47	5	47	0	5	15	0	5	15	15
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Walk [s]	0	5	5	0	5	0	0	5	0	0	5	5
Pedestrian Clearance [s]	0	17	17	0	17	0	0	7	0	0	10	10
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0

Phasing & Timing: Pattern 1

Split [s]	30	26	26	46	42	0	16	24	0	14	22	22
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	10	5	10	0	5	10	0	5	10	10
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.01	0.20	0.20	0.38	0.57	0.31	0.18	0.18	0.31	0.18	0.60
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.17	0.40	0.30	0.13	0.15	0.15	0.25	0.05	0.27
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3		3			3		
s, saturation flow rate [veh/h]	1714	1800	1530	3220	1740	1101	1800	1740	1180	1800	1530

s, saturation flow rate [veh/h]	1714	1800	1530	3329	1749	1191	1800	1740	1180	1800	1530
c, Capacity [veh/h]	22	362	308	1271	998	420	325	314	331	328	919
X, volume / capacity	0.41	0.35	0.86	1.04	0.52	0.38	0.83	0.83	0.90	0.29	0.44
d, Delay for Lane Group [s/veh]	65.96	40.41	67.64	56.56	16.35	31.78	57.10	57.78	66.26	39.31	13.51
Lane Group LOS	E	D	E	F	B	C	E	E	E	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.32	3.15	8.88	19.97	7.73	3.42	8.10	7.91	9.08	2.21	5.30
50th-Percentile Queue Length [ft/ln]	7.90	78.71	222.12	499.29	193.25	85.52	202.44	197.67	227.06	55.33	132.58
95th-Percentile Queue Length [veh/ln]	0.57	5.67	13.77	27.98	12.29	6.16	12.76	12.52	14.02	3.98	9.08
95th-Percentile Queue Length [ft/ln]	14.21	141.67	344.33	699.62	307.24	153.93	319.11	312.96	350.62	99.59	227.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.96	40.41	67.64	56.56	16.35	16.35	31.78	57.40	57.78	66.26	39.31	13.51
Movement LOS	E	D	E	F	B	B	C	E	E	E	D	B
Critical Movement	No	No	Yes	No	No	No	No	No	No	No	No	No
d_A, Approach Delay [s/veh]	58.96			45.21			51.51			36.19		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	45.92											
Intersection LOS	D											
Intersection V/C	0.845											

Option 1: Copy of Glen Helen Pkwy/Glen Helen Rd

Number	4											
Intersection	Glen Helen Pkwy/Glen Helen Rd											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	4	436	2	3	439	9	1	0	2	2	0	4
Total Analysis Volume [veh/h]	67	362	2	4	666	221	488	0	157	5	0	11

Intersection Settings

Cycle Length [s]	60
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	5	15	0	5	15	0	5	37	0	0	37	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	7	0	0	10	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0

Phasing & Timing: Pattern 1

Split [s]	10	24	0	9	23	0	13	27	0	0	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	-	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	0	10	0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.06	0.63	0.63	0.01	0.58	0.58	0.17	0.17	0.10
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.00	0.00	0.26	0.26	0.31	0.10	0.01
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800	1800	1800	1800	1800	1800	1800
Arrival type	3			3			3		3
[illegible]	1714	2427	1529	1714	1800	1648	1586	1529	1497

s, saturation flow rate [veh/h]	1714	3427	1530	1714	1800	1648	1586	1530	1497
c, Capacity [veh/h]	97	2144	957	10	1035	948	444	258	229
X, volume / capacity	0.69	0.17	0.00	0.39	0.45	0.45	1.10	0.61	0.07
d, Delay for Lane Group [s/veh]	36.35	4.87	4.21	52.12	8.68	8.81	87.23	25.45	24.64
Lane Group LOS	D	A	A	D	A	A	F	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.09	0.63	0.01	0.12	2.72	2.53	13.09	2.09	0.20
50th-Percentile Queue Length [ft/ln]	27.34	15.85	0.17	2.92	68.07	63.23	327.17	52.23	5.10
95th-Percentile Queue Length [veh/ln]	1.97	1.14	0.01	0.21	4.90	4.55	19.90	3.76	0.37
95th-Percentile Queue Length [ft/ln]	49.22	28.53	0.31	5.26	122.52	113.81	497.47	94.02	9.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.35	4.87	4.21	52.12	8.72	8.81	87.23	87.23	25.45	24.64	24.64	24.64
Movement LOS	D	A	A	D	A	A	F	F	C	C	C	C
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	9.76			8.94			72.19			24.64		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	29.82											
Intersection LOS	C											
Intersection V/C	0.399											

Option 1: Copy of Glen Helen Pkwy/I-15 NB On Ramp

Number	6											
Intersection	Glen Helen Pkwy/I-15 NB On Ramp											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	111	21	373	0	0	0	222	343	0	0	713	163
Total Analysis Volume [veh/h]	419	25	378	0	0	0	264	293	0	0	1218	168

Intersection Settings

Cycle Length [s]	105
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Split	Split	Permiss	Permiss	Split	Split
Signal Group	0	6	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Maximum Green [s]	0	25	0	0	0	0	12	27	0	0	11	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Walk [s]	0	5	0	0	0	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	10	0	0	10	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
l1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	19	0	0	0	0	109	19	0	0	67	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	10	0	0	0	0	5	10	0	0	10	0
Minimum Recall		No						No			No	
Maximum Recall		No						No			No	
Pedestrian Recall		No						No			No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

g / C, Green / Cycle	0.27	0.27	0.27		0.18	0.18	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.13	0.13	0.25		0.15	0.09	0.39	0.40
so, Base Saturation Flow per Lane [pc/h/ln]	1800	1800	1800		1800	1800	1800	1800
Arrival type	3			3	3		3	
c, saturation flow rate [veh/h]	1714	1724	1529		1714	2427	1800	1726

s, saturation flow rate [veh/h]	1714	1724	1530		1714	3427	1800	1726
c, Capacity [veh/h]	469	471	418		304	608	783	751
X, volume / capacity	0.47	0.47	0.90		0.87	0.48	0.89	0.92
d, Delay for Lane Group [s/veh]	35.23	35.19	62.26		49.45	39.44	33.69	38.04
Lane Group LOS	D	D	E		D	D	C	D
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.99	5.00	11.93		7.07	3.35	16.21	17.31
50th-Percentile Queue Length [ft/ln]	124.87	125.11	298.33		176.69	83.86	405.24	432.75
95th-Percentile Queue Length [veh/ln]	8.66	8.67	17.60		11.43	6.04	22.81	24.13
95th-Percentile Queue Length [ft/ln]	216.51	216.83	439.96		285.69	150.96	570.31	603.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.21	35.19	62.26	0.00	0.00	0.00	49.45	39.44	0.00	0.00	35.56	38.04
Movement LOS	D	D	E				D	D			D	D
Critical Movement	No	No	Yes				No	No			No	No
d_A, Approach Delay [s/veh]	47.65			0.00			44.18			35.86		
Approach LOS	D			A			D			D		
d_I, Intersection Delay [s/veh]	41.04											
Intersection LOS	D											
Intersection V/C	0.803											

Option 1: Copy of Glen Helen Pkwy/I-15 SB On Ramp

Number	7											
Intersection	Glen Helen Pkwy/I-15 SB On Ramp											
Control Type	Signalized											
Analysis Method	HCM 7th Edition											
Name												
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	0	0	0	453	269	442	0	48	88	596	76	0
Total Analysis Volume [veh/h]	0	0	0	531	315	528	0	0	196	922	613	0

Intersection Settings

Cycle Length [s]	120
Active Pattern	Pattern 1
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Lost time [s]	0.00

Phasing & Timing (Basic)

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	4	7	0	2	2	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	0	0	5	44	5	0	68	68	5	68	0
Amber [s]	0.0	0.0	0.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	0.0
Walk [s]	0	0	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	0	0	0	17	0	0	7	7	0	7	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	0.0

Phasing & Timing: Pattern 1

Split [s]	0	0	0	66	66	66	0	16	16	38	54	0
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	5	10	5	0	10	10	5	10	0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

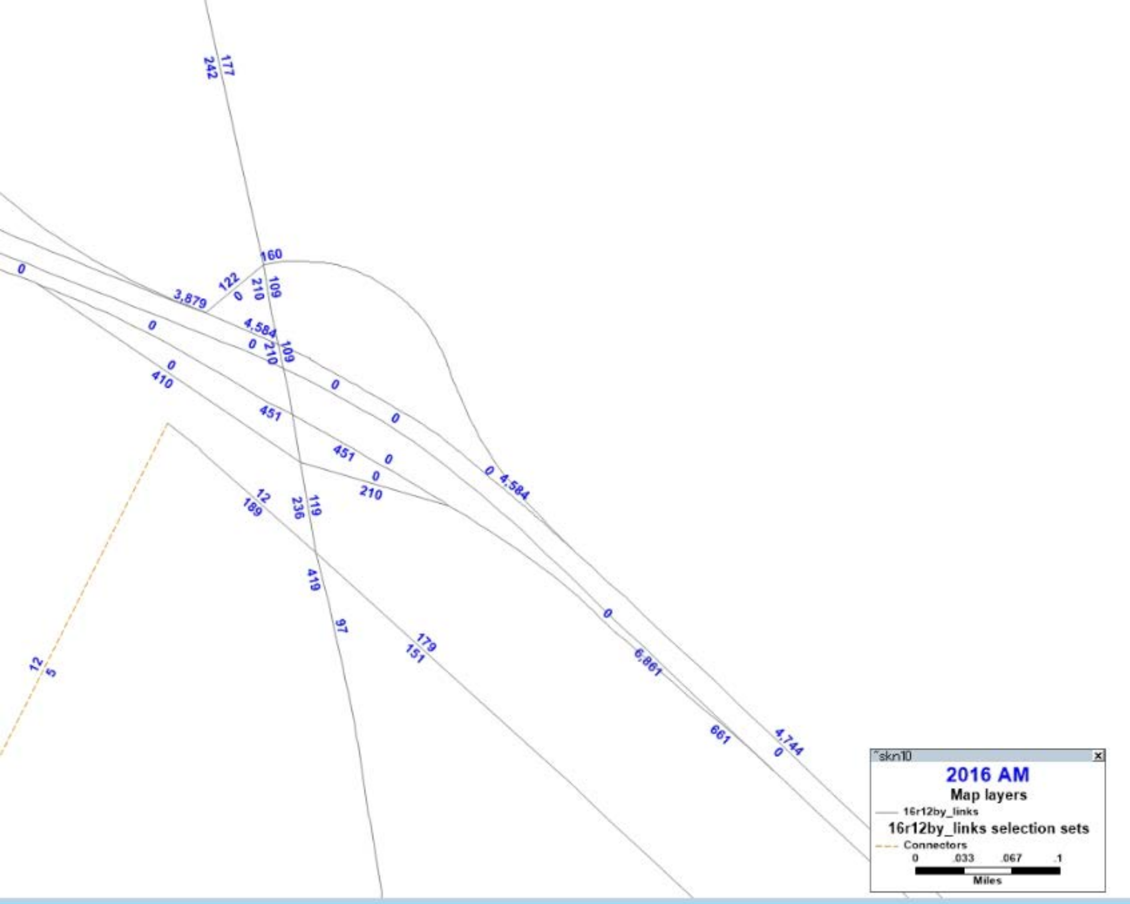
g / C, Green / Cycle		0.52	0.52	0.10	0.10	0.28	0.42
(v / s)_i Volume / Saturation Flow Rate		0.31	0.52	0.06	0.06	0.28	0.34
so, Base Saturation Flow per Lane [pc/h/ln]		1800	1800	1800	1800	1800	1800
Arrival type	3	3		3		3	
s, saturation flow rate [veh/h]		1714	1621	1530	1530	3229	1800

s, saturation flow rate [veh/h]		1714	1621	1530	1530	3329	1800
c, Capacity [veh/h]		886	837	153	153	943	750
X, volume / capacity		0.60	1.01	0.64	0.64	0.98	0.82
d, Delay for Lane Group [s/veh]		21.34	61.12	70.71	70.71	51.94	40.57
Lane Group LOS		C	F	E	E	D	D
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		10.08	29.60	3.59	3.59	14.32	16.98
50th-Percentile Queue Length [ft/ln]		252.04	740.09	89.75	89.75	358.10	424.38
95th-Percentile Queue Length [veh/ln]		15.29	38.74	6.46	6.46	20.53	23.73
95th-Percentile Queue Length [ft/ln]		382.22	968.48	161.55	161.55	513.27	593.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.34	61.12	61.12	0.00	70.71	70.71	51.94	40.57	0.00
Movement LOS				C	E	E		E	E	D	D	
Critical Movement				No	No	No		No	Yes	No	No	
d_A, Approach Delay [s/veh]	0.00			45.75			70.71			47.40		
Approach LOS	A			D			E			D		
d_I, Intersection Delay [s/veh]	48.14											
Intersection LOS	D											
Intersection V/C	0.861											

APPENDIX D – GENERAL PLAN BUILDOUT VOLUME POST-PROCESSING WORKSHEETS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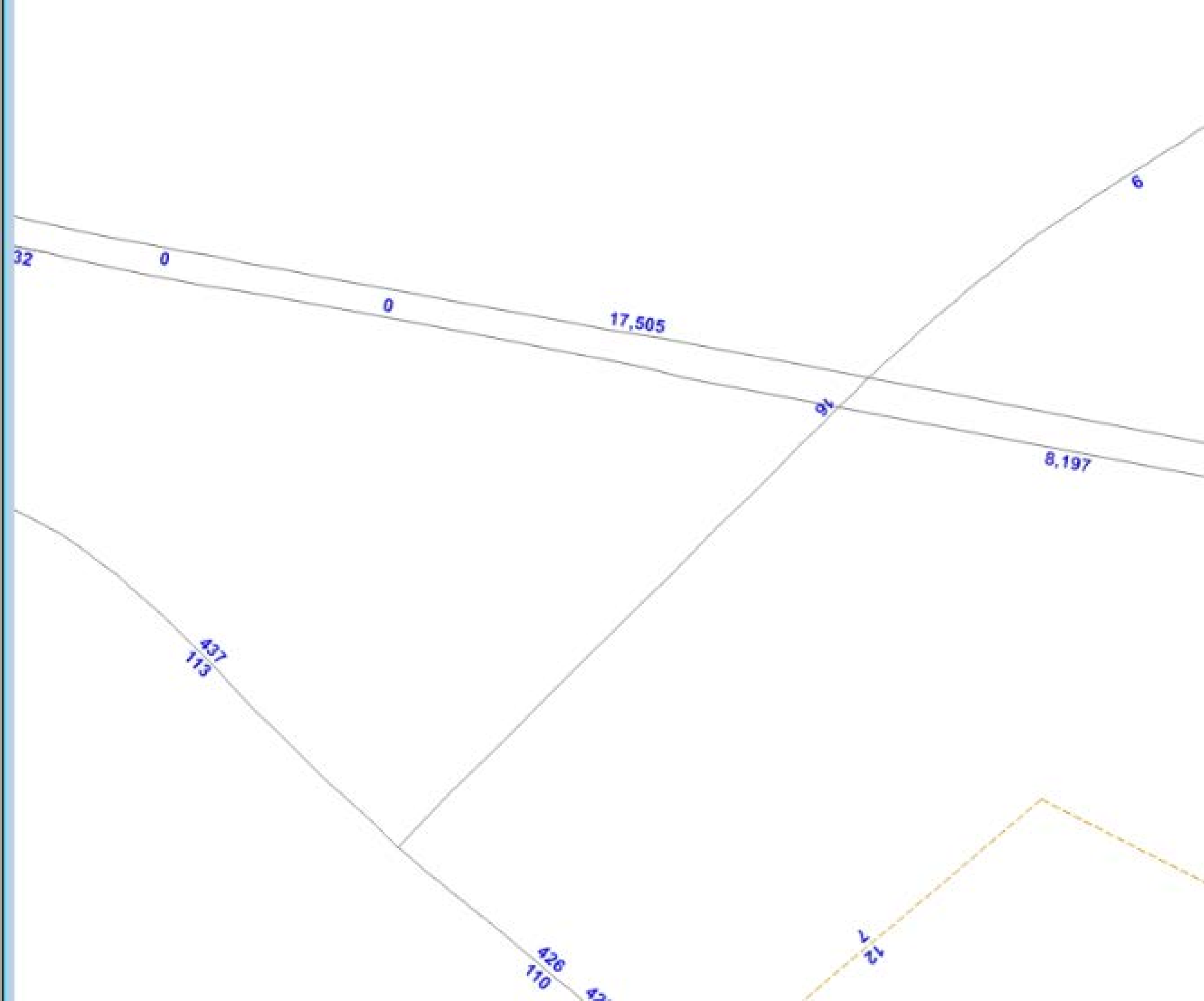
Miles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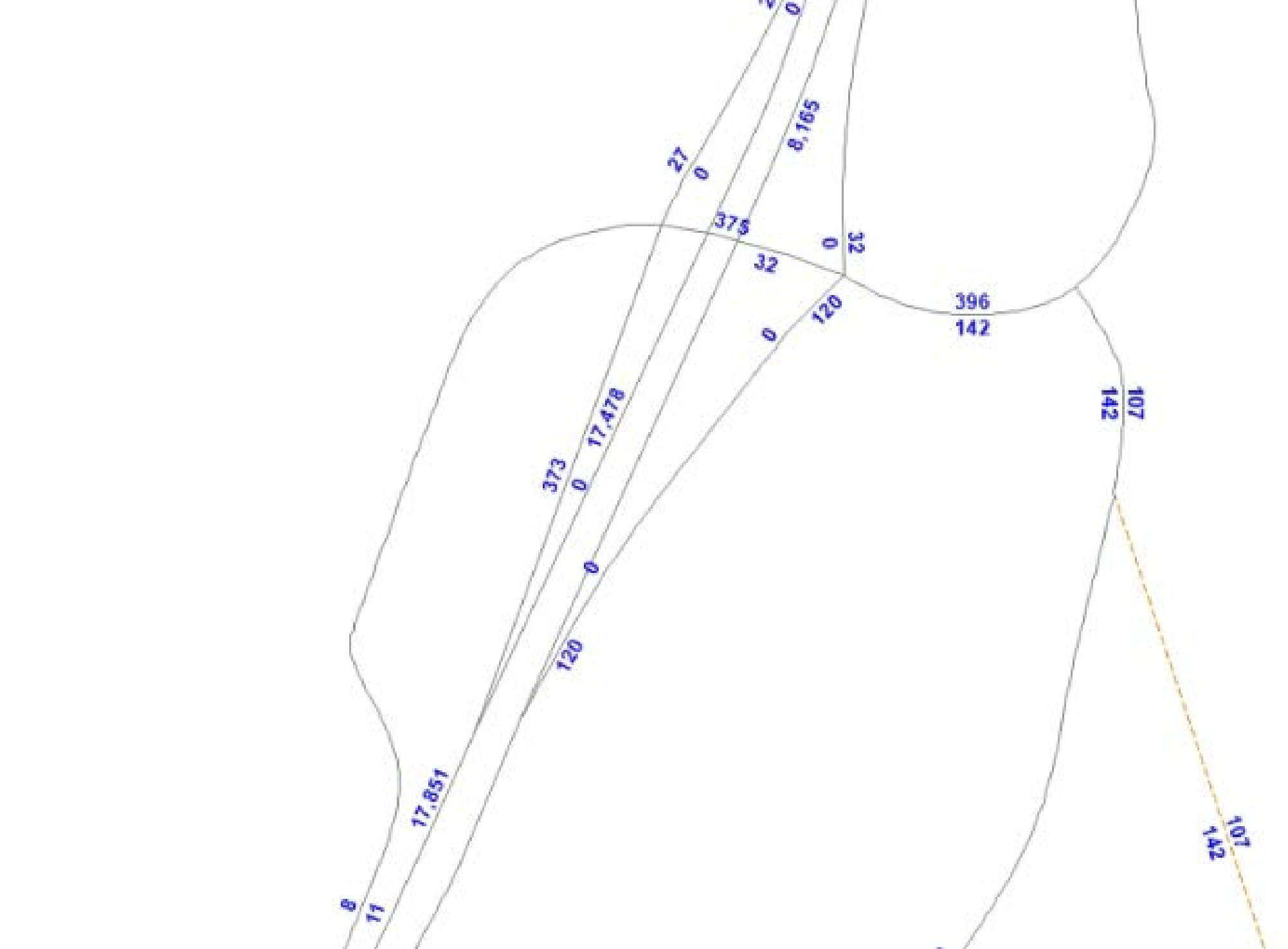
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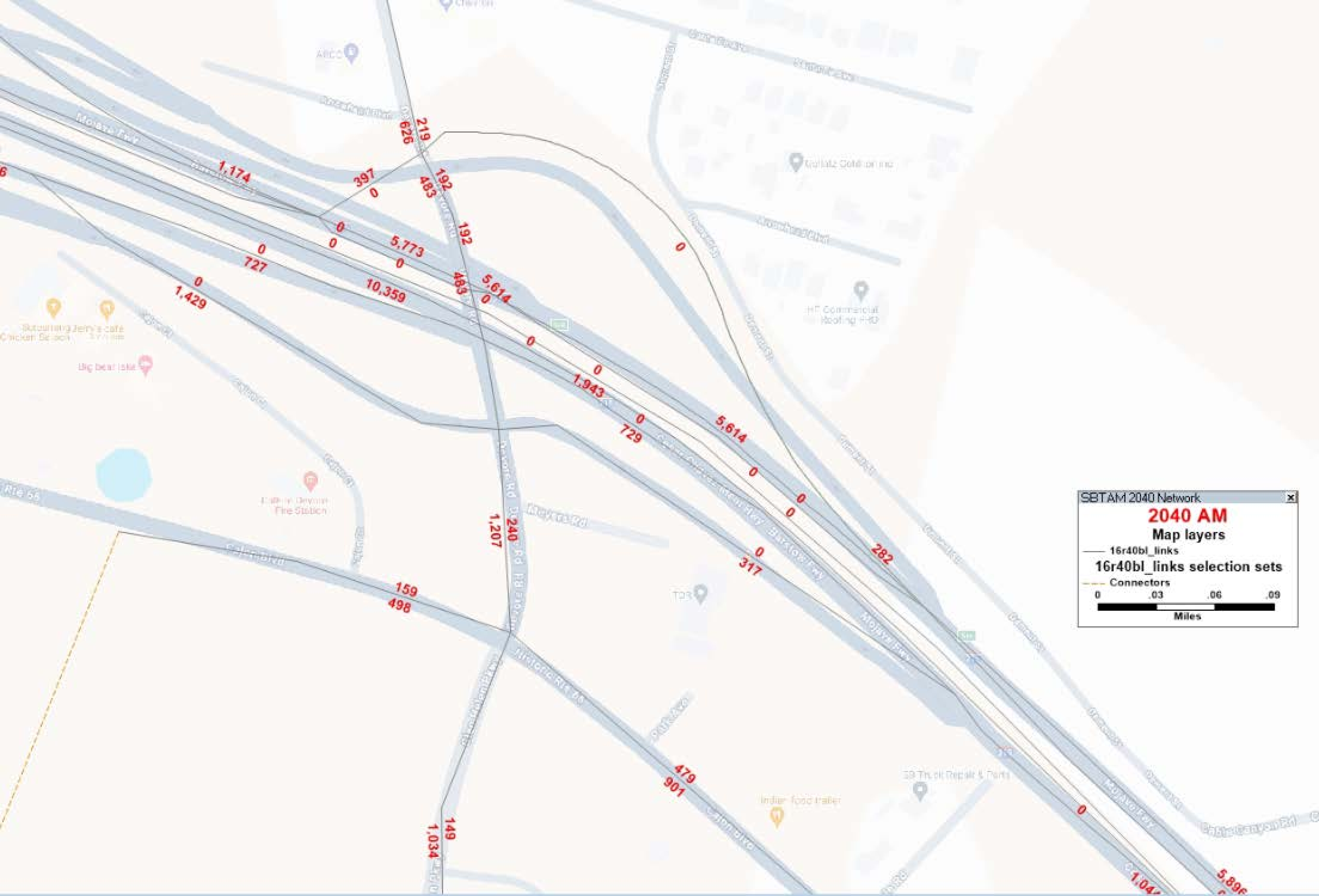
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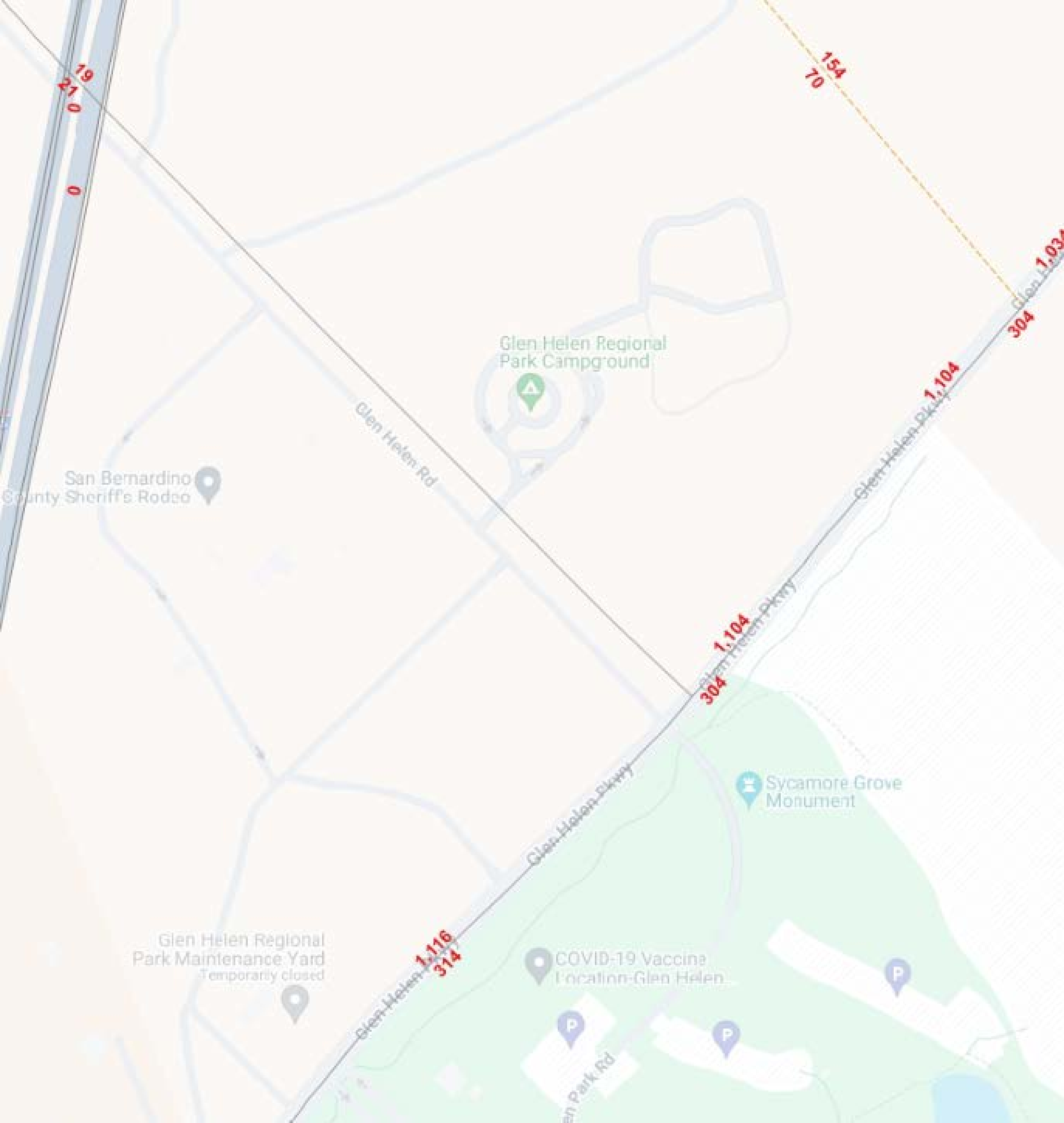

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Glen Helen Regional Park Campground
Glen Helen Rd
San Bernardino County Sheriff's Rodeo
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Glen Helen Pkwy
1,104
304
Glen Helen Pkwy
Sycamore Grove Monument
Glen Helen Pkwy
1,116
314
Glen Helen Regional Park Maintenance Yard
Temporarily closed


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361
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24
276
152
276
152
Glen Helen Pkwy
Clearwater Pkwy
Glen Helen Rd
Glen Helen Park Rd
Glen Helen Regional Park Swim Complex
Sycamore Canyon

Base	Future
2016	2040
Model Growth Years	24
Count	Buildout
2023	2040
Count Escalation Years	17

MANUALLY - Existing AM Turning Movement Counts

	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Glen Helen Pkwy & I-215 NB On Ramp	1	113	105	0	0	163.5	80	0	0	0	45	5	122
Glen Helen Pkwy & I-215 SB On Ramp	2	0	172.5	115	92	109	0	42	2	182.5	0	0	0
Glen Helen/Cajon	3	2.5	45	92	202.5	49.5	8	140.5	87.5	29	94.5	6	135.5
Glen Helen Parkway & Glen Helen Road	4	2	191	2	3	207	5.5	1	0	2	2	0	4
Clearwater/Glen Helen	5	440	0	94.5	0	0	0	0	73.5	214.5	117.5	86	0
I-15 NB Ramps and Glen Helen	6	12	7	157.5	0	0	0	63	133.5	0	0	362	163
I-15 SB Ramps and Glen Helen	7	0	0	0	150.5	22.5	21.5	0	48	31.5	349	26	0

AUTOMATICALLY - Existing Link Volumes (Formulated once Turning Movement Counts are inserted above)

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	218	209	427	244	227	471	0	198	198	172	0	172
Glen Helen Pkwy & I-215 SB On Ramp	2	288	292	579	201	215	416	227	0	227	0	209	209
Glen Helen/Cajon	3	140	173	313	260	321	581	257	17	274	236	382	618
Glen Helen Parkway & Glen Helen Road	4	195	211	406	216	196	412	3	8	11	6	5	11
Clearwater/Glen Helen	5	535	332	867	0	0	0	288	526	814	204	168	372
I-15 NB Ramps and Glen Helen	6	177	0	177	0	233	233	197	374	571	525	291	816
I-15 SB Ramps and Glen Helen	7	0	403	403	195	0	195	80	48	127	375	199	574

2016 BASE YEAR (MODEL)

MANUALLY - Peak Period Modeled Base Year Link Volumes (Inserted from Model Network Map)

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	109	210	319	242	177	419	0	122	122	160	0	160
Glen Helen Pkwy & I-215 SB On Ramp	2	119	236	355	210	109	319	410	0	410	0	210	210
Glen Helen/Cajon	3	97	419	516	236	119	355	189	12	201	179	151	330
Glen Helen Parkway & Glen Helen Road	4	113	437	550	426	110	536	16	9	25	1	1	2
Clearwater/Glen Helen	5	107	142	249	0	0	0	142	396	538	433	142	575
I-15 NB Ramps and Glen Helen	6	120	0	120	0	32	32	32	375	407	396	142	538
I-15 SB Ramps and Glen Helen	7	0	373	373	27	0	27	11	8	19	375	32	407

AUTOMATICALLY - Peak Hour Modeled Base Year Link Volumes - (Conversion from Peak Period to Peak hour in this step using peak hour factor)

	HOUR FACTOR	0.38											
		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	41	80	121	92	67	159	0	46	46	61	0	61
Glen Helen Pkwy & I-215 SB On Ramp	2	45	90	135	80	41	121	156	0	156	0	80	80
Glen Helen/Cajon	3	37	159	196	90	45	135	72	5	76	68	57	125
Glen Helen Parkway & Glen Helen Road	4	43	166	209	162	42	204	6	3	10	0	0	1
Clearwater/Glen Helen	5	41	54	95	0	0	0	54	150	204	165	54	219
I-15 NB Ramps and Glen Helen	6	46	0	46	0	12	12	12	143	155	150	54	204
I-15 SB Ramps and Glen Helen	7	0	142	142	10	0	10	4	3	7	143	12	155

2040 FUTURE YEAR (MODEL) (Repeat Process Above for 2040 base year model)

MANUALLY - Peak Period Modeled Future Year Link Volumes

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	192	483	675	626	219	845	0	397	397	282	0	282
Glen Helen Pkwy & I-215 SB On Ramp	2	240	1207	1447	483	192	675	1429	0	1429	0	317	317
Glen Helen/Cajon	3	149	1034	1183	1207	240	1447	498	159	657	479	901	1380
Glen Helen Parkway & Glen Helen Road	4	314	1116	1430	1104	304	1408	21	19	40	1	1	2
Clearwater/Glen Helen	5	152	276	428	0	0	0	435	552	987	1115	380	1495
I-15 NB Ramps and Glen Helen	6	361	0	361	0	56	56	97	1013	1110	552	435	987
I-15 SB Ramps and Glen Helen	7	0	1091	1091	271	0	271	24	120	144	1013	97	1110

AUTOMATICALLY - Peak Hour Modeled Future Year Link Volumes

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	73	184	257	238	83	321	0	151	151	107	0	107
Glen Helen Pkwy & I-215 SB On Ramp	2	91	459	550	184	73	257	543	0	543	0	120	120
Glen Helen/Cajon	3	57	393	450	459	91	550	189	60	250	182	342	524
Glen Helen Parkway & Glen Helen Road	4	119	424	543	420	116	535	8	7	15	0	0	1
Clearwater/Glen Helen	5	58	105	163	0	0	0	165	210	375	424	144	568
I-15 NB Ramps and Glen Helen	6	137	0	137	0	21	21	37	385	422	210	165	375
I-15 SB Ramps and Glen Helen	7	0	415	415	103	0	103	9	46	55	385	37	422

AUTOMATICALLY - Total Modeled Growth from 2016 to 2040 from Model Run

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	0.7615	1.3000	2.0615	1.5868	0.2373	1.8241	#DIV/0!	2.2541	#DIV/0!	0.7625	#DIV/0!	#DIV/0!
Glen Helen Pkwy & I-215 SB On Ramp	2	1.0168	4.1144	5.1312	1.3000	0.7615	2.0615	2.4854	#DIV/0!	#DIV/0!	#DIV/0!	0.5095	#DIV/0!
Glen Helen/Cajon	3	0.5361	1.4678	2.0039	4.1144	1.0168	5.1312	1.6349	12.2500	13.8849	1.6760	4.9669	6.6429
Glen Helen Parkway & Glen Helen Road	4	1.7788	1.5538	3.3325	1.5915	1.7636	3.3552	0.3125	1.1111	1.4236	0.0000	0.0000	0.0000
Clearwater/Glen Helen	5	0.4206	0.9437	1.3642	#DIV/0!	#DIV/0!	#DIV/0!	2.0634	0.3939	2.4573	1.5751	1.6761	3.2511
I-15 NB Ramps and Glen Helen	6	2.0083	#DIV/0!	#DIV/0!	#DIV/0!	0.7500	#DIV/0!	2.0313	1.7013	3.7326	0.3939	2.0634	2.4573
I-15 SB Ramps and Glen Helen	7	#DIV/0!	1.9249	#DIV/0!	9.0370	#DIV/0!	#DIV/0!	1.1818	14.0000	15.1818	1.7013	2.0313	3.7326

AUTOMATICALLY - Modeled Growth Per Year

		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	0.0317	0.0542	0.0859	0.0661	0.0099	0.0760	#DIV/0!	0.0939	#DIV/0!	0.0318	#DIV/0!	#DIV/0!
Glen Helen Pkwy & I-215 SB On Ramp	2	0.0424	0.1714	0.2138	0.0542	0.0317	0.0859	0.1036	#DIV/0!	#DIV/0!	#DIV/0!	0.0212	#DIV/0!
Glen Helen/Cajon	3	0.0223	0.0612	0.0835	0.1714	0.0424	0.2138	0.0681	0.5104	0.5785	0.0698	0.2070	0.2768
Glen Helen Parkway & Glen Helen Road	4	0.0741	0.0647	0.1389	0.0663	0.0735	0.1398	0.0130	0.0463	0.0593	0.0000	0.0000	0.0000
Clearwater/Glen Helen	5	0.0175	0.0393	0.0568	#DIV/0!	#DIV/0!	#DIV/0!	0.0860	0.0164	0.1024	0.0656	0.0698	0.1355
I-15 NB Ramps and Glen Helen	6	0.0837	#DIV/0!	#DIV/0!	#DIV/0!	0.0313	#DIV/0!	0.0846	0.0709	0.1555	0.0164	0.0860	0.1024
I-15 SB Ramps and Glen Helen	7	#DIV/0!	0.0802	#DIV/0!	0.3765	#DIV/0!	#DIV/0!	0.0492	0.5833	0.6326	0.0709	0.0846	0.1555

AUTOMATICALLY - Future Baseline Peak Hour Link Volumes based on exising counts that were collected. This applies the growth rate per year above to existing turning movemnet counts

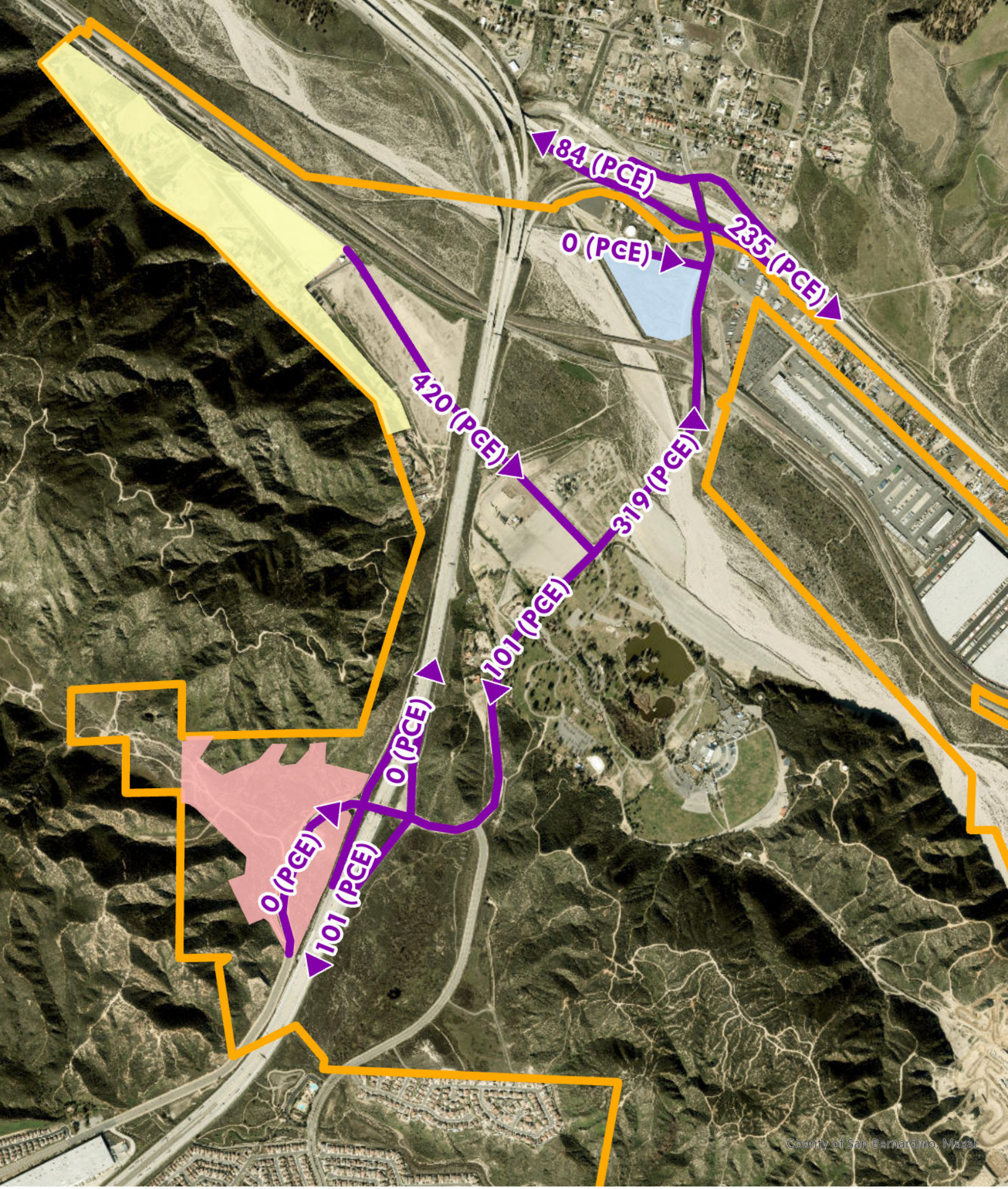
		NB LINK (SOUTH LEG)			SB LINK (NORTH LEG)			EB LINK (WEST LEG)			WB LINK (EAST LEG)		
	Intersection	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL	APPROACH	DEPARTURE	TOTAL
Glen Helen Pkwy & I-215 NB On Ramp	1	336	400	736	517	265	782	#DIV/0!	514	#DIV/0!	265	#DIV/0!	#DIV/0!
Glen Helen Pkwy & I-215 SB On Ramp	2	495	1141	1636	386	330	716	625	#DIV/0!	#DIV/0!	#DIV/0!	284	#DIV/0!
Glen Helen/Cajon	3	192	353	545	1018	552	1570	555	160	714	516	1726	2242
Glen Helen Parkway & Glen Helen Road	4	441	443	884	458	441	899	4	13	17	6	5	11
Clearwater/Glen Helen	5	694	554	1248	#DIV/0!	#DIV/0!	#DIV/0!	709	673	1382	431	367	798
I-15 NB Ramps and Glen Helen	6	428	#DIV/0!	#DIV/0!	#DIV/0!	357	#DIV/0!	479	825	1304	671	716	1388
I-15 SB Ramps and Glen Helen	7	#DIV/0!	952	#DIV/0!	1440	#DIV/0!	#DIV/0!	146	519	665	827	484	1311

	AUTOMATICALLY LINKED - Future AM Traffic Volumes												
	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Glen Helen Pkwy & I-215 NB On Ramp	1	258	97	0	0	306	240	0	0	0	94	17	168
Glen Helen Pkwy & I-215 SB On Ramp	2	0	306	227	56	408	0	25	2	733	0	0	0
Glen Helen/Cajon	3	7	28	201	1097	82	72	205	428	45	226	80	320
Glen Helen Parkway & Glen Helen Road	4	4	436	2	3	439	9	1	0	2	2	0	4
Clearwater/Glen Helen	5	477	0	128	0	0	0	0	239	375	179	196	0
I-15 NB Ramps and Glen Helen	6	111	21	373	0	0	0	222	343	0	0	713	113
I-15 SB Ramps and Glen Helen	7	0	0	0	453	269	442	0	31	88	596	76	0

	AUTOMATICALLY LINKED - Future AM Traffic Volumes Growth												
	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Glen Helen Pkwy & I-215 NB On Ramp	1	145	-8	0	0	142.5	160	0	0	0	49	12	46
Glen Helen Pkwy & I-215 SB On Ramp	2	0	133.5	112	-36	299	0	-17	0	550.5	0	0	0
Glen Helen/Cajon	3	4.5	-17	109	894.5	32.5	64	64.5	340.5	16	131.5	74	184.5
Glen Helen Parkway & Glen Helen Road	4	2	245	0	0	232	3.5	0	0	0	0	0	0
Clearwater/Glen Helen	5	37	0	33.5	0	0	0	0	165.5	160.5	61.5	110	0
I-15 NB Ramps and Glen Helen	6	99	14	215.5	0	0	0	159	209.5	0	0	351	-50
I-15 SB Ramps and Glen Helen	7	0	0	0	302.5	246.5	420.5	0	-17	56.5	247	50	0

	Final - Future AM Traffic Volumes												
	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
Glen Helen Pkwy & I-215 NB On Ramp	1	258	105	0	0	306	240	0	0	0	94	17	168
Glen Helen Pkwy & I-215 SB On Ramp	2	0	306	227	92	408	0	42	2	733	0	0	0
Glen Helen/Cajon	3	7	45	201	1097	82	72	205	428	45	226	80	320
Glen Helen Parkway & Glen Helen Road	4	4	436	2	3	439	9	1	0	2	2	0	4
Clearwater/Glen Helen	5	477	0	128	0	0	0	0	239	375	179	196	0
I-15 NB Ramps and Glen Helen	6	111	21	373	0	0	0	222	343	0	0	713	163
I-15 SB Ramps and Glen Helen	7	0	0	0	453	269	442	0	48	88	596	76	0

APPENDIX E – SUBAREA TRIP ASSIGNMENT



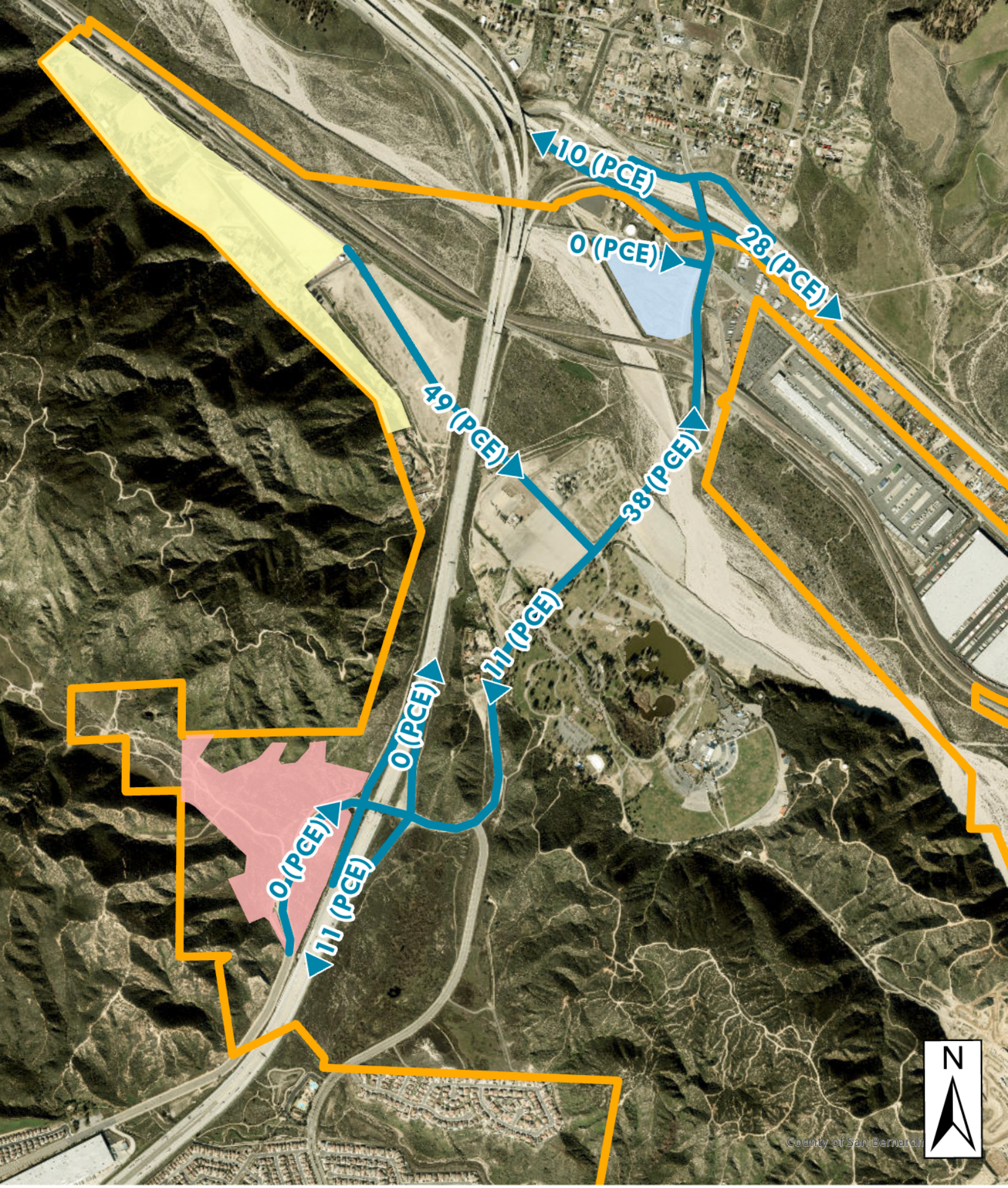
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Truck Assignment



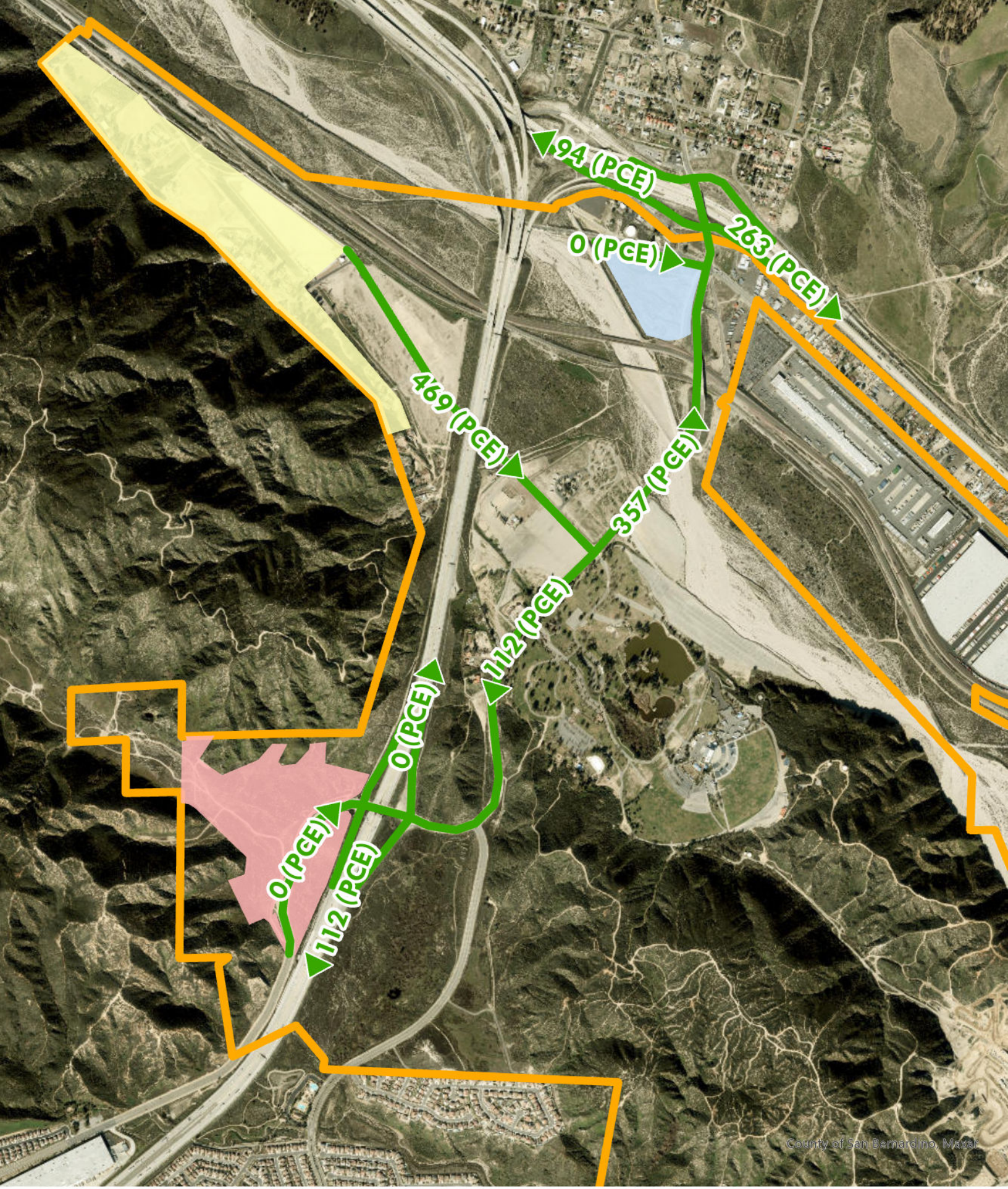
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Auto Assignment



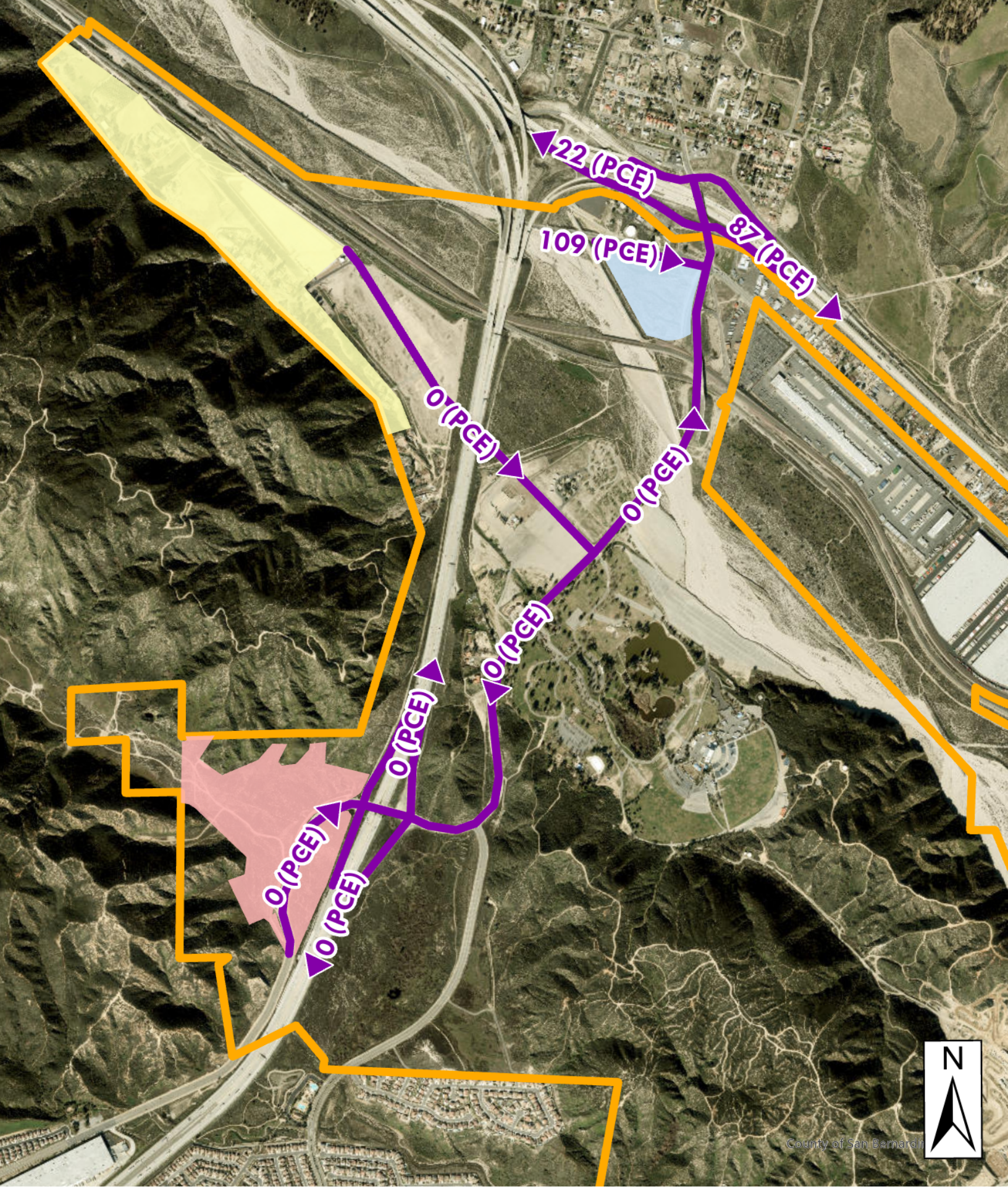
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Total Assignment



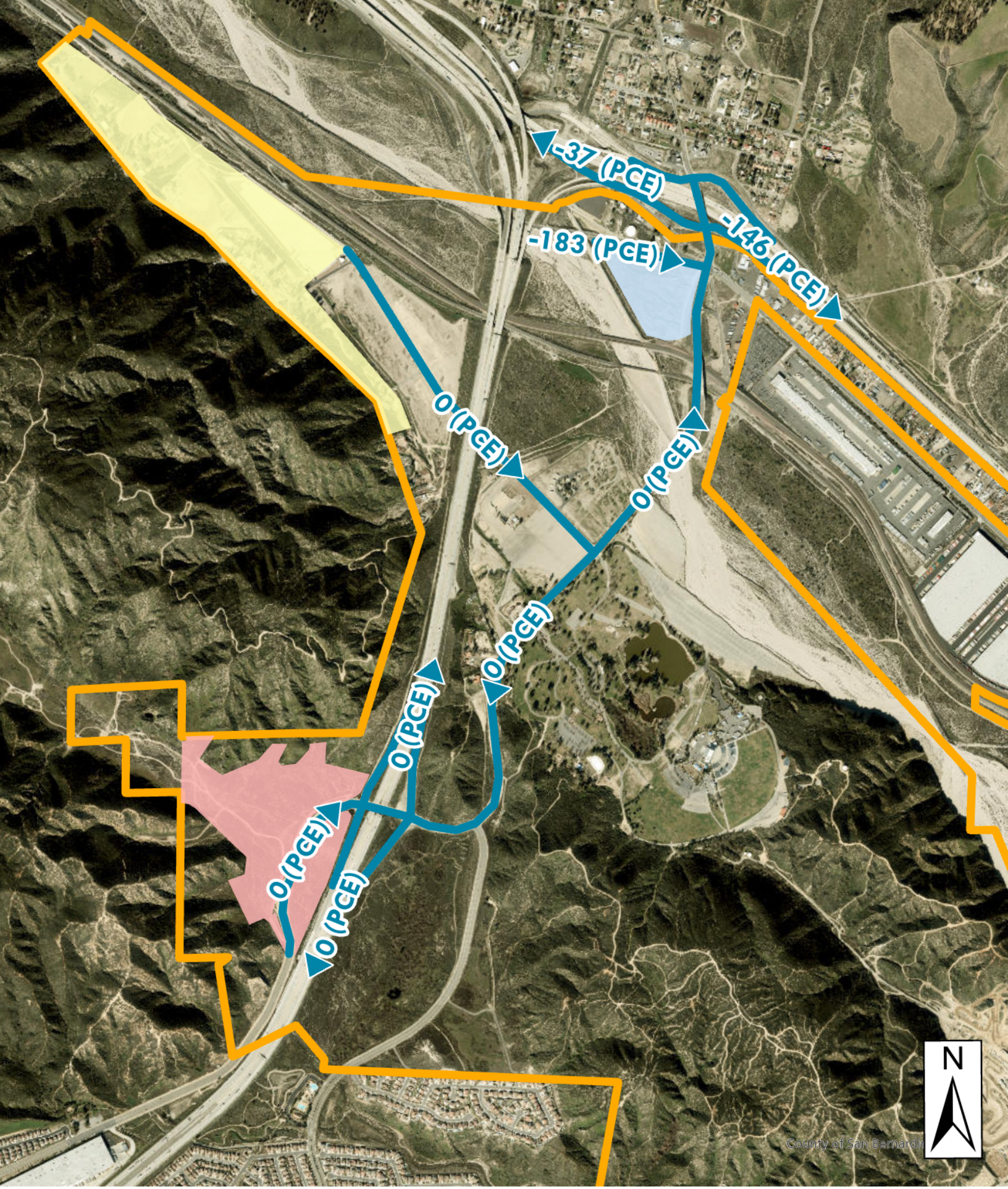
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Truck Assignment



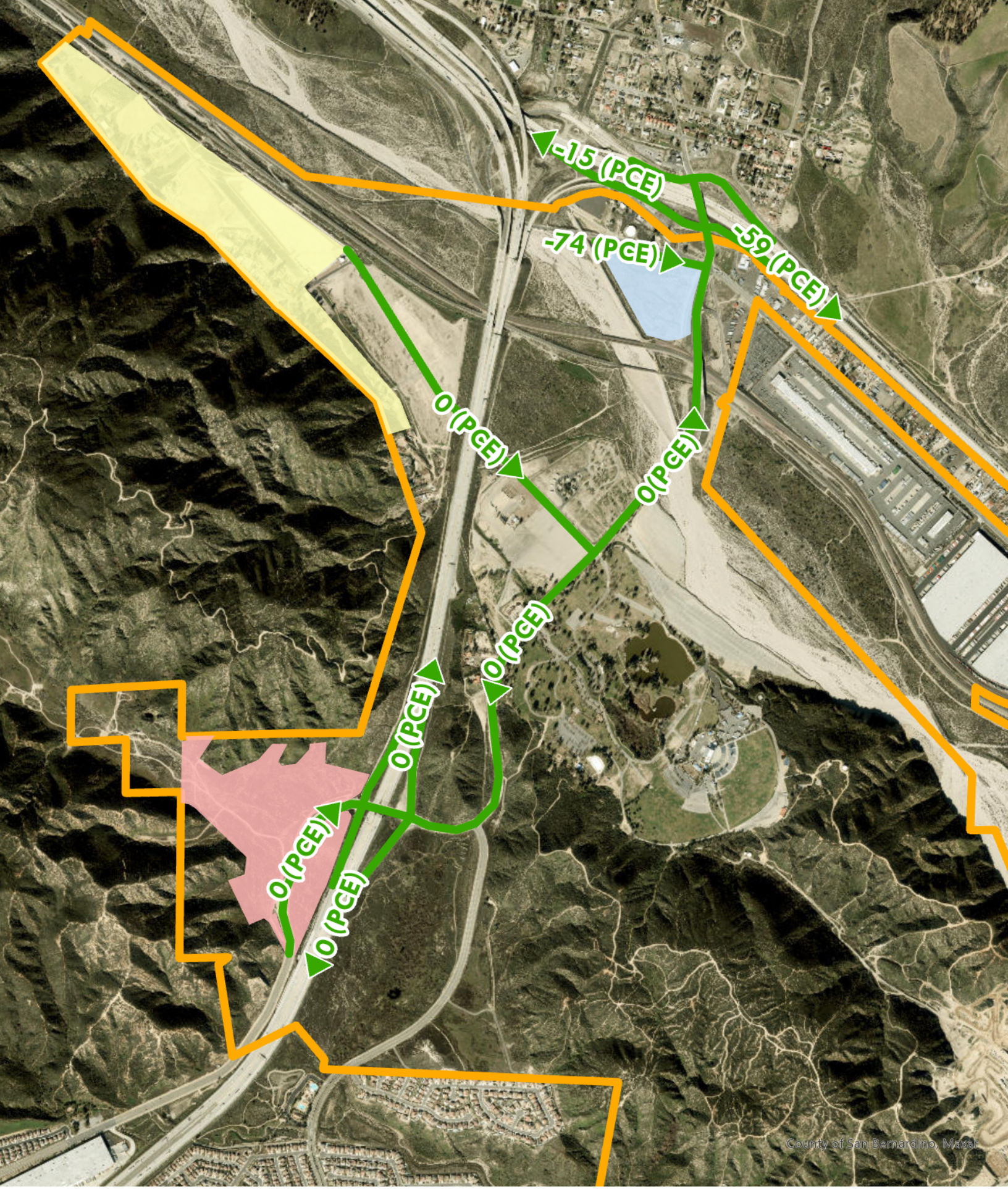
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Auto Assignment



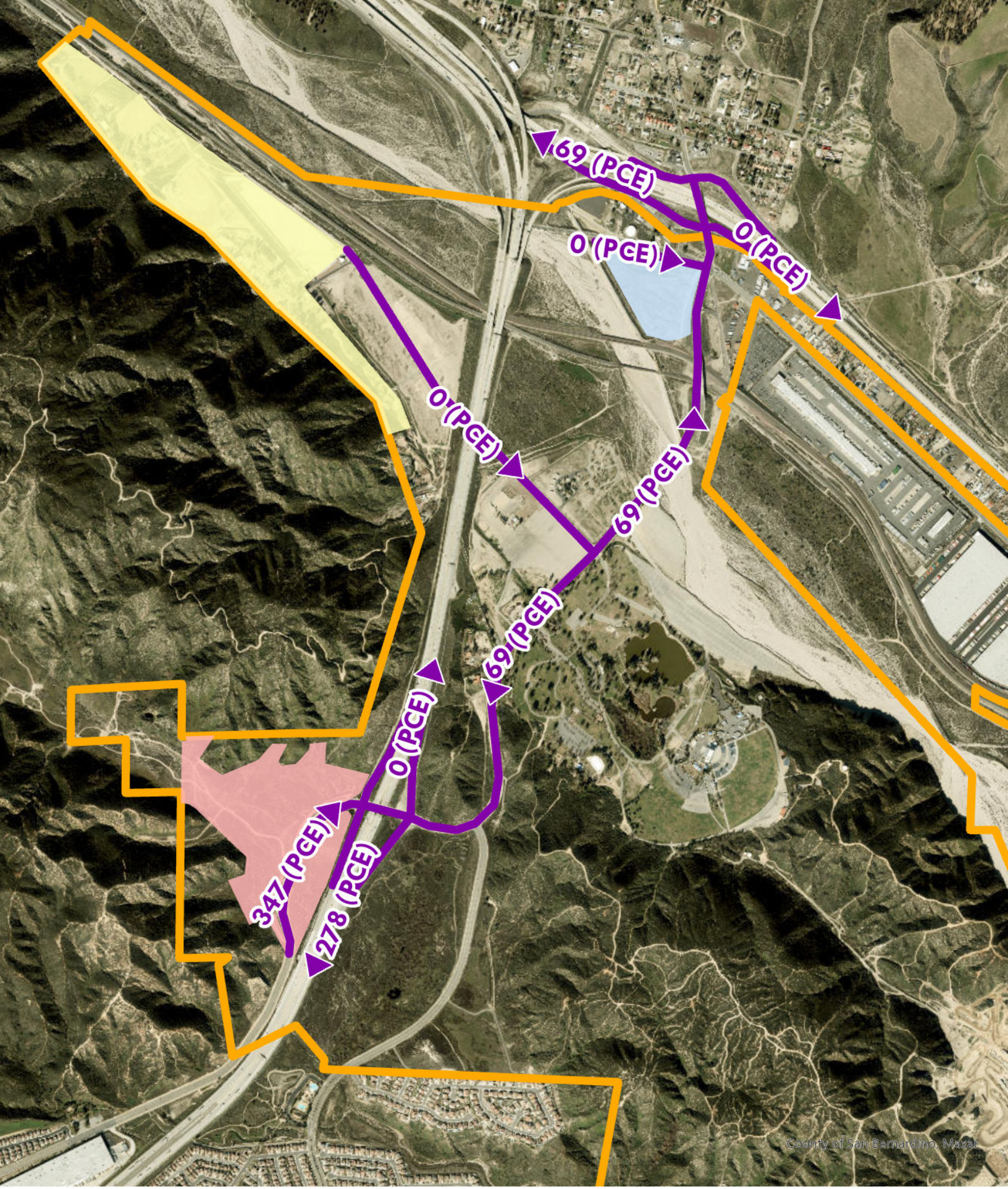
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Total Assignment



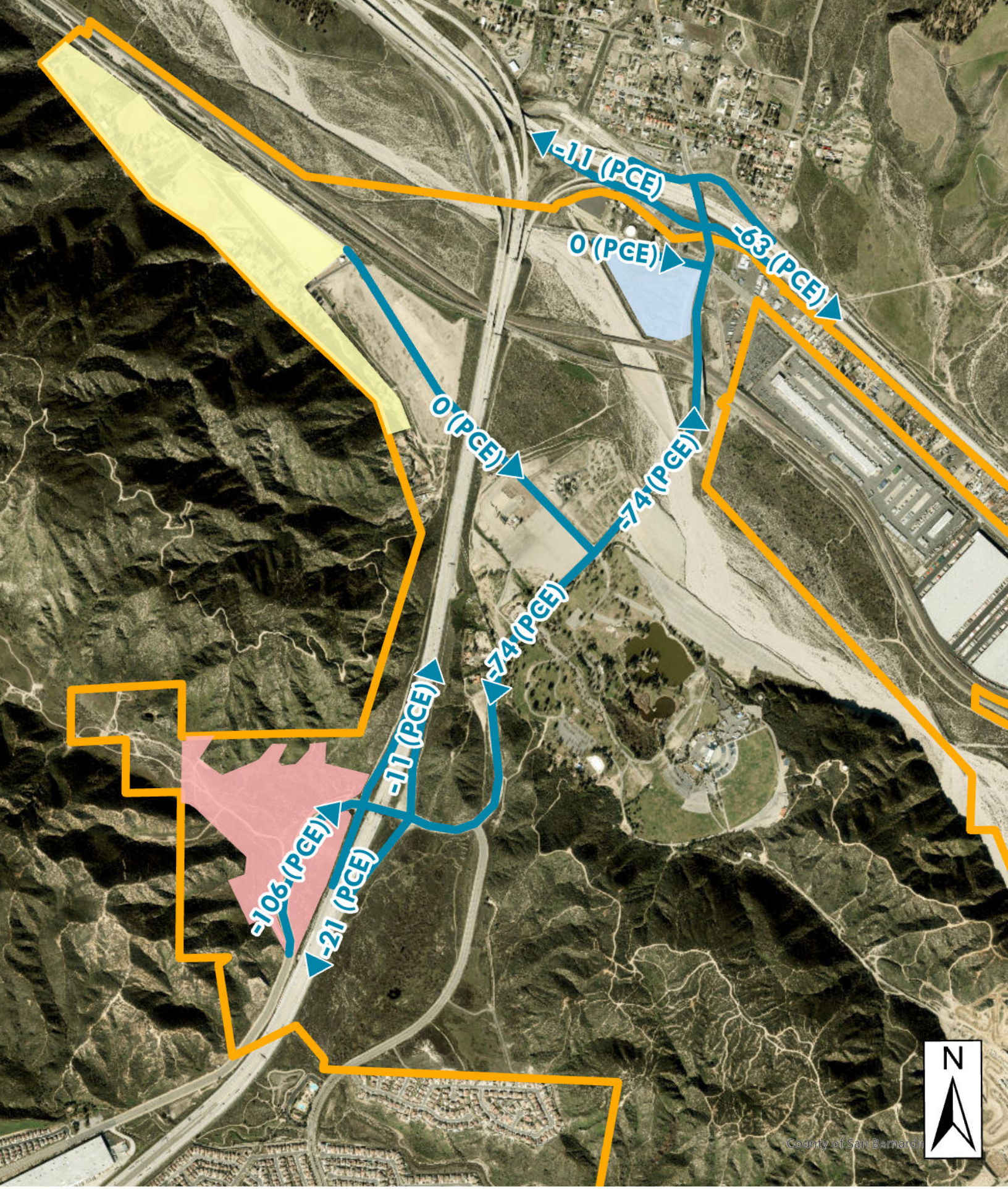
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Truck Assignment



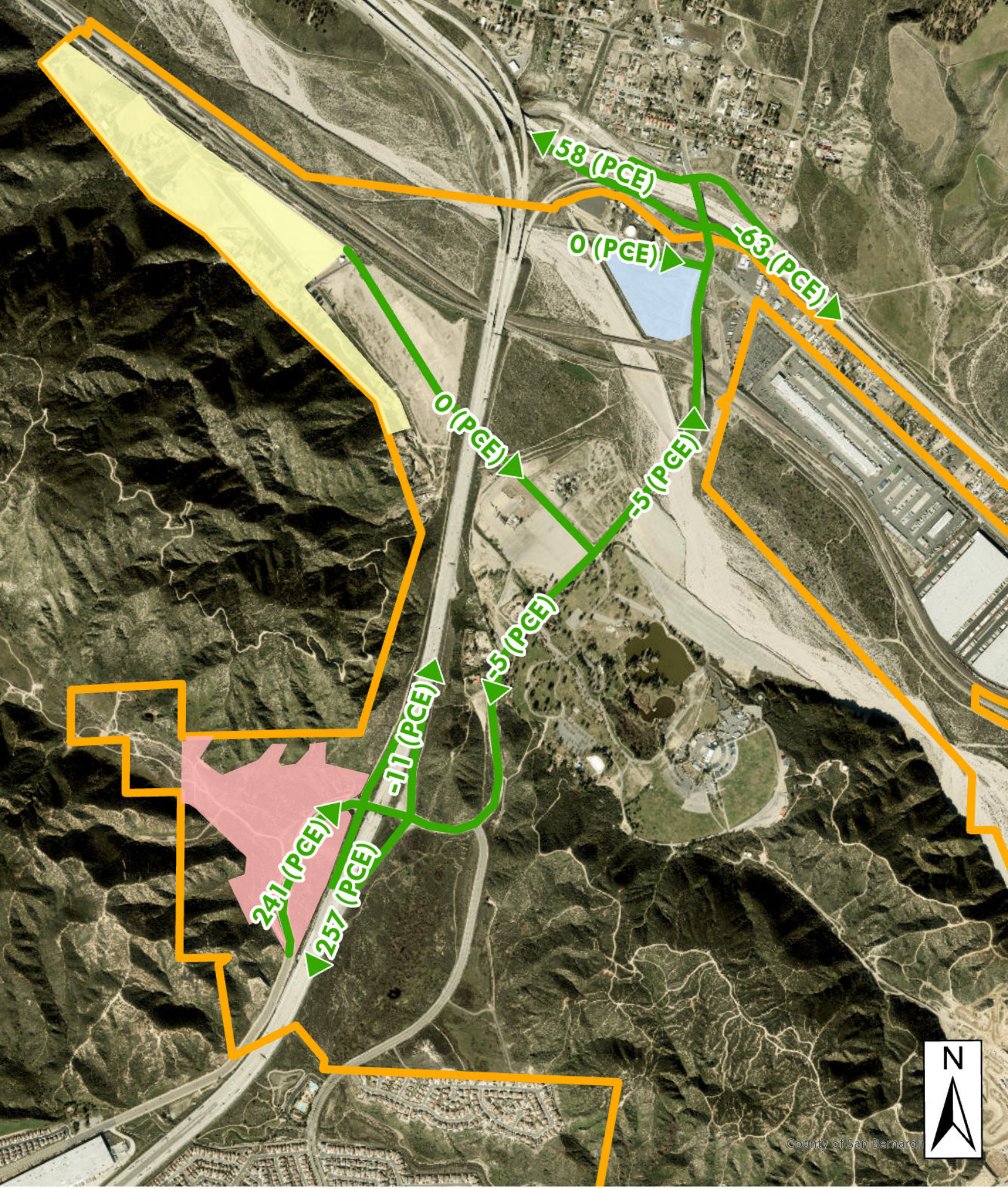
Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Auto Assignment



Glen Helen Specific Plan Boundary

North Glen Helen Subarea

Devore Subarea

Sycamore Flats Subarea

Total Assignment

APPENDIX F – TRAFFIC SIGNAL WARRANT ASSESSMENTS

Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Scenario: Existing AM

Major Street (Total of Both Approaches) Vehicle Volume: 455

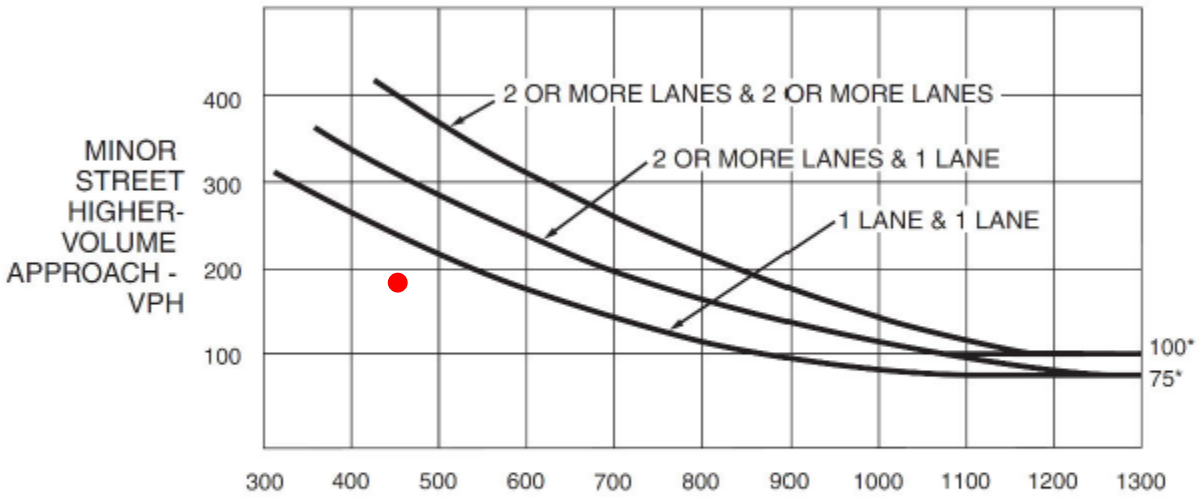
Minor Street (Higher Volume Approach) Vehicle Volume: 195

Number of Lanes: 2 or more lanes & 2 or more lane

Warrant Met: **No**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Intersection 2: Glen Helen Pkwy/I-215 SB On Ramp

Scenario: General Plan Buildout

Major Street (Total of Both Approaches) Vehicle Volume: 1033

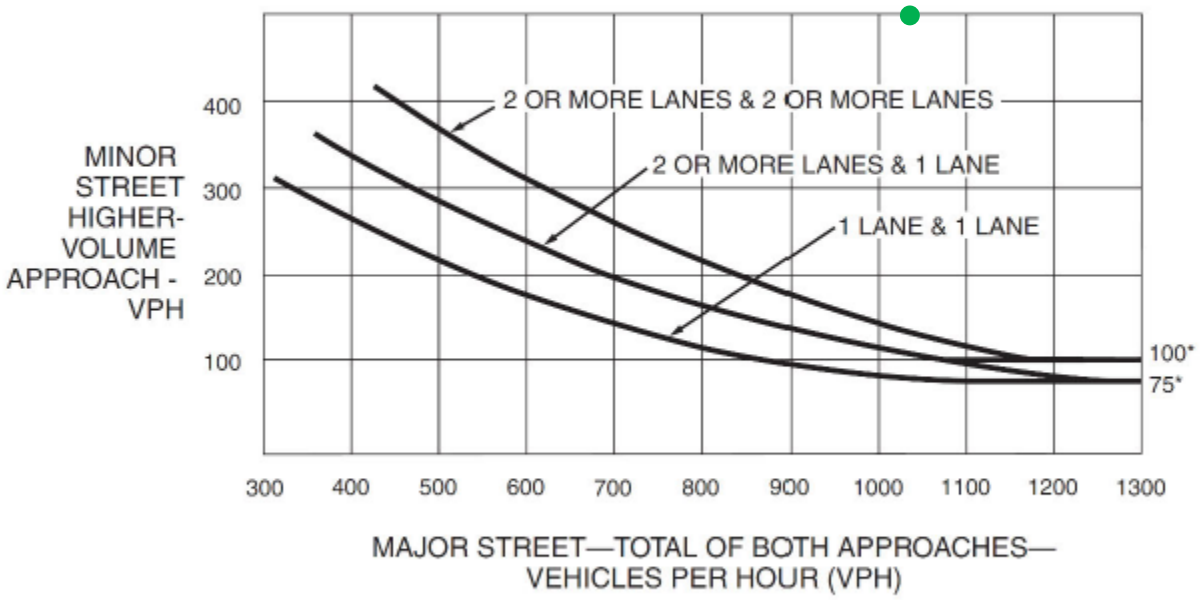
Minor Street (Higher Volume Approach) Vehicle Volume: 777

Number of Lanes: 2 or more lanes & 2 or more lane

Warrant Met: **Yes**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Intersection 3: Glen Helen Pkwy/Cajon Blvd

Scenario: General Plan Buildout

Major Street (Total of Both Approaches) Vehicle Volume: 1504

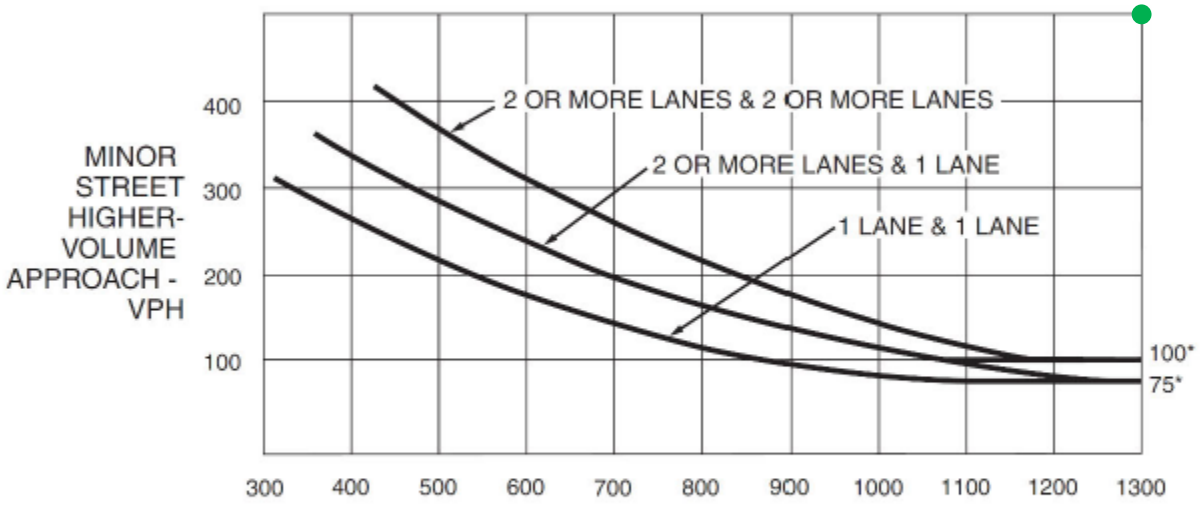
Minor Street (Higher Volume Approach) Vehicle Volume: 678

Number of Lanes: 2 or more lanes & 2 or more lanes

Warrant Met: **Yes**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Scenario: General Plan Buildout

Major Street (Total of Both Approaches) Vehicle Volume: 1164

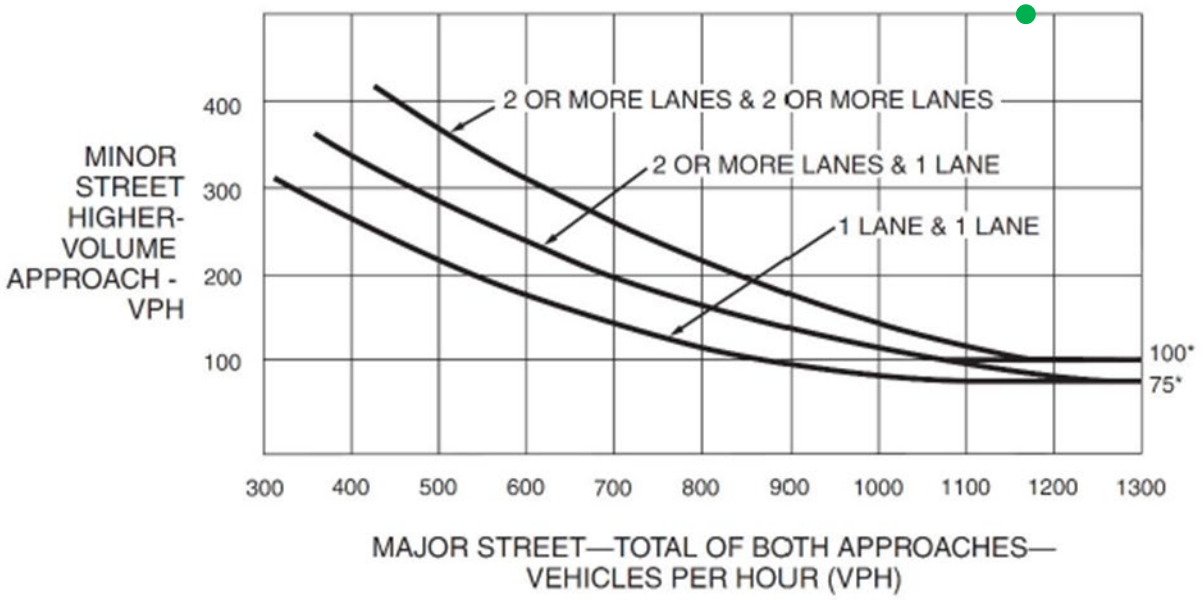
Minor Street (Higher Volume Approach) Vehicle Volume: 672

Number of Lanes: 2 or more lanes & 2 or more lane

Warrant Met: **Yes**

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

Intersection 2: Glen Helen Pkwy/I-215 SB On Ramp

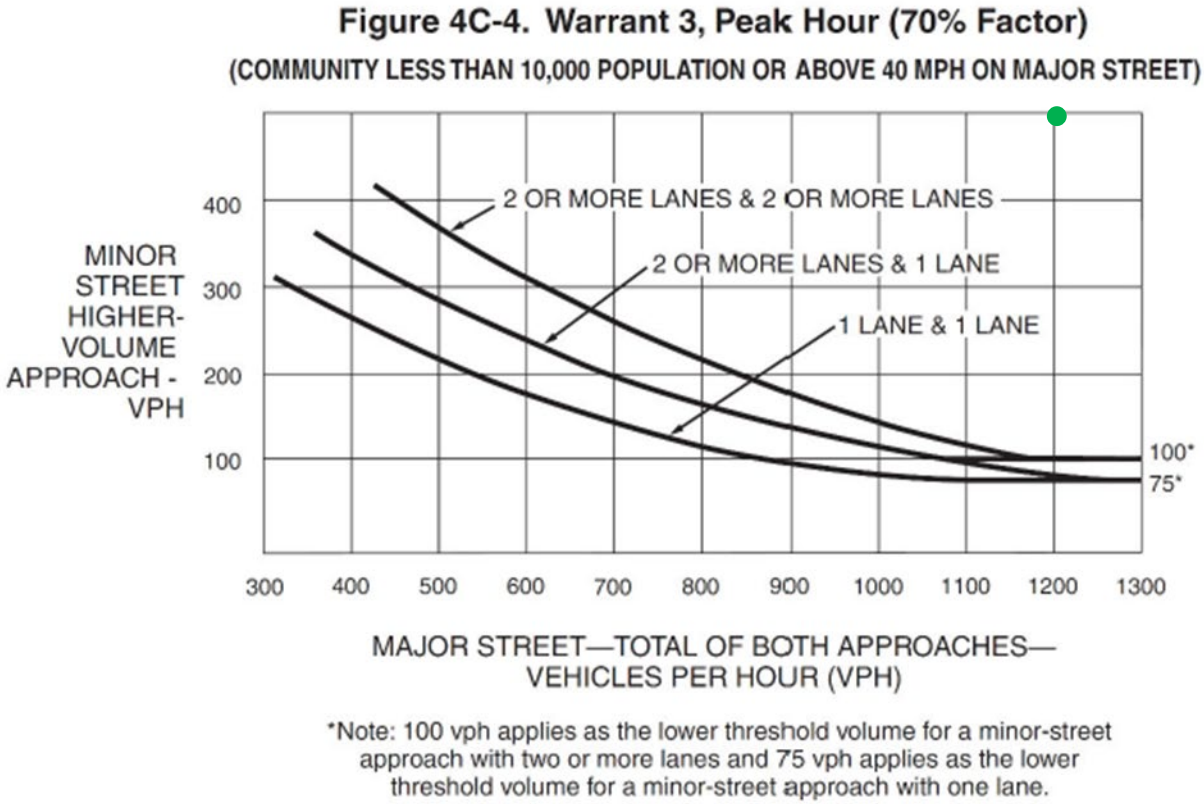
Scenario: General Plan Buildout Plus Project

Major Street (Total of Both Approaches) Vehicle Volume: 1201

Minor Street (Higher Volume Approach) Vehicle Volume: 879

Number of Lanes: 2 or more lanes & 2 or more lane

Warrant Met: **Yes**



Intersection 3: Glen Helen Pkwy/Cajon Blvd

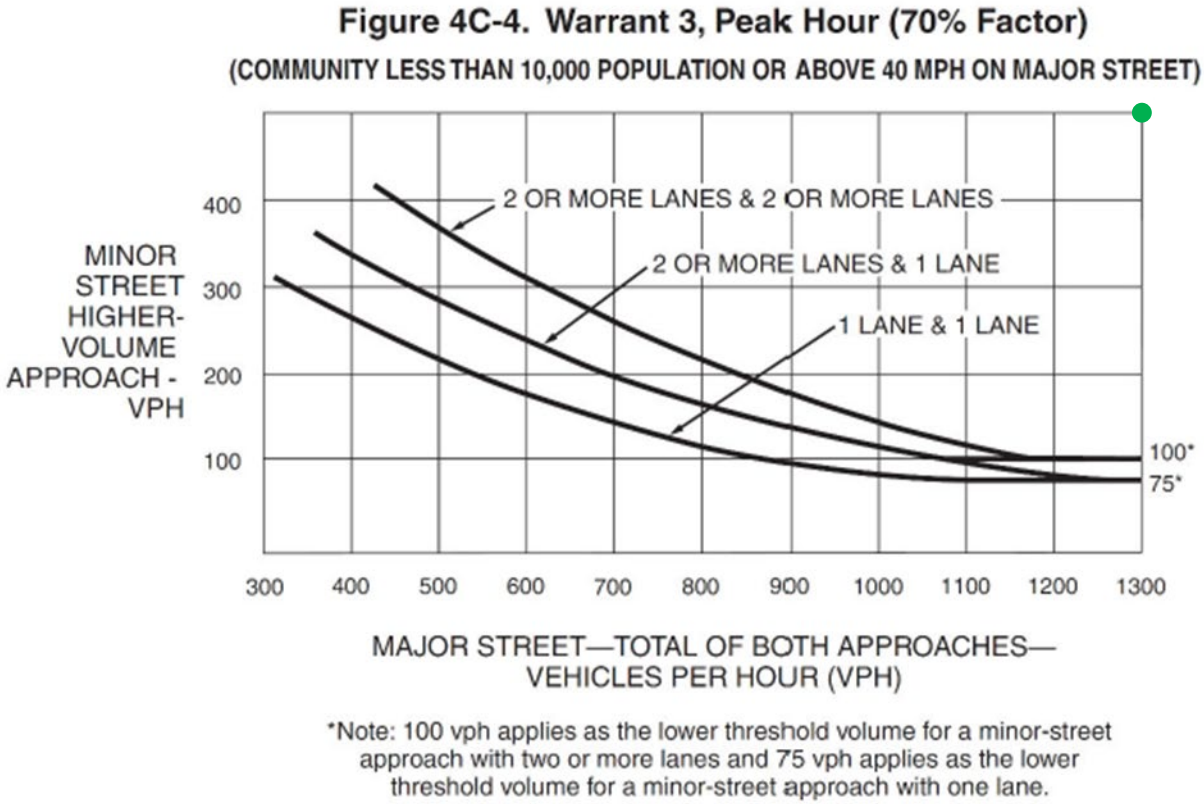
Scenario: General Plan Buildout Plus Project

Major Street (Total of Both Approaches) Vehicle Volume: 1846

Minor Street (Higher Volume Approach) Vehicle Volume: 629

Number of Lanes: 2 or more lanes & 2 or more lanes

Warrant Met: **Yes**



Intersection 4: Glen Helen Pkwy/Glen Helen Rd

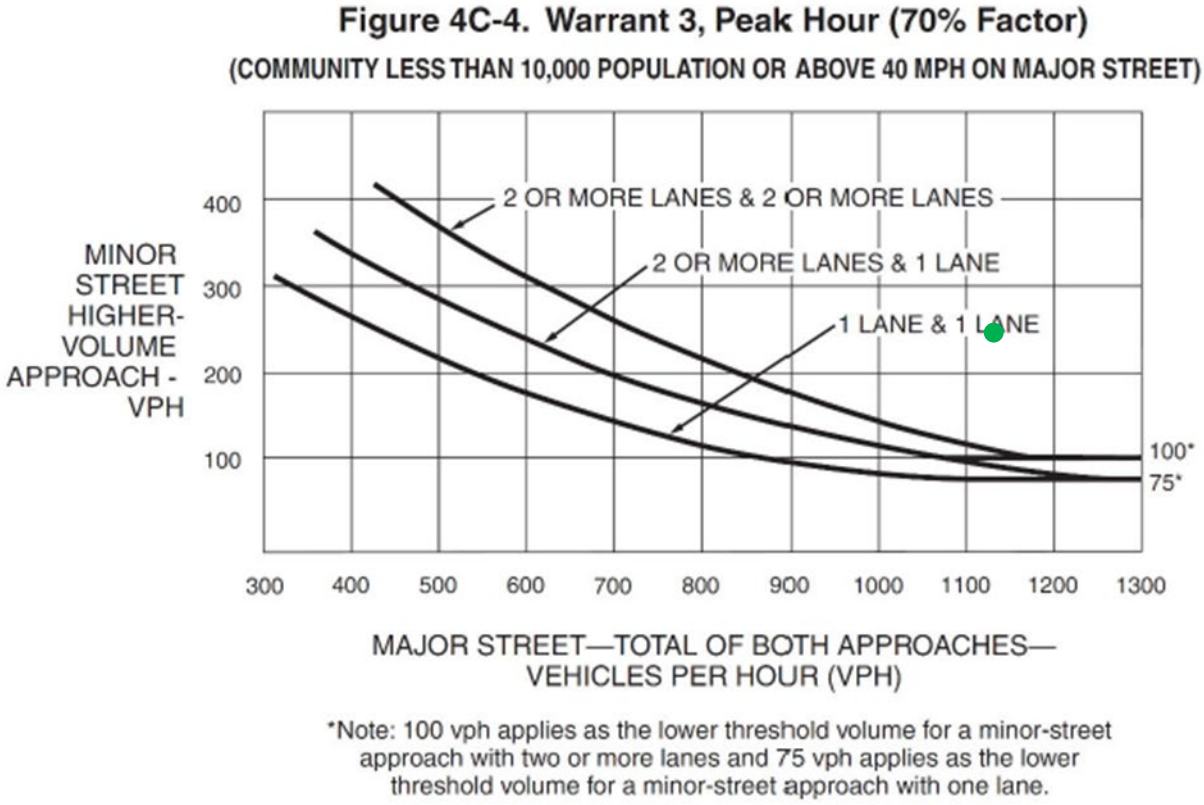
Scenario: General Plan Buildout Plus Project

Major Street (Total of Both Approaches) Vehicle Volume: 1117

Minor Street (Higher Volume Approach) Vehicle Volume: 242

Number of Lanes: 2 or more lanes & 2 or more lanes

Warrant Met: **Yes**



Intersection 7: Glen Helen Pkwy/I-15 SB On Ramp

Scenario: General Plan Buildout Plus Project

Major Street (Total of Both Approaches) Vehicle Volume: 1187

Minor Street (Higher Volume Approach) Vehicle Volume: 1172

Number of Lanes: 2 or more lanes & 2 or more lane

Warrant Met: **Yes**