



# Olive Pit Mining and Reclamation Project Traffic Impact Analysis

City of Irwindale, California

July 24, 2014 (Revised)

June 26, 2014





---

# Olive Pit Mining and Reclamation Project

## TRAFFIC IMPACT ANALYSIS

### CITY OF IRWINDALE, CALIFORNIA

PREPARED FOR:

Jeff Harvey, PhD.  
HARVEY CONSULTING GROUP, LLC  
2810 Cazadero Drive  
Carlsbad, CA 92009

PREPARED BY:

Marlie Whiteman, P.E.  
mwhiteman@urbanxroads.com  
(949) 660-1994 x208

John Kain, AICP  
jkain@urbanxroads.com  
(949) 660-1994 x211

Janette Cachola  
jcatchola@urbanxroads.com  
(949) 660-1994 x249

JULY 24, 2014 (REVISED)  
JUNE 26, 2014

---

09197-04 Report



# TABLE OF CONTENTS

---

<u>Section</u>	<u>Page</u>
<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
<b>1.0 INTRODUCTION.....</b>	<b>7</b>
1.1 Purpose of Report and Study Objectives .....	7
1.2 Project Description .....	7
1.3 Traffic Operations Analysis .....	10
1.3.1 Intersection Delay Analysis Methodology	
1.4 Traffic Signal Warrant Analysis Methodology .....	14
1.5 Definition of Deficiency and Significant Impact.....	15
1.5.1 Definition of Deficiency	
1.5.2 Definition of Significant Impact	
1.6 Los Angeles County Congestion Management Program (CMP)	
Consistency Requirements .....	17
1.7 Principal Findings .....	18
1.8 Project Fair Share Calculations .....	19
1.9 Recommendations .....	19
1.9.1 Off-Site Improvements	
1.9.2 On-Site Circulation Recommendations	
<b>2.0 PROJECT DESCRIPTION .....</b>	<b>23</b>
2.1 Location .....	23
2.2 Land Use and Intensity .....	23
2.3 Project Access.....	23
2.4 Phasing and Timing .....	23
2.5 Project Trip Distribution .....	24
2.6 Project Trip Generation .....	28
2.7 Project Only Volumes.....	28



## **TABLE OF CONTENTS (CONT.)**

---

<u>Section</u>	<u>Page</u>
<b>3.0 AREA CONDITIONS</b> .....	<b>35</b>
3.1 Existing Roadway System Circulation Network.....	35
3.2 Transit Service .....	37
3.3 Existing Pedestrian and Bicycle Facilities .....	37
3.4 Existing Daily Traffic Volumes .....	37
3.5 Existing Peak Hour Traffic Volumes .....	37
3.6 Existing (2014) Traffic Conditions .....	41
3.6.1 Existing Intersection Delay Analysis	
3.6.2 Existing Traffic Signal Warrant Analysis	
3.7 Planned Transportation Improvements and Relationships to General Plan .....	46
<b>4.0 FUTURE TRAFFIC VOLUMES</b> .....	<b>55</b>
4.1 Existing Plus Project .....	55
4.2 Interim Year (2016) Without Project .....	55
4.3 Interim Year (2016) With Project .....	65
4.4 Long Range (2035) Without Project .....	65
4.5 Long Range (2035) With Project .....	75
<b>5.0 TRAFFIC ANALYSIS</b> .....	<b>83</b>
5.1 Delay, Capacity, Level of Service and Improvement Analysis.....	83
5.1.1 Existing Plus Project	
5.1.2 Interim Year (2016) Without Project	
5.1.3 Interim Year (2016) With Project	
5.1.4 Long Range (2035) Without Project	
5.1.5 Long Range (2035) With Project	



## **TABLE OF CONTENTS (CONT.)**

---

<u>Section</u>	<u>Page</u>
<b>6.0 IMPROVEMENT AND PROJECT FAIR SHARE CONTRIBUTION.....</b>	<b>101</b>
6.1 Off-Site Recommended Improvements .....	101
6.2 2035 With Project Fair Share Percentage .....	102
<b>7.0 FINDINGS AND RECOMMENDATIONS.....</b>	<b>105</b>
7.1 Findings .....	105
7.1.1 Existing Conditions	
7.1.2 Project Development	
7.1.3 Future Traffic Conditions	
7.2 Project Recommendations.....	107



## LIST OF APPENDICES

---

<u>Appendix</u>	<u>Page</u>
Scoping Letter.....	A
Daily Traffic Count Data.....	B
Peak Hour Traffic Count Data and Volume Development Summary .....	C
Existing (2014) Conditions Intersection Analysis Worksheets .....	D
Traffic Signal Warrant Analysis Worksheets .....	E
Cumulative Project Trip Distributions .....	F
Los Angeles CMP Growth Factor Excerpts .....	G
Existing Plus Project Conditions Intersection Analysis Worksheets .....	H
Interim Year (2016) Without Project Conditions Intersection Analysis Worksheets .....	I
Interim Year (2016) With Project Conditions Intersection Analysis Worksheets .....	J
Long Range (2035) Without Project Conditions Intersection Analysis Worksheets .....	K
Long Range (2035) With Project Buildout Conditions Intersection Analysis Worksheets .....	L



# LIST OF EXHIBITS

---

<u>Exhibit</u>	<u>Page</u>
ES-A Vicinity Map .....	2
ES-B Study Area .....	3
1-A Site Plan.....	8
2-A Truck Outbound Trip Distribution .....	25
2-B Truck Inbound Trip Distribution .....	26
2-C Employee (Passenger Car) Trip Distribution .....	27
2-D Project Average Daily Traffic (ADT) .....	29
2-E Project AM Peak Hour Intersection Volumes.....	30
2-F Project PM Peak Hour Intersection Volumes.....	31
2-G Project Only Peak Hour Link Volumes.....	33
3-A Existing Number of Through Lanes and Intersection Controls.....	36
3-B Foothill Transit Agency Bus Routes .....	38
3-C Existing Pedestrian and Bicycle Facilities.....	39
3-D Existing (2014) Average Daily Traffic (ADT).....	40
3-E Existing (2014) AM Peak Hour Intersection Volumes .....	42
3-F Existing (2014) PM Peak Hour Intersection Volumes .....	43
3-G City of Irwindale General Plan Circulation Element.....	47
3-H City of Irwindale General Plan Roadway Cross-Sections .....	48
3-I County of Los Angeles General Plan Circulation Element.....	49
3-J County of Los Angeles General Plan Roadway Cross-Sections .....	50
3-K City of Baldwin Park General Plan Circulation Element.....	52
3-L City of Baldwin Park General Plan Roadway Cross-Sections.....	53
3-M City of Irwindale Truck Routes .....	54
4-A Existing Plus Project Average Daily Traffic (ADT) .....	56
4-B Existing With Project AM Peak Hour Intersection Volumes .....	57
4-C Existing With Project PM Peak Hour Intersection Volumes .....	58
4-D Cumulative Development Location Map .....	59
4-E Cumulative Average Daily Traffic (ADT) .....	66



## **LIST OF EXHIBITS (CONT.)**

---

<u>Exhibit</u>	<u>Page</u>
4-F Cumulative AM Peak Hour Intersection Volumes.....	67
4-G Cumulative PM Peak Hour Intersection Volumes.....	68
4-H Interim Year (2016) Without Project Average Daily Traffic (ADT).....	69
4-I Interim Year (2016) Without Project AM Peak Hour Intersection Volumes .....	70
4-J Interim Year (2016) Without Project PM Peak Hour Intersection Volumes .....	71
4-K Interim Year (2016) With Project Average Daily Traffic (ADT).....	72
4-L Interim Year (2016) With Project AM Peak Hour Intersection Volumes.....	73
4-M Interim Year (2016) With Project PM Peak Hour Intersection Volumes.....	74
4-N Long Range (2035) Without Project Average Daily Traffic .....	76
4-O Long Range (2035) Without Project AM Peak Hour Intersection Volumes .....	77
4-P Long Range (2035) Without Project PM Peak Hour Intersection Volumes .....	78
4-Q Long Range (2035) With Project Average Daily Traffic.....	79
4-R Long Range (2035) With Project AM Peak Hour Intersection Volumes .....	80
4-S Long Range (2035) With Project PM Peak Hour Intersection Volumes .....	81
7-A Existing Plus Project Conditions Required Off-Site Improvements.....	109
7-B Interim Year (2016) With Project Conditions Required Off-Site Improvements.....	110
7-C Long Range (2035) With Project Conditions Required Off-Site Improvements.....	111
7-D Site Access Recommendations .....	112



## **LIST OF TABLES**

---

<u>Table</u>	<u>Page</u>
ES-1 Intersection Analysis Locations .....	4
2-1 Project Trip Generation Estimates .....	28
3-1 Existing (2014) Conditions Intersection Analysis Summary .....	45
4-1 Other Development Trip Generation Summary .....	61
5-1 Existing Plus Project Conditions Intersection Analysis Summary .....	84
5-2 Existing and Existing Plus Project Intersection Analysis Summary Comparison .....	86
5-3 Interim Year (2016) Without Project Conditions Intersection Analysis Summary .....	88
5-4 Interim Year (2016) With Project Conditions Intersection Analysis Summary .....	90
5-5 Interim Year (2016) Intersection Analysis Summary Comparison .....	92
5-6 Long Range (2035) Without Project Conditions Intersection Analysis Summary .....	94
5-7 Long Range (2035) With Project Conditions Intersection Analysis Summary .....	96
5-8 Long Range (2035) Intersection Analysis Summary Comparison .....	97
6-1 Long Range (2035) With Project Buildout Fair Share Percentages For Off-Site Improvements .....	103



## **ES EXECUTIVE SUMMARY**

---

The purpose of this traffic impact analysis is to evaluate the proposed Olive Pit Mining and Reclamation Project from a traffic circulation standpoint. The proposed project is located north of Los Angeles Street, south of Olive Street, and west of Azusa Canyon Road, in the City of Irwindale. Exhibit ES-A illustrates the general vicinity of the project site.

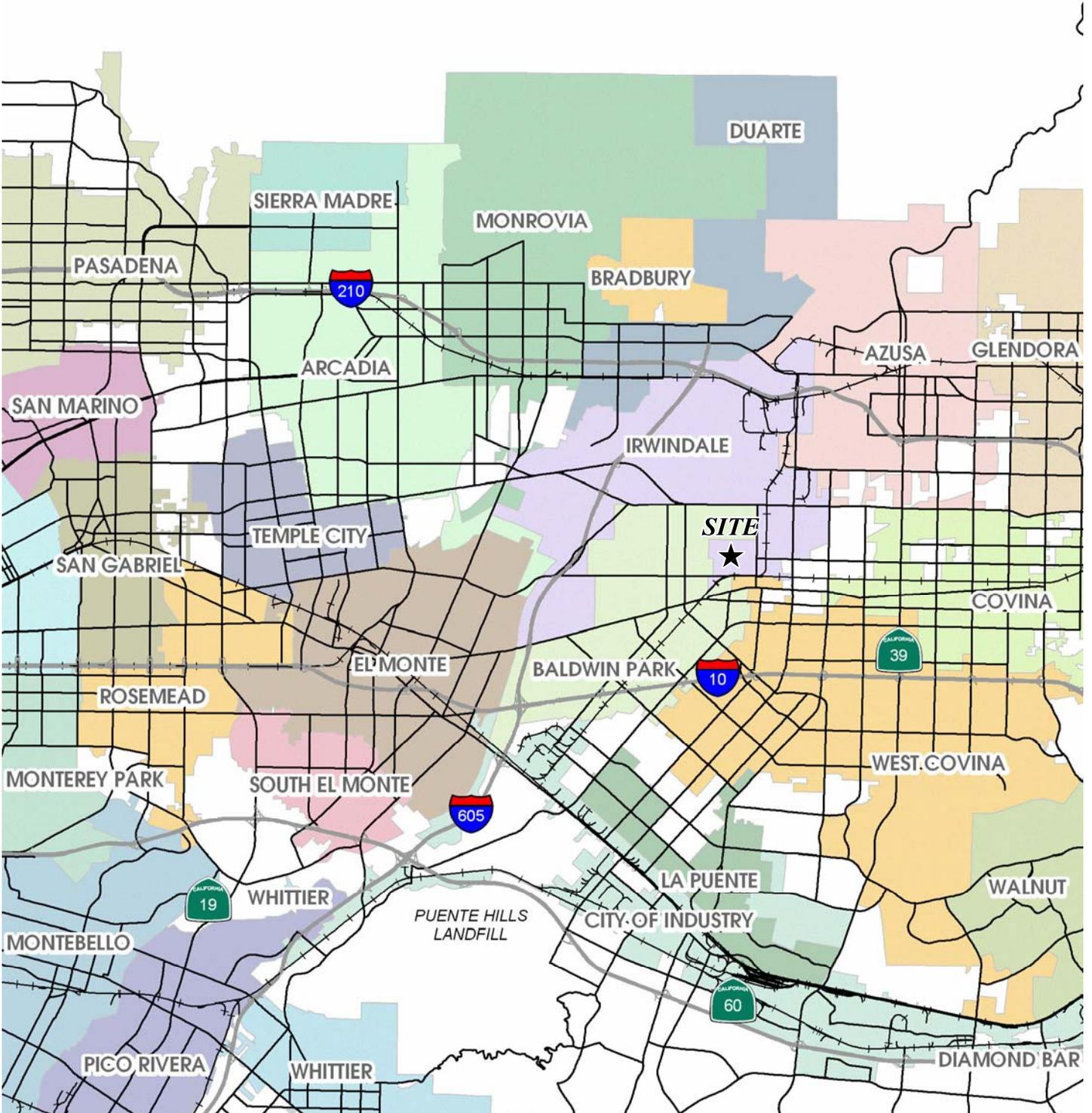
The Proposed Project plans involve three components: 1) construction of a new on-site access road; 2) phased extraction of mineral resources; and 3) site reclamation. The first operational phase at the site will include mining the eastern portion of the site, followed by reclamation of this area to create an approximately 32-acre pad suitable for future development. Reclamation will involve filling the extraction void with inert fill materials. The second operational phase will include mining the remainder of the site utilizing both dry and underwater mining processes.

Exhibit ES-B illustrates the intersection analysis locations which include the proposed site access driveways, adjacent roadways, and intersections around the site, including the major signalized intersections providing access from the site to the nearest regional corridor (I-605 Freeway). The intersection analysis locations have been selected based on locations where the project is anticipated to contribute 50 (or more) peak hour trips. The intersection analysis locations have also been refined based on the traffic study scoping presented in Appendix "A" and discussions with City staff. The San Gabriel Freeway (I-605) and the Foothill Freeway (I-210) ramps located in the City of Irwindale are the only Los Angeles County Congestion Management (CMP) - designated facilities in the City of Irwindale. Table ES-1 summarizes the intersection analysis locations identified on Exhibit ES-B:

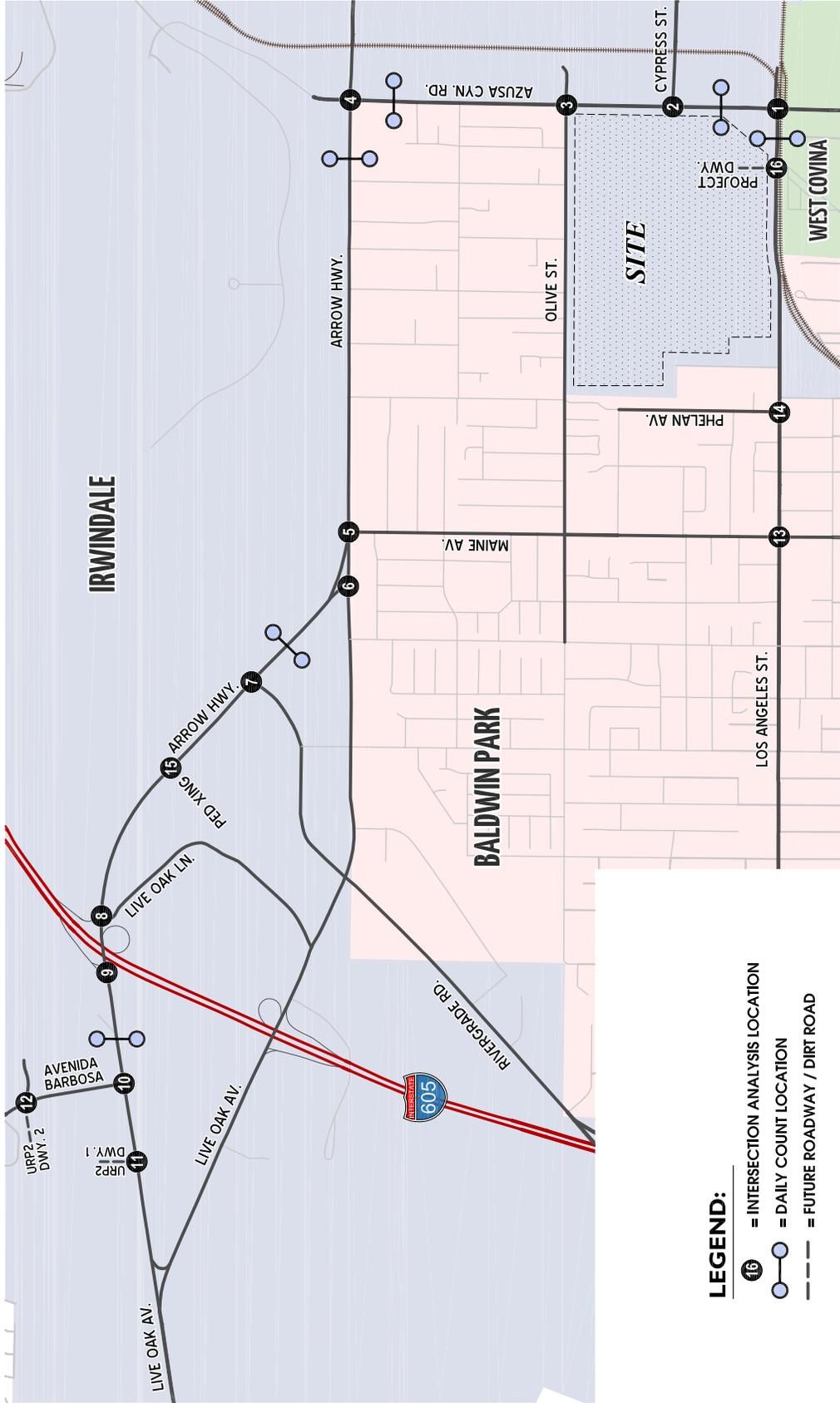
**Table ES-1 Intersection Analysis Locations**

<b>ID</b>	<b>Intersection Location</b>	<b>Traffic Control</b>	<b>Jurisdiction</b>
1	Azusa Canyon Road / Los Angeles Street	Unsignalized	Irwindale and West Covina
2	Azusa Canyon Road / Cypress Street	Signalized	Irwindale
3	Azusa Canyon Road / Olive Street	Signalized	Irwindale
4	Azusa Canyon Road / Arrow Highway	Signalized	Irwindale

EXHIBIT ES-A: Vicinity Map



**EXHIBIT ES-B: Study Area**



**Table ES-1 Intersection Analysis Locations (Continued)**

<b>ID</b>	<b>Intersection Location</b>	<b>Traffic Control</b>	<b>Jurisdiction</b>
5	Maine Avenue / Arrow Highway	Signalized	Irwindale and Baldwin Park
6	Arrow Highway / Live Oak Avenue	Signalized	Irwindale
7	Arrow Highway / Rivergrade Road	Signalized	Irwindale
8	I-605 NB Ramp - Live Oak Lane / Arrow Highway	Unsignalized	Caltrans
9	I-605 SB Off-Ramp / Arrow Highway	Signalized	Caltrans
10	Avenida Barbosa / Arrow Highway	Signalized	Irwindale
11	URP2 Driveway 1 / Arrow Highway	Unsignalized	Irwindale
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Unsignalized	Irwindale
13	Maine Avenue / Los Angeles Street	Signalized	Baldwin Park
14	Phelan Avenue / Los Angeles Street	Unsignalized	Baldwin Park
15	Ped Xing / Arrow Highway	Signalized	Irwindale
16	Project Driveway / Los Angeles Street - <i>(Future)</i>	Unsignalized	Irwindale

The following summarizes the principal findings in the traffic analysis portions of this report:

**For Existing (2014) and Existing Plus Project conditions**, the following intersections operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

<b>ID</b>	<b>Intersection Location</b>	<b>Jurisdiction</b>
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

At an unsignalized intersection, a significant impact occurs when the minor stop-controlled approach operates at unacceptable level of service (“E” or worse) and does not have acceptable operation in terms of total control delay, and the addition of more than 50 peak-hour project trips contributes to the continuing operational failure at the minor approach.

Based on the intersection analysis results and number of traffic added by the Project, the intersection of Azusa Canyon Road / Los Angeles Street is significantly impacted by the project (comparing Existing to Existing Plus Project conditions).

It should be noted that the westbound left turn movement (from adjacent Private Driveway) at the intersection of Avenida Barbosa/URP2 Driveway 2 (Private) is the only minor approach anticipated to operate at unacceptable LOS (LOS “E”) and the project does not contribute to a traffic volume increase for the westbound left turns at this intersection and the total/average control delay is operating at acceptable LOS. Therefore, the project impact at this location is considered less-than significant and improvements are not recommended.

**For Interim Year (2016) Without and With Project conditions**, the intersection of Azusa Canyon Road / Arrow Highway (#4) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to previously identified locations under Existing and Existing Plus Project Conditions.

At a signalized intersection, a significant impact occurs when an intersection operates at unacceptable level of service (“E” or worse) for baseline conditions and the project adds more than 50 peak hour project trips. Based on the intersection analysis results and number of traffic added by the Project, the intersection of Azusa Canyon Road / Arrow Highway (#4) is significantly impacted by the project (comparing Interim Year 2016 Without Project to Interim Year 2016 With Project conditions).

**For Long Range (2035) Without and With Project conditions**, the intersection of I-605 SB Off-Ramp / Arrow Highway (#9) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to previously identified locations under Interim Year (2016) Conditions.

Based on the intersection analysis results and number of traffic added by the Project, the intersection of I-605 SB Off-Ramp / Arrow Highway (#9) is significantly impacted by the project (comparing Long Range 2035 Without Project to Long Range 2035 With Project conditions).

The following improvements are necessary to reduce the Project's proportionate increase in delay to pre-project levels or better, thus reducing the Project's impact to less-than-significant.

**1. Existing Plus Project Conditions**

*Azusa Canyon Road / Los Angeles Street (#1)*

- Install a traffic signal

**2. 2016 Without and With Project Conditions:**

*Azusa Canyon Road / Arrow Highway (#4)*

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

**3. 2035 Without and With Project Conditions:**

*I-605 SB Off-Ramp / Arrow Highway (#9)*

- Construct a 2<sup>nd</sup> southbound left turn lane.
  - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.
  - Caltrans or the City may accept fair share funding contributions towards future improvements of its facilities so long as improvements are reasonably expected to be implemented in a reasonable time frame.

The project will be fully responsible for the intersection improvement at Azusa Canyon Road/Los Angeles Street (#1) to mitigate the project's direct impact to pre-project conditions.

The project will be partially responsible and contribute on a fair share basis for the intersection improvement at Azusa Canyon Road / Arrow Highway (#4) and I-605 SB Off-Ramp/Arrow Highway (#9) to mitigate the project's cumulative impact to pre-project conditions.

**OLIVE PIT MINING AND RECLAMATION PROJECT  
TRAFFIC IMPACT ANALYSIS  
CITY OF IRWINDALE, CALIFORNIA**

## **1.0 INTRODUCTION**

---

### **1.1 Purpose of Report and Study Objectives**

The purpose of this traffic impact analysis is to evaluate the proposed Olive Pit Mining and Reclamation Project from a traffic circulation standpoint. The proposed project is located north of Los Angeles Street, south of Olive Street, and west of Azusa Canyon Road, in the City of Irwindale.

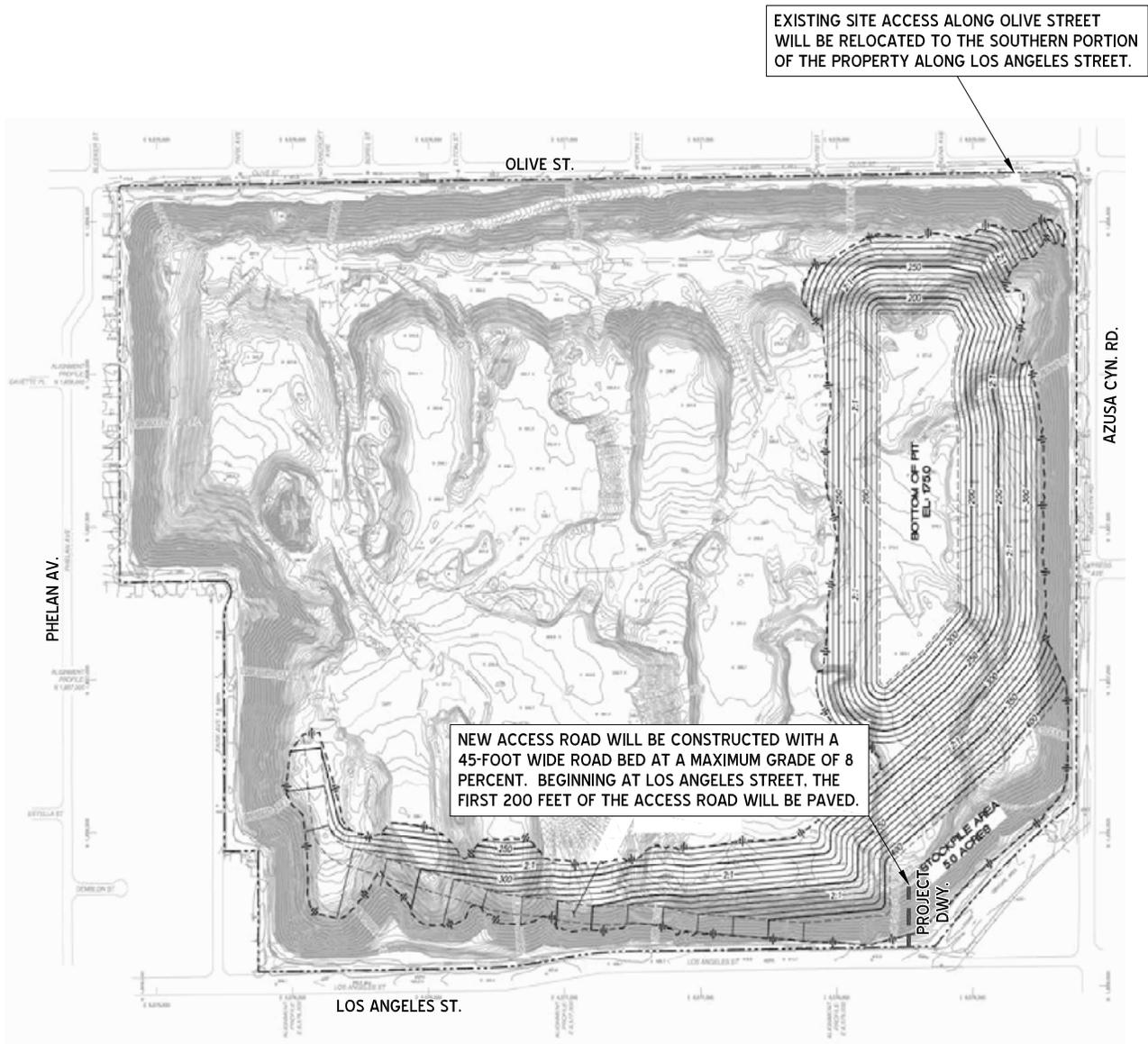
To satisfy the environmental analysis requirements per the City of Irwindale Policy Guidelines for Traffic Impact Reports, the California Department of Transportation (Caltrans) requirements, the California Environmental Quality Act (CEQA) and the Los Angeles County Congestion Management Program (CMP), the following time frames / scenarios will be evaluated in the traffic analysis:

- Existing (2014) Conditions
- Existing Plus Project Conditions
- Interim Year (2016) Conditions Without and With the Project
- Long Range (2035) Conditions Without and With the Project

### **1.2 Project Description**

Exhibit 1-A shows the site plan of the proposed project. The Project is approximately 190 acres in size and the proposed Project plans involve three components: 1) construction of a new on-site access road; 2) phased extraction of mineral resources; and 3) site reclamation. The first operational phase at the site will include mining the eastern portion of the site, followed by reclamation of this area to create an approximately 32-acre pad suitable for future development. Reclamation will involve filling the extraction void with inert fill materials. The second operational phase will include mining the remainder of the site utilizing both dry and underwater mining processes.

### EXHIBIT 1-A: Site Plan



Material excavated in the pit will be transported up the access road to the loading area by conveyor or off-road haul trucks and subsequently placed in overhead hoppers. Over-the-road haul trucks will be loaded at the hoppers through an automated process. Extracted materials will then be transported approximately 3 miles from the pit to the processing plant located at 1245 E Arrow Highway in Irwindale.

United Rock proposes to extract an average of 1 million tons per year during Phase I. This mining activity will typically occur 6 days per week, excluding holidays. This amounts to approximately 306 working days a year (306 days = 52 weeks per year x 6 work days per week, less 6 holidays). The average truck load conveys approximately 25 tons of aggregate material. On an annual basis, 40,000 truck trips are required to transport 1 million tons. The average daily activity equals 131 round trips (40,000 annual trips / 306 working days). This will result in 262 one-way truck trips a day (both entering and exiting truck trips).

Operational components of the Project include the following:

- A locking gate will be placed at the entrance to the site to prevent unauthorized access during non-business hours.
- An approximate 5-acre area at the entrance to the site will be used as the "loading area". The loading area will allow for storing mined materials and loading of over-the-road haul trucks. Haul trucks will access this location to be loaded with material for transport to the processing area.
- Hours of operation for the extraction of resources will occur between 6:00AM. and 6:00PM.
- Transportation to the processing plant will be conducted during the hours of 7:00AM- 5:00PM. Trucks leaving the Olive Pit site at or near to 5:00PM will be on the roadway system during the typical evening peak period (4:00PM – 6:00PM).

- All trucks shall be equipped with Diesel Particulate Filters or a resonator to reduce noise by 3 to 6 dBA. In addition, no Jake Brakes will be used.
- All trucks shall be equipped with single exhaust, vertical straight stacks and no turndown. All trucks shall be equipped with automatic transmissions, which eliminate unnecessary engine revving.
- A walking park and landscape screening will be placed along the northern border of the pit to create a visual buffer between residences north of Olive Street and the Olive Pit.

For the purpose of this TIA report, the truck trips have been converted to passenger car equivalents (PCE). The project is anticipated to generate a net total of approximately 866 (PCE) trip-ends per day, with 133 AM peak hour (PCE) trips and 92 PM peak hour (PCE) trips.

### 1.3 Traffic Operations Analysis

#### 1.3.1 Intersection Delay Analysis Methodology

For this study, the technical guide used in the evaluation of traffic operations is the 2010 Highway Capacity Manual (HCM). The HCM defines level of service as a qualitative measure which describes operational conditions within a traffic stream, generally in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. The criteria used to evaluate Level of Service (LOS) conditions vary based on the type of roadway and whether the traffic flow is considered interrupted or uninterrupted.

The definitions of level of service for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are:

- LOS "A" represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.

- LOS "B" is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.
- LOS "C" is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
- LOS "D" represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
- LOS "E" represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.
- LOS "F" is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations.

Uninterrupted flow is generally found only on limited access (freeway) facilities in urban areas. The level of service is based on the HCM, Table 3-1.

The definitions of level of service for interrupted traffic flow (flow restrained by the existence of traffic signals and other traffic control devices) differ slightly depending on the type of traffic control.

The level of service is typically dependent on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the level of service at an intersection in terms of delay time for the various intersection approaches. The HCM uses different procedures depending on the type of intersection control.

For signalized intersections, average total delay per vehicle for the overall intersection is used to determine level of service. Levels of service at the study intersections have been evaluated using an HCM intersection analysis program (Synchro Version 8). The level of service has been determined at signalized

intersections using data collected describing the intersection configuration, traffic signal timing, and traffic volumes to calculate average intersection delay.

The study area intersections which are stop sign controlled with stop-control on the minor street only have been analyzed using the two-way stop-controlled unsignalized intersection analysis methodology of the HCM. For these intersections, the calculation of level of service is dependent on the occurrence of gaps occurring in the traffic flow of the major street. The level of service criteria for this type of intersection analysis is based on total delay per vehicle for the worst minor street movement(s).

The levels of service are defined in terms of average delay for the HCM intersection analysis methodology is as follows:

Level of Service	Average Total Delay per Vehicle (Seconds)	
	Signalized	Unsignalized
A	0 to 10.00	0 to 10.00
B	10.01 to 20.00	10.01 to 15.00
C	20.01 to 35.00	15.01 to 25.00
D	35.01 to 55.00	25.01 to 35.00
E	55.01 to 80.00	35.01 to 50.00
F	80.01 and up	50.01 and up

Urban segments (i.e., segments on roadways that are generally signalized) do not typically require segment analysis. Segment requirements can normally be determined by the analysis of lane requirements at intersections.

For Existing and Future 'Without Project' conditions LOS analysis, the existing signal timing plans (provided by City of Irwindale staff and Caltrans staff) have been utilized for the study area intersections. For 'With Project' conditions, the existing signal timing plans in conjunction with potential signal optimization timing opportunities (e.g. – lengthier green times and separate / protected left turn phases, where necessary) were used to calculate 'With Project' LOS.

Pursuant to City or Irwindale Traffic Impact Analysis Policy Guidelines, the current Highway Capacity Manual (HCM) methodology is used to evaluate study area intersections. The HCM 2010 utilizes a saturation flow rate of 1,900 vehicles per hour of green (vphg) per lane in each scenario for intersection delay calculation purposes. In addition, all signalized study area intersections are analyzed using the Intersection Capacity Utilization (ICU) technique. To calculate an ICU, the volume of traffic using the intersection is compared with the capacity of the intersection. ICU is usually expressed as a volume to capacity (V/C) ratio. The V/C represents that portion of the hour required to provide sufficient capacity to accommodate all intersection traffic if all approaches operate at capacity. ICU analysis is performed using the Synchro 8 software.

For CMP intersections, a saturation flow rate of 1,600 vehicles per hour of green (vphg) per lane and 2,880 vehicles per hour of green (vphg) per dual turn lanes will be utilized in each scenario for Intersection Capacity Utilization (ICU) calculation purposes. Per the City of Irwindale 2020 General Plan, the only CMP-designated facilities within the City of Irwindale are the I-605 and I-210 ramps. Therefore, ICU results based on LA CMP parameters are also presented in this report for the signalized intersection of I-605 SB Off-Ramp/Arrow Highway (#9).

For unsignalized study area intersections, explicit ICU volume to capacity ratios cannot be calculated. Per the County of Los Angeles CMP guidelines (page B-5), the V/C ratio for an unsignalized intersection must be converted/extracted from the HCM analysis.

For all study area signalized intersections, ICU analysis has also been performed using the Synchro 8 software. It should be noted that the Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. Therefore, consistent with the City's guidelines, both the Synchro v/c ratio (ICU) and delay results are presented in this report. The V/C ratio and

corresponding Level of Service (LOS) are as follows:

Level of Service	Critical Volume To Capacity Ratio
A	0.00 - 0.60
B	0.61 - 0.70
C	0.71 - 0.80
D	0.81 - 0.90
E	0.91 - 1.00
F	>1.00

#### 1.4 Traffic Signal Warrant Analysis Methodology

The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the potential need for installation of a traffic signal at an otherwise unsignalized intersection. This TIA uses the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices (MUTCD), as amended by the 2012 California MUTCD (CA MUTCD), for all study area intersections.

The signal warrant criteria for Existing (2014) conditions are based upon several factors, including volume of vehicular and pedestrian traffic, frequency of accidents, and location of school areas. Both the FHWA's MUTCD and the 2012 CA MUTCD indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. Specifically, this TIA utilizes the Peak Hour Volume-based Warrant 3 as the appropriate representative traffic signal warrant analysis for Existing (2014) traffic conditions. Warrant 3 criteria are basically identical for both the FHWA's MUTCD and the 2012 CA MUTCD. For the purposes of this study, the speed limit was the basis for determining whether Urban or Rural warrants were used for a given intersection.

For future (new) unsignalized intersections, future traffic conditions have been assessed regarding the potential need for new traffic signals based on future average daily traffic (ADT) volumes, using the Caltrans planning level ADT-based signal warrant analysis worksheets.

Traffic signal warrant analyses were performed for the following unsignalized study area intersections:

ID	Intersection Location	Traffic Control	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Unsignalized	Irwindale and West Covina
8	I-605 NB Ramp-Live Oak Lane /Arrow Hwy.	Unsignalized	Caltrans
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Unsignalized	Irwindale
14	Phelan Avenue / Los Angeles Street	Unsignalized	Baldwin Park
16	Project Driveway / Los Angeles Street	Unsignalized	Irwindale

It is important to note that a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should also be noted that signal warrants do not necessarily correlate with level of service. An intersection may satisfy a signal warrant condition and operate at or above LOS “D” or operate below LOS “D” and not meet a signal warrant.

## 1.5 Definition of Deficiency and Significant Impact

The following definitions of deficiencies and significant impacts have been developed in accordance with City of Irwindale requirements.

### 1.5.1 Definition of Deficiency

The City of Irwindale requires the following LOS criteria be implemented:

- LOS will not exceed LOS “D” at all intersections (excluding State Highway facilities) on arterial and collector streets.

The City of Baldwin Park General Plan (November 2002) states that the City will maintain level of service “D” at all City intersections. As such, LOS “D” has also been considered acceptable at any intersections within the City of Baldwin Park.

### 1.5.2 Definition of Significant Impact

- When a signalized intersection operates at mid-range LOS “D” (45.0 seconds) or better under existing or future baseline conditions, and the addition of project trips degrades the intersection operations to LOS “E” or “F”. The project mitigation should bring the facility to operate at mid-range LOS “D” at minimum.
- When a signalized intersection operates at mid-range LOS “E” (67.5 seconds) for State Highways or better under existing or future baseline conditions, and the addition of project trips degrades the intersection operations to 67.6 seconds (LOS “E”) or worse (LOS “F”). The project mitigation should bring the facility to operate at mid-range LOS “E” at minimum.
- When a signalized intersection operates at LOS “E” for non-state or LOS “F” (for State) under existing or future baseline conditions, and the addition of more than 50 peak hour project trips contributes to the continuing operational failure at the intersection. The project mitigation should bring the facility to pre-project conditions.
- At an unsignalized intersection, when the minor stop-controlled approach operates at LOS “F” and does not have acceptable operation in terms of total control delay, and the addition of project trips increases the total control delay to more than 4.0 vehicle hours for a single lane approach or 5.0 vehicle hours for a multi-lane approach. The project mitigation should bring the facility to operate at LOS “E” (at a minimum) or bring the total control delay to less than 4.0 vehicle-hours for a single lane approach or 5.0 vehicle-hours for a multi-lane approach (at a minimum).
- At an unsignalized intersection, when the minor stop controlled approach operates at LOS “F” and does not have an acceptable operation in terms of total control delay, and the addition of more than 50 peak hour project trips

contributes to the continuing operational failure at the minor approach. The project mitigation should bring the facility to pre-project conditions.

#### 1.6 Los Angeles County Congestion Management Program (CMP) Consistency Requirements

The proposed project is located within the jurisdiction of the City of Irwindale in Los Angeles County. Therefore, this traffic study is required to address all CMP requirements of the Los Angeles County Congestion Management Program. The purpose of the Los Angeles County Congestion Management Program (CMP) is to address the impact of local growth on the regional transportation system. The goals of the CMP are summarized below:

- To link local land use decisions with their impacts on regional transportation, and air quality;
- To develop a partnership among transportation decision makers on devising appropriate transportation solutions that include all modes of travel; and
- To provide transportation projects which are eligible to compete for state gas tax funds.

The CMP offers the following mechanisms to meet these goals:

- Tracking and analysis to determine how the regional highway and transit systems are performing;
- Analysis of the impacts of local land use decisions on regional transportation;
- Local implementation of Transportation Demand Management design guidelines that ensure new development includes improvements supportive of transit and TDM;
- Tracking new building activity throughout Los Angeles County; and Implementation of local strategies which benefit the regional transportation system and offset the impact of new development.

## 1.7 Principal Findings

**For Existing (2014) and Existing Plus Project conditions**, the following intersections operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Based on the traffic signal warrants for Existing (2014) traffic conditions, the intersections of Azusa Canyon Road / Los Angeles Street (#1) and Phelan Avenue / Los Angeles Street (#14) both appear to warrant a traffic signal.

As mentioned previously, a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should be noted that even though the intersection of Phelan Avenue / Los Angeles Street (#14) appear to warrant a traffic signal, this intersection is expected to continue operate at acceptable level of service “C” or better with an all-way-stop control through 2035 conditions and consequently a project related significant impact is not anticipated at this location . Therefore, installation of a traffic signal at this location is not recommended

**For Interim Year (2016) Without and With Project conditions**, the intersection of Azusa Canyon Road / Arrow Highway (#4) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Existing and Existing Plus Project Conditions.

**For Long Range (2035) Without and With Project conditions**, the intersection of I-605 SB Off-Ramp / Arrow Highway (#9) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Interim Year (2016) Conditions.

## 1.8 Project Fair Share Calculations

Per City of Irwindale Guidelines, the project shall pay its fair share of improvements to eliminate any of the significant impacts. Based on the intersection analysis results (see Table 5-8), the project is anticipated to contribute additional traffic causing significant impacts up to 2035 conditions, fair share calculation is therefore based on 2035 conditions to address all significant impacts caused by the project.

The project fair share percentages (%) towards the required improvements have also been calculated. Table 6-1 summarizes the 2035 With Project fair share percentages for the proposed project. As shown on Table 6-1, the project contributes approximately 19% of the new traffic at the intersection of Azusa Canyon Road / Arrow Highway (#4) and 17% of the new traffic at the intersection of I-605 SB Off-Ramp / Arrow Highway (#9). In addition, the project will be fully responsible for the intersection improvement at Azusa Canyon Road/Los Angeles Street (#1) to mitigate the project’s direct impact to pre-project conditions.

## 1.9 Recommendations

### 1.9.1 Off-Site Improvements

These improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project conditions, thus reducing the Projects impact to less-than-significant and result in acceptable traffic operations with the addition of project traffic.

Existing plus Project conditions, the following improvements are recommended:

***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

Interim Year (2016) Without and With Project conditions, the following improvements are recommended, in addition to the improvement identified under

***Azusa Canyon Road / Arrow Highway (#4)***

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

Long Range (2035) Without and With Project conditions, the following improvements are recommended, in addition to the improvements identified under Interim Year (2016) conditions:

***I-605 SB Off-Ramp / Arrow Highway (#9)***

- Construct a 2<sup>nd</sup> southbound left turn lane.
  - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

1.9.2 On-Site Circulation Recommendations

The recommended site access driveway improvements for the Project are described below. Construction of on-site and site adjacent improvements shall occur in conjunction with adjacent Project development activity or as needed for Project access purposes.

***Project Driveway / Los Angeles Street (#16)*** – Install a stop control on the southbound approach and construct the intersection with the following geometrics:

- Northbound Approach: N/A
- Southbound Approach: One left turn lane and one right turn lane.
- Eastbound Approach: One shared left-through lane and 2<sup>nd</sup> through lane.
- Westbound Approach: Two through lanes and one defacto right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at the project access point should be reviewed with respect to applicable local jurisdiction's sight distance standards at the time of preparation of final grading, landscape and street improvement plans. If the local jurisdiction does not have sight distance standards, Caltrans Highway Design Manual standards should be used.

THIS PAGE IS INTENTIONALLY LEFT BLANK

## **2.0 PROJECT DESCRIPTION**

---

### **2.1 Location**

The proposed project is located on the northwest corner of Azusa Canyon Road and Los Angeles Street in the City of Irwindale, as previously shown on Exhibit 1-A.

### **2.2 Land Use and Intensity**

The project site is approximately 190 acres in size and is currently zoned for Quarry Overlay – Residential/Commercial land use in the City’s General Plan. The project site is located in an industrial area, with various commercial/industrial, and residential land uses in surrounding areas.

### **2.3 Project Access**

Access on-to the site will be relocated from Olive Street to the southern portion of the property along Los Angeles Street. The new access road will be constructed with a combination of on-site materials and inert fill materials from off-site sources. The access road will ascend from the bottom of the pit along the southern edge of the property to the southeastern corner of the site where it will exit at Los Angeles Street. The new access road will be constructed with a 45-foot wide road bed at a maximum grade of 8 percent. Beginning at Los Angeles Street, the first 200 feet of the access road will be paved. The remaining length of the road will be treated with dust palliatives and watered for dust control and soil stabilization. As shown previously, Exhibit 1-A illustrates the proposed Access for the project.

### **2.4 Phasing and Timing**

The project will be constructed in one phase and expected to become operational in 2016.

## 2.5 Project Trip Distribution

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by Project traffic. Over-the-road haul trucks will proceed approximately 3 miles to United Rock's existing Pit No.2 located at 1245 E Arrow Highway in Irwindale. Trucks will reach this location by exiting the site at Los Angeles Street, turning north onto Azusa Canyon, then proceeding west on Arrow Highway to Pit No.2. From there, a conveyor will move materials to the processing plant (United Rocks Pit No. 4) which is adjacent to Pit No. 2.

The project truck trip outbound distribution pattern is shown on Exhibit 2-A. As presented on Exhibit 2-A, the outbound route from the Olive Pit mining site involves the following roadway segments:

- Los Angeles Street, eastbound from Project driveway to Azusa Canyon Road.
- Azusa Canyon Road, northbound from Los Angeles Street to Arrow Highway.
- Arrow Highway, westbound from Azusa Canyon Road to URP Pit No. 2 Driveway 1.

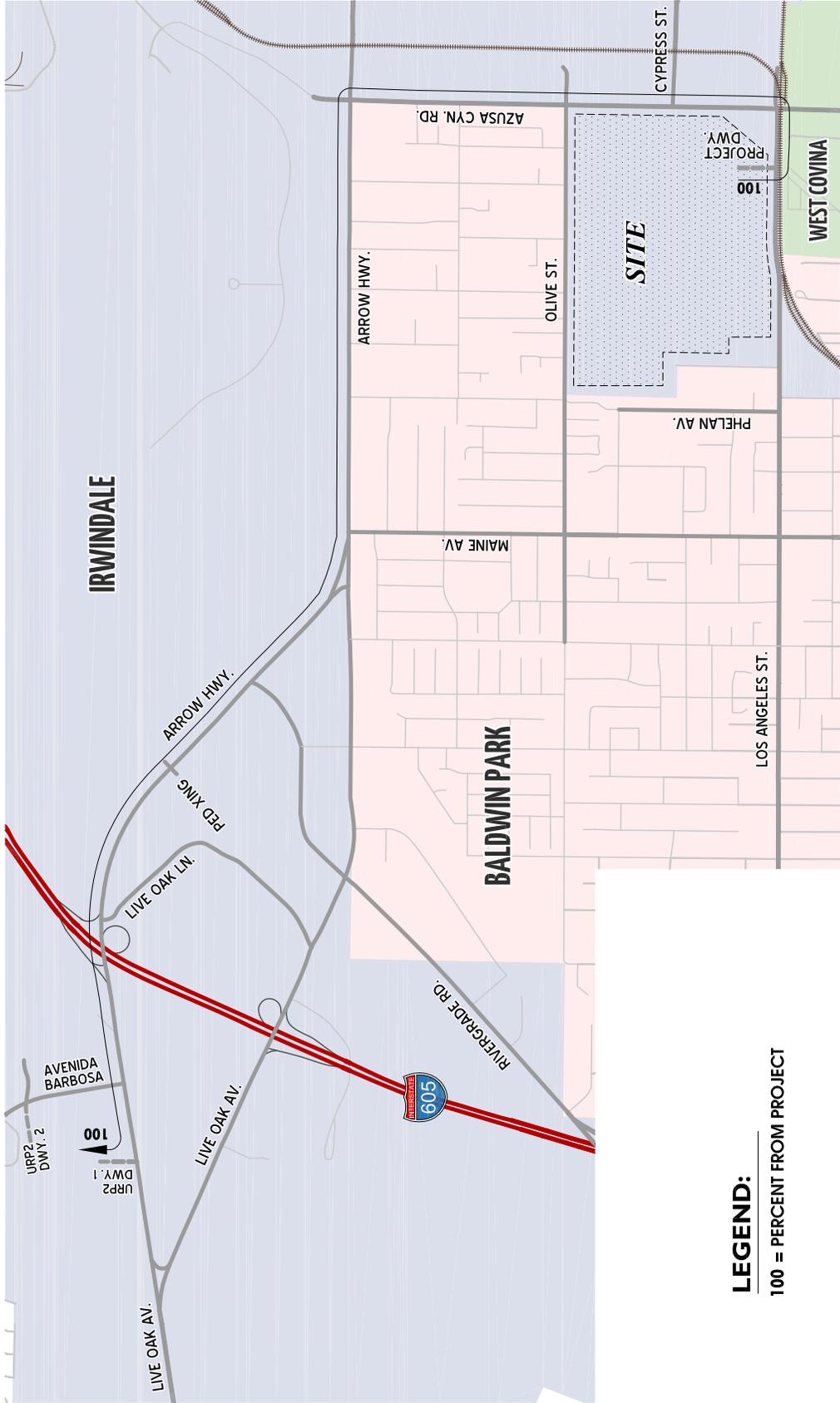
The project truck trip inbound/return distribution pattern is shown on Exhibit 2-B. As presented on Exhibit 2-B, the inbound route from the URP Pit No. 2 to the Olive Pit mining site involves the following roadway segments:

- Avenida Barbosa, southbound from URP Pit No. 2 Driveway to Arrow Highway.
- Arrow Highway, eastbound from Avenida Barbosa to Azusa Canyon Road.
- Azusa Canyon Road, southbound from Arrow Highway to Los Angeles Street.
- Los Angeles Street, westbound from Azusa Canyon Road to Olive Pit mining site Project Driveway.

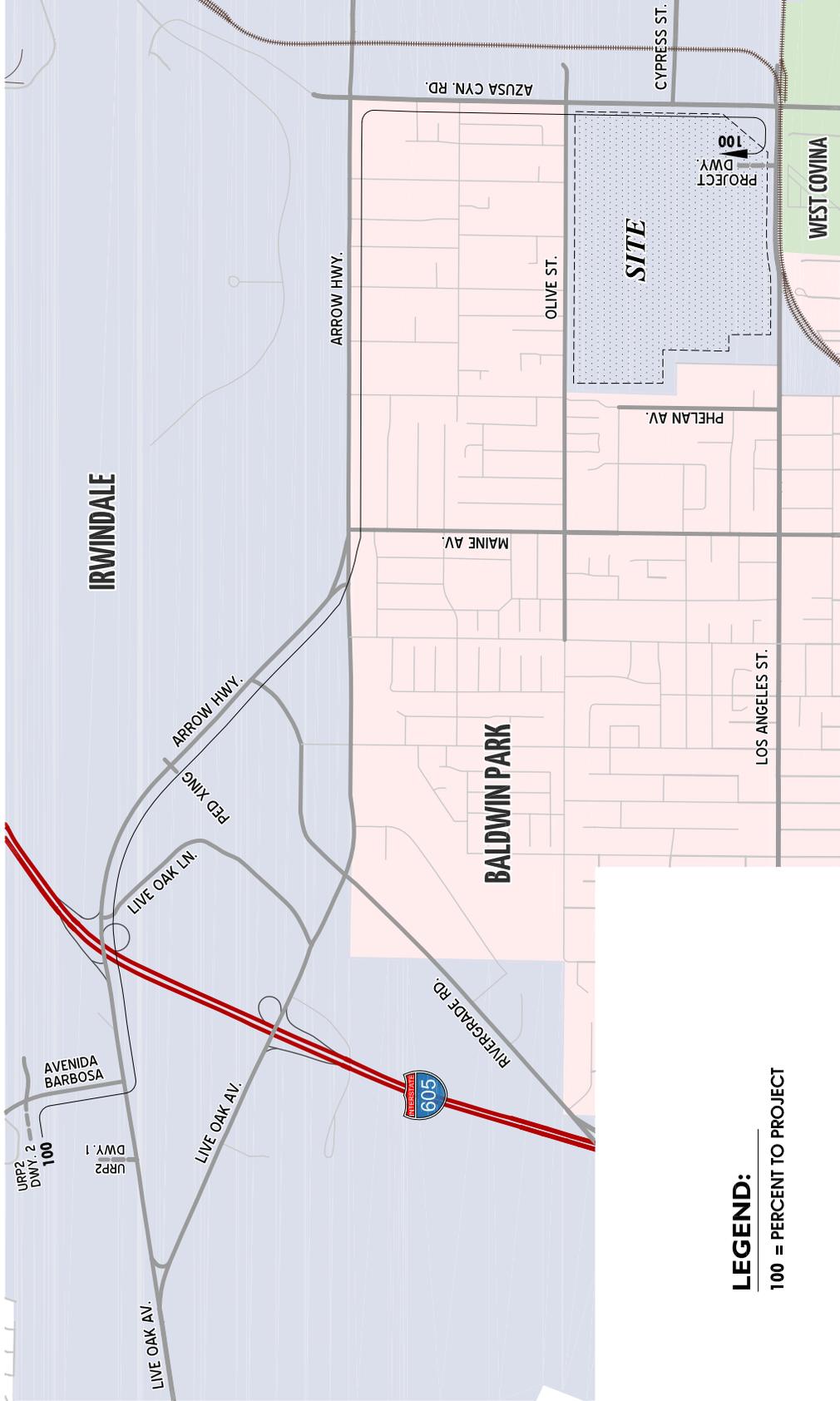
The project's truck route is very specific and will only pass through Los Angeles Street, Azusa Canyon Road, and Arrow Highway as described above.

The project employee/visitor trip distribution is shown on Exhibit 2-C.

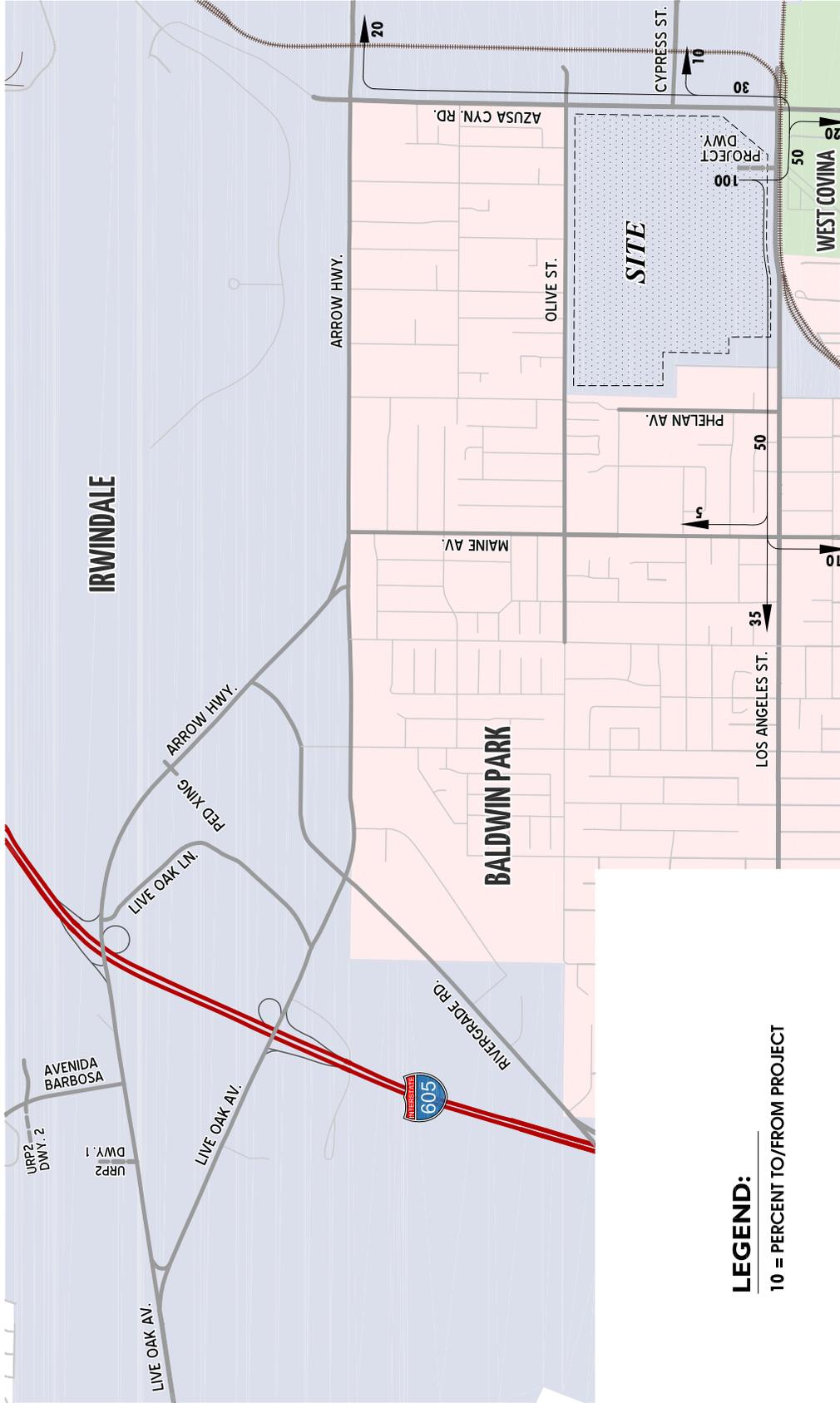
### EXHIBIT 2-A: Truck Trip Distribution (Outbound)



### EXHIBIT 2-B: Truck Trip Distribution (Inbound)



**EXHIBIT 2-C: Employee (Passenger Car) Trip Distribution**



**LEGEND:**  
 10 = PERCENT TO/FROM PROJECT



## 2.6 Project Trip Generation

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

Anticipated truck traffic will be approximately 262 daily truck trips (131 out bound loads). Transportation to the processing plant will be conducted during the hours of 7:00AM-5:00PM. Trucks leaving the Olive Pit site at or near to 5:00PM will be on the roadway system during the typical evening peak period (4:00PM – 6:00PM). Trip Generation estimates for the Project are shown in Table 2-1. Traffic activity levels for Phase 1 reclamation, Phase 2 extraction, and Phase 2 reclamation will generate traffic at a level commensurate to or less than Phase 1 mining operations described previously.

**TABLE 2-1: PROJECT TRIP GENERATION ESTIMATES**

Land Use	AM Peak Hour			PM Peak Hour			Daily
	In	Out	Total	In	Out	Total	
Aggregate Trucks <sup>1</sup>	20	19	39	13	13	26	262
<i>Passenger Car Equivalent (PCE = 3.0)<sup>2</sup></i>	<i>60</i>	<i>57</i>	<i>117</i>	<i>39</i>	<i>39</i>	<i>78</i>	<i>786</i>
Net Truck Trips (PCE)	60	57	117	39	39	78	786
Employees/Visitors (Passenger Car) <sup>3</sup>	12	4	16	6	8	14	80
<b>TOTAL PROJECT TRIPS (PCE)<sup>4</sup></b>	<b>72</b>	<b>61</b>	<b>133</b>	<b>45</b>	<b>47</b>	<b>92</b>	<b>866</b>

<sup>1</sup> Daily truck trips are based on the number of trucks estimated for 1 million tons per year.

<sup>2</sup> Passenger Car Equivalent (PCE) factor of 3.0 is assumed for aggregate trucks.

<sup>3</sup> Daily quantities assume 2 trips per employee/visitor. AM and PM peak hour to daily relationships have been based on ITE Land Use Code "140 EMP" (Manufacturing).

<sup>4</sup> TOTAL PROJECT TRIPS (PCE) = "Net Truck Trips (PCE)" + "Employees/Visitors (Passenger Car)"

As shown on Table 2-1, the Project is anticipated to generate a net total of approximately 866 passenger car equivalent (PCE) trip-ends per day with 133 PCE AM peak hour trips and 92 PCE PM peak hour trips.

## 2.7 Project Only Volumes

The project only related average daily traffic (ADT) volumes are shown on Exhibit 2-D. Similarly, Exhibit 2-E and Exhibit 2-F present the project only AM and PM peak hour volumes, respectively. As shown on these exhibits, Los Angeles Street (immediately

EXHIBIT 2-D: Project Only Average Daily Traffic

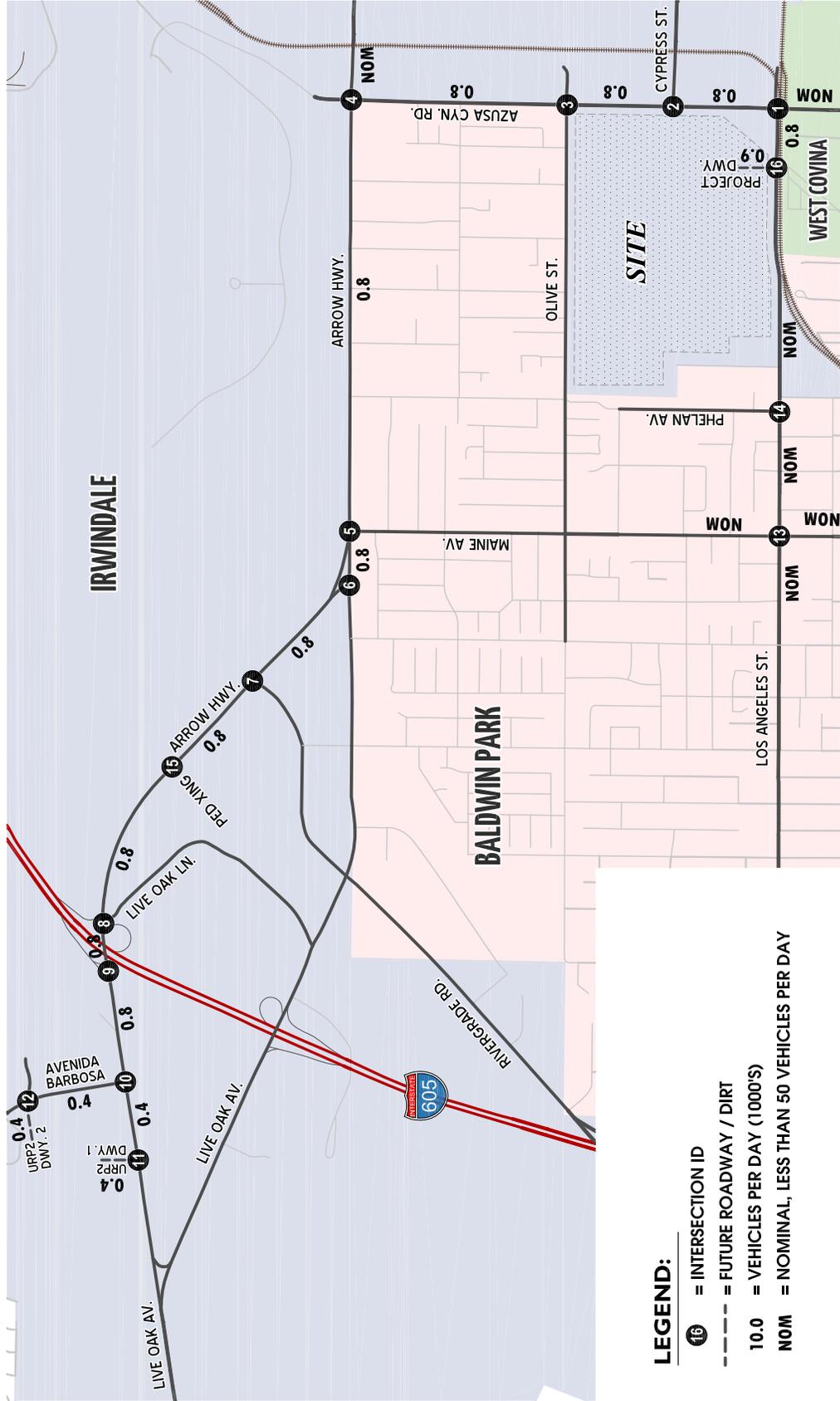
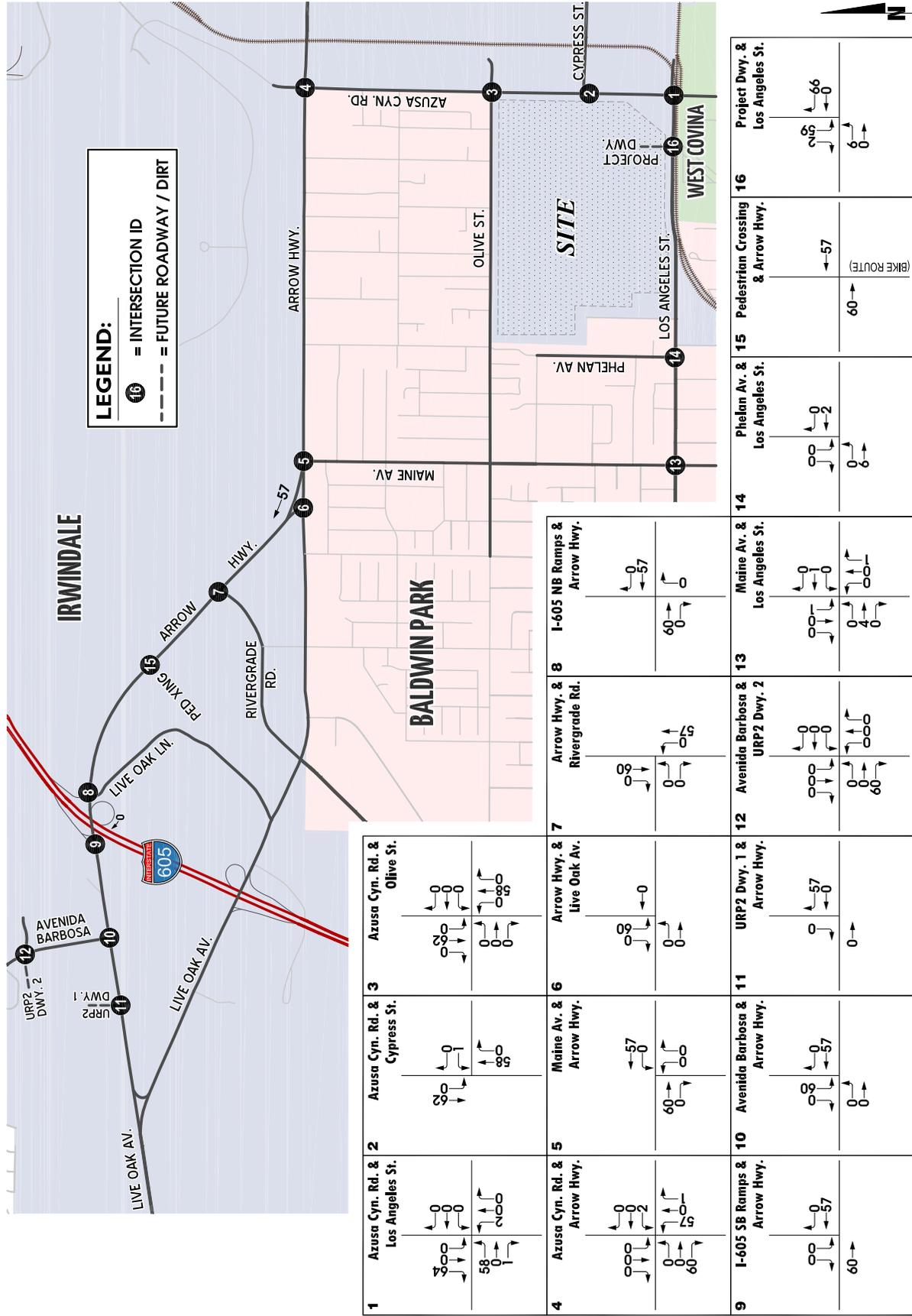


EXHIBIT 2-E: Project Only AM Peak Hour Intersection Volumes

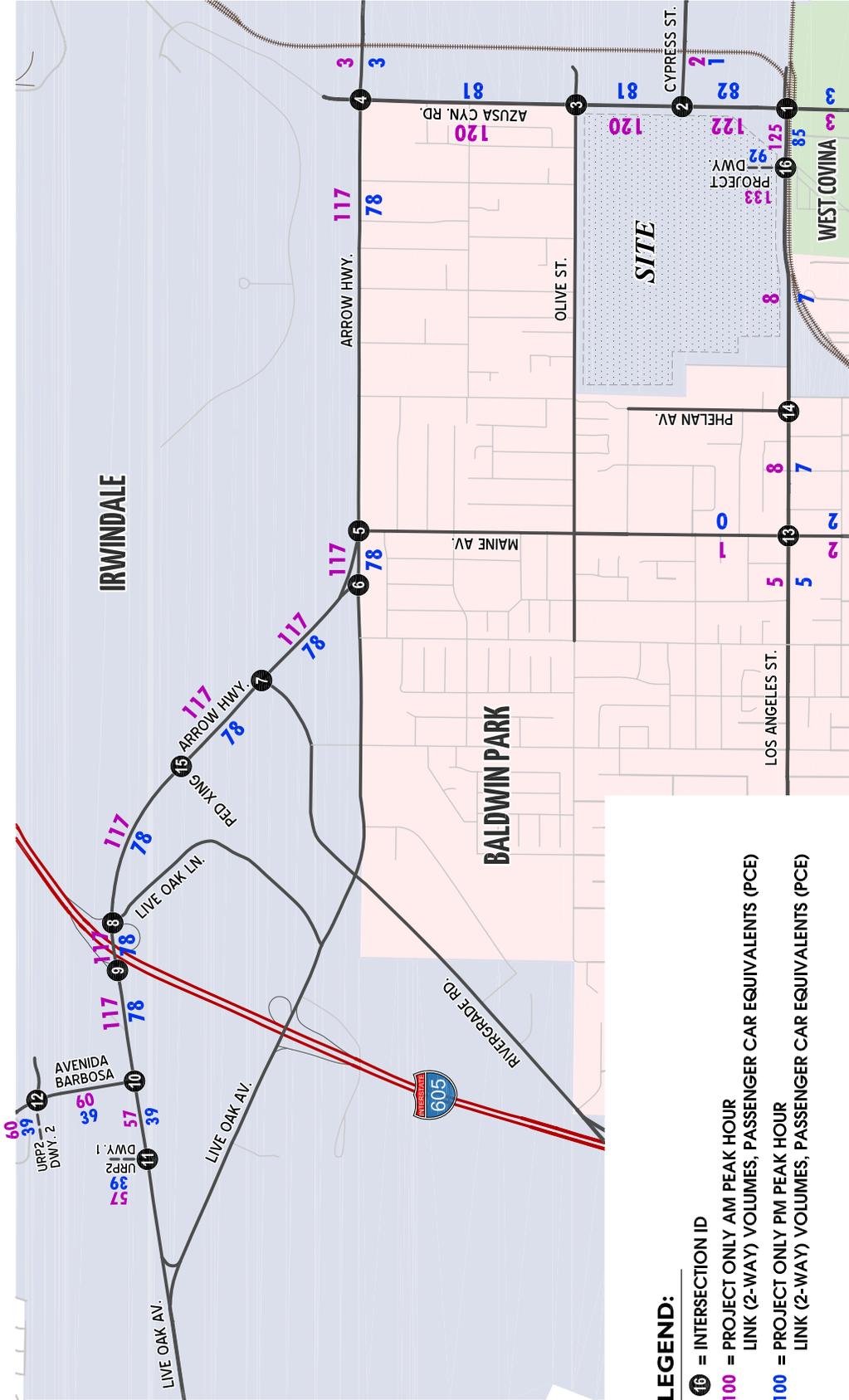




east of Project Driveway), Azusa Canyon Road, and Arrow Highway are projected to carry the most project related traffic with approximately 800 vehicles per day (vpd).

“Project only” peak hour 2-way (link) traffic volumes are presented on Exhibit 2-G. As shown on Exhibit 2-G, the project is anticipated to generate the most peak hour trips along Los Angeles Street (immediately east of Project Driveway), Azusa Canyon Road, and Arrow Highway. The 117 AM and 78 PM trips along Arrow Highway is reflective of the truck trips traveling to URP2 location. By comparing Exhibit 2-G and Exhibit ES-B (intersection analysis location map), all major intersections projected to carry 50 (or more) peak hour trips have been evaluated in this traffic study.

EXHIBIT 2-G: Project Only Peak Hour Link Volumes



THIS PAGE IS INTENTIONALLY LEFT BLANK

## 3.0 AREA CONDITIONS

---

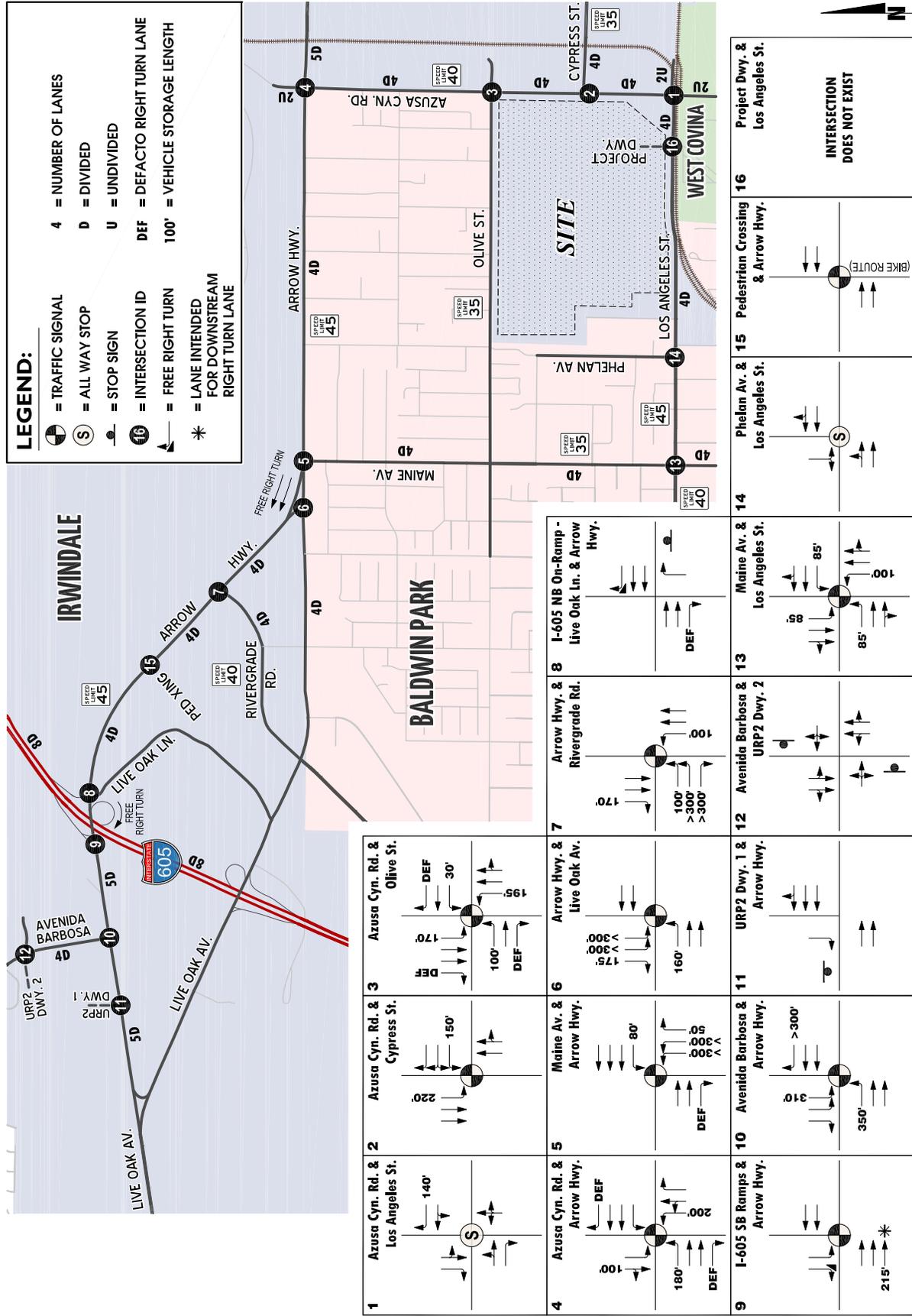
This section of the report summarizes existing roadway and traffic conditions in the study area. All major intersections anticipated to carry 50 (or more) peak hour trips (passenger car equivalents) have been evaluated in this traffic study. The existing number of lanes and traffic control devices for existing intersections are presented, along with existing traffic count data collected for this study. This data was used to analyze existing traffic operations in the study area. Existing plans for roadway improvements are also described in this section.

### 3.1 Existing Roadway System Circulation Network

The study area includes a total of sixteen (16) existing and future intersections as shown on Exhibit ES-B. Of these sixteen (16) intersections, the existing study area circulation network includes fifteen (15) intersections analysis locations shown on Table ES-1. The last intersection in the study area is future planned intersection (Project driveway) that does not currently exist.

Exhibit 3-A identifies the existing number of through lanes and intersection controls for the study area roadways. As shown on Exhibit 3-A, Los Angeles Street (west of Azusa Canyon Road), Azusa Canyon Road (north of Los Angeles Street), and Arrow Highway (between Azusa Canyon Road and I-605 Ramps) exist today as four (4) lane divided roadways. Arrow Highway, east of Azusa Canyon Road, exists as a five (5) lane divided roadway. The speed limit on both Los Angeles Street and Arrow Highway is currently 45 miles per hour (mph), while Azusa Canyon Road speed limit is currently 40 miles per hour (mph). As also shown on Exhibit 3-A, most of the existing study area intersections are signalized, with the exception of Azusa Canyon Road/Los Angeles Street (#1), I-605 Freeway Northbound Ramps/Live Oak Lane (private industrial road) and Arrow Highway (#8), URP2 Driveway 1/Arrow Highway (#11), Avenida Barbosa/URP2 Driveway 2 (Private) (#12), and Phelan Avenue/Los Angeles Street (#14).

### EXHIBIT 3-A: Existing Number of Lanes and Intersection Controls



### 3.2 Transit Service

The study area is currently served by the Foothill Transit Agency with bus service along Live Oak Avenue via Route 492 and Arrow Highway via Route 272. Portions of Olive Street and Maine Avenue, within the study area, are also served by the Baldwin Park Transit Agency via Teal Line route.

Exhibit 3-B illustrates the Foothill Transit Agency bus routes for the study area.

### 3.3 Existing Pedestrian and Bicycle Facilities

Existing pedestrian and bicycle facilities (e.g., crosswalks, sidewalks, bike lanes, etc.) within the study area are shown on Exhibit 3-C. As shown in Exhibit 3-C, the only existing bike path within the study area is located on the riverbed.

### 3.4 Existing Daily Traffic Volumes

Exhibit 3-D depicts the current average daily traffic (ADT) volumes in the study area. The existing data shown on Exhibit 3-D has been based on May 2014 traffic data (see Appendix "B"). The traffic count data was collected while school was in session.

As shown on Exhibit 3-D, the highest daily traffic volumes in the study area occur on Arrow Highway, west of Maine Avenue, which currently carries approximately 43,900 vehicles per day (VPD).

### 3.5 Existing Peak Hour Traffic Volumes

Existing intersection level of service calculations are based upon manual AM and PM peak period turning movement counts conducted on May 2014. Turning Movement traffic count worksheets are included in Appendix "C". The AM peak hour traffic volumes were determined by counting the two hour period between 7 - 9 AM in the morning. Similarly, the PM peak hour traffic volumes were identified by counting the two hour period from 4 - 6 PM in the evening. The highest four consecutive 15-minute periods traffic counts have

EXHIBIT 3-B: Existing Transit Services

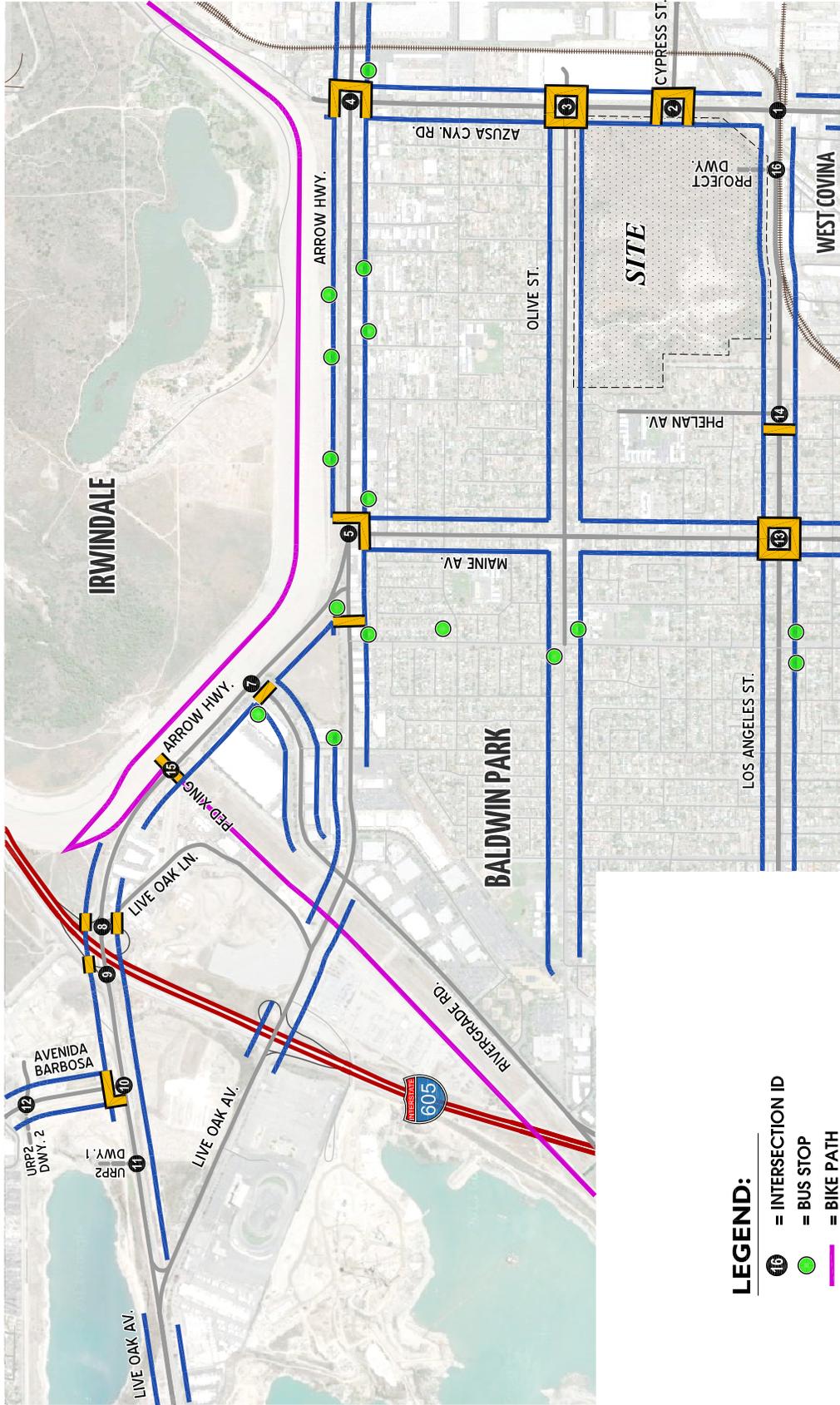


**LEGEND:**

- = INTERSECTION ID
- = FOOTHILL TRANSIT ROUTE 272
- = FOOTHILL TRANSIT ROUTE 492
- = BALDWIN PARK TRANSIT TEAL LINE ROUTE
- = FOOTHILL TRANSIT BUS STOP
- = BALDWIN PARK TRANSIT BUS STOP



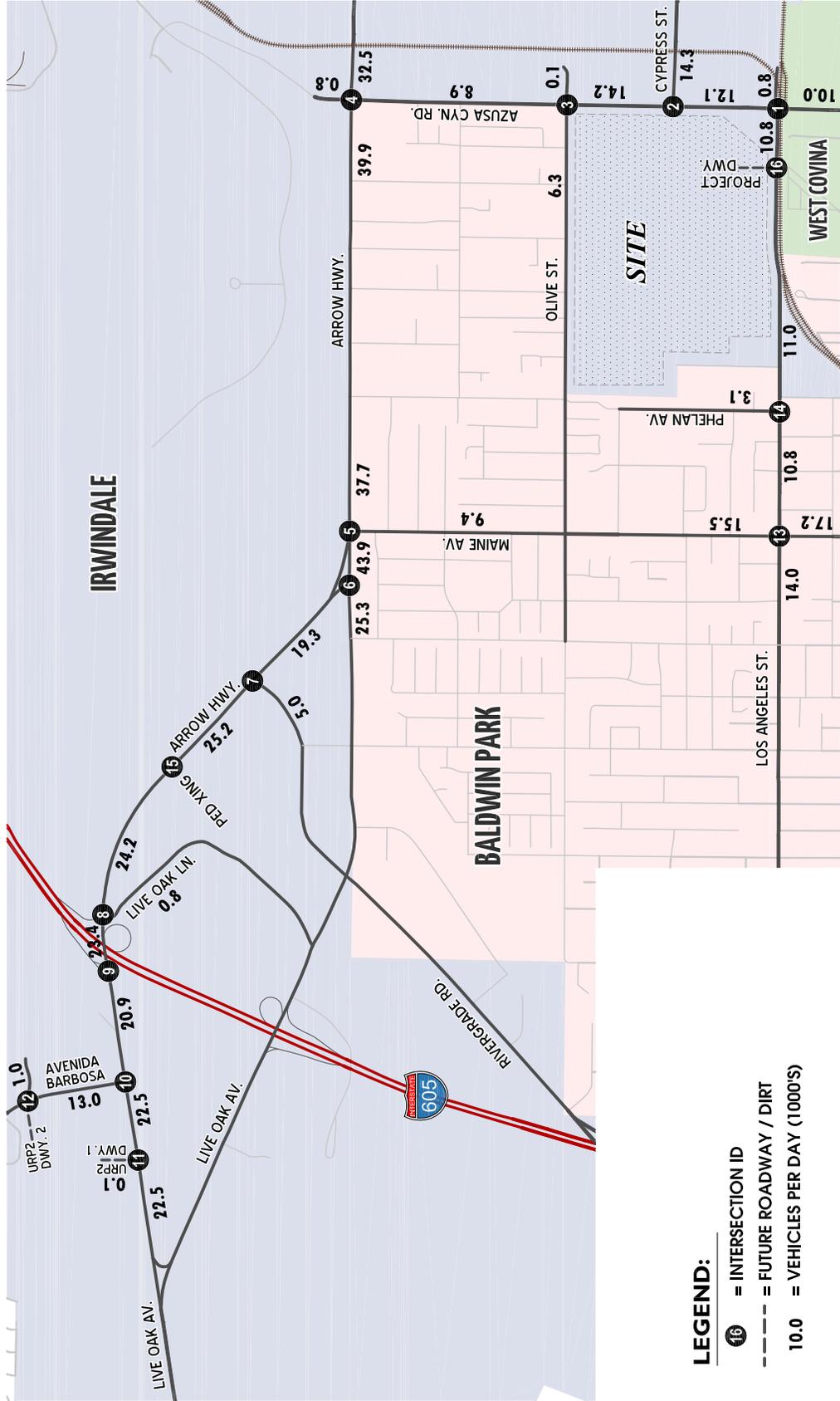
EXHIBIT 3-C: Existing Pedestrian and Bicycle Facilities



- LEGEND:**
- 16 = INTERSECTION ID
  - = BUS STOP
  - = BIKE PATH
  - = SIDEWALK
  - = CROSSWALK



EXHIBIT 3-D: Existing (2014) PCE Average Daily Traffic



**LEGEND:**  
 16 = INTERSECTION ID  
 --- = FUTURE ROADWAY / DIRT  
 10.0 = VEHICLES PER DAY (1000'S)



been used for analysis. The count includes the vehicle classification as shown below per the City of Irwindale traffic study guidelines:

- passenger cars
- buses/recreational vehicles
- 3 axle trucks
- 4 or more axle trucks

To represent the impact large trucks, buses and recreational vehicles have on traffic flow; trucks are converted into passenger car equivalents (PCEs). By their size alone, these vehicles occupy the same space as two or more passenger cars. In addition, the time it takes for them to accelerate and decelerate is also much longer than for passenger cars, and varies depending on the type of vehicle and number of axles. For the purpose of this analysis, a PCE factor of 1.5 will be applied to 2-axle trucks, 2.0 for 3-axle trucks and 3.0 for 4+-axle trucks to estimate each turning movement.

The overall existing count volumes illustrated on the exhibits and used for the analysis for the study are calculated passenger car equivalent (PCE) volumes. These raw PCE volumes are then reviewed for flow conservation between closely spaced intersections and adjusted to ensure reasonable flow conservation if necessary was also performed.

The final Existing (2014) AM and PM Peak hour volumes are shown on Exhibit 3-E and Exhibit 3-F, respectively.

### 3.6 Existing (2014) Traffic Conditions

The existing conditions analyses include intersection delay and level of service operations. The analysis methodologies were described previously in Section 1.

EXHIBIT 3-E: Existing (2014) PCE AM Peak Hour Intersection Volumes

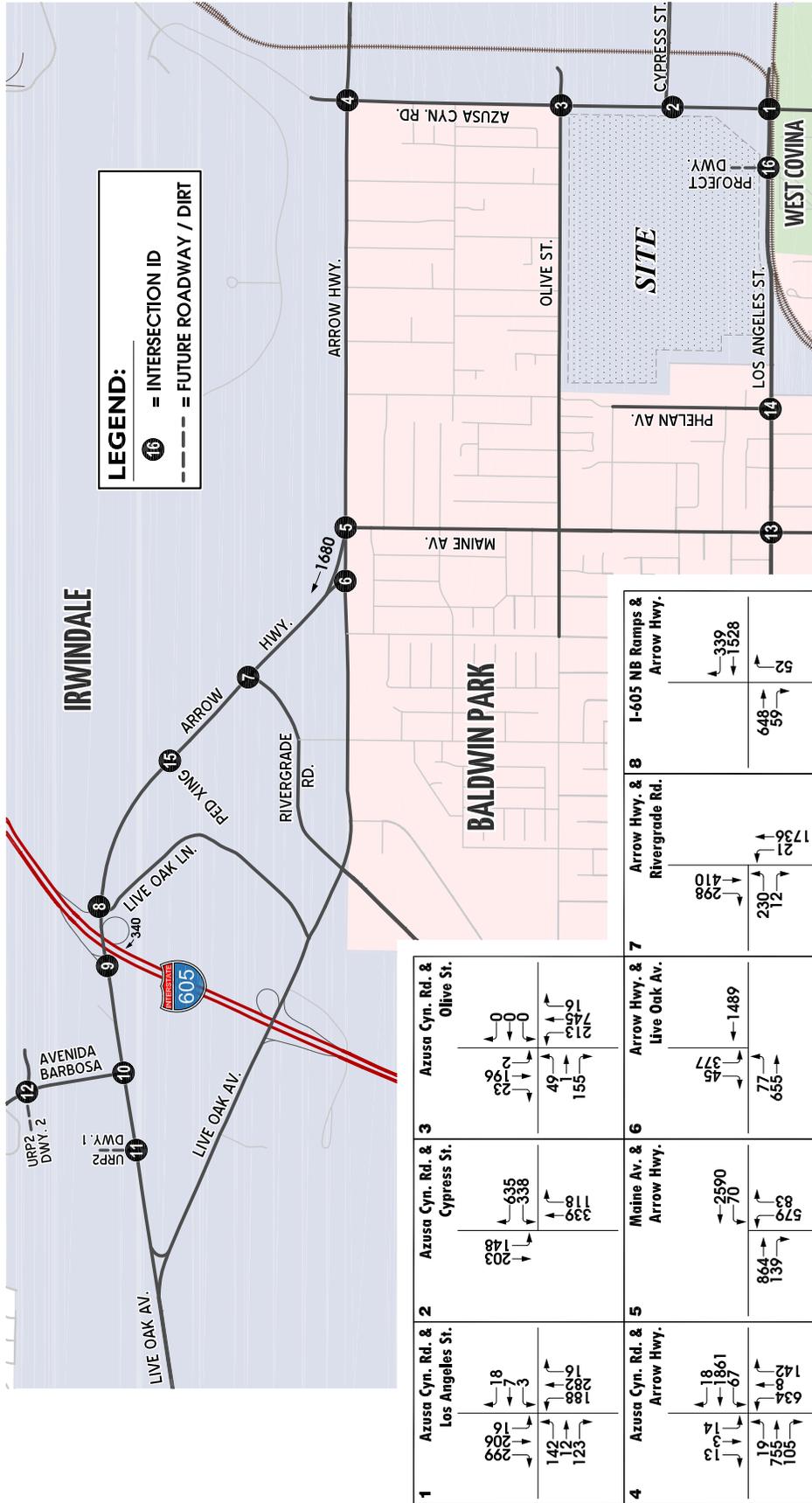
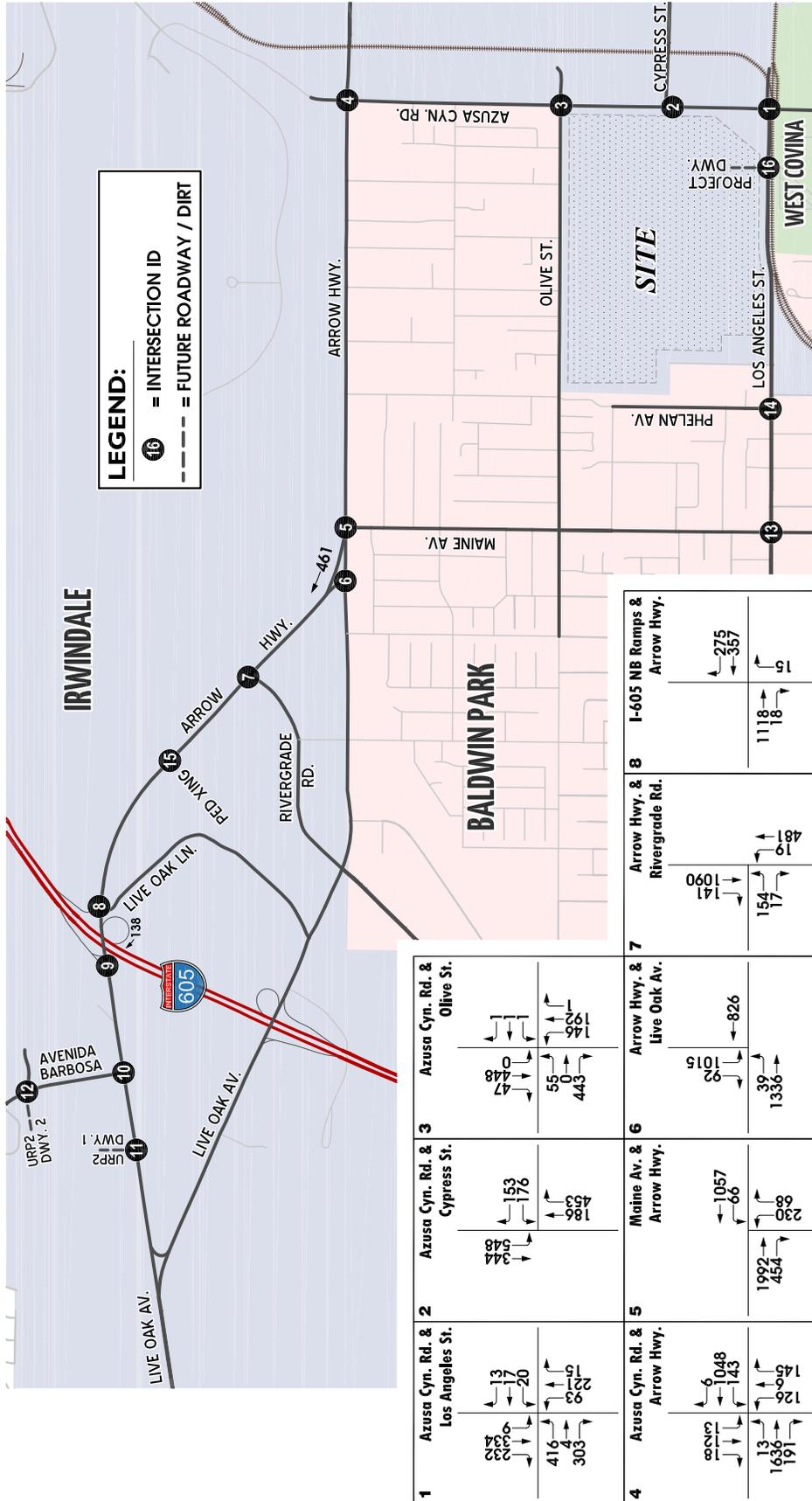


EXHIBIT 3-F: Existing (2014) PCE PM Peak Hour Intersection Volumes



**LEGEND:**  
 16 = INTERSECTION ID  
 - - - - = FUTURE ROADWAY / DIRT

Intersection ID	Intersection Description	Volume Data
1	Azusa Cyn. Rd. & Los Angeles St.	523, 233, 13, 416, 303, 23, 20, 13, 17, 20, 13, 20, 13, 20, 13, 20
2	Azusa Cyn. Rd. & Cypress St.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
3	Azusa Cyn. Rd. & Olive St.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
4	Azusa Cyn. Rd. & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
5	Maine Av. & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
6	Arrow Hwy. & Live Oak Av.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
7	Arrow Hwy. & Rivergrade Rd.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
8	I-605 NB Ramps & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
9	I-605 SB Ramps & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
10	Avenida Barbosa & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
11	URP2 Dwy. 1 & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
12	Avenida Barbosa & URP2 Dwy. 2	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
13	Maine Av. & Los Angeles St.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
14	Phelan Av. & Los Angeles St.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
15	Pedestrian Crossing & Arrow Hwy.	153, 176, 18, 236, 548, 1992, 454, 230, 880, 1057, 66, 39, 1336, 1992, 454, 230, 880, 1057, 66, 39, 1336
16	Project Dwy. & Los Angeles St.	INTERSECTION DOES NOT EXIST



### 3.6.1 Existing Intersection Delay Analysis

Existing (2014) peak hour traffic operations have been evaluated for study area intersections. The results of this analysis are summarized in Table 3-1, along with the existing intersection geometrics and traffic control devices at each analysis location. The supporting HCM delay and ICU calculation worksheets are provided as Appendix “D”.

For Existing (2014) conditions, the following study area intersection currently operates at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Even though the ICU results show that intersection of Azusa Canyon Road / Arrow Highway (#4) operates at LOS “E” with 0.92 v/c during the AM peak hour under Existing (2014) conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). It should be noted that the City of Irwindale (local lead agency) Policy Guidelines states under Section V-B that the traffic study shall identify and analyze all the impacts to the operational conditions (LOS) of the transportation facilities in the project in accordance with the HCM methodology.

Therefore, the intersection delay based on the HCM methodology is primarily utilized to determine intersection deficiencies and significant impacts. The v/c ratio is included because the City’s Policy Guidelines also indicate that both delay and v/c ratio be presented.

HCM results present a more accurate representation of the intersection operational level. Unlike the ICU methodology, HCM results take into consideration more than just peak hour volumes and lane capacities on intersection approach legs.

**TABLE 3-1**

**EXISTING (2014) CONDITIONS  
INTERSECTIONS ANALYSIS SUMMARY**

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R								
1	Azusa Cyn. Rd. / Los Angeles St.	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	25.6	40.5	D	<b>E</b>	NA	NA	NA	NA
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	25.6	24.8	C	C	0.43	0.58	A	A
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	19.0	B	B	0.39	0.30	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	50.6	48.5	D	D	0.92	0.75	E	C
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	16.2	11.4	B	B	0.76	0.80	C	C
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	10.1	22.9	B	C	0.59	0.74	A	C
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.4	A	A	0.65	0.39	B	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.0	13.1	B	B	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy. - LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	15.1	7.4	B	A	0.84	0.42	D	A
		TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.84	0.48	D	A
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	26.8	22.1	C	C	0.73	0.44	C	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.2	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) <sup>6</sup> - URP2 Dwy. 2 (eastbound approach) <sup>7</sup> - Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	2.7	0.2	A	A	NA	NA	NA	NA
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	41.0	15.4	<b>E</b>	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.5	24.9	C	C	0.52	0.61	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.8	15.9	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.61	0.38	B	A
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST												-	-	-	-	-	-	-	-

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on average delay (unsignalized intersection).

<sup>7</sup> LOS based on the minor approach operating condition (unsignalized intersection).

**BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

HCM data inputs include turning movements volumes, lane geometries, signal phasing, signal timing, lane widths, heavy vehicles, lane utilization, left turns, right turns, and pedestrian activity affecting turn movements.

### 3.6.2 Existing Traffic Signal Warrant Analysis

Based on the traffic signal warrants for Existing (2014) traffic conditions, the intersections of Azusa Canyon Road / Los Angeles Street (#1) and Phelan Avenue / Los Angeles Street (#14) both appear to warrant a traffic signal (see Appendix “E”).

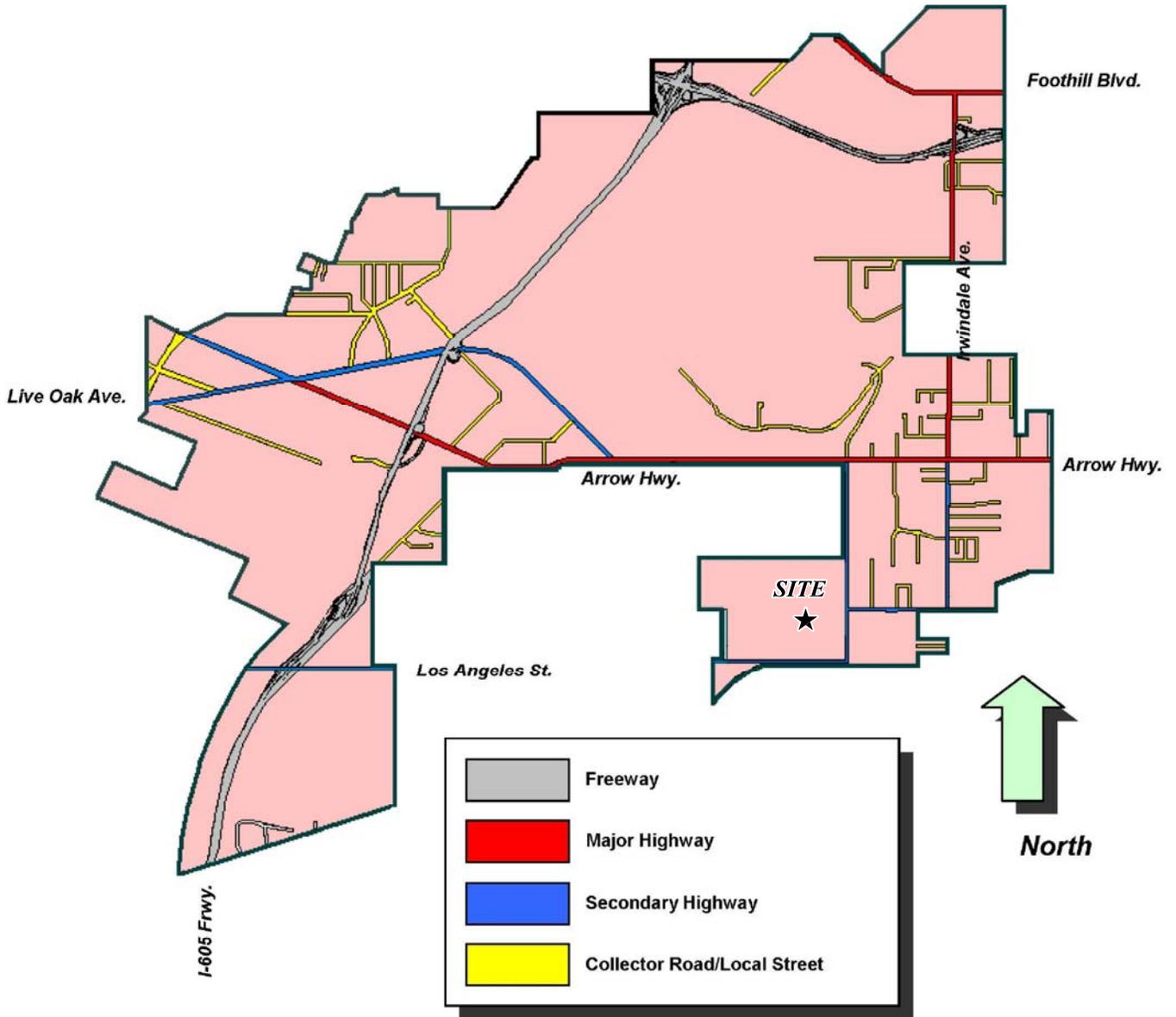
As mentioned previously, a signal warrant defines the minimum condition under which the installation of a traffic signal might be warranted. Meeting this threshold condition does not require that a traffic control signal be installed at a particular location, but rather, that other traffic factors and conditions be evaluated in order to determine whether the signal is truly justified. It should be noted that even though the intersection of Phelan Avenue / Los Angeles Street (#14) appear to warrant a traffic signal, this intersection is expected to continue operate at acceptable level of service “C” or better with an all-way-stop control through 2035 conditions. Therefore, installation of a traffic signal at this location is not recommended.

### 3.7 Planned Transportation Improvements and Relationships to General Plan

The City of Irwindale roadway classifications and typical roadway cross-sections are illustrated on Exhibit 3-G and Exhibit 3-H, respectively. These exhibits show the nature of the roadways in the vicinity of the proposed site and how access will be provided to the surrounding areas.

The County of Los Angeles roadway classifications and typical roadway cross-sections are illustrated on Exhibit 3-I and 3-J, respectively.

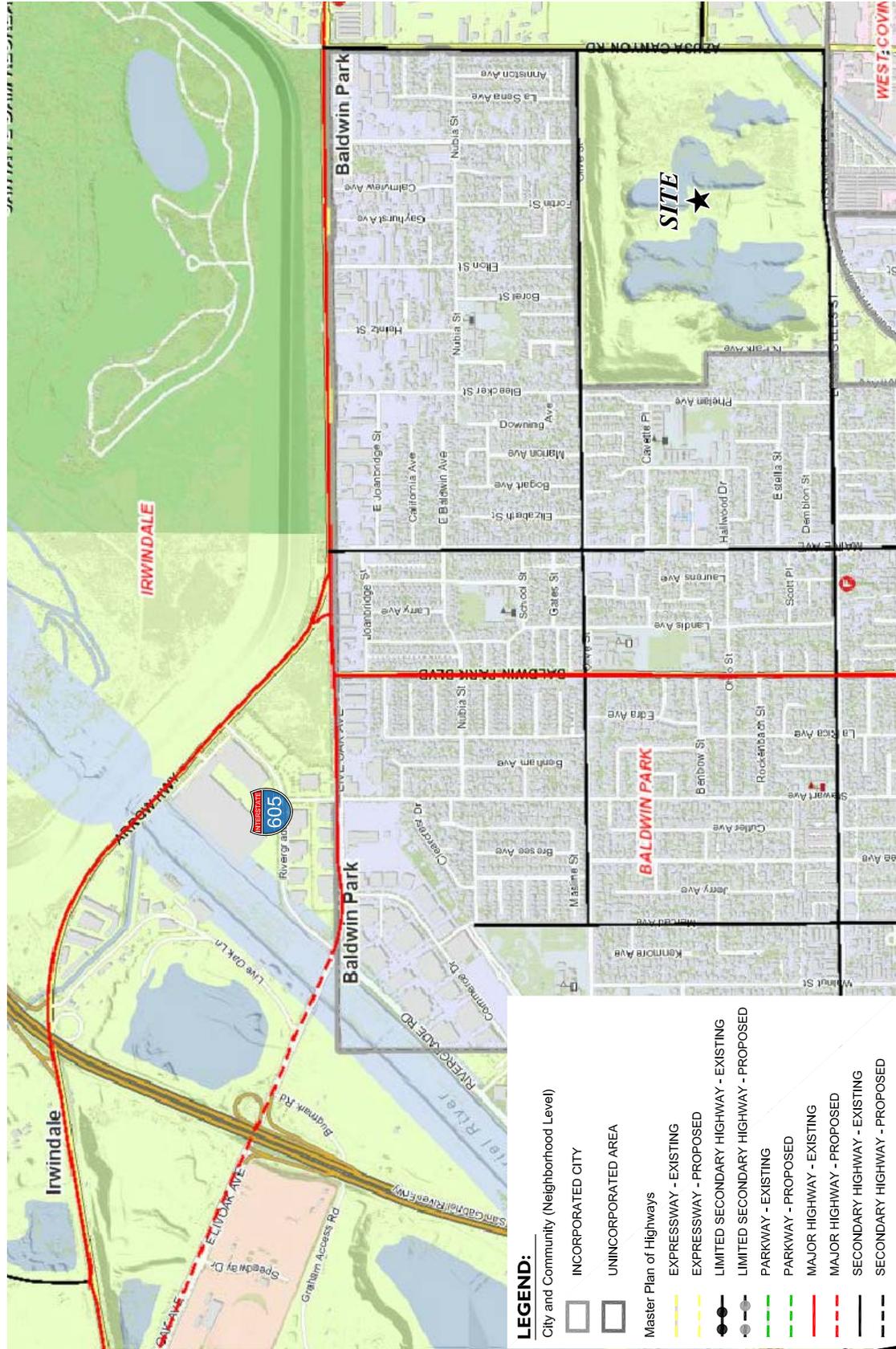
EXHIBIT 3-G: CITY OF Irwindale General Plan Circulation Element



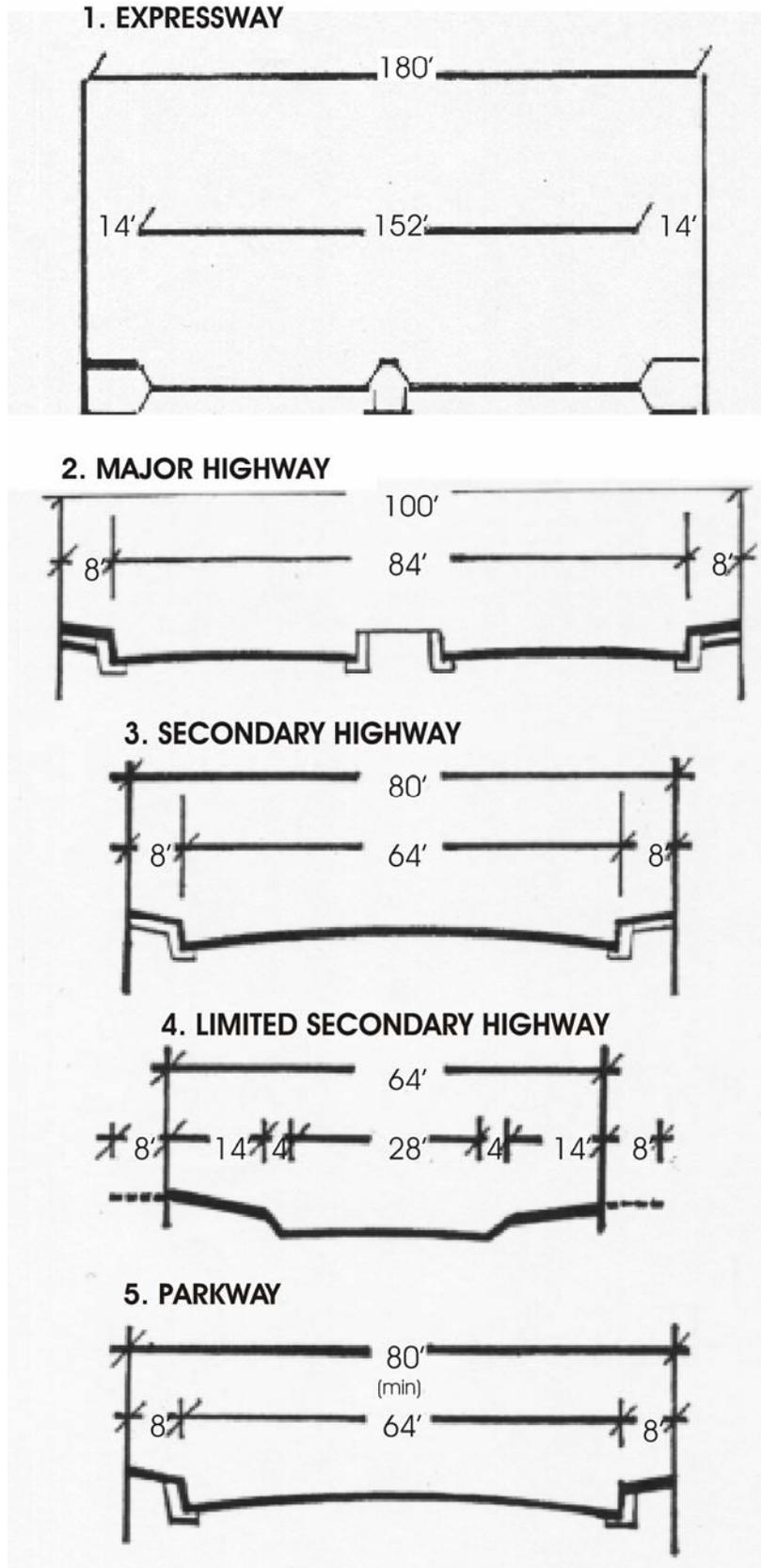
**EXHIBIT 3-H: CITY OF Irwindale General Plan Roadway Cross-Sections**

<b>Table 4-10 Roadway Classification Standards</b>				
	<b>Major Highways</b>	<b>Secondary Highways</b>	<b>Collector Roads</b>	<b>Local Streets</b>
Travel Lanes	4-6 (divided)	2-4 lanes (Undivided)	2 lanes	2 lanes
Estimated Daily Capacity	40,400 to 53,000 vehicles/day	10,000 to 30,000 vehicles/day	Up to 10,000 vehicles/day	2,000 or less vehicles/day
ROW width	100 ft.	80 ft.	60 ft.	60 ft.
Pavement Width	84 ft.	64 ft.	40 ft.	40 ft.
Note: Estimated daily capacity for LOS expressed in vehicles/day				

EXHIBIT 3-1: County of Los Angeles General Plan Circulation Element



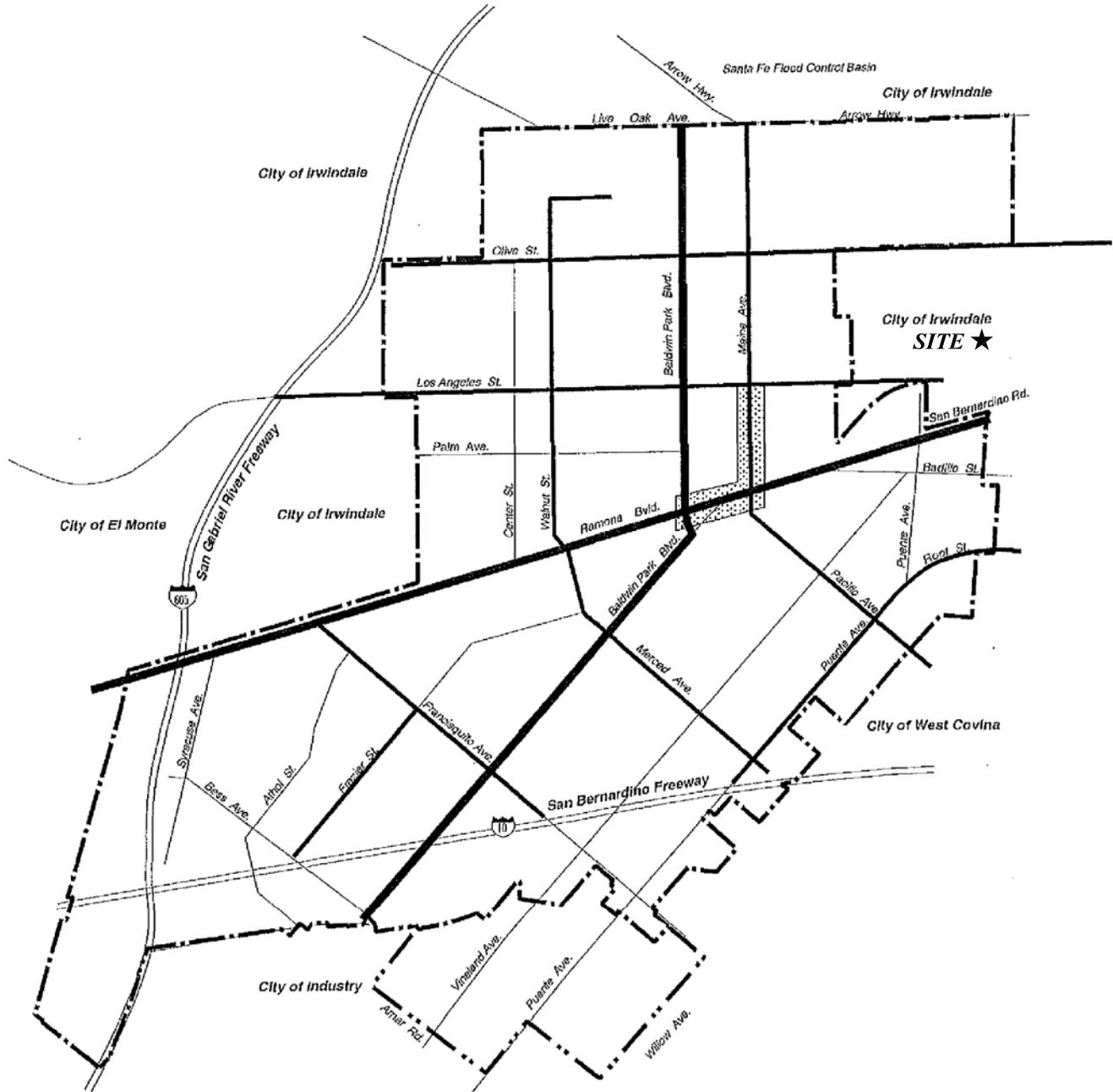
**EXHIBIT 3-J: County of Los Angeles General Plan Roadway Cross-Sections**



The City of Baldwin Park roadway classifications and typical roadway cross-sections are illustrated on Exhibit 3-K and 3-L, respectively. As shown on Exhibit 3-K, Baldwin Park Boulevard is classified as an Arterial in the study area.

Exhibit 3-M illustrates the City of Irwindale truck routes. As shown on Exhibit 3-M, Arrow Highway and Live Oak Avenue are designated truck routes, as is Irwindale Avenue. Local truck access is also allowed on Los Angeles Street, Azusa Canyon Road, and the other local streets serving industrial uses in the study area.

**EXHIBIT 3-K: CITY OF Baldwin Park General Plan Circulation Element**



SOURCE: BALDWIN PARK 2020 GENERAL PLAN

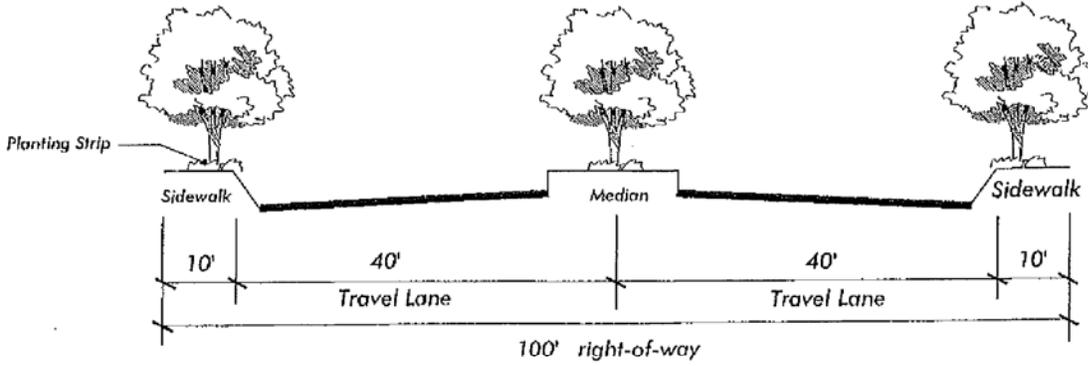
**LEGEND:**

-  City Boundary
-  Sphere of Influence
-  Arterial
-  Collector/Industrial
-  Special Study Area

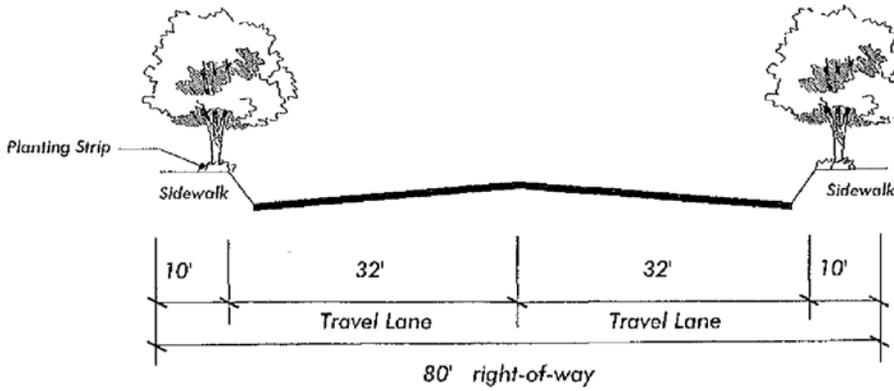


**EXHIBIT 3-L: CITY OF Baldwin Park General Plan Roadway Cross-Sections**

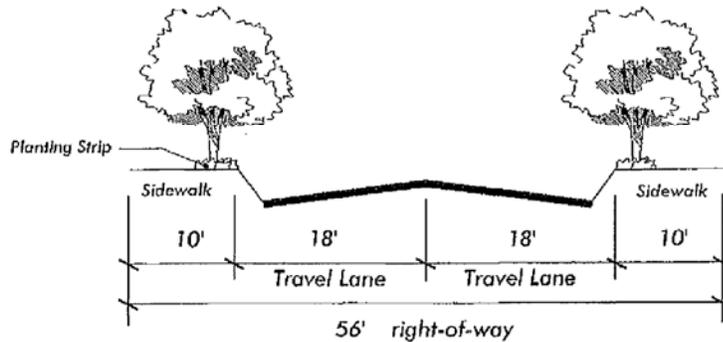
**Arterial Street: 100' right-of-way**



**Collector / Industrial: 80' right-of-way**



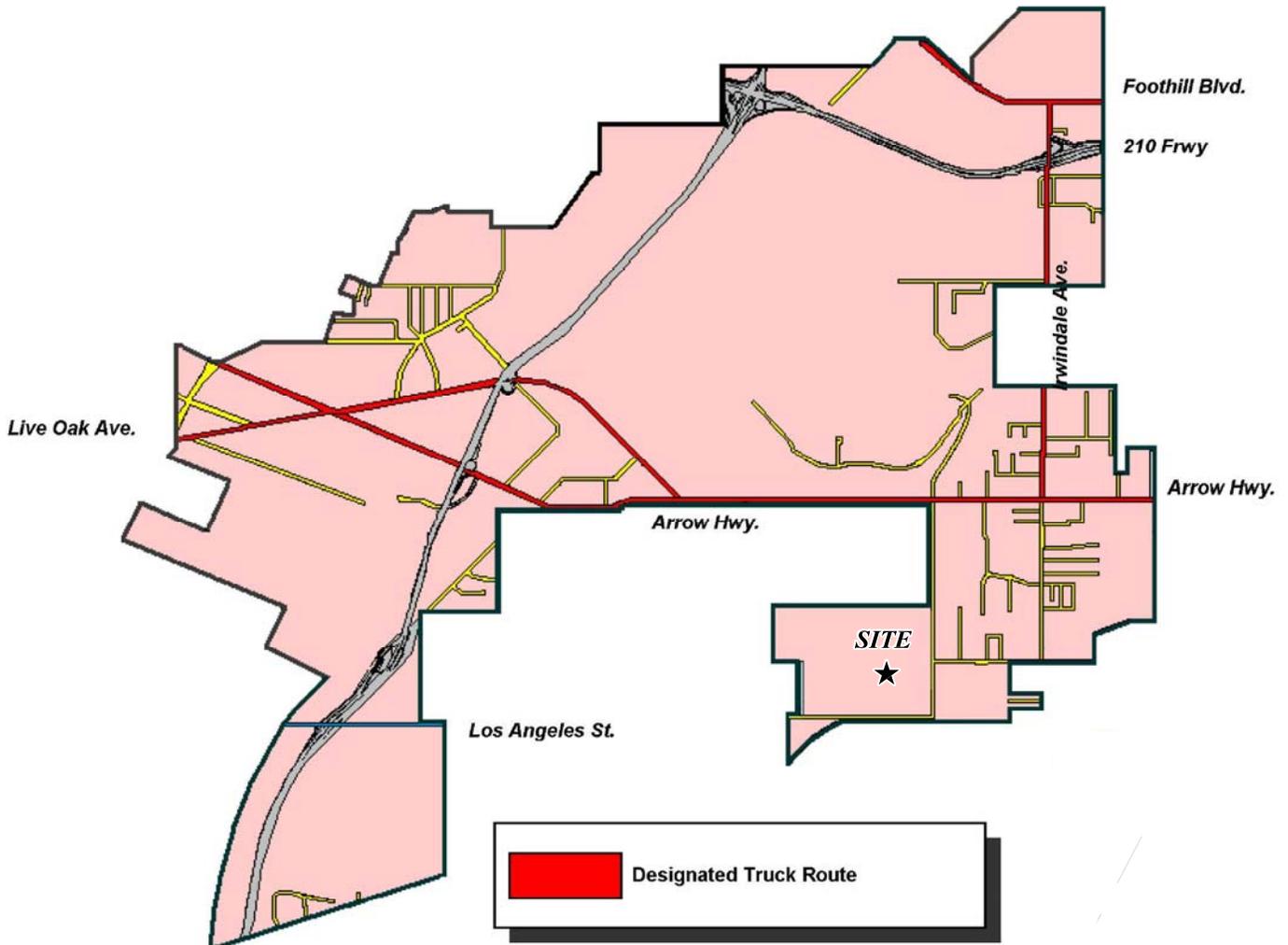
**Residential: 60' right-of-way**



Note: Right-of-way widths represent maximums. City reserves the right to develop narrower streets consistent with land use goals for pedestrian districts and within residential subdivisions.

SOURCE: BALDWIN PARK 2020 GENERAL PLAN

**EXHIBIT 3-M: CITY OF Irwindale Truck Routes**



## 4.0 FUTURE TRAFFIC VOLUMES

---

This section of the report discusses the volume calculation methodology utilized to forecast the future traffic volumes for the following scenarios:

- Existing (2014) Conditions
- Existing Plus Project Conditions
- Interim Year (2016) Conditions Without and With the Project
- Long Range (2035) Conditions Without and With the Project

### 4.1 Existing Plus Project

For Existing Plus Project conditions, project only traffic volumes were added to the existing (2013) traffic volumes (presented in Section 3 of this report). Exhibit 4-A, 4-B, and 4-C present the Existing Plus Project ADT, AM peak hour, and PM peak hour traffic volumes respectively.

### 4.2 Interim Year (2016) Without Project

For Interim Year (2016) Without Project conditions, an ambient growth rate of 2.0% per year (consistent with City of Irwindale traffic study guidelines) was applied to the existing (2014) for two (2) years (a total background growth of 4.04%) in addition to the cumulative project / other development data. Other cumulative development has been obtained from the City of Irwindale and other nearby cities and grouped into twelve (12) traffic analysis zone (TAZ) locations. The TAZ locations of the anticipated cumulative development projects are shown on Exhibit 4-D. The following projects have been identified by the various jurisdictions:

EXHIBIT 4-A: Existing Plus Project Average Daily Traffic

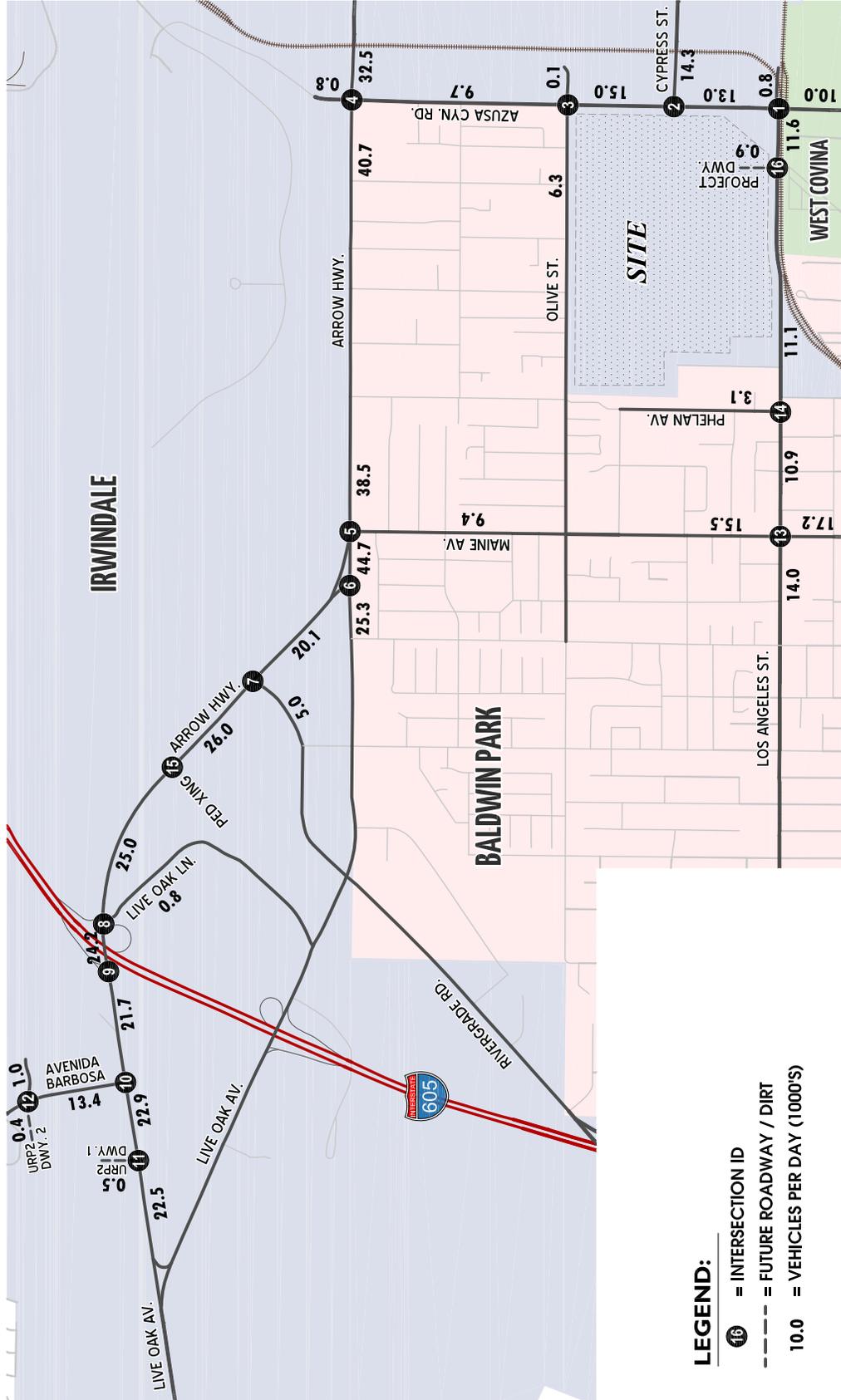
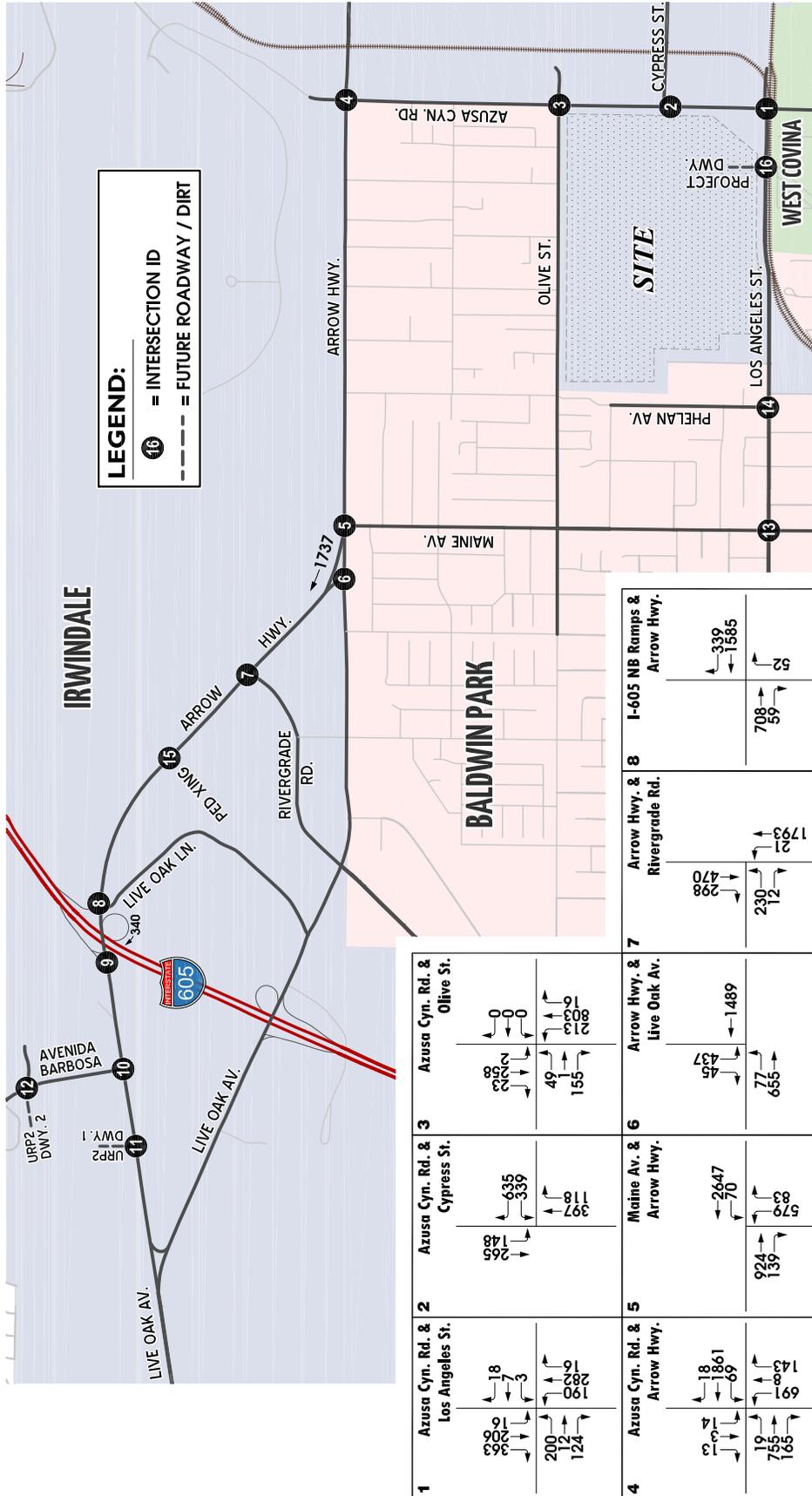


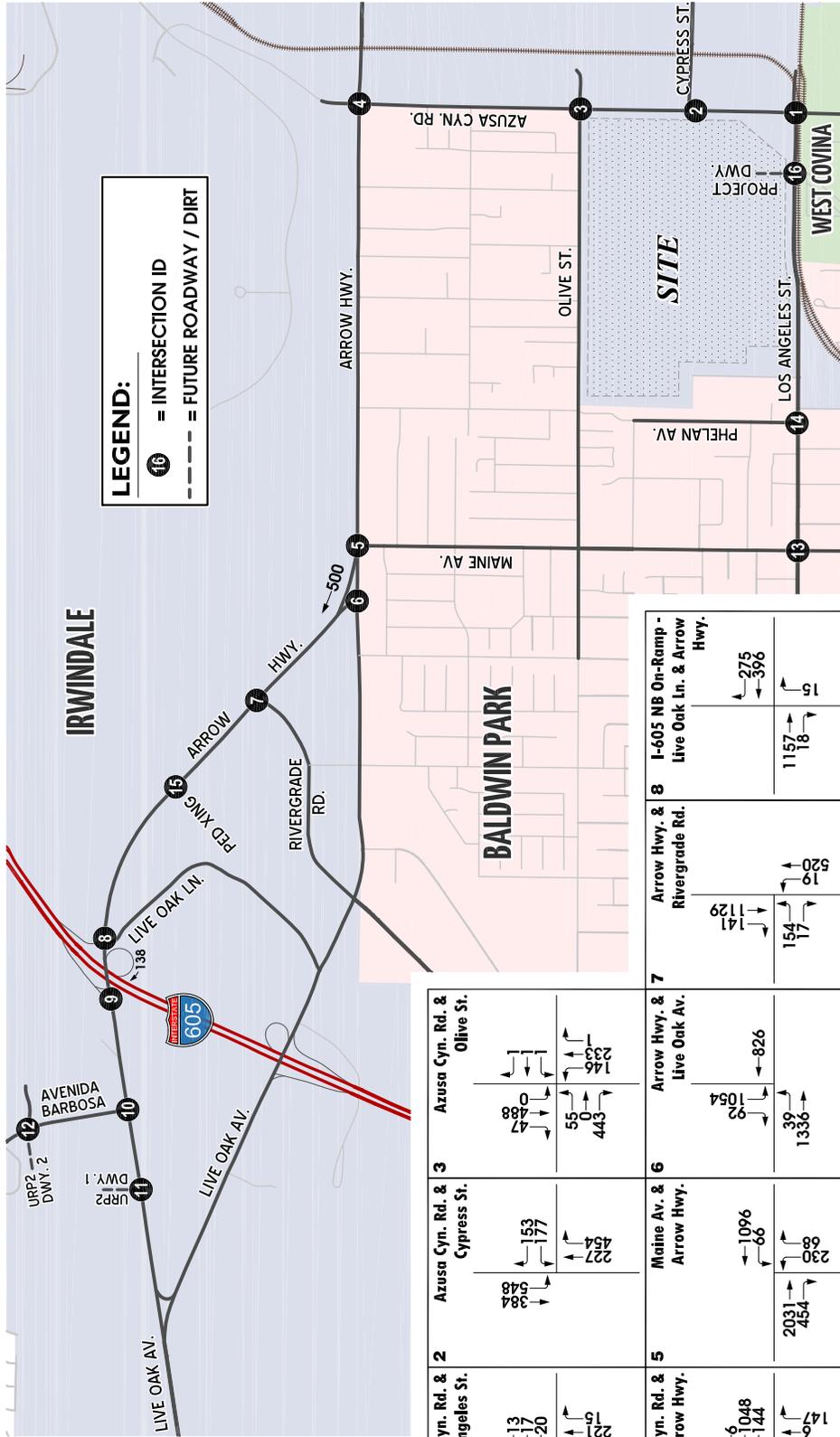
EXHIBIT 4-B: Existing Plus Project AM Peak Hour Intersection Volumes



Intersection ID	Intersection Description	Northbound	Southbound	Eastbound	Westbound	Notes
1	Azusa Cyn. Rd. & Los Angeles St.	18 16 206	7 3 206	200 124	124 124	
2	Azusa Cyn. Rd. & Cypress St.	635 148	339 148	397 148	148 148	
3	Azusa Cyn. Rd. & Olive St.	0 0	0 0	49 155	155 155	
4	Azusa Cyn. Rd. & Arrow Hwy.	18 1861	69 1861	130 755 165	130 755 165	
5	Maine Av. & Arrow Hwy.	924 139	2647 70	57 338	655 1489	
6	Maine Av. & Live Oak Av.	173 298	173 298	230 12	12 12	
7	Arrow Hwy. & Rivergrade Rd.	330 1565	330 1565	708 59	52 52	
8	I-605 NB Ramps & Arrow Hwy.	44 379	44 379	112 244 180	112 244 180	
9	I-605 SB Ramps & Arrow Hwy.	0 1585	0 1585	692	692	
10	Avenida Barbosa & Arrow Hwy.	198 247	600 1508	261 528	789	
11	URP2 Dwy. 1 & Arrow Hwy.	13	66 1689	789	789	
12	Avenida Barbosa & URP2 Dwy. 2	0 10	6 75	0 75	0 75	
13	Maine Av. & Los Angeles St.	89 79	44 379	112 244 180	112 244 180	
14	Phelan Av. & Los Angeles St.	96 452	96 452	72 249	72 249	
15	Pedestrian Crossing & Arrow Hwy.	1897	1897	750	750	(BIKE ROUTE)
16	Project Dwy. & Los Angeles St.	66 494	66 494	277	277	

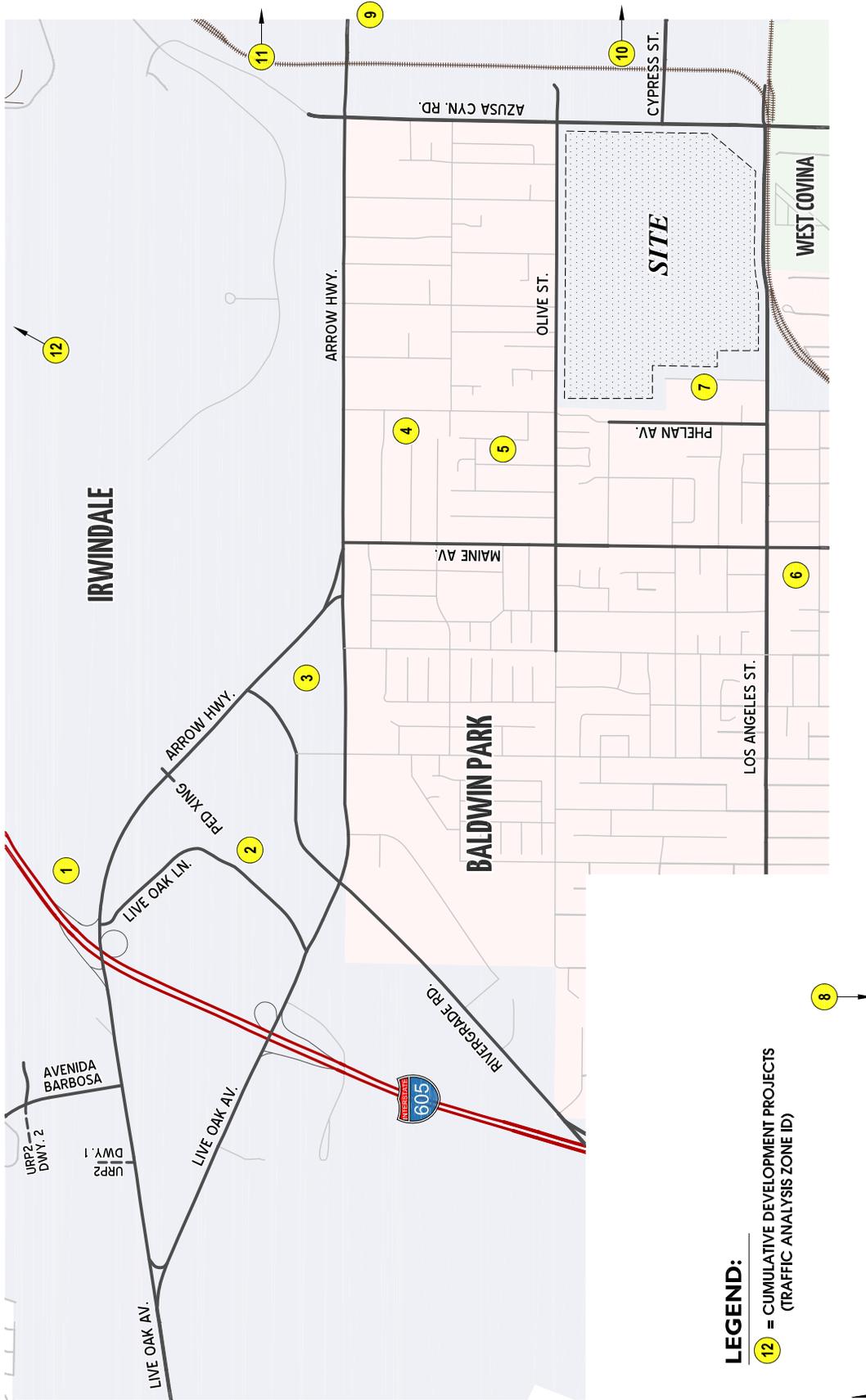


EXHIBIT 4-C: Existing Plus Project PM Peak Hour Intersection Volumes



<b>1</b> Azusa Cyn. Rd. & Los Angeles St.	<b>2</b> Azusa Cyn. Rd. & Cypress St.	<b>3</b> Azusa Cyn. Rd. & Olive St.	<b>4</b> Azusa Cyn. Rd. & Arrow Hwy.	<b>5</b> Maine Av. & Arrow Hwy.	<b>6</b> Maine Av. & Live Oak Av.	<b>7</b> Arrow Hwy. & Rivergrade Rd.	<b>8</b> I-605 NB On-Ramp - Live Oak Ln. & Arrow Hwy.	<b>9</b> I-605 SB Ramps & Arrow Hwy.	<b>10</b> Avenida Barbosa & Arrow Hwy.	<b>11</b> URP2 Dwy. 1 & Arrow Hwy.	<b>12</b> Avenida Barbosa & URP2 Dwy. 2	<b>13</b> Maine Av. & Los Angeles St.	<b>14</b> Phelan Av. & Los Angeles St.	<b>15</b> Pedestrian Crossing & Arrow Hwy.	<b>16</b> Project Dwy. & Los Angeles St.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
<table border="1"> <tr><td>13</td><td>17</td><td>20</td><td>22</td></tr> <tr><td>23</td><td>23</td><td>25</td><td>25</td></tr> <tr><td>27</td><td>27</td><td>28</td><td>28</td></tr> <tr><td>33</td><td>33</td><td>34</td><td>34</td></tr> <tr><td>42</td><td>42</td><td>43</td><td>43</td></tr> <tr><td>47</td><td>47</td><td>48</td><td>48</td></tr> <tr><td>55</td><td>55</td><td>56</td><td>56</td></tr> <tr><td>137</td><td>137</td><td>138</td><td>138</td></tr> <tr><td>144</td><td>144</td><td>144</td><td>144</td></tr> <tr><td>165</td><td>165</td><td>165</td><td>165</td></tr> <tr><td>230</td><td>230</td><td>230</td><td>230</td></tr> <tr><td>277</td><td>277</td><td>277</td><td>277</td></tr> <tr><td>305</td><td>305</td><td>305</td><td>305</td></tr> <tr><td>457</td><td>457</td><td>457</td><td>457</td></tr> <tr><td>548</td><td>548</td><td>548</td><td>548</td></tr> <tr><td>582</td><td>582</td><td>582</td><td>582</td></tr> <tr><td>638</td><td>638</td><td>638</td><td>638</td></tr> <tr><td>727</td><td>727</td><td>727</td><td>727</td></tr> <tr><td>827</td><td>827</td><td>827</td><td>827</td></tr> <tr><td>927</td><td>927</td><td>927</td><td>927</td></tr> <tr><td>1027</td><td>1027</td><td>1027</td><td>1027</td></tr> <tr><td>1127</td><td>1127</td><td>1127</td><td>1127</td></tr> <tr><td>1227</td><td>1227</td><td>1227</td><td>1227</td></tr> <tr><td>1327</td><td>1327</td><td>1327</td><td>1327</td></tr> <tr><td>1427</td><td>1427</td><td>1427</td><td>1427</td></tr> <tr><td>1527</td><td>1527</td><td>1527</td><td>1527</td></tr> <tr><td>1627</td><td>1627</td><td>1627</td><td>1627</td></tr> <tr><td>1727</td><td>1727</td><td>1727</td><td>1727</td></tr> <tr><td>1827</td><td>1827</td><td>1827</td><td>1827</td></tr> <tr><td>1927</td><td>1927</td><td>1927</td><td>1927</td></tr> <tr><td>2027</td><td>2027</td><td>2027</td><td>2027</td></tr> <tr><td>2127</td><td>2127</td><td>2127</td><td>2127</td></tr> <tr><td>2227</td><td>2227</td><td>2227</td><td>2227</td></tr> <tr><td>2327</td><td>2327</td><td>2327</td><td>2327</td></tr> <tr><td>2427</td><td>2427</td><td>2427</td><td>2427</td></tr> <tr><td>2527</td><td>2527</td><td>2527</td><td>2527</td></tr> <tr><td>2627</td><td>2627</td><td>2627</td><td>2627</td></tr> <tr><td>2727</td><td>2727</td><td>2727</td><td>2727</td></tr> <tr><td>2827</td><td>2827</td><td>2827</td><td>2827</td></tr> <tr><td>2927</td><td>2927</td><td>2927</td><td>2927</td></tr> <tr><td>3027</td><td>3027</td><td>3027</td><td>3027</td></tr> <tr><td>3127</td><td>3127</td><td>3127</td><td>3127</td></tr> <tr><td>3227</td><td>3227</td><td>3227</td><td>3227</td></tr> <tr><td>3327</td><td>3327</td><td>3327</td><td>3327</td></tr> <tr><td>3427</td><td>3427</td><td>3427</td><td>3427</td></tr> <tr><td>3527</td><td>3527</td><td>3527</td><td>3527</td></tr> <tr><td>3627</td><td>3627</td><td>3627</td><td>3627</td></tr> <tr><td>3727</td><td>3727</td><td>3727</td><td>3727</td></tr> <tr><td>3827</td><td>3827</td><td>3827</td><td>3827</td></tr> <tr><td>3927</td><td>3927</td><td>3927</td><td>3927</td></tr> <tr><td>4027</td><td>4027</td><td>4027</td><td>4027</td></tr> <tr><td>4127</td><td>4127</td><td>4127</td><td>4127</td></tr> <tr><td>4227</td><td>4227</td><td>4227</td><td>4227</td></tr> <tr><td>4327</td><td>4327</td><td>4327</td><td>4327</td></tr> <tr><td>4427</td><td>4427</td><td>4427</td><td>4427</td></tr> <tr><td>4527</td><td>4527</td><td>4527</td><td>4527</td></tr> <tr><td>4627</td><td>4627</td><td>4627</td><td>4627</td></tr> <tr><td>4727</td><td>4727</td><td>4727</td><td>4727</td></tr> <tr><td>4827</td><td>4827</td><td>4827</td><td>4827</td></tr> <tr><td>4927</td><td>4927</td><td>4927</td><td>4927</td></tr> <tr><td>5027</td><td>5027</td><td>5027</td><td>5027</td></tr> <tr><td>5127</td><td>5127</td><td>5127</td><td>5127</td></tr> <tr><td>5227</td><td>5227</td><td>5227</td><td>5227</td></tr> <tr><td>5327</td><td>5327</td><td>5327</td><td>5327</td></tr> <tr><td>5427</td><td>5427</td><td>5427</td><td>5427</td></tr> <tr><td>5527</td><td>5527</td><td>5527</td><td>5527</td></tr> <tr><td>5627</td><td>5627</td><td>5627</td><td>5627</td></tr> <tr><td>5727</td><td>5727</td><td>5727</td><td>5727</td></tr> <tr><td>5827</td><td>5827</td><td>5827</td><td>5827</td></tr> <tr><td>5927</td><td>5927</td><td>5927</td><td>5927</td></tr> <tr><td>6027</td><td>6027</td><td>6027</td><td>6027</td></tr> <tr><td>6127</td><td>6127</td><td>6127</td><td>6127</td></tr> <tr><td>6227</td><td>6227</td><td>6227</td><td>6227</td></tr> <tr><td>6327</td><td>6327</td><td>6327</td><td>6327</td></tr> <tr><td>6427</td><td>6427</td><td>6427</td><td>6427</td></tr> <tr><td>6527</td><td>6527</td><td>6527</td><td>6527</td></tr> <tr><td>6627</td><td>6627</td><td>6627</td><td>6627</td></tr> <tr><td>6727</td><td>6727</td><td>6727</td><td>6727</td></tr> <tr><td>6827</td><td>6827</td><td>6827</td><td>6827</td></tr> <tr><td>6927</td><td>6927</td><td>6927</td><td>6927</td></tr> <tr><td>7027</td><td>7027</td><td>7027</td><td>7027</td></tr> <tr><td>7127</td><td>7127</td><td>7127</td><td>7127</td></tr> <tr><td>7227</td><td>7227</td><td>7227</td><td>7227</td></tr> <tr><td>7327</td><td>7327</td><td>7327</td><td>7327</td></tr> <tr><td>7427</td><td>7427</td><td>7427</td><td>7427</td></tr> <tr><td>7527</td><td>7527</td><td>7527</td><td>7527</td></tr> <tr><td>7627</td><td>7627</td><td>7627</td><td>7627</td></tr> <tr><td>7727</td><td>7727</td><td>7727</td><td>7727</td></tr> <tr><td>7827</td><td>7827</td><td>7827</td><td>7827</td></tr> <tr><td>7927</td><td>7927</td><td>7927</td><td>7927</td></tr> <tr><td>8027</td><td>8027</td><td>8027</td><td>8027</td></tr> <tr><td>8127</td><td>8127</td><td>8127</td><td>8127</td></tr> <tr><td>8227</td><td>8227</td><td>8227</td><td>8227</td></tr> <tr><td>8327</td><td>8327</td><td>8327</td><td>8327</td></tr> <tr><td>8427</td><td>8427</td><td>8427</td><td>8427</td></tr> <tr><td>8527</td><td>8527</td><td>8527</td><td>8527</td></tr> <tr><td>8627</td><td>8627</td><td>8627</td><td>8627</td></tr> <tr><td>8727</td><td>8727</td><td>8727</td><td>8727</td></tr> <tr><td>8827</td><td>8827</td><td>8827</td><td>8827</td></tr> <tr><td>8927</td><td>8927</td><td>8927</td><td>8927</td></tr> <tr><td>9027</td><td>9027</td><td>9027</td><td>9027</td></tr> <tr><td>9127</td><td>9127</td><td>9127</td><td>9127</td></tr> <tr><td>9227</td><td>9227</td><td>9227</td><td>9227</td></tr> <tr><td>9327</td><td>9327</td><td>9327</td><td>9327</td></tr> <tr><td>9427</td><td>9427</td><td>9427</td><td>9427</td></tr> <tr><td>9527</td><td>9527</td><td>9527</td><td>9527</td></tr> <tr><td>9627</td><td>9627</td><td>9627</td><td>9627</td></tr> <tr><td>9727</td><td>9727</td><td>9727</td><td>9727</td></tr> <tr><td>9827</td><td>9827</td><td>9827</td><td>9827</td></tr> <tr><td>9927</td><td>9927</td><td>9927</td><td>9927</td></tr> <tr><td>10027</td><td>10027</td><td>10027</td><td>10027</td></tr> </table>	13	17	20	22	23	23	25	25	27	27	28	28	33	33	34	34	42	42	43	43	47	47	48	48	55	55	56	56	137	137	138	138	144	144	144	144	165	165	165	165	230	230	230	230	277	277	277	277	305	305	305	305	457	457	457	457	548	548	548	548	582	582	582	582	638	638	638	638	727	727	727	727	827	827	827	827	927	927	927	927	1027	1027	1027	1027	1127	1127	1127	1127	1227	1227	1227	1227	1327	1327	1327	1327	1427	1427	1427	1427	1527	1527	1527	1527	1627	1627	1627	1627	1727	1727	1727	1727	1827	1827	1827	1827	1927	1927	1927	1927	2027	2027	2027	2027	2127	2127	2127	2127	2227	2227	2227	2227	2327	2327	2327	2327	2427	2427	2427	2427	2527	2527	2527	2527	2627	2627	2627	2627	2727	2727	2727	2727	2827	2827	2827	2827	2927	2927	2927	2927	3027	3027	3027	3027	3127	3127	3127	3127	3227	3227	3227	3227	3327	3327	3327	3327	3427	3427	3427	3427	3527	3527	3527	3527	3627	3627	3627	3627	3727	3727	3727	3727	3827	3827	3827	3827	3927	3927	3927	3927	4027	4027	4027	4027	4127	4127	4127	4127	4227	4227	4227	4227	4327	4327	4327	4327	4427	4427	4427	4427	4527	4527	4527	4527	4627	4627	4627	4627	4727	4727	4727	4727	4827	4827	4827	4827	4927	4927	4927	4927	5027	5027	5027	5027	5127	5127	5127	5127	5227	5227	5227	5227	5327	5327	5327	5327	5427	5427	5427	5427	5527	5527	5527	5527	5627	5627	5627	5627	5727	5727	5727	5727	5827	5827	5827	5827	5927	5927	5927	5927	6027	6027	6027	6027	6127	6127	6127	6127	6227	6227	6227	6227	6327	6327	6327	6327	6427	6427	6427	6427	6527	6527	6527	6527	6627	6627	6627	6627	6727	6727	6727	6727	6827	6827	6827	6827	6927	6927	6927	6927	7027	7027	7027	7027	7127	7127	7127	7127	7227	7227	7227	7227	7327	7327	7327	7327	7427	7427	7427	7427	7527	7527	7527	7527	7627	7627	7627	7627	7727	7727	7727	7727	7827	7827	7827	7827	7927	7927	7927	7927	8027	8027	8027	8027	8127	8127	8127	8127	8227	8227	8227	8227	8327	8327	8327	8327	8427	8427	8427	8427	8527	8527	8527	8527	8627	8627	8627	8627	8727	8727	8727	8727	8827	8827	8827	8827	8927	8927	8927	8927	9027	9027	9027	9027	9127	9127	9127	9127	9227	9227	9227	9227	9327	9327	9327	9327	9427	9427	9427	9427	9527	9527	9527	9527	9627	9627	9627	9627	9727	9727	9727	9727	9827	9827	9827	9827	9927	9927	9927	9927	10027	10027	10027	10027	<table border="1"> <tr><td>13</td><td>17</td><td>20</td><td>22</td></tr> <tr><td>23</td><td>23</td><td>25</td><td>25</td></tr> <tr><td>27</td><td>27</td><td>28</td><td>28</td></tr> <tr><td>33</td><td>33</td><td>34</td><td>34</td></tr> <tr><td>42</td><td>42</td><td>43</td><td>43</td></tr> <tr><td>47</td><td>47</td><td>48</td><td>48</td></tr> <tr><td>55</td><td>55</td><td>56</td><td>56</td></tr> <tr><td>137</td><td>137</td><td>138</td><td>138</td></tr> <tr><td>144</td><td>144</td><td>144</td><td>144</td></tr> <tr><td>165</td><td>165</td><td>165</td><td>165</td></tr> <tr><td>230</td><td>230</td><td>230</td><td>230</td></tr> <tr><td>277</td><td>277</td><td>277</td><td>277</td></tr> <tr><td>305</td><td>305</td><td>305</td><td>305</td></tr> <tr><td>457</td><td>457</td><td>457</td><td>457</td></tr> <tr><td>548</td><td>548</td><td>548</td><td>548</td></tr> <tr><td>582</td><td>582</td><td>582</td><td>582</td></tr> <tr><td>638</td><td>638</td><td>638</td><td>638</td></tr> <tr><td>727</td><td>727</td><td>727</td><td>727</td></tr> <tr><td>827</td><td>827</td><td>827</td><td>827</td></tr> <tr><td>927</td><td>927</td><td>927</td><td>927</td></tr> <tr><td>1027</td><td>1027</td><td>1027</td><td>1027</td></tr> <tr><td>1127</td><td>1127</td><td>1127</td><td>1127</td></tr> <tr><td>1227</td><td>1227</td><td>1227</td><td>1227</td></tr> <tr><td>1327</td><td>1327</td><td>1327</td><td>1327</td></tr> <tr><td>1427</td><td>1427</td><td>1427</td><td>1427</td></tr> <tr><td>1527</td><td>1527</td><td>1527</td><td>1527</td></tr> <tr><td>1627</td><td>1627</td><td>1627</td><td>1627</td></tr> <tr><td>1727</td><td>1727</td><td>1727</td><td>1727</td></tr> <tr><td>1827</td><td>1827</td><td>1827</td><td>1827</td></tr> <tr><td>1927</td><td>1927</td><td>1927</td><td>1927</td></tr> <tr><td>2027</td><td>2027</td><td>2027</td><td>2027</td></tr> <tr><td>2127</td><td>2127</td><td>2127</td><td>2127</td></tr> <tr><td>2227</td><td>2227</td><td>2227</td><td>2227</td></tr> <tr><td>2327</td><td>2327</td><td>2327</td><td>2327</td></tr> <tr><td>2427</td><td>2427</td><td>2427</td><td>2427</td></tr> <tr><td>2527</td><td>2527</td><td>2527</td><td>2527</td></tr> <tr><td>2627</td><td>2627</td><td>2627</td><td>2627</td></tr> <tr><td>2727</td><td>2727</td><td>2727</td><td>2727</td></tr> <tr><td>2827</td><td>2827</td><td>2827</td><td>2827</td></tr> <tr><td>2927</td><td>2927</td><td>2927</td><td>2927</td></tr> <tr><td>3027</td><td>3027</td><td>3027</td><td>3027</td></tr> <tr><td>3127</td><td>3127</td><td>3127</td><td>3127</td></tr> <tr><td>3227</td><td>3227</td><td>3227</td><td>3227</td></tr> <tr><td>3327</td><td>3327</td><td>3327</td><td>3327</td></tr> <tr><td>3427</td><td>3427</td><td>3427</td><td>3427</td></tr> <tr><td>3527</td><td>3527</td><td>3527</td><td>3527</td></tr> <tr><td>3627</td><td>3627</td><td>3627</td><td>3627</td></tr> <tr><td>3727</td><td>3727</td><td>3727</td><td>3727</td></tr> <tr><td>3827</td><td>3827</td><td>3827</td><td>3827</td></tr> <tr><td>3927</td><td>3927</td><td>3927</td><td>3927</td></tr> <tr><td>4027</td><td>4027</td><td>4027</td><td>4027</td></tr> <tr><td>4127</td><td>4127</td><td>4127</td><td>4127</td></tr> <tr><td>4227</td><td>4227</td><td>4227</td><td>4227</td></tr> <tr><td>4327</td><td>4327</td><td>4327</td><td>4327</td></tr> <tr><td>4427</td><td>4427</td><td>4427</td><td>4427</td></tr> <tr><td>4527</td><td>4527</td><td>4527</td><td>4527</td></tr> <tr><td>4627</td><td>4627</td><td>4627</td><td>4627</td></tr> <tr><td>4727</td><td>4727</td><td>4727</td><td>4727</td></tr> <tr><td>4827</td><td>4827</td><td>4827</td><td>4827</td></tr> <tr><td>4927</td><td>4927</td><td>4927</td><td>4927</td></tr> <tr><td>5027</td><td>5027</td><td>5027</td><td>5027</td></tr> <tr><td>5127</td><td>5127</td><td>5127</td><td>5127</td></tr> <tr><td>5227</td><td>5227</td><td>5227</td><td>5227</td></tr> <tr><td>5327</td><td>5327</td><td>5327</td><td>5327</td></tr> <tr><td>5427</td><td>5427</td><td>5427</td><td>5427</td></tr> <tr><td>5527</td><td>5527</td><td>5527</td><td>5527</td></tr> <tr><td>5627</td><td>5627</td><td>5627</td><td>5627</td></tr> <tr><td>5727</td><td>5727</td><td>5727</td><td>5727</td></tr> <tr><td>5827</td><td>5827</td><td>5827</td><td>5827</td></tr> <tr><td>5927</td><td>5927</td><td>5927</td><td>5927</td></tr> <tr><td>6027</td><td>6027</td><td>6027</td><td>6027</td></tr> <tr><td>6127</td><td>6127</td><td>6127</td><td>6127</td></tr> <tr><td>6227</td><td>6227</td><td>6227</td><td>6227</td></tr> <tr><td>6327</td><td>6327</td><td>6327</td><td>6327</td></tr> <tr><td>6427</td><td>6427</td><td>6427</td><td>6427</td></tr> <tr><td>6527</td><td>6527</td><td>6527</td><td>6527</td></tr> <tr><td>6627</td><td>6627</td><td>6627</td><td>6627</td></tr> <tr><td>6727</td><td>6727</td><td>6727</td><td>6727</td></tr> <tr><td>6827</td><td>6827</td><td>6827</td><td>6827</td></tr> <tr><td>6927</td><td>6927</td><td>6927</td><td>6927</td></tr> <tr><td>7027</td><td>7027</td><td>7027</td><td>7027</td></tr> <tr><td>7127</td><td>7127</td><td>7127</td><td>7127</td></tr> <tr><td>7227</td><td>7227</td><td>7227</td><td>7227</td></tr> <tr><td>7327</td><td>7327</td><td>7327</td><td>7327</td></tr> <tr><td>7427</td><td>7427</td><td>7427</td><td>7427</td></tr> <tr><td>7527</td><td>7527</td><td>7527</td><td>7527</td></tr> <tr><td>7627</td><td>7627</td><td>7627</td><td>7627</td></tr> <tr><td>7727</td><td>7727</td><td>7727</td><td>7727</td></tr> <tr><td>7827</td><td>7827</td><td>7827</td><td>7827</td></tr> <tr><td>7927</td><td>7927</td><td>7927</td><td>7927</td></tr> <tr><td>8027</td><td>8027</td><td>8027</td><td>8027</td></tr> <tr><td>8127</td><td>8127</td><td>8127</td><td>8127</td></tr> <tr><td>8227</td><td>8227</td><td>8227</td><td>8227</td></tr> <tr><td>8327</td><td>8327</td><td>8327</td><td>8327</td></tr> <tr><td>8427</td><td>8427</td><td>8427</td><td>8427</td></tr> <tr><td>8527</td><td>8527</td><td>8527</td><td>8527</td></tr> <tr><td>8627</td><td>8627</td><td>8627</td><td>8627</td></tr> <tr><td>8727</td><td>8727</td><td>8727</td><td>8727</td></tr> <tr><td>8827</td><td>8827</td><td>8827</td><td>8827</td></tr> <tr><td>8927</td><td>8927</td><td>8927</td><td>8927</td></tr> <tr><td>9027</td><td>9027</td><td>9027</td><td>9027</td></tr> <tr><td>9127</td><td>9127</td><td>9127</td><td>9127</td></tr> <tr><td>9227</td><td>9227</td><td>9227</td><td>9227</td></tr> <tr><td>9327</td><td>9327</td><td>9327</td><td>9327</td></tr> <tr><td>9427</td><td>9427</td><td>9427</td><td>9427</td></tr> <tr><td>9527</td><td>9527</td><td>9527</td><td>9527</td></tr> <tr><td>9627</td><td>9627</td><td>9627</td><td>9627</td></tr> <tr><td>9727</td><td>9727</td><td>9727</td><td>9727</td></tr> <tr><td>9827</td><td>9827</td><td>9827</td><td>9827</td></tr> <tr><td>9927</td><td>9927</td><td>9927</td><td>9927</td></tr> <tr><td>10027</td><td>10027</td><td>10027</td><td>10027</td></tr> </table>	13	17	20	22	23	23	25	25	27	27	28	28	33	33	34	34	42	42	43	43	47	47	48	48	55	55	56	56	137	137	138	138	144	144	144	144	165	165	165	165	230	230	230	230	277	277	277	277	305	305	305	305	457	457	457	457	548	548	548	548	582	582	582	582	638	638	638	638	727	727	727	727	827	827	827	827	927	927	927	927	1027	1027	1027	1027	1127	1127	1127	1127	1227	1227	1227	1227	1327	1327	1327	1327	1427	1427	1427	1427	1527	1527	1527	1527	1627	1627	1627	1627	1727	1727	1727	1727	1827	1827	1827	1827	1927	1927	1927	1927	2027	2027	2027	2027	2127	2127	2127	2127	2227	2227	2227	2227	2327	2327	2327	2327	2427	2427	2427	2427	2527	2527	2527	2527	2627	2627	2627	2627	2727	2727	2727	2727	2827	2827	2827	2827	2927	2927	2927	2927	3027	3027	3027	3027	3127	3127	3127	3127	3227	3227	3227	3227	3327	3327	3327	3327	3427	3427	3427	3427	3527	3527	3527	3527	3627	3627	3627	3627	3727	3727	3727	3727	3827	3827	3827	3827	3927	3927	3927	3927	4027	4027	4027	4027	4127	4127	4127	4127	4227	4227	4227	4227	4327	4327	4327	4327	4427	4427	4427	4427	4527	4527	4527	4527	4627	4627	4627	4627	4727	4727	4727	4727	4827	4827	4827	4827	4927	4927	4927	4927	5027	5027	5027	5027	5127	5127	5127	5127	5227	5227	5227	5227	5327	5327	5327	5327	5427	5427	5427	5427	5527	5527	5527	5527	5627	5627	5627	5627	5727	5727	5727	5727	5827	5827	5827	5827	5927	5927	5927	5927	6027	6027	6027	6027	6127	6127	6127	6127	6227	6227	6227	6227	6327	6327	6327	6327	6427	6427	6427	6427	6527	6527	6527	6527	6627	6627	6627	6627	6727	6727	6727	6727	6827	6827	6827	6827	6927	6927	6927	6927	7027	7027	7027	7027	7127	7127	7127	7127	7227	7227	7227	7227	7327	7327	7327	7327	7427	7427	7427	7427	7527	7527	7527	7527	7627	7627	7627	7627	7727	7727	7727	7727	7827	7827	7827	7827	7927	7927	7927	7927	8027	8027	8027	8027	8127	8127	8127	8127	8227	8227	8227	8227	8327	8327	8327	8327	8427	8427	8427	8427	8527	8527	8527	8527	8627	8627	8627	8627	8727	8727	8727	8727	8827	8827	8827	8827	8927	8927	8927	8927	9027	9027	9027	9027	9127	9127	9127	9127	9227	9227	9227	9227	9327	9327	9327	9327	9427	9427	9427	9427	9527	9527	9527	9527	9627	9627	9627	9627	9727	9727	9727	9727	9827	9827	9827	9827	9927	9927	9927	9927	10027	10027	10027	10027	<table border="1"> <tr><td>13</td><td>17</td><td>20</td><td>22</td></tr> <tr><td>23</td><td>23</td><td>25</td><td>25</td></tr> <tr><td>27</td><td>27</td><td>28</td><td>28</td></tr> <tr><td>33</td><td>33</td><td>34</td><td>34</td></tr> <tr><td>42</td><td>42</td><td>43</td><td>43</td></tr> <tr><td>47</td><td>47</td><td>48</td><td>48</td></tr> <tr><td>55</td><td>55</td><td>56</td><td>56</td></tr> <tr><td>137</td><td>137</td><td>138</td><td>138</td></tr> <tr><td>144</td><td>144</td><td>144</td><td>144</td></tr> <tr><td>165</td><td>165</td><td>165</td><td>165</td></tr> <tr><td>230</td><td>230</td><td>230</td><td>230</td></tr> <tr><td>277</td><td>277</td><td>277</td><td>277</td></tr> <tr><td>305</td><td>305</td><td>305</td><td>305</td></tr> <tr><td>457</td><td>457</td><td>457</td><td>457</td></tr> <tr><td>548</td><td>548</td><td>548</td><td>548</td></tr> <tr><td>582</td><td>582</td><td>582</td><td>582</td></tr> <tr><td>638</td><td>638</td><td>638</td><td>638</td></tr> <tr><td>727</td><td>727</td><td>727</td><td>727</td></tr> <tr><td>827</td><td>827</td><td>827</td><td>827</td></tr> <tr><td>927</td><td>927</td><td>927</td><td>927</td></tr> <tr><td>1027</td><td>1027</td><td>1027</td><td>1027</td></tr> <tr><td>1127</td><td>1127</td><td>1127</td><td>1127</td></tr> <tr><td>1227</td><td>1227</td><td>1227</td><td>1227</td></tr> <tr><td>1327</td><td>1327</td><td>1327</td><td>1327</td></tr> <tr><td>1427</td><td>1427</td><td>1427</td><td>1427</td></tr> <tr><td>1527</td><td>1527</td><td>1527</td><td>1527</td></tr> <tr><td>1627</td><td>1627</td><td>1627</td><td>1627</td></tr> <tr><td>1727</td><td>1727</td><td>1727</td><td>1727</td></tr> <tr><td>1827</td><td>1827</td><td>1827</td><td>1827</td></tr> <tr><td>1927</td><td>1927</td><td>1927</td><td>1927</td></tr> <tr><td>2027</td><td>2027</td><td>2027</td><td>2027</td></tr> <tr><td>2127</td><td>2127</td><td>2127</td><td>2127</td></tr> <tr><td>2227</td><td>2227</td><td>2227</td><td>2227</td></tr> <tr><td>2327</td><td>2327</td><td>2327</td><td>2327</td></tr> <tr><td>2427</td><td>2427</td><td>2427</td><td>2427</td></tr> <tr><td>2527</td><td>2527</td><td>2527</td><td>2527</td></tr> <tr><td>2627</td><td>2627</td><td>2627</td><td>2627</td></tr> <tr><td>2727</td><td>2727</td><td>2727</td><td>2727</td></tr> <tr><td>2827</td><td>2827</td><td>2827</td><td>2827</td></tr> <tr><td>2927</td><td>2927</td><td>2927</td><td>2927</td></tr> <tr><td>3027</td><td>3027</td><td>3027</td><td>3027</td></tr> <tr><td>3127</td><td>3127</td><td>3127</td><td>3127</td></tr> <tr><td>3227</td><td>3227</td><td>3227</td><td>3227</td></tr> <tr><td>3327</td><td>3327</td><td>3327</td><td>3327</td></tr> <tr><td>3427</td><td>3427</td><td>3427</td><td>3427</td></tr> <tr><td>3527</td><td>3527</td><td>3527</td><td>3527</td></tr> <tr><td>3627</td><td>3627</td><td>3627</td><td>3627</td></tr> <tr><td>3727</td><td>3727</td><td>3727</td><td>3727</td></tr> <tr><td>3827</td><td>3827</td><td>3827</td><td>3827</td></tr> <tr><td>3927</td><td>3927</td><td>3927</td><td>3927</td></tr> <tr><td>4027</td><td>4027</td><td>4027</td><td>4027</td></tr> <tr><td>4127</td><td>4127</td><td>4127</td><td>4127</td></tr> <tr><td>4227</td><td>4227</td><td>4227</td><td>4227</td></tr> <tr><td>4327</td><td>4327</td><td>4327</td><td>4327</td></tr> <tr><td>4427</td><td>4427</td><td>4427</td><td>4427</td></tr> <tr><td>4527</td><td>4527</td><td>4527</td><td>4527</td></tr> <tr><td>4627</td><td>4627</td><td>4627</td><td>4627</td></tr> <tr><td>4727</td><td>4727</td><td>4727</td><td>4727</td></tr> <tr><td>4827</td><td>4827</td><td>4827</td><td>4827</td></tr> <tr><td>4927</td><td>4927</td><td>4927</td><td>4927</td></tr> <tr><td>5027</td><td>5027</td><td>5027</td><td>5027</td></tr> <tr><td>5127</td><td>5127</td><td>5127</td><td>5127</td></tr> <tr><td>5227</td><td>5227</td><td>5227</td><td>5227</td></tr> <tr><td>5327</td><td>5327</td><td>5327</td><td>5327</td></tr> <tr><td>5427</td><td>5427</td><td>5427</td><td>5427</td></tr> <tr><td>5527</td><td>5527</td><td>5527</td><td>5527</td></tr> <tr><td>5627</td><td>5627</td><td>5627</td><td>5627</td></tr> <tr><td>5727</td><td>5727</td><td>5727</td><td>5727</td></tr> <tr><td>5827</td><td>5827</td><td>5827</td><td>5827</td></tr> <tr><td>5927</td><td>5927</td><td>5927</td><td>592</td></tr></table>	13	17	20	22	23	23	25	25	27	27	28	28	33	33	34	34	42	42	43	43	47	47	48	48	55	55	56	56	137	137	138	138	144	144	144	144	165	165	165	165	230	230	230	230	277	277	277	277	305	305	305	305	457	457	457	457	548	548	548	548	582	582	582	582	638	638	638	638	727	727	727	727	827	827	827	827	927	927	927	927	1027	1027	1027	1027	1127	1127	1127	1127	1227	1227	1227	1227	1327	1327	1327	1327	1427	1427	1427	1427	1527	1527	1527	1527	1627	1627	1627	1627	1727	1727	1727	1727	1827	1827	1827	1827	1927	1927	1927	1927	2027	2027	2027	2027	2127	2127	2127	2127	2227	2227	2227	2227	2327	2327	2327	2327	2427	2427	2427	2427	2527	2527	2527	2527	2627	2627	2627	2627	2727	2727	2727	2727	2827	2827	2827	2827	2927	2927	2927	2927	3027	3027	3027	3027	3127	3127	3127	3127	3227	3227	3227	3227	3327	3327	3327	3327	3427	3427	3427	3427	3527	3527	3527	3527	3627	3627	3627	3627	3727	3727	3727	3727	3827	3827	3827	3827	3927	3927	3927	3927	4027	4027	4027	4027	4127	4127	4127	4127	4227	4227	4227	4227	4327	4327	4327	4327	4427	4427	4427	4427	4527	4527	4527	4527	4627	4627	4627	4627	4727	4727	4727	4727	4827	4827	4827	4827	4927	4927	4927	4927	5027	5027	5027	5027	5127	5127	5127	5127	5227	5227	5227	5227	5327	5327	5327	5327	5427	5427	5427	5427	5527	5527	5527	5527	5627	5627	5627	5627	5727	5727	5727	5727	5827	5827	5827	5827	5927	5927	5927	592
13	17	20	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
23	23	25	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
27	27	28	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
33	33	34	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
42	42	43	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
47	47	48	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
55	55	56	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
137	137	138	138																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
144	144	144	144																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
165	165	165	165																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
230	230	230	230																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
277	277	277	277																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
305	305	305	305																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
457	457	457	457																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
548	548	548	548																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
582	582	582	582																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
638	638	638	638																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
727	727	727	727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
827	827	827	827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
927	927	927	927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1027	1027	1027	1027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1127	1127	1127	1127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1227	1227	1227	1227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1327	1327	1327	1327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1427	1427	1427	1427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1527	1527	1527	1527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1627	1627	1627	1627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1727	1727	1727	1727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1827	1827	1827	1827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1927	1927	1927	1927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2027	2027	2027	2027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2127	2127	2127	2127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2227	2227	2227	2227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2327	2327	2327	2327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2427	2427	2427	2427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2527	2527	2527	2527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2627	2627	2627	2627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2727	2727	2727	2727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2827	2827	2827	2827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2927	2927	2927	2927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3027	3027	3027	3027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3127	3127	3127	3127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3227	3227	3227	3227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3327	3327	3327	3327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3427	3427	3427	3427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3527	3527	3527	3527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3627	3627	3627	3627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3727	3727	3727	3727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3827	3827	3827	3827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3927	3927	3927	3927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4027	4027	4027	4027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4127	4127	4127	4127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4227	4227	4227	4227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4327	4327	4327	4327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4427	4427	4427	4427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4527	4527	4527	4527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4627	4627	4627	4627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4727	4727	4727	4727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4827	4827	4827	4827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4927	4927	4927	4927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5027	5027	5027	5027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5127	5127	5127	5127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5227	5227	5227	5227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5327	5327	5327	5327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5427	5427	5427	5427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5527	5527	5527	5527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5627	5627	5627	5627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5727	5727	5727	5727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5827	5827	5827	5827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5927	5927	5927	5927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6027	6027	6027	6027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6127	6127	6127	6127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6227	6227	6227	6227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6327	6327	6327	6327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6427	6427	6427	6427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6527	6527	6527	6527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6627	6627	6627	6627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6727	6727	6727	6727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6827	6827	6827	6827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6927	6927	6927	6927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7027	7027	7027	7027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7127	7127	7127	7127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7227	7227	7227	7227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7327	7327	7327	7327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7427	7427	7427	7427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7527	7527	7527	7527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7627	7627	7627	7627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7727	7727	7727	7727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7827	7827	7827	7827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7927	7927	7927	7927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8027	8027	8027	8027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8127	8127	8127	8127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8227	8227	8227	8227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8327	8327	8327	8327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8427	8427	8427	8427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8527	8527	8527	8527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8627	8627	8627	8627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8727	8727	8727	8727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8827	8827	8827	8827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8927	8927	8927	8927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9027	9027	9027	9027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9127	9127	9127	9127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9227	9227	9227	9227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9327	9327	9327	9327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9427	9427	9427	9427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9527	9527	9527	9527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9627	9627	9627	9627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9727	9727	9727	9727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9827	9827	9827	9827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9927	9927	9927	9927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
10027	10027	10027	10027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
13	17	20	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
23	23	25	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
27	27	28	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
33	33	34	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
42	42	43	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
47	47	48	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
55	55	56	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
137	137	138	138																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
144	144	144	144																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
165	165	165	165																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
230	230	230	230																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
277	277	277	277																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
305	305	305	305																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
457	457	457	457																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
548	548	548	548																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
582	582	582	582																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
638	638	638	638																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
727	727	727	727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
827	827	827	827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
927	927	927	927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1027	1027	1027	1027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1127	1127	1127	1127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1227	1227	1227	1227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1327	1327	1327	1327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1427	1427	1427	1427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1527	1527	1527	1527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1627	1627	1627	1627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1727	1727	1727	1727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1827	1827	1827	1827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1927	1927	1927	1927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2027	2027	2027	2027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2127	2127	2127	2127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2227	2227	2227	2227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2327	2327	2327	2327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2427	2427	2427	2427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2527	2527	2527	2527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2627	2627	2627	2627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2727	2727	2727	2727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2827	2827	2827	2827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2927	2927	2927	2927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3027	3027	3027	3027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3127	3127	3127	3127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3227	3227	3227	3227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3327	3327	3327	3327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3427	3427	3427	3427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3527	3527	3527	3527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3627	3627	3627	3627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3727	3727	3727	3727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3827	3827	3827	3827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3927	3927	3927	3927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4027	4027	4027	4027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4127	4127	4127	4127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4227	4227	4227	4227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4327	4327	4327	4327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4427	4427	4427	4427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4527	4527	4527	4527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4627	4627	4627	4627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4727	4727	4727	4727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4827	4827	4827	4827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4927	4927	4927	4927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5027	5027	5027	5027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5127	5127	5127	5127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5227	5227	5227	5227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5327	5327	5327	5327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5427	5427	5427	5427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5527	5527	5527	5527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5627	5627	5627	5627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5727	5727	5727	5727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5827	5827	5827	5827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5927	5927	5927	5927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6027	6027	6027	6027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6127	6127	6127	6127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6227	6227	6227	6227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6327	6327	6327	6327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6427	6427	6427	6427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6527	6527	6527	6527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6627	6627	6627	6627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6727	6727	6727	6727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6827	6827	6827	6827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
6927	6927	6927	6927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7027	7027	7027	7027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7127	7127	7127	7127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7227	7227	7227	7227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7327	7327	7327	7327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7427	7427	7427	7427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7527	7527	7527	7527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7627	7627	7627	7627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7727	7727	7727	7727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7827	7827	7827	7827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
7927	7927	7927	7927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8027	8027	8027	8027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8127	8127	8127	8127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8227	8227	8227	8227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8327	8327	8327	8327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8427	8427	8427	8427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8527	8527	8527	8527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8627	8627	8627	8627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8727	8727	8727	8727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8827	8827	8827	8827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
8927	8927	8927	8927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9027	9027	9027	9027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9127	9127	9127	9127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9227	9227	9227	9227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9327	9327	9327	9327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9427	9427	9427	9427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9527	9527	9527	9527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9627	9627	9627	9627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9727	9727	9727	9727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9827	9827	9827	9827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
9927	9927	9927	9927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
10027	10027	10027	10027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
13	17	20	22																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
23	23	25	25																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
27	27	28	28																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
33	33	34	34																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
42	42	43	43																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
47	47	48	48																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
55	55	56	56																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
137	137	138	138																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
144	144	144	144																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
165	165	165	165																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
230	230	230	230																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
277	277	277	277																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
305	305	305	305																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
457	457	457	457																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
548	548	548	548																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
582	582	582	582																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
638	638	638	638																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
727	727	727	727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
827	827	827	827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
927	927	927	927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1027	1027	1027	1027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1127	1127	1127	1127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1227	1227	1227	1227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1327	1327	1327	1327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1427	1427	1427	1427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1527	1527	1527	1527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1627	1627	1627	1627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1727	1727	1727	1727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1827	1827	1827	1827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
1927	1927	1927	1927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2027	2027	2027	2027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2127	2127	2127	2127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2227	2227	2227	2227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2327	2327	2327	2327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2427	2427	2427	2427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2527	2527	2527	2527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2627	2627	2627	2627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2727	2727	2727	2727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2827	2827	2827	2827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
2927	2927	2927	2927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3027	3027	3027	3027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3127	3127	3127	3127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3227	3227	3227	3227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3327	3327	3327	3327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3427	3427	3427	3427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3527	3527	3527	3527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3627	3627	3627	3627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3727	3727	3727	3727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3827	3827	3827	3827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
3927	3927	3927	3927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4027	4027	4027	4027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4127	4127	4127	4127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4227	4227	4227	4227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4327	4327	4327	4327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4427	4427	4427	4427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4527	4527	4527	4527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4627	4627	4627	4627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4727	4727	4727	4727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4827	4827	4827	4827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
4927	4927	4927	4927																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5027	5027	5027	5027																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5127	5127	5127	5127																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5227	5227	5227	5227																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5327	5327	5327	5327																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5427	5427	5427	5427																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5527	5527	5527	5527																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5627	5627	5627	5627																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5727	5727	5727	5727																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5827	5827	5827	5827																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
5927	5927	5927	592																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

**EXHIBIT 4-D: Cumulative Development Location Map**



**LEGEND:**  
 12 = CUMULATIVE DEVELOPMENT PROJECTS  
 (TRAFFIC ANALYSIS ZONE ID)



CITY OF IRWINDALE PROJECTS	
<ul style="list-style-type: none"> <li>● Kare Youth League/Santa Fe Dam Sports Park</li> <li>● City Infill Housing Project</li> <li>● Ahern Rentals - 13645 Live Oak Ln.</li> </ul>	<ul style="list-style-type: none"> <li>● Hotel - 15744 Arrow Hwy.</li> <li>● Mod 4-06 to CUP 67-6 - 16025 Cypress St.</li> <li>● Athens-Irwindale MRF and Transfer Station</li> </ul>
CITY OF AZUSA PROJECTS	
<ul style="list-style-type: none"> <li>● Waste Management MRF &amp; Transfer Station</li> <li>● Downtown Azusa Project 1 - 619/621 N. Azusa</li> <li>● Residential Project - 710 S. Azusa Av.</li> <li>● Gladstone Mixed Use - 890 Gladstone St.</li> <li>● Residential - 523-531 Arrow Hwy.</li> <li>● Monrovia Nursery - Specific Plan</li> <li>● Azusa Pacific University - Specific Plan</li> </ul>	<ul style="list-style-type: none"> <li>● Mixed Use Project - NEC of Dalton &amp; Foothill</li> <li>● Block 36 - SEC of Azusa Av. &amp; Foothill Bl.</li> <li>● Target Project - 809 N Azusa Av.</li> <li>● Azusa Rock Revised CUP &amp; Reclamation Plan</li> <li>● Residential - 9th St. &amp; Alameda Av.</li> <li>● Commercial - 880 S Azusa Av.</li> </ul>
CITY OF COVINA PROJECTS	
<ul style="list-style-type: none"> <li>● Taco Bell - 301 N Citrus Av.</li> <li>● Jack in the Box/CVS - 545 S. Citrus Av.</li> <li>● Lowes - 1348 N Azusa Av.</li> <li>● Condominiums - 615 N 3rd St.</li> <li>● Residential - 436 E Cypress St.</li> <li>● Condominiums Citrus Av. &amp; Italia St.</li> </ul>	<ul style="list-style-type: none"> <li>● Mixed Use Condominiums - Citrus Av. &amp; Italia St.</li> <li>● Rose Gardens at Santa Teresita</li> <li>● Andres Duarte Terrace Phase II</li> <li>● Huntington Counts Phase III</li> <li>● Huntington Counts Phase II</li> <li>● Attalla Ranch (Las Lomas Est.)</li> </ul>
CITY OF BALDWIN PARK PROJECTS	
<ul style="list-style-type: none"> <li>● Residential - 13655 Foster Av.</li> <li>● Residential - 3346 Vineland Av.</li> <li>● Residential - 13732 Monterey Av.</li> <li>● Residential - 13734 Monterey Av.</li> <li>● Residential - 13736 Monterey Av.</li> <li>● Residential - 12723 Bess Av.</li> <li>● Residential - 12725 Bess Av.</li> <li>● Residential - 12727 Bess Av.</li> <li>● Residential - 3138 Magum St.</li> <li>● Residential - 4859 Marion Av.</li> <li>● Residential - 4861 Marion Av.</li> <li>● Residential - 4503 Park Av.</li> </ul>	<ul style="list-style-type: none"> <li>● Residential - 4143 Hornbrook Av.</li> <li>● Residential - 4455 Park Av.</li> <li>● Residential - 4819 Lante St.</li> <li>● Residential - 4820-28 Fortin Av.</li> <li>● Commercial - 4341 Maine Av.</li> <li>● Restaurant - 14622 Dalewood St.</li> <li>● Warehouse - 5029 Bleecker St.</li> <li>● Office - 4814 Maine Av.</li> <li>● Office - 3323 Baldwin Park Bl.</li> <li>● Office - 13329 Garvey Av.</li> <li>● Fueling Facility (Truck Fleet) -13940 Live Oak Av.</li> <li>● Inst.Facility w/Parking Structure -14403 Pacific Av.</li> </ul>
CITY OF WEST COVINA PROJECTS	
<ul style="list-style-type: none"> <li>● Westfield Expansion - 112 Plaza Dr.</li> <li>● McIntyre Square Exp. -2612-1698 E.Garvey</li> <li>● West Covina Senior Villas - 1838 E Workman Av.</li> </ul>	<ul style="list-style-type: none"> <li>● Mixed-Use - 1045-1052 West Grondahl St.</li> <li>● Medical Imaging Center - 1700 West Covina Pkwy.</li> <li>● Office - SEC of West Covina Pwy. &amp; W Garvey S.</li> </ul>
CITY OF GLENDORA PROJECTS	
<ul style="list-style-type: none"> <li>● Diamond Ridge</li> <li>● Cataract</li> <li>● JPI Sevilla Project</li> <li>● Glendora Station</li> <li>● Tract 46680</li> <li>● Tract 46916</li> <li>● Tract 45858</li> </ul>	<ul style="list-style-type: none"> <li>● Glendora Marketplace</li> <li>● Wildwood Canyon</li> <li>● Monrovia Nursery</li> <li>● Grand-Foothill</li> <li>● Grand Av. Retail Center</li> <li>● WalMart Expansion</li> <li>● Route 66 Specific Plan</li> </ul>

Table 4-1 summarizes the anticipated cumulative development projects' trip generation per TAZ.

**TABLE 4-1  
OTHER DEVELOPMENT TRIP GENERATION SUMMARY<sup>1</sup>**

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction	
				In	Out	Total	In	Out	Total			
1	Kare Youth League/ Santa Fe Dam Sports Park NEC of Arrow Highway & I-605	Youth sports park	17.0 AC	15	13	28	40	40	80	710	City of Irwindale	
2	Ahern Rentals 13645 Live Oak Lane	Replace 23,000 SF bldg. with 29,000 SF building	6 TSF	5	1	6	1	5	6	42	City of Irwindale	
3	Athens-Irwindale MRF & Transfer Station <sup>2</sup>	Collection and Roll-Off Trucks	- -	130	143	273	211	170	381	4,450	City of Irwindale	
		Self-Haul Trucks	- -	18	29	47	18	18	36	374		
		Transfer Trucks	- -	89	89	178	33	52	85	2,068		
		Employees	345 EMP	95	35	130	51	65	116	690		
		Convenience Market w/ Pumps	- -	18	18	36	23	23	46	751		
<b>TAZ 3 Subtotal</b>				<b>350</b>	<b>314</b>	<b>664</b>	<b>336</b>	<b>328</b>	<b>664</b>	<b>8,333</b>		
4	Warehouse - 5029 Bleecker St.	Warehouse	8.748 TSF	2	1	3	1	2	3	31	Baldwin Park	
5	Residential - 4859 Marion Av. Residential - 4861 Marion Av. Residential - 4819 Lante St. Residential - 4820-28 Fortin Av.	Single Family Residential	4 DU	0	4	4	4	0	4	40	City of Baldwin Park	
	Office - 4814 Maine Av.	Office	6.3 TSF	9	1	10	0	2	2	69		
	<b>TAZ 5 Subtotal</b>				<b>9</b>	<b>5</b>	<b>14</b>	<b>4</b>	<b>2</b>	<b>6</b>		<b>109</b>
6	Commercial - 4341 Maine Av.	Commercial	4.5 TSF	3	2	5	10	7	17	193	City of Baldwin Park	
7	Residential - 4503 Park Av. & Residential - 4455 Park Av.	Single Family Residential	2 DU	0	2	2	2	0	2	20	City of Baldwin Park	
8	Commercial (Jack in the Box & CVS Pharmacy) 545 S Citrus Avenue	Fast-Food Rest. w/ Drive-Thru	1.188 TSF	30	29	59	21	19	40	589	City of Covina	
		Pharmacy / Drug Store	10.658 TSF	20	14	34	45	45	90	960		
		Subtotal		50	43	93	66	64	130	1,549		
	Residential - 13655 Foster Av.	Medium-Density Residential	10 DU	1	4	5	4	2	6	67	City of Baldwin Park	
	Residential 3346 Vineland Av.	Medium-Density Residential	15 DU	2	6	8	6	3	9	100		
	Residential - 13732 Monterey Av. Residential - 13734 Monterey Av. Residential - 13736 Monterey Av. Residential - 12723 Bess Av. Residential - 12725 Bess Av. Residential - 12727 Bess Av. Residential - 3138 Magum St. Residential - 4143 Hornbrook Av.	Single Family Residential	8 DU	0	8	8	8	0	8	80		
	Restaurant - 14622 Dalewood St.	Rest.	15.295 TSF	92	85	177	101	70	171	1,945		
	Office - 3323 Baldwin Park Bl.	Office	4.95 TSF	7	1	8	1	6	7	54		
	13329 Garvey Av.	Office / Warehouse	13.62 TSF	19	3	22	3	17	20	150		
	Institutional Facility with Parking Structure -14403 Pacific Av.	Institution	176.2 TSF	870	166	1,036	66	147	213	12,145		
	Westfield Expansion 112 Plaza Dr.	Shopping Center	32 TSF	20	12	32	73	47	120	1,418		City of West Covina

**TABLE 4-1  
OTHER DEVELOPMENT TRIP GENERATION SUMMARY<sup>1</sup>**

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
8	McIntyre Square Expansion 2612-1698 E Garvey Av.	Rest.	4.8 TSF	29	27	56	32	22	54	610	City of West Covina
		Retail	4.8 TSF	3	2	5	11	7	18	206	
		Subtotal		32	29	61	43	29	72	816	
	West Covina Senior Villas 1838 E Workman Av.	High-Density Residential	65 DU	7	27	34	22	12	34	432	
	Medical / Professional Office SEC of W. Covina Pwy. & W Garvey S.	Office	55 TSF	75	10	85	14	68	82	606	City of West Covina
<b>TAZ 8 Subtotal</b>				<b>1,175</b>	<b>394</b>	<b>1,569</b>	<b>407</b>	<b>465</b>	<b>872</b>	<b>19,362</b>	--
9	Hotel - 15744 Arrow Hwy.	Hotel	120 RM	41	26	67	37	34	71	980	City of Irwindale
10	Mod 4-06 to CUP 67-6 16025 Cypress Street	Our Lady of Guadalupe Church	12.227 TSF	4	3	7	3	4	7	111	City of Irwindale
11	Waste Management Materials Recycling Facility & Transfer Station 501 West Gladstone	125,000 sf processing building with offices to receive, process and transfer up to 3,800 tons per day of solid waste.	3800 Tons/ Day	224	148	372	400	320	720	4,294	City of Azusa
	Residential - 710 S. Azusa Av.	Residential Condominiums	81 DU	6	30	36	28	14	42	471	
	Gladstone Mixed Use 890 Gladstone Street	Residential Apartments	9 DU	1	4	5	4	2	6	60	
		Retail/Commercial	4.443 TSF	3	2	5	10	6	16	191	
	Subtotal			4	6	10	14	8	22	251	
	Residential - 523-531 Arrow Hwy.	Residential Condominiums	28 DU	2	10	12	10	5	15	163	
	Commercial - 880 S Azusa Av.	Commercial	47 TSF	29	18	47	107	68	175	2,018	City of Covina
	Lowes - 1348 N Azusa Av.	Home Improvement Store	111.348 TSF	80	60	140	127	137	264	3,318	
	Taco Bell - 301 N Citrus Av.	Fast-Food Rest. w/ Drive-Thru	3.445 TSF	87	83	170	60	55	115	1,709	
	Condominiums - 615 N 3rd St.	Condominiums	30 DU	2	11	13	10	5	15	174	
	Residential - 436 E Cypress St.	Single Family Residential	1 DU	0	1	1	1	0	1	10	
Condominiums - Citrus Av. & Italia St.	Condominiums	37 DU	3	14	17	13	6	19	215	City of West Covina	
Mixed Use Condominiums Citrus Avenue & Italia Street	Retail	4.366 TSF	3	2	5	10	6	16	187		
	Residential Condominiums	4 DU	0	1	1	1	1	2	23		
Subtotal			3	3	6	11	7	18	210		
Mixed-Use Project 1045-1052 West Grondahl St.	Residential	412 DU	42	168	210	166	89	255	2,740	City of West Covina	
	Commercial	20 TSF	12	8	20	46	29	75	859		
Subtotal			54	176	230	212	118	330	3,599		
Medical Imaging Center 1700 West Covina Pkwy.	Medical Office	9.3 TSF	13	2	15	2	12	14	102		
<b>TAZ 11 Subtotal</b>				<b>507</b>	<b>562</b>	<b>1,069</b>	<b>995</b>	<b>755</b>	<b>1,750</b>	<b>16,534</b>	--
12	City Infill Housing Project	Single Family Units	7 DU	0	0	0	0	0	0	0	City of Irwindale
	Downtown Azusa Project 1 619/621 North Azusa Av.	Rest.	3.9 TSF	23	22	45	26	18	44	496	City of Azusa
		Office	1.035 TSF	1	0	1	0	1	2	11	
	Subtotal			24	22	46	26	19	46	507	
	Monrovia Nursery Specific Plan	Single Family Units	752 DU	141	423	564	478	281	759	7,197	
		Residential Condominiums	823 DU	62	301	363	287	141	428	4,782	
		Elementary School	245 STU	61	50	111	18	19	37	316	
Middle School		175 STU	52	43	95	14	14	28	284		
Park		6 AC	0	0	0	0	0	0	9		
Transit Commercial	50 TSF	31	20	51	114	73	187	2,147			
Subtotal			347	837	1,184	911	528	1,439	14,735		

**TABLE 4-1  
OTHER DEVELOPMENT TRIP GENERATION SUMMARY<sup>1</sup>**

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
	Azusa Pacific University Specific Plan	East Campus	874 STU	147	37	184	55	128	183	2,080	City of Azusa
		West Campus	2,550 STU	428	107	535	161	375	536	6,069	
		Subtotal		575	144	719	216	503	719	8,149	
Mixed Use Project NEC of Dalton Avenue & Foothill Bl.	Residential	73 DU	7	30	37	29	16	45	485		
	Retail	8 TSF	5	3	8	18	12	30	344		
	Subtotal		12	33	45	47	28	75	829		
Block 36 SEC of Azusa Av. & Foothill Bl.	Residential Apartments	110 DU	11	45	56	44	24	68	732		
	Office	29.2 TSF	40	5	45	7	36	43	321		
	Retail/Commercial	30 TSF	18	12	30	68	44	112	1,288		
	Rest.	7.5 TSF	45	41	86	49	34	83	954		
	Subtotal		114	103	217	168	138	306	3,295		
Target Project - 809 N Azusa Av.	Retail	150 TSF	92	59	151	341	218	559	6,441		
Azusa Rock Revised CUP & Reclamation Plan [a] Northerly terminus of Encanto Pkwy. & Fish Cyn. Rd.	Mineral Resource - Mining	Revised CUP & Reclamation Plan; Modify operations & reclamation approach	56	56	112	19	19	38	0		
Residential - 9th St. & Alameda Av.	Residential Townhomes	14 DU	1	5	6	5	2	7	81		
Rose Gardens at Santa Teresita 800 Buena Vista Street	Nursing Facility, Assisted Living	229.292 TSF	21	11	32	22	28	50	610	City of Duarte	
Andres Duarte Terrace Phase II 1700 Huntington Drive	High-Density Residential	43 DU	4	18	22	17	9	26	286		
Huntington Counts Phase III 2400 Huntington Drive	Medium-Density Residential	16 DU	2	7	9	6	3	9	106		
Huntington Courts Phase II 2400 Huntington Drive	Residential (Single/Multi-Family)	14 DU	1	6	7	6	3	9	93		
Attalla Ranch (Las Lomas Est.) NEC of Sunnydale & Woodbluff	Single Family Residential	15 DU	3	8	11	10	6	16	144		
Diamond Ridge	Quality Rest.	6.5 TSF	0	0	0	33	16	49	585		
	Office	30 TSF	41	6	47	8	37	45	330		
	Subtotal		41	6	47	41	53	94	915		
Cataract	Condominiums	17 DU	1	6	7	6	3	9	99		
JPI Sevilla Project	Condominiums	161 DU	12	59	71	56	28	84	935		
	Office	12 TSF	16	2	18	3	15	18	132		
	Subtotal		28	61	89	59	43	102	1,067		
Glendora Station	Residential	87 DU	9	35	44	35	19	54	579	City of Glendora	
	Office	5 TSF	7	1	8	1	6	7	55		
	Subtotal		16	36	52	36	25	61	634		
Tract 46680	Single Family Residential	14 DU	3	8	11	9	5	14	134		
Tract 46916	Single Family Residential	16 DU	3	9	12	10	6	16	153		
Tract 45858	Single Family Residential	13 DU	2	7	9	8	5	13	124		
Glendora Marketplace	Retail	50 TSF	31	20	51	114	73	187	2,147		
	Quality Rest.	4.2 TSF	N/A	N/A	0	21	10	31	378		
	Subtotal		31	20	51	135	83	218	2,525		
Wildwood Canyon	Single Family Residential	54 DU	10	30	40	34	20	54	517		
Monrovia Nursery	Single Family Residential	54 DU	10	30	40	34	20	54	517		

**TABLE 4-1  
OTHER DEVELOPMENT TRIP GENERATION SUMMARY<sup>1</sup>**

ID	Project Name/Location	Land Use	Quantity [b]	AM Peak Hour			PM Peak Hour			Daily	Jurisdiction
				In	Out	Total	In	Out	Total		
12	Grand-Foothill	Townhouses	18 DU	6	30	36	29	14	43	105	City of Glendora
		Condominiums	64 DU	2	12	14	12	6	18	372	
		Subtotal		8	42	50	41	20	61	477	
	Grand Avenue Retail Center	General Commercial	14 TSF	9	5	14	32	20	52	601	
		Quality Rest.	4.2 TSF	N/A	N/A	N/A	21	10	31	378	
		Subtotal		9	5	14	53	30	83	979	
	WalMart Expansion	Retail/Grocery	20 TSF	14	7	21	50	50	100	1,145	
	Route 66 Specific Plan	Office	750 TSF	1,023	140	1,163	190	928	1,118	8,258	
		Commercial	750 TSF	458	293	751	1,706	1,091	2,797	32,205	
		Apartments	225 DU	23	92	115	91	49	140	1,496	
		Subtotal		1,504	525	2,029	1,987	2,068	4,055	41,959	
	<b>TAZ 12 Subtotal</b>				<b>2,932</b>	<b>2,101</b>	<b>5,033</b>	<b>4,297</b>	<b>3,935</b>	<b>8,233</b>	

<sup>1</sup> Source: Transportation Study for the Athens Materials Recovery Facility and Transfer Station (01/2012). Prepared by Gibson Transportation Consulting Inc.

*Trip Generation, 8th Edition*, Institute of Transportation Engineers (ITE), 2008. Notes:

[a] Materials processed through conveyor belts, trucks pick up material at Foothill & Irwindale; study intersections not impacted

[b] DU: Dwelling Unit; SF: Square Feet

<sup>2</sup> Source: Athens-Irwindale Materials Recovery Facility and Transfer Station Traffic Impact Analysis (02/2014). Prepared by Urban Crossroads, Inc.

Trip distribution assumptions have been obtained from the cumulative project traffic study reports where available, or developed independently for those projects where published information was not available. The trip distributions for each of the cumulative development projects are included as Appendix “F” of this report.

Based on the identified trip generation and distributions for other developments on arterial highways throughout the study area, other cumulative development project daily traffic volumes and AM and PM peak hour intersection turning movement volumes have been developed and are shown on Exhibit 4-E, Exhibit 4-F, and Exhibit 4-G, respectively.

Exhibit 4-H, Exhibit 4-I, and Exhibit 4-J present the Interim Year (2016) Without Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

#### 4.3 Interim Year (2016) With Project

For Interim Year (2016) With Project conditions, project only traffic volumes were added to the Interim Year Without Project volumes described above. Exhibit 4-K, Exhibit 4-L, and Exhibit 4-M present the Interim Year (2016) With Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

#### 4.4 Long Range (2035) Without Project

Per Appendix D in the Los Angeles County 2010 CMP, the background traffic growth estimates for Horizon Year must use the generalized growth factor (at a minimum) shown in Exhibit D-1 of the LA CMP. Based on Exhibit D-1 of the LA CMP, a general traffic volume growth factor of 1.106 is used for cities (including Irwindale) within the Regional Statistical Area (RSA) 26 for Horizon Year 2035. Therefore, Long Range baseline volumes were developed by applying a general growth factor of 1.106 to existing volumes to reflect 2035 conditions, as identified in the Los Angeles County CMP, in addition to the cumulative project / other development data.

EXHIBIT 4-E: Cumulative Development Average Daily Traffic

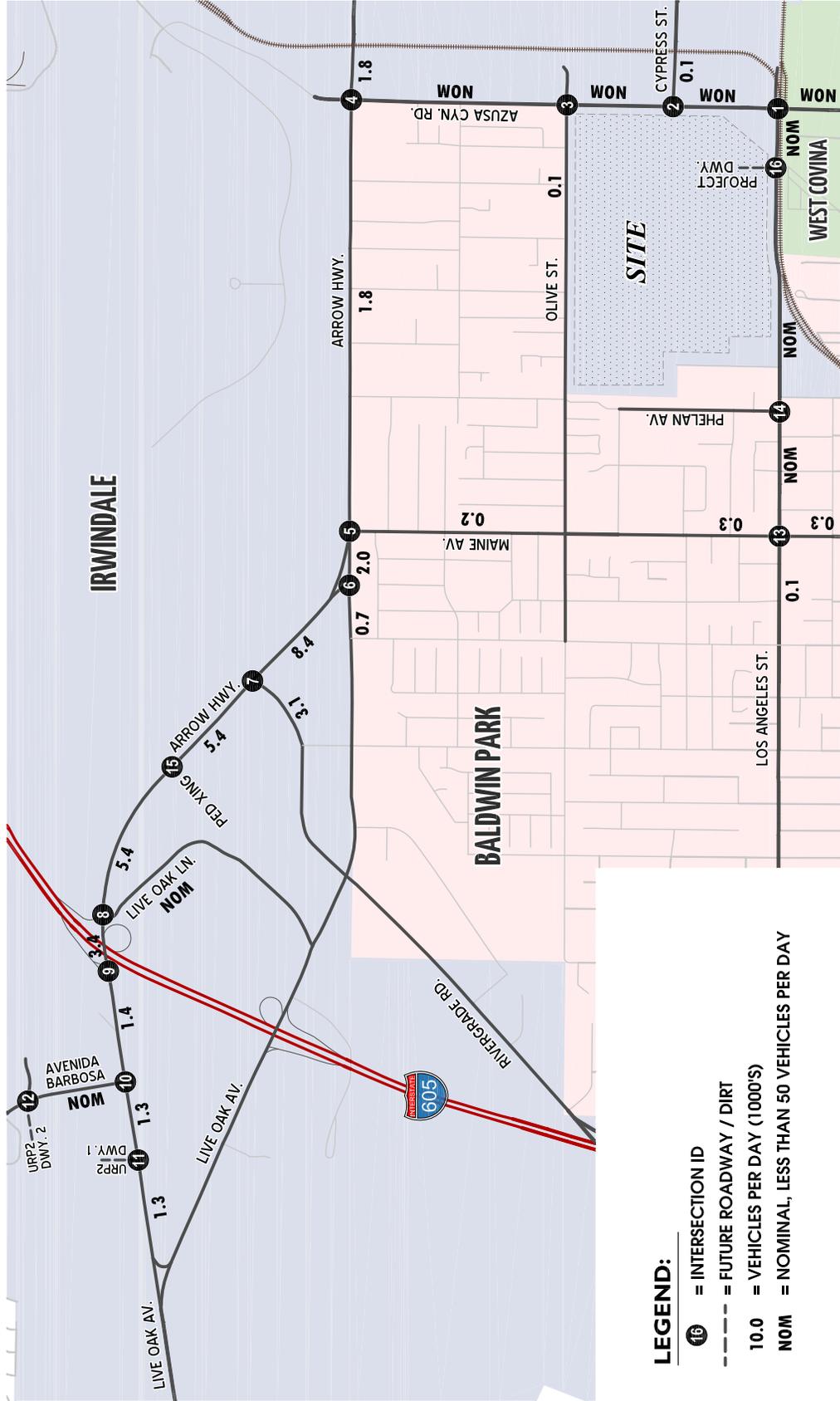






EXHIBIT 4-H: Interim Year (2016) Without Project Average Daily Traffic

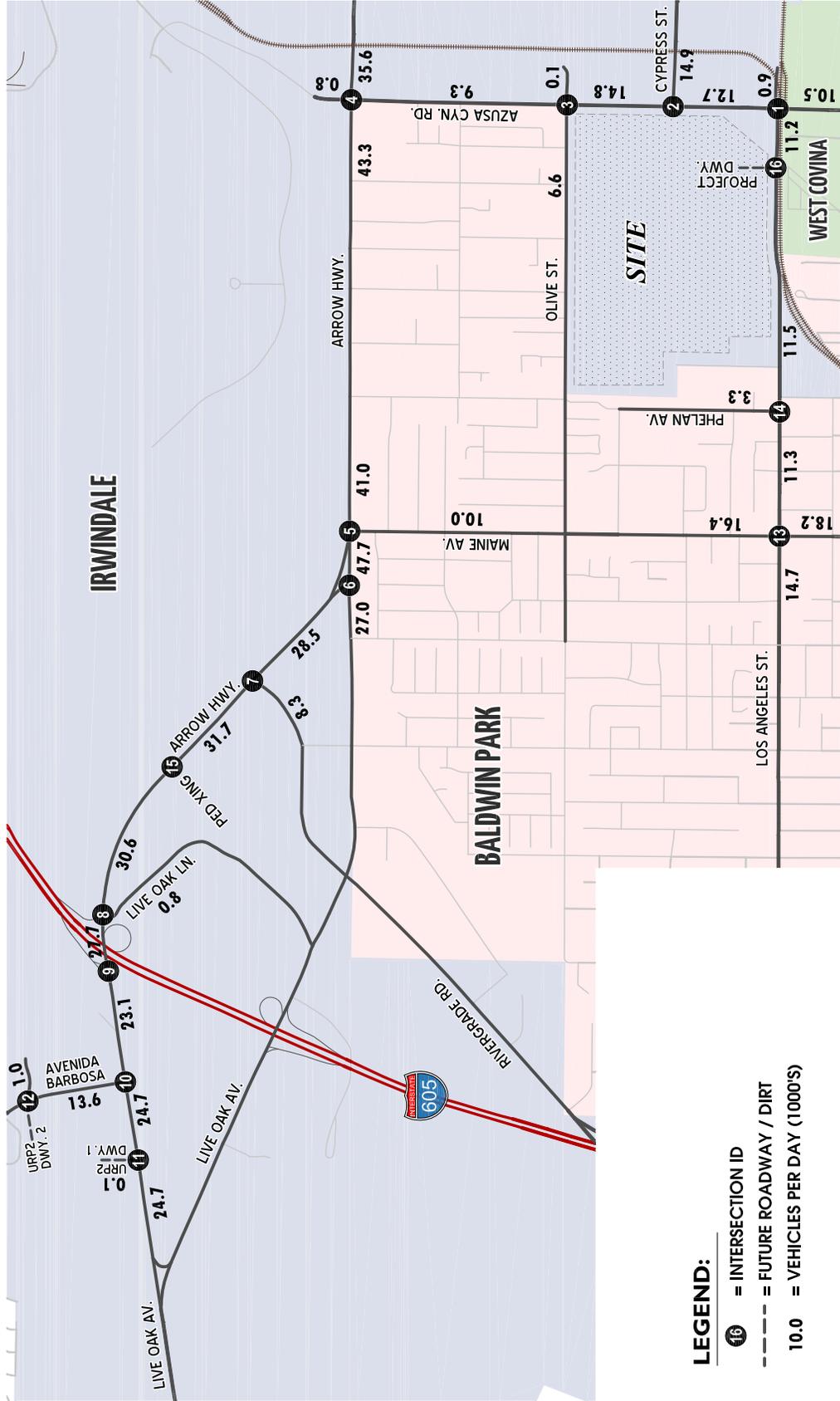






EXHIBIT 4-K: Interim Year (2016) With Project Average Daily Traffic

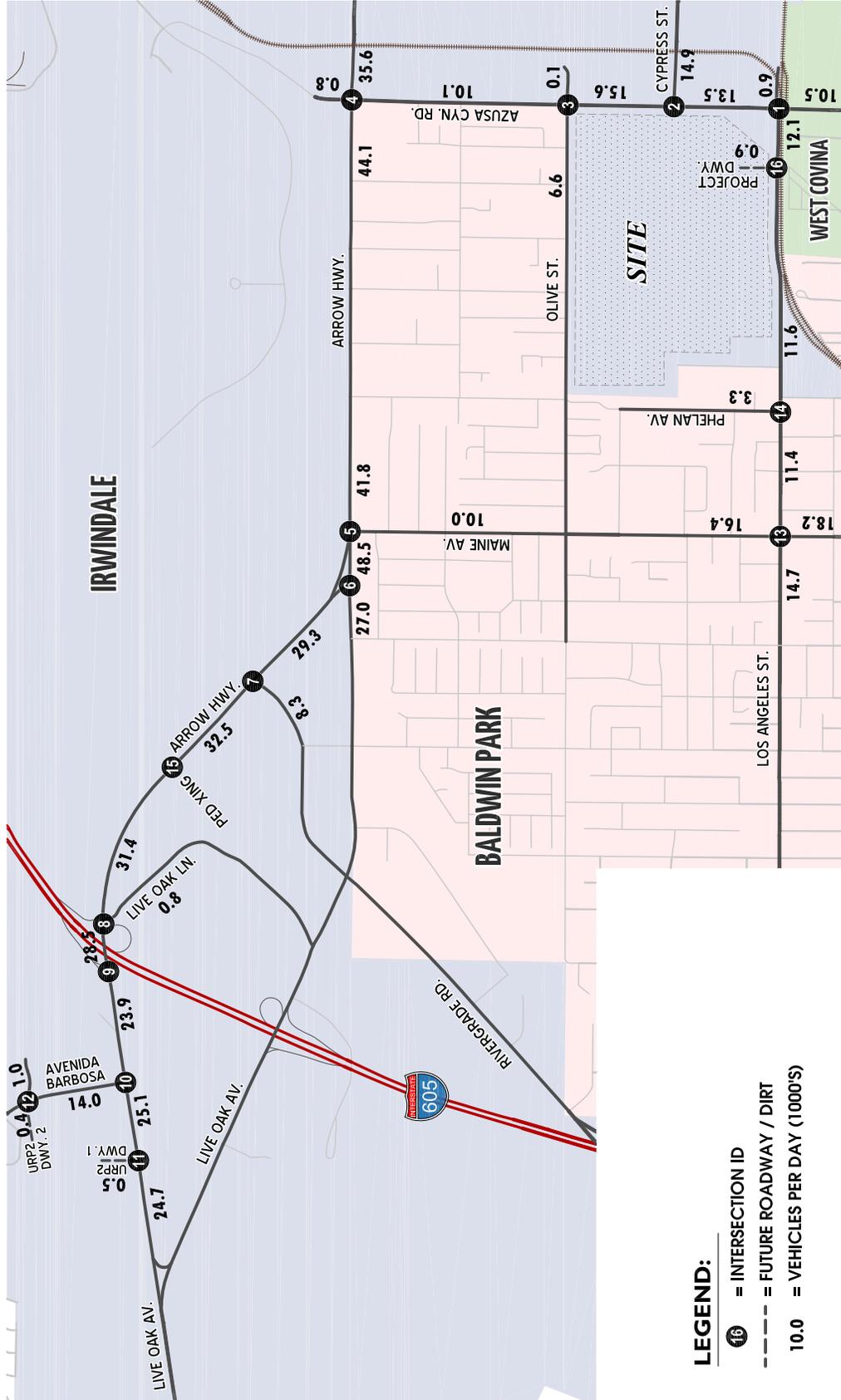
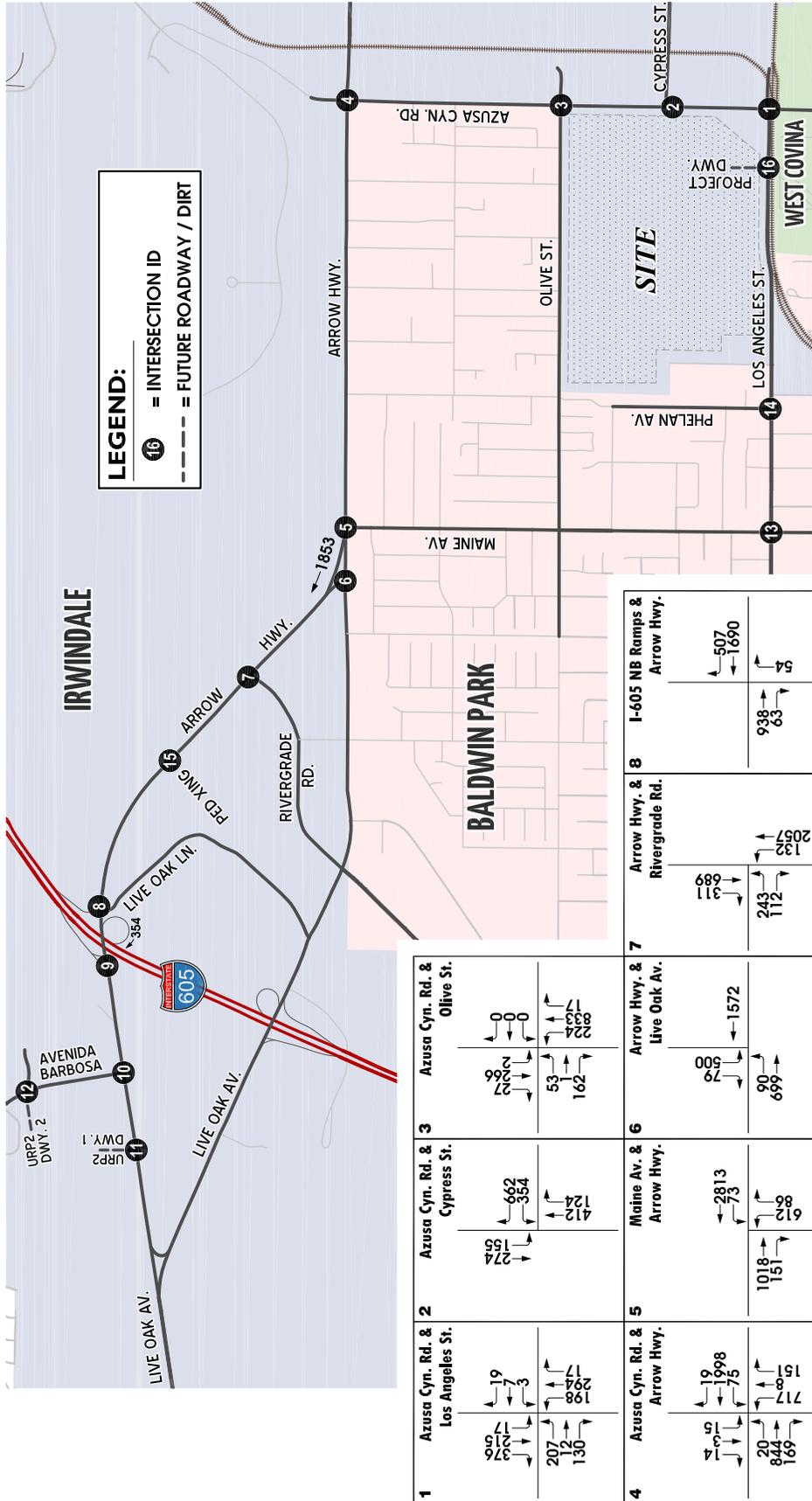


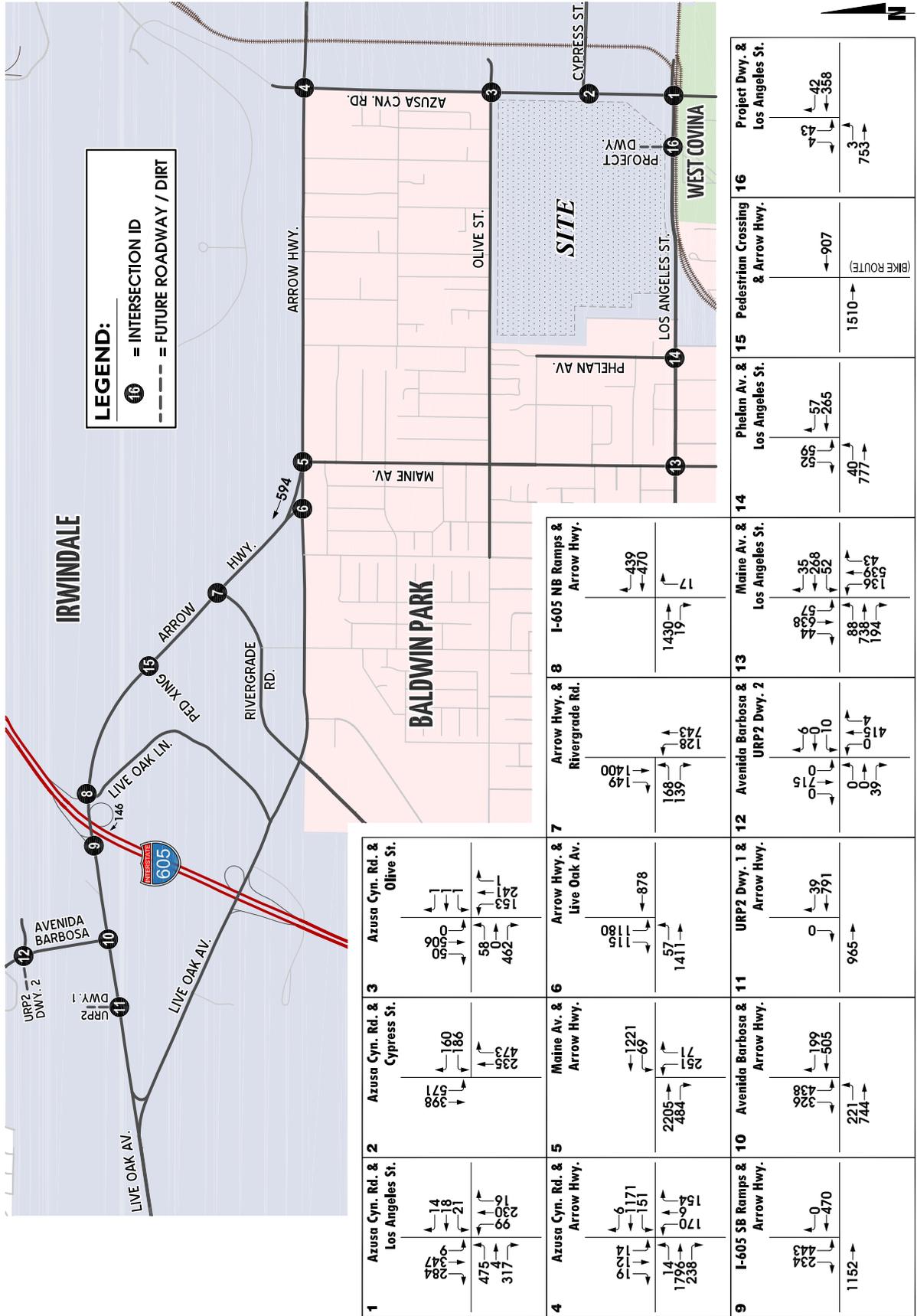
EXHIBIT 4-L: Interim Year (2016) With Project AM Peak Hour Intersection Volumes



Intersection ID	Intersection Description	Volume Data																								
1	Azusa Cyn. Rd. & Los Angeles St.	<table border="1"> <tr><td>19</td><td>17</td><td>12</td><td>130</td></tr> <tr><td>17</td><td>15</td><td>12</td><td>130</td></tr> <tr><td>207</td><td>215</td><td>207</td><td>130</td></tr> <tr><td>19</td><td>17</td><td>12</td><td>130</td></tr> <tr><td>17</td><td>15</td><td>12</td><td>130</td></tr> <tr><td>207</td><td>215</td><td>207</td><td>130</td></tr> </table>	19	17	12	130	17	15	12	130	207	215	207	130	19	17	12	130	17	15	12	130	207	215	207	130
19	17	12	130																							
17	15	12	130																							
207	215	207	130																							
19	17	12	130																							
17	15	12	130																							
207	215	207	130																							
2	Azusa Cyn. Rd. & Cypress St.	<table border="1"> <tr><td>124</td><td>155</td><td>124</td><td>155</td></tr> <tr><td>662</td><td>384</td><td>662</td><td>384</td></tr> <tr><td>124</td><td>155</td><td>124</td><td>155</td></tr> <tr><td>662</td><td>384</td><td>662</td><td>384</td></tr> <tr><td>124</td><td>155</td><td>124</td><td>155</td></tr> <tr><td>662</td><td>384</td><td>662</td><td>384</td></tr> </table>	124	155	124	155	662	384	662	384	124	155	124	155	662	384	662	384	124	155	124	155	662	384	662	384
124	155	124	155																							
662	384	662	384																							
124	155	124	155																							
662	384	662	384																							
124	155	124	155																							
662	384	662	384																							
3	Azusa Cyn. Rd. & Olive St.	<table border="1"> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>53</td><td>162</td><td>53</td><td>162</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>53</td><td>162</td><td>53</td><td>162</td></tr> </table>	0	0	0	0	0	0	0	0	53	162	53	162	0	0	0	0	0	0	0	0	53	162	53	162
0	0	0	0																							
0	0	0	0																							
53	162	53	162																							
0	0	0	0																							
0	0	0	0																							
53	162	53	162																							
4	Azusa Cyn. Rd. & Arrow Hwy.	<table border="1"> <tr><td>19</td><td>1998</td><td>19</td><td>1998</td></tr> <tr><td>15</td><td>75</td><td>15</td><td>75</td></tr> <tr><td>20</td><td>844</td><td>20</td><td>844</td></tr> <tr><td>169</td><td>169</td><td>169</td><td>169</td></tr> <tr><td>15</td><td>75</td><td>15</td><td>75</td></tr> <tr><td>19</td><td>1998</td><td>19</td><td>1998</td></tr> </table>	19	1998	19	1998	15	75	15	75	20	844	20	844	169	169	169	169	15	75	15	75	19	1998	19	1998
19	1998	19	1998																							
15	75	15	75																							
20	844	20	844																							
169	169	169	169																							
15	75	15	75																							
19	1998	19	1998																							
5	Maine Av. & Arrow Hwy.	<table border="1"> <tr><td>1018</td><td>151</td><td>1018</td><td>151</td></tr> <tr><td>2813</td><td>73</td><td>2813</td><td>73</td></tr> <tr><td>612</td><td>612</td><td>612</td><td>612</td></tr> <tr><td>1018</td><td>151</td><td>1018</td><td>151</td></tr> <tr><td>2813</td><td>73</td><td>2813</td><td>73</td></tr> <tr><td>612</td><td>612</td><td>612</td><td>612</td></tr> </table>	1018	151	1018	151	2813	73	2813	73	612	612	612	612	1018	151	1018	151	2813	73	2813	73	612	612	612	612
1018	151	1018	151																							
2813	73	2813	73																							
612	612	612	612																							
1018	151	1018	151																							
2813	73	2813	73																							
612	612	612	612																							
6	Maine Av. & Live Oak Av.	<table border="1"> <tr><td>90</td><td>699</td><td>90</td><td>699</td></tr> <tr><td>29</td><td>29</td><td>29</td><td>29</td></tr> <tr><td>50</td><td>50</td><td>50</td><td>50</td></tr> <tr><td>90</td><td>699</td><td>90</td><td>699</td></tr> <tr><td>29</td><td>29</td><td>29</td><td>29</td></tr> <tr><td>50</td><td>50</td><td>50</td><td>50</td></tr> </table>	90	699	90	699	29	29	29	29	50	50	50	50	90	699	90	699	29	29	29	29	50	50	50	50
90	699	90	699																							
29	29	29	29																							
50	50	50	50																							
90	699	90	699																							
29	29	29	29																							
50	50	50	50																							
7	Arrow Hwy. & Rivergrade Rd.	<table border="1"> <tr><td>243</td><td>112</td><td>243</td><td>112</td></tr> <tr><td>132</td><td>2057</td><td>132</td><td>2057</td></tr> <tr><td>21</td><td>689</td><td>21</td><td>689</td></tr> <tr><td>243</td><td>112</td><td>243</td><td>112</td></tr> <tr><td>132</td><td>2057</td><td>132</td><td>2057</td></tr> <tr><td>21</td><td>689</td><td>21</td><td>689</td></tr> </table>	243	112	243	112	132	2057	132	2057	21	689	21	689	243	112	243	112	132	2057	132	2057	21	689	21	689
243	112	243	112																							
132	2057	132	2057																							
21	689	21	689																							
243	112	243	112																							
132	2057	132	2057																							
21	689	21	689																							
8	I-605 NB Ramps & Arrow Hwy.	<table border="1"> <tr><td>54</td><td>507</td><td>54</td><td>507</td></tr> <tr><td>63</td><td>1690</td><td>63</td><td>1690</td></tr> <tr><td>938</td><td>938</td><td>938</td><td>938</td></tr> <tr><td>54</td><td>507</td><td>54</td><td>507</td></tr> <tr><td>63</td><td>1690</td><td>63</td><td>1690</td></tr> <tr><td>938</td><td>938</td><td>938</td><td>938</td></tr> </table>	54	507	54	507	63	1690	63	1690	938	938	938	938	54	507	54	507	63	1690	63	1690	938	938	938	938
54	507	54	507																							
63	1690	63	1690																							
938	938	938	938																							
54	507	54	507																							
63	1690	63	1690																							
938	938	938	938																							
9	I-605 SB Ramps & Arrow Hwy.	<table border="1"> <tr><td>19</td><td>1690</td><td>19</td><td>1690</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>20</td><td>844</td><td>20</td><td>844</td></tr> <tr><td>169</td><td>169</td><td>169</td><td>169</td></tr> <tr><td>15</td><td>15</td><td>15</td><td>15</td></tr> <tr><td>19</td><td>1690</td><td>19</td><td>1690</td></tr> </table>	19	1690	19	1690	15	15	15	15	20	844	20	844	169	169	169	169	15	15	15	15	19	1690	19	1690
19	1690	19	1690																							
15	15	15	15																							
20	844	20	844																							
169	169	169	169																							
15	15	15	15																							
19	1690	19	1690																							
10	Avenida Barbosa & Arrow Hwy.	<table border="1"> <tr><td>272</td><td>589</td><td>272</td><td>589</td></tr> <tr><td>205</td><td>625</td><td>205</td><td>625</td></tr> <tr><td>205</td><td>1609</td><td>205</td><td>1609</td></tr> <tr><td>272</td><td>589</td><td>272</td><td>589</td></tr> <tr><td>205</td><td>625</td><td>205</td><td>625</td></tr> <tr><td>205</td><td>1609</td><td>205</td><td>1609</td></tr> </table>	272	589	272	589	205	625	205	625	205	1609	205	1609	272	589	272	589	205	625	205	625	205	1609	205	1609
272	589	272	589																							
205	625	205	625																							
205	1609	205	1609																							
272	589	272	589																							
205	625	205	625																							
205	1609	205	1609																							
11	URP2 Dwy. 1 & Arrow Hwy.	<table border="1"> <tr><td>14</td><td>66</td><td>14</td><td>66</td></tr> <tr><td>14</td><td>1799</td><td>14</td><td>1799</td></tr> <tr><td>14</td><td>14</td><td>14</td><td>14</td></tr> <tr><td>14</td><td>66</td><td>14</td><td>66</td></tr> <tr><td>14</td><td>1799</td><td>14</td><td>1799</td></tr> <tr><td>14</td><td>14</td><td>14</td><td>14</td></tr> </table>	14	66	14	66	14	1799	14	1799	14	14	14	14	14	66	14	66	14	1799	14	1799	14	14	14	14
14	66	14	66																							
14	1799	14	1799																							
14	14	14	14																							
14	66	14	66																							
14	1799	14	1799																							
14	14	14	14																							
12	Avenida Barbosa & URP2 Dwy. 2	<table border="1"> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0																							
0	0	0	0																							
0	0	0	0																							
0	0	0	0																							
0	0	0	0																							
0	0	0	0																							
13	Maine Av. & Los Angeles St.	<table border="1"> <tr><td>120</td><td>254</td><td>120</td><td>254</td></tr> <tr><td>188</td><td>188</td><td>188</td><td>188</td></tr> <tr><td>46</td><td>395</td><td>46</td><td>395</td></tr> <tr><td>64</td><td>64</td><td>64</td><td>64</td></tr> <tr><td>120</td><td>254</td><td>120</td><td>254</td></tr> <tr><td>188</td><td>188</td><td>188</td><td>188</td></tr> </table>	120	254	120	254	188	188	188	188	46	395	46	395	64	64	64	64	120	254	120	254	188	188	188	188
120	254	120	254																							
188	188	188	188																							
46	395	46	395																							
64	64	64	64																							
120	254	120	254																							
188	188	188	188																							
14	Phelan Av. & Los Angeles St.	<table border="1"> <tr><td>75</td><td>260</td><td>75</td><td>260</td></tr> <tr><td>100</td><td>472</td><td>100</td><td>472</td></tr> <tr><td>96</td><td>96</td><td>96</td><td>96</td></tr> <tr><td>75</td><td>260</td><td>75</td><td>260</td></tr> <tr><td>100</td><td>472</td><td>100</td><td>472</td></tr> <tr><td>96</td><td>96</td><td>96</td><td>96</td></tr> </table>	75	260	75	260	100	472	100	472	96	96	96	96	75	260	75	260	100	472	100	472	96	96	96	96
75	260	75	260																							
100	472	100	472																							
96	96	96	96																							
75	260	75	260																							
100	472	100	472																							
96	96	96	96																							
15	Pedestrian Crossing & Arrow Hwy.	<table border="1"> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> <tr><td>981</td><td>981</td><td>981</td><td>981</td></tr> </table>	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981	981
981	981	981	981																							
981	981	981	981																							
981	981	981	981																							
981	981	981	981																							
981	981	981	981																							
981	981	981	981																							
16	Project Dwy. & Los Angeles St.	<table border="1"> <tr><td>290</td><td>290</td><td>290</td><td>290</td></tr> <tr><td>66</td><td>515</td><td>66</td><td>515</td></tr> <tr><td>66</td><td>515</td><td>66</td><td>515</td></tr> <tr><td>290</td><td>290</td><td>290</td><td>290</td></tr> <tr><td>66</td><td>515</td><td>66</td><td>515</td></tr> <tr><td>66</td><td>515</td><td>66</td><td>515</td></tr> </table>	290	290	290	290	66	515	66	515	66	515	66	515	290	290	290	290	66	515	66	515	66	515	66	515
290	290	290	290																							
66	515	66	515																							
66	515	66	515																							
290	290	290	290																							
66	515	66	515																							
66	515	66	515																							



### EXHIBIT 4-M: Interim Year (2016) With Project PM Peak Hour Intersection Volumes



Appendix “G” of this report contains the relevant excerpts from the Los Angeles County CMP traffic impact analysis guidelines.

Exhibit 4-N, Exhibit 4-O, and Exhibit 4-P present the Long Range (2035) Without Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

#### 4.5 Long Range (2035) With Project

For Long Range (2035) With Project conditions, “project only” traffic volumes were added to the Long Range (2035) Without Project volumes described above. Exhibit 4-Q, Exhibit 4-R, and 4-S present the Long Range (2035) with Project ADT, AM peak hour, and PM peak hour traffic volumes, respectively.

EXHIBIT 4-N: Long Range (2035) Without Project Average Daily Traffic

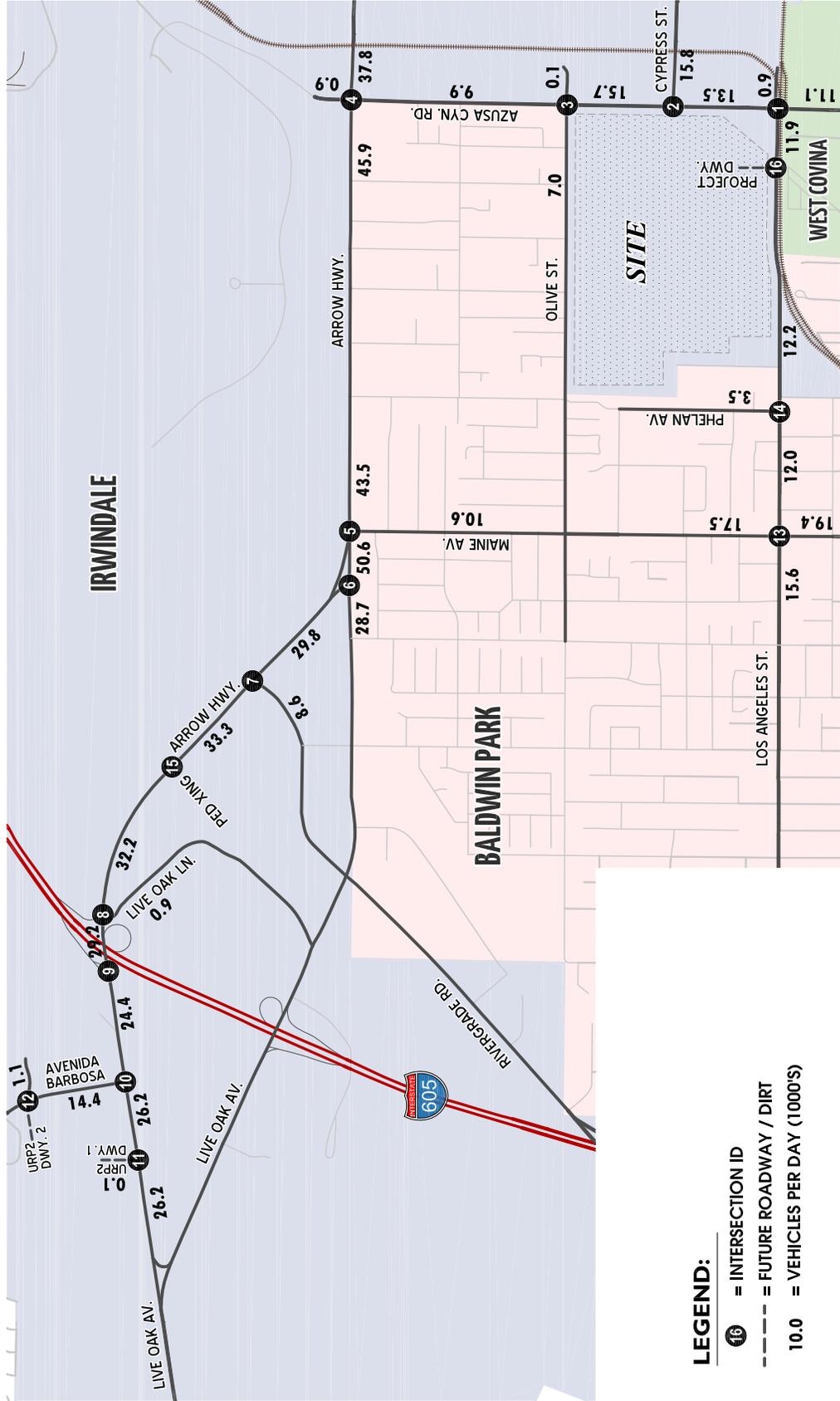
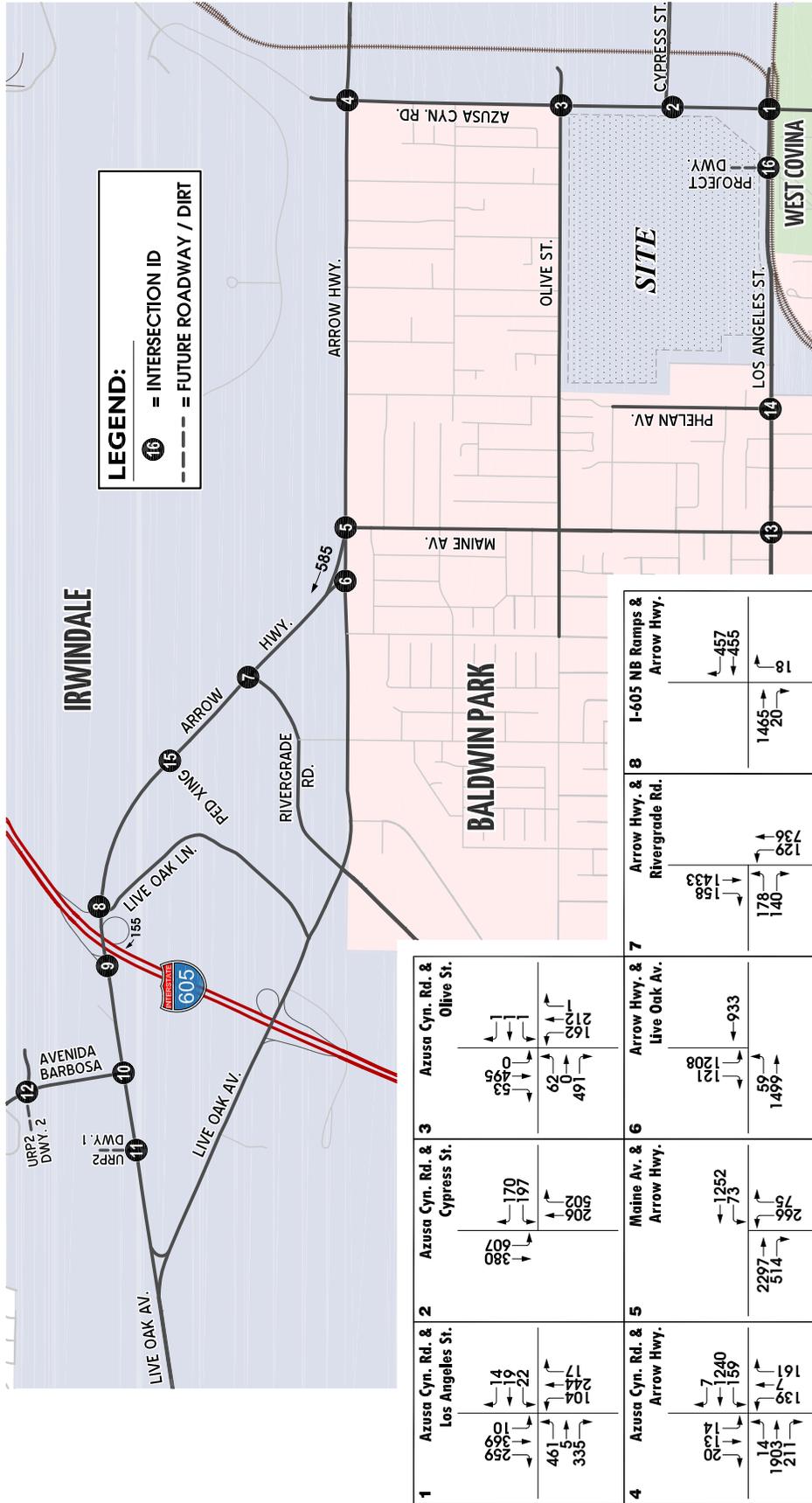




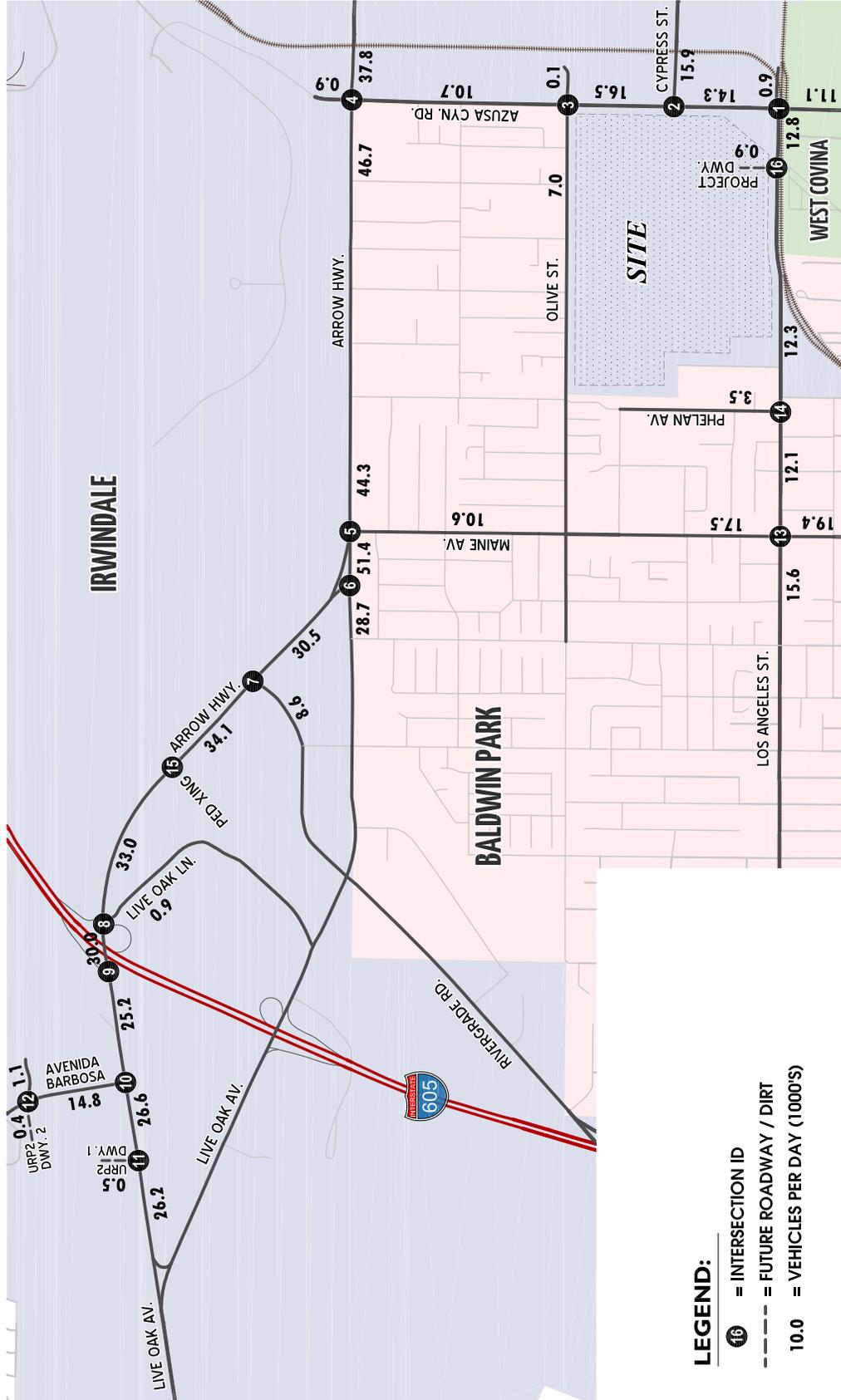
EXHIBIT 4-P: Long Range (2035) Without Project PM Peak Hour Intersection Volumes



Intersection ID	1 Azusa Cyn. Rd. & Los Angeles St.	2 Azusa Cyn. Rd. & Cypress St.	3 Azusa Cyn. Rd. & Olive St.	4 Azusa Cyn. Rd. & Arrow Hwy.	5 Maine Av. & Arrow Hwy.	6 Maine Av. & Live Oak Av.	7 Arrow Hwy. & Rivergrade Rd.	8 I-605 NB Ramps & Arrow Hwy.	9 I-605 SB Ramps & Arrow Hwy.	10 Avenida Barbosa & Arrow Hwy.	11 URP2 Dwy. 1 & Arrow Hwy.	12 Avenida Barbosa & URP2 Dwy. 2	13 Maine Av. & Los Angeles St.	14 Phelan Av. & Los Angeles St.	15 Pedestrian Crossing & Arrow Hwy.	16 Project Dwy. & Los Angeles St.																																																																																																																																																																																																																																																																																																																																																												
1	<table border="1"> <tr><td>14</td><td>102</td><td>17</td><td>102</td></tr> <tr><td>18</td><td>102</td><td>17</td><td>102</td></tr> <tr><td>19</td><td>102</td><td>17</td><td>102</td></tr> <tr><td>22</td><td>102</td><td>17</td><td>102</td></tr> <tr><td>461</td><td>335</td><td>491</td><td>335</td></tr> <tr><td>102</td><td>335</td><td>491</td><td>335</td></tr> <tr><td>17</td><td>102</td><td>491</td><td>102</td></tr> <tr><td>102</td><td>17</td><td>491</td><td>102</td></tr> </table>	14	102	17	102	18	102	17	102	19	102	17	102	22	102	17	102	461	335	491	335	102	335	491	335	17	102	491	102	102	17	491	102	<table border="1"> <tr><td>170</td><td>197</td><td>206</td><td>102</td></tr> <tr><td>380</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>67</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>102</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>102</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>102</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>102</td><td>102</td><td>102</td><td>102</td></tr> <tr><td>102</td><td>102</td><td>102</td><td>102</td></tr> </table>	170	197	206	102	380	102	102	102	67	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	102	<table border="1"> <tr><td>165</td><td>232</td><td>165</td><td>232</td></tr> <tr><td>165</td><td>232</td><td>165</td><td>232</td></tr> <tr><td>165</td><td>232</td><td>165</td><td>232</td></tr> <tr><td>165</td><td>232</td><td>165</td><td>232</td></tr> <tr><td>62</td><td>491</td><td>491</td><td>62</td></tr> <tr><td>165</td><td>491</td><td>491</td><td>165</td></tr> <tr><td>232</td><td>62</td><td>491</td><td>232</td></tr> <tr><td>165</td><td>62</td><td>491</td><td>165</td></tr> </table>	165	232	165	232	165	232	165	232	165	232	165	232	165	232	165	232	62	491	491	62	165	491	491	165	232	62	491	232	165	62	491	165	<table border="1"> <tr><td>145</td><td>121</td><td>121</td><td>145</td></tr> <tr><td>121</td><td>145</td><td>145</td><td>121</td></tr> <tr><td>121</td><td>145</td><td>145</td><td>121</td></tr> <tr><td>121</td><td>145</td><td>145</td><td>121</td></tr> <tr><td>178</td><td>140</td><td>140</td><td>178</td></tr> <tr><td>140</td><td>178</td><td>178</td><td>140</td></tr> <tr><td>140</td><td>178</td><td>178</td><td>140</td></tr> <tr><td>140</td><td>178</td><td>178</td><td>140</td></tr> </table>	145	121	121	145	121	145	145	121	121	145	145	121	121	145	145	121	178	140	140	178	140	178	178	140	140	178	178	140	140	178	178	140	<table border="1"> <tr><td>1465</td><td>20</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>1465</td><td>20</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> </table>	1465	20	20	1465	20	1465	1465	20	20	1465	1465	20	20	1465	1465	20	1465	20	20	1465	20	1465	20	1465	20	1465	20	1465	20	1465	20	1465	<table border="1"> <tr><td>38</td><td>92</td><td>92</td><td>38</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>64</td><td>94</td><td>94</td><td>64</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> </table>	38	92	92	38	92	38	38	92	92	38	38	92	92	38	38	92	64	94	94	64	94	64	64	94	94	64	64	94	94	64	64	94	<table border="1"> <tr><td>7</td><td>0</td><td>0</td><td>7</td></tr> <tr><td>0</td><td>7</td><td>7</td><td>0</td></tr> <tr><td>0</td><td>7</td><td>7</td><td>0</td></tr> <tr><td>0</td><td>7</td><td>7</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td></tr> </table>	7	0	0	7	0	7	7	0	0	7	7	0	0	7	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	<table border="1"> <tr><td>1465</td><td>20</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>20</td><td>1465</td><td>1465</td><td>20</td></tr> <tr><td>1465</td><td>20</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> <tr><td>20</td><td>1465</td><td>20</td><td>1465</td></tr> </table>	1465	20	20	1465	20	1465	1465	20	20	1465	1465	20	20	1465	1465	20	1465	20	20	1465	20	1465	20	1465	20	1465	20	1465	20	1465	20	1465	<table border="1"> <tr><td>38</td><td>92</td><td>92</td><td>38</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>92</td><td>38</td><td>38</td><td>92</td></tr> <tr><td>64</td><td>94</td><td>94</td><td>64</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> <tr><td>94</td><td>64</td><td>64</td><td>94</td></tr> </table>	38	92	92	38	92	38	38	92	92	38	38	92	92	38	38	92	64	94	94	64	94	64	64	94	94	64	64	94	94	64	64	94	<table border="1"> <tr><td>53</td><td>53</td><td>61</td><td>277</td></tr> <tr><td>53</td><td>53</td><td>61</td><td>277</td></tr> <tr><td>53</td><td>53</td><td>61</td><td>277</td></tr> <tr><td>53</td><td>53</td><td>61</td><td>277</td></tr> <tr><td>42</td><td>823</td><td>823</td><td>42</td></tr> <tr><td>823</td><td>42</td><td>42</td><td>823</td></tr> <tr><td>823</td><td>42</td><td>42</td><td>823</td></tr> <tr><td>823</td><td>42</td><td>42</td><td>823</td></tr> </table>	53	53	61	277	53	53	61	277	53	53	61	277	53	53	61	277	42	823	823	42	823	42	42	823	823	42	42	823	823	42	42	823	<table border="1"> <tr><td>1550</td><td>910</td><td>910</td><td>1550</td></tr> <tr><td>910</td><td>1550</td><td>1550</td><td>910</td></tr> <tr><td>910</td><td>1550</td><td>1550</td><td>910</td></tr> <tr><td>910</td><td>1550</td><td>1550</td><td>910</td></tr> <tr><td>1550</td><td>910</td><td>910</td><td>1550</td></tr> <tr><td>910</td><td>1550</td><td>910</td><td>1550</td></tr> <tr><td>910</td><td>1550</td><td>910</td><td>1550</td></tr> <tr><td>910</td><td>1550</td><td>910</td><td>1550</td></tr> </table>	1550	910	910	1550	910	1550	1550	910	910	1550	1550	910	910	1550	1550	910	1550	910	910	1550	910	1550	910	1550	910	1550	910	1550	910	1550	910	1550	<p>INTERSECTION DOES NOT EXIST</p>
14	102	17	102																																																																																																																																																																																																																																																																																																																																																																									
18	102	17	102																																																																																																																																																																																																																																																																																																																																																																									
19	102	17	102																																																																																																																																																																																																																																																																																																																																																																									
22	102	17	102																																																																																																																																																																																																																																																																																																																																																																									
461	335	491	335																																																																																																																																																																																																																																																																																																																																																																									
102	335	491	335																																																																																																																																																																																																																																																																																																																																																																									
17	102	491	102																																																																																																																																																																																																																																																																																																																																																																									
102	17	491	102																																																																																																																																																																																																																																																																																																																																																																									
170	197	206	102																																																																																																																																																																																																																																																																																																																																																																									
380	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
67	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
102	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
102	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
102	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
102	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
102	102	102	102																																																																																																																																																																																																																																																																																																																																																																									
165	232	165	232																																																																																																																																																																																																																																																																																																																																																																									
165	232	165	232																																																																																																																																																																																																																																																																																																																																																																									
165	232	165	232																																																																																																																																																																																																																																																																																																																																																																									
165	232	165	232																																																																																																																																																																																																																																																																																																																																																																									
62	491	491	62																																																																																																																																																																																																																																																																																																																																																																									
165	491	491	165																																																																																																																																																																																																																																																																																																																																																																									
232	62	491	232																																																																																																																																																																																																																																																																																																																																																																									
165	62	491	165																																																																																																																																																																																																																																																																																																																																																																									
145	121	121	145																																																																																																																																																																																																																																																																																																																																																																									
121	145	145	121																																																																																																																																																																																																																																																																																																																																																																									
121	145	145	121																																																																																																																																																																																																																																																																																																																																																																									
121	145	145	121																																																																																																																																																																																																																																																																																																																																																																									
178	140	140	178																																																																																																																																																																																																																																																																																																																																																																									
140	178	178	140																																																																																																																																																																																																																																																																																																																																																																									
140	178	178	140																																																																																																																																																																																																																																																																																																																																																																									
140	178	178	140																																																																																																																																																																																																																																																																																																																																																																									
1465	20	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
1465	20	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
38	92	92	38																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
64	94	94	64																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
7	0	0	7																																																																																																																																																																																																																																																																																																																																																																									
0	7	7	0																																																																																																																																																																																																																																																																																																																																																																									
0	7	7	0																																																																																																																																																																																																																																																																																																																																																																									
0	7	7	0																																																																																																																																																																																																																																																																																																																																																																									
0	0	0	0																																																																																																																																																																																																																																																																																																																																																																									
0	0	0	0																																																																																																																																																																																																																																																																																																																																																																									
0	0	0	0																																																																																																																																																																																																																																																																																																																																																																									
0	0	0	0																																																																																																																																																																																																																																																																																																																																																																									
1465	20	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
20	1465	1465	20																																																																																																																																																																																																																																																																																																																																																																									
1465	20	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
20	1465	20	1465																																																																																																																																																																																																																																																																																																																																																																									
38	92	92	38																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
92	38	38	92																																																																																																																																																																																																																																																																																																																																																																									
64	94	94	64																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
94	64	64	94																																																																																																																																																																																																																																																																																																																																																																									
53	53	61	277																																																																																																																																																																																																																																																																																																																																																																									
53	53	61	277																																																																																																																																																																																																																																																																																																																																																																									
53	53	61	277																																																																																																																																																																																																																																																																																																																																																																									
53	53	61	277																																																																																																																																																																																																																																																																																																																																																																									
42	823	823	42																																																																																																																																																																																																																																																																																																																																																																									
823	42	42	823																																																																																																																																																																																																																																																																																																																																																																									
823	42	42	823																																																																																																																																																																																																																																																																																																																																																																									
823	42	42	823																																																																																																																																																																																																																																																																																																																																																																									
1550	910	910	1550																																																																																																																																																																																																																																																																																																																																																																									
910	1550	1550	910																																																																																																																																																																																																																																																																																																																																																																									
910	1550	1550	910																																																																																																																																																																																																																																																																																																																																																																									
910	1550	1550	910																																																																																																																																																																																																																																																																																																																																																																									
1550	910	910	1550																																																																																																																																																																																																																																																																																																																																																																									
910	1550	910	1550																																																																																																																																																																																																																																																																																																																																																																									
910	1550	910	1550																																																																																																																																																																																																																																																																																																																																																																									
910	1550	910	1550																																																																																																																																																																																																																																																																																																																																																																									

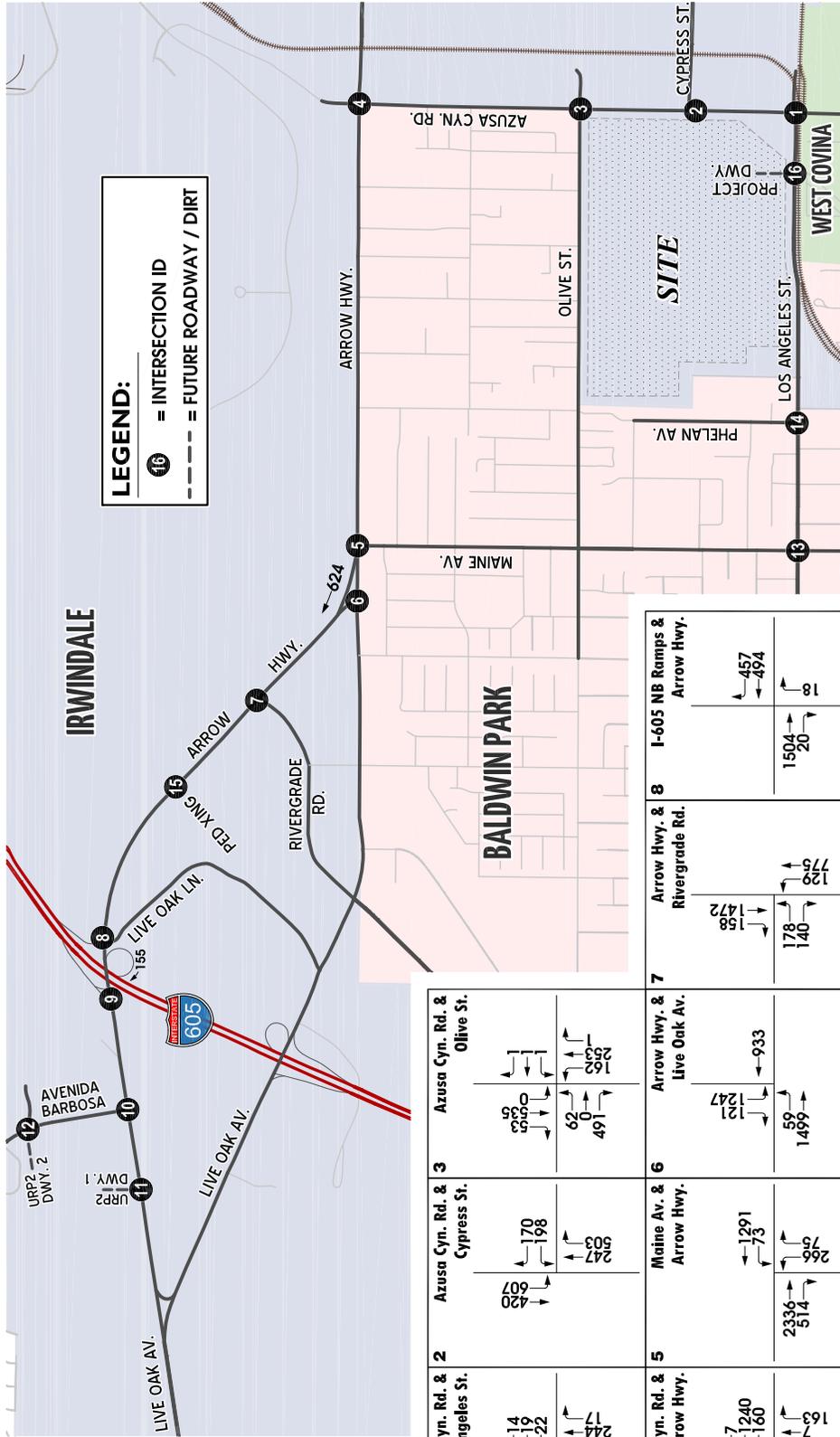


EXHIBIT 4-Q: Long Range (2035) With Project Average Daily Traffic





### EXHIBIT 4-s: Long Range (2035) With Project PM Peak Hour Intersection Volumes



<b>1</b> Azusa Cyn. Rd. & Los Angeles St. 14 105 178 163 1903 250 502 337 17 125 19 22 105 189 109 109	<b>2</b> Azusa Cyn. Rd. & Cypress St. 247 503 170 198 420 607	<b>3</b> Azusa Cyn. Rd. & Olive St. 165 253 125 155 62 491 121 1247 59 1499	<b>4</b> Azusa Cyn. Rd. & Arrow Hwy. 178 240 160 14 1903 250 7 240 160 14 1903 250	<b>5</b> Maine Av. & Arrow Hwy. 2336 514 266 576 1291 73 1291 73	<b>6</b> Arrow Hwy. & Live Oak Av. 178 140 178 140 178 140	<b>7</b> Arrow Hwy. & I-605 NB Ramps & Arrow Hwy. 1504 20 457 494 1504 20	<b>8</b> Arrow Hwy. & Rivergrade Rd. 178 140 178 140 178 140	<b>9</b> I-605 SB Ramps & Arrow Hwy. 461 292 494 1218 0 494 1218	<b>10</b> Avenida Barbosa & Arrow Hwy. 235 786 464 211 532 235 786	<b>11</b> URP2 Dwy. 1 & Arrow Hwy. 0 39 839 0 39 839	<b>12</b> Avenida Barbosa & URP2 Dwy. 2 0 0 0 39 0 0 0 39	<b>13</b> Maine Av. & Los Angeles St. 94 784 207 38 285 55 94 784 207	<b>14</b> Phelan Av. & Los Angeles St. 42 826 53 61 281 42 826	<b>15</b> Pedestrian Crossing & Arrow Hwy. 1589 (BIKE ROUTE)	<b>16</b> Project Dwy. & Los Angeles St. 42 382 801 3 42 382
--	---	---	--	--	--	---	--	---	---	--	---	--	---	--	--



THIS PAGE IS INTENTIONALLY LEFT BLANK

## 5.0 TRAFFIC ANALYSIS

---

### 5.1 Delay, Capacity, Level of Service, and Improvements.

#### 5.1.1 Existing Plus Project

HCM delay and ICU calculations for Existing Plus Project conditions are shown in Table 5-1. The operation analysis worksheets are included in Appendix “H”. Table 5-1 shows the operations analysis at the study area intersections with and without improvements. For Existing Plus Project conditions, the following study area intersection are anticipated to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Even though the ICU results show that intersection of Azusa Canyon Road / Arrow Highway (#4) operates at LOS “E” during the AM peak hour under Existing Plus Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level.

Table 5-2 provides a summary comparison of the intersection analysis operations for Existing (2014) and Existing Plus Project conditions. Table 5-2 also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines). As shown on Table 5-2, a significant impact is projected for the intersection of Azusa Canyon Road / Los Angeles Street (#1), based on the minor approach operating conditions.

It should be noted that the westbound left turn movement (from adjacent Private Driveway) at the intersection of Avenida Barbosa/URP2 Driveway 2 (Private) is the only minor approach anticipated to operate at unacceptable LOS (LOS “E”).

**TABLE 5-1**

**EXISTING PLUS PROJECT CONDITIONS  
INTERSECTIONS ANALYSIS SUMMARY**

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L	T	R								
1	Azusa Cyn. Rd. / Los Angeles St.																					
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	31.4	41.3	D	<b>E</b>	NA	NA	NA	NA
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	40.7	47.6	D	D	0.63	0.85	B	D
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	27.1	25.0	C	C	0.46	0.59	A	A
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.6	19.3	B	B	0.39	0.31	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	55.0	51.6	D	D	0.94	0.76	E	C
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	16.4	11.6	B	B	0.78	0.80	C	C
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	11.3	24.4	B	C	0.61	0.75	B	C
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	7.3	5.3	A	A	0.67	0.41	B	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	11.3	13.3	B	B	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy.	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	16.1	7.4	B	A	0.86	0.43	D	A
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.49	D	A
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	28.2	22.2	C	C	0.77	0.46	C	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.9	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) <sup>6</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.3	0.6	A	A	NA	NA	NA	NA
	- URP2 Dwy. 2 (eastbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.1	A	B	NA	NA	NA	NA
	- Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	46.0	16.0	<b>E</b>	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.6	25.0	C	C	0.52	0.61	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.9	16.1	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.63	0.39	B	A
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	<u>1</u>	0	<u>1</u>	0	2	0	0	2	d	16.6	17.3	C	C	-	-	-	-

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Inwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on average delay (unsignalized intersection).

<sup>7</sup> LOS based on the minor approach operating condition (unsignalized intersection).

**E** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

Providing physical improvements (such as adding capacity for the westbound left turns) will not solve this problem because of the high northbound through traffic along Avenida Barbosa impede the westbound left turn movements. Installation of a traffic signal at this location is not recommended because traffic volumes do not warrant signal control. Furthermore, the project does not contribute to a traffic volume increase for the westbound left turns at this intersection and the total/average control delay is operating at acceptable LOS. Therefore, a project significant impact at this location is not expected and improvements are not recommended.

As shown in Table 5-1 and Table 5-2, the following improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant and result in acceptable level of service operations with the addition of project traffic:

***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

**5.1.2 Interim Year (2016) Without Project**

HCM delay and ICU calculations for Interim Year (2016) Without Project conditions are shown in Table 5-3. The operation analysis worksheets are included in Appendix “I”. Table 5-3 shows the operations analysis at the study area intersections with and without improvements. For Interim Year (2016) Without Project conditions, the following study area intersection is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

<b>ID</b>	<b>Intersection Location</b>	<b>Jurisdiction</b>
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale



TABLE 5-2

EXISTING AND EXISTING PLUS PROJECT INTERSECTION ANALYSIS SUMMARY COMPARISON

#	INTERSECTION	TRAFFIC Control <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>7</sup> (V/C)		ICU <sup>7</sup> LEVEL OF SERVICE		SIGNIFICANT IMPACT? <sup>4</sup>		Added Project Traffic	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	AM
10	Avenida Barbosa / Arrow Hwy. • Existing (2014) • Existing + Project	TS	0	0	0	2	0	1	1	2	0	0	2	1	26.8	22.1	C	C	0.73	0.44	C	A				
		TS	0	0	0	2	0	1	1	2	0	0	2	1	28.2	22.2	C	C	0.77	0.46	C	A			NO	
11	URP2 Dwy. 1 / Arrow Hwy. • Existing (2014) • Existing + Project	CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.2	0.0	C	A	NA	NA	NA	NA				
		CSS	0	0	0	0	0	1	0	2	0	0	3	0	20.9	0.0	C	A	NA	NA	NA	NA				
12	Avenida Barbosa / URP2 Dwy. 2 (Private) • Existing (2014) <sup>5</sup> • Existing + Project <sup>5</sup> - URP2 Dwy. 2 (eastbound approach) <sup>6</sup> • Existing (2014) • Existing + Project - Private Dwy. (westbound approach) <sup>6</sup> • Existing (2014) • Existing + Project	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	2.7	0.2	A	A	NA	NA	NA	NA				
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.3	0.6	A	A	NA	NA	NA	NA			NO	
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA				
		CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.1	A	B	NA	NA	NA	NA				
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	41.0	15.4	E	C	NA	NA	NA	NA				
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	46.0	16.0	E	C	NA	NA	NA	NA			NO	0
13	Maine Av. / Los Angeles St. • Existing (2014) • Existing + Project	TS	1	2	0	1	2	0	1	2	0	1	2	0	22.5	24.9	C	C	0.52	0.61	A	B				
		TS	1	2	0	1	2	0	1	2	0	1	2	0	22.6	25.0	C	C	0.52	0.61	A	B			NO	
14	Phelan Av. / Los Angeles St. • Existing (2014) • Existing + Project	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.8	15.9	B	C	NA	NA	NA	NA				
		AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.9	16.1	B	C	NA	NA	NA	NA			NO	
15	Ped Xing / Arrow Hwy. • Existing (2014) • Existing + Project	TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.61	0.38	B	A				
		TS	0	0	0	0	0	0	0	2	0	0	2	0	0.8	0.5	A	A	0.63	0.39	B	A			NO	

1 When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; >>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

2 Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

3 AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop

4 Per City of Inland Empire traffic study guidelines, a significant impact is identified if one of the following criteria are met:  
• For Signalized Intersections  
- When an intersection operates at acceptable LOS ("D" or better) for baseline conditions and the addition of project results in unacceptable LOS ("E" or "F").  
- When a State Highway intersection operates at acceptable LOS ("E" or better) for baseline conditions and the addition of project results in unacceptable LOS "F".  
• For Unsignalized Intersections  
- When an intersection operates at LOS "F" for baseline conditions and the project adds more than 50 peak hour project trips.  
- When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project increases the total control delay to more than 4.0 hours for single lane approach and 5.0 hours for multi-lane approach.  
5 LOS based on average delay (unsignalized intersection).  
6 LOS based on minor approach operating condition (unsignalized intersection).  
7 The Synchro v/c output results are discussed in the City of Inland Empire Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information.

**LOS** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).



TABLE 5-3

INTERIM YEAR (2016) WITHOUT PROJECT CONDITION:  
INTERSECTIONS ANALYSIS SUMMARY

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE		
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM
1	Azusa Cyn. Rd. / Los Angeles St.																						
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	30.3	43.6	D	<b>E</b>	NA	NA	NA	NA	
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	31.7	49.7	C	D	0.61	0.86	B	D	
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.1	25.8	C	C	0.46	0.60	A	A	
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	19.9	B	B	0.41	0.32	A	A	
4	Azusa Cyn. Rd. / Arrow Hwy.																						
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	67.3	69.4	<b>E</b>	<b>E</b>	0.98	0.81	E	D	
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<b>3</b>	0	1	<b>3</b>	0	32.8	34.4	C	C	0.77	0.67	C	B	
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	17.4	13.0	B	B	0.81	0.84	D	D	
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	11.8	30.1	B	C	0.64	0.80	B	C	
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.0	8.1	A	A	0.74	0.51	C	A	
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.4	15.1	B	C	NA	NA	NA	NA	
9	I-605 SB Off-Ramp / Arrow Hwy.	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	40.6	10.4	D	B	1.00	0.56	E	A	
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	0.98	0.61	E	B	
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	30.9	22.4	C	C	0.78	0.48	C	A	
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	21.7	0.0	C	A	NA	NA	NA	NA	
12	Avenida Barbosa / URP2 Dwy. 2 (Private) <sup>6</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.1	0.2	A	A	NA	NA	NA	NA	
	- URP2 Dwy. 2 (eastbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	0.0	0.0	A	A	NA	NA	NA	NA	
	- Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	47.9	15.9	<b>E</b>	C	NA	NA	NA	NA	
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	23.2	25.9	C	C	0.55	0.64	A	B	
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	14.7	17.3	B	C	NA	NA	NA	NA	
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.70	0.46	B	A	
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST												-	-	-	-	-	-	-	-	

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; 1 = Improvement

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on average delay (unsignalized intersection).

<sup>7</sup> LOS based on the minor approach operating condition (unsignalized intersection).

\* **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

Even though the ICU results show that intersection of I-605 SB Off-Ramp / Arrow Highway (#9) operates at LOS “E” during the AM peak hour under Interim Year (2016) Without Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level.

### 5.1.3 Interim Year (2016) With Project

HCM delay and ICU calculations for Interim Year (2016) With Project conditions are shown in Table 5-4. The operation analysis worksheets are included in Appendix “J”. Table 5-4 shows the operations analysis at the study area intersections with and without improvements. For Interim (2016) With Project conditions, no additional intersection is projected to operate at unacceptable level of service compared to Interim Year (2016) Without Project conditions.

Even though the ICU results show that intersection of I-605 SB Off-Ramp / Arrow Highway (#9) operates at LOS “E” during the AM peak hour under Interim Year (2016) With Project conditions, the HCM results show that the intersection operates at acceptable LOS (LOS “D” or better). The HCM results present a more accurate representation of the intersection operational level.

Table 5-5 summarizes the intersection analysis operations for Interim Year (2016) Without Project and Interim Year With Project conditions. Table 5-5 also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines). As shown on Table 5-5, a significant impact is projected for the intersection of Azusa Canyon Road / Los Angeles Street (#1) and Azusa Canyon Road / Arrow Highway (#4).

As mentioned previously, a significant impact is not anticipated at the intersection Avenida Barbosa / URP2 Driveway 2 (Private) since the project does not contribute to a traffic volume increase for the westbound left turns (deficient

TABLE 5-4

INTERIM YEAR (2016) WITH PROJECT CONDITION:  
INTERSECTIONS ANALYSIS SUMMARY

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE	
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM
1	Azusa Cyn. Rd. / Los Angeles St.																					
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	34.3	44.6	D	<b>E</b>	NA	NA	NA	NA
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	40.2	52.4	D	D	0.65	0.89	B	D
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	27.7	26.1	C	C	0.48	0.62	A	B
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.7	23.3	B	C	0.41	0.33	A	A
4	Azusa Cyn. Rd. / Arrow Hwy.																					
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	72.0	70.2	<b>E</b>	<b>E</b>	1.00	0.83	E	D
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<b>3</b>	0	1	<b>3</b>	0	35.9	41.2	D	D	0.79	0.70	C	B
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	17.8	13.4	B	B	0.82	0.84	D	D
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	13.2	33.8	B	C	0.68	0.81	B	D
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.1	8.1	A	A	0.76	0.54	C	A
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.5	B	C	NA	NA	NA	NA
9	I-605 SB Off-Ramp / Arrow Hwy.	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	47.7	10.4	D	B	1.02	0.57	F	A
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.00	0.62	F	B
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	35.3	22.5	D	C	0.82	0.49	D	A
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	22.5	0.0	C	A	NA	NA	NA	NA
12	Avenida Barbosa / URP2 Dwy. 2 (Private) <sup>6</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	0	1!	0	3.8	0.6	A	A	NA	NA	NA	NA
	- URP2 Dwy. 2 (eastbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	9.6	11.3	A	B	NA	NA	NA	NA
	- Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	54.4	16.6	<b>F</b>	C	NA	NA	NA	NA
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	23.3	25.9	C	C	0.55	0.64	A	B
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	14.7	17.6	B	C	NA	NA	NA	NA
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.72	0.48	C	A
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	<b>1</b>	0	<b>1</b>	0	2	0	0	2	d	17.2	18.1	C	C	-	-	-	-

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane; **1** = Improvement

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Irwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersections. Therefore, ICU results based on the LA CMP parameters are also presented for the signalized intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on average delay (unsignalized intersection).

<sup>7</sup> LOS based on the minor approach operating condition (unsignalized intersection).

**BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

movement) at this intersection and the total/average control delay is operating at acceptable LOS.

As shown in Table 5-4 and Table 5-5, the following improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant and result in acceptable level of service operations with the addition of project traffic:

***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

***Azusa Canyon Road / Arrow Highway (#4)***

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

5.1.4 Long Range (2035) Without Project

HCM delay and ICU calculations for Long Range (2035) Without Project conditions are shown in Table 5-6. The operation analysis worksheets are included in Appendix “K”. Table 5-6 shows the operations analysis at the study area intersections with and without improvements. For Long Range (2035) Without Project conditions the following study area intersection is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry:

<b>ID</b>	<b>Intersection Location</b>	<b>Jurisdiction</b>
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
9	I-605 SB Off-Ramp / Arrow Highway	Caltrans
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale



TABLE 5-5

INTERIM YEAR (2016)  
INTERSECTION ANALYSIS SUMMARY COMPARISON

#	INTERSECTION	TRAFFIC Control <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>						HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>7</sup> (V/C)		ICU <sup>7</sup> LEVEL OF SERVICE		SIGNIFICANT IMPACT <sup>4</sup>		Added Project Traffic							
			NORTH-BOUND		SOUTH-BOUND		EAST-BOUND		WEST-BOUND		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM						
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	L	T	R			
10	Avenida Barbosa / Arrow Hwy. • 2016 Without Project • 2016 With Project	TS TS	0	0	0	2	0	1	1	2	0	0	2	1	30.9	22.4	C	C	0.78	0.48	C	A				
11	URP2 Dwy. 1 / Arrow Hwy. • 2016 Without Project • 2016 With Project	CSS CSS	0	0	0	0	0	1	0	2	0	0	3	0	21.7	0.0	C	A	NA	NA	NA	NA				
12	Avenida Barbosa / URP2 Dwy. 2 (Private) • 2016 Without Project <sup>5</sup> • 2016 With Project <sup>5</sup> - URP2 Dwy. 2 (eastbound approach) <sup>6</sup> • 2016 Without Project • 2016 With Project - Private Dwy. (westbound approach) <sup>6</sup> • 2016 Without Project • 2016 With Project	CSS CSS CSS CSS CSS CSS	1	2	0	1	2	0	0	1	0	0	1	0	3.1	0.2	A	A	NA	NA	NA	NA				
13	Maine Av. / Los Angeles St. • 2016 Without Project • 2016 With Project	TS TS	1	2	0	1	2	0	1	2	0	1	2	0	23.2	25.9	C	C	0.55	0.64	A	B				
14	Phelan Av. / Los Angeles St. • 2016 Without Project • 2016 With Project	AWS AWS	0	0	0	0	1	0	1	2	0	0	2	0	14.7	17.3	B	C	NA	NA	NA	NA				
15	Ped Xing / Arrow Hwy. • 2016 Without Project • 2016 With Project	TS TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.6	A	A	0.70	0.46	B	A				

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right-turning vehicles to travel outside the through bar  
L = Left; T = Through; R = Right; L>> = Free Right Turn Lane; d = Delineate Right Turn Lane; I = Improvement  
<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with 1 signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU v/c  
<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop  
<sup>4</sup> Per City of Inland Empire traffic study guidelines, a significant impact is identified if one of the following criteria are met:  
• For Signalized Intersections:  
- When an intersection operates at acceptable LOS (D\* or better) for baseline conditions and the addition of project results in unacceptable LOS (E\* or F\*)  
- When a State Highway intersection operates at acceptable LOS (E\* or better) for baseline conditions and the addition of project results in unacceptable LOS (F\*)  
- When an intersection operates at LOS "F" for baseline conditions and the project adds more than 50 peak hour project trips  
• For Unsignalized Intersections:  
- When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project increases the total control delay to more than 4.0 hours for single lane approach and 5.0 hours for multilane approach  
- When the minor stop-controlled approach operates at LOS "F" and does not have acceptable LOS in terms of total control delay, and the addition of project of more than 50 peak-hour project trips contributes to the continuing operational failure at the minor approach  
<sup>5</sup> LOS based on average delay (unsignalized intersection)  
<sup>6</sup> LOS based on minor approach operating condition (unsignalized intersection)  
<sup>7</sup> The Synchro v/c output results are discussed in the City of Inland Empire Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on CU and should be presented in addition to delay inform  
**LOS** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).



TABLE 5-6

LONG RANGE (2035) WITHOUT PROJECT CONDITION:  
INTERSECTIONS ANALYSIS SUMMARY

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE		
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM
1	Azusa Cyn. Rd. / Los Angeles St.																						
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.5	45.0	D	<b>E</b>	NA	NA	NA	NA	
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.8	48.6	C	D	0.65	0.87	B	D	
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.8	28.3	C	C	0.49	0.65	A	B	
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	21.3	B	C	0.43	0.37	A	A	
4	Azusa Cyn. Rd. / Arrow Hwy.																						
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	86.1	84.8	<b>F</b>	<b>F</b>	1.04	0.86	F	D	
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<b>3</b>	0	1	<b>3</b>	0	36.6	41.9	D	D	0.81	0.71	D	C	
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.3	15.0	B	B	0.86	0.89	D	D	
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	12.5	36.5	B	D	0.78	0.85	C	D	
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	9.7	8.3	A	A	0.78	0.57	C	A	
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.8	B	C	NA	NA	NA	NA	
9	I-605 SB Off-Ramp / Arrow Hwy.																						
	- Without Improvements	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	57.3	10.8	<b>E</b>	B	1.06	0.59	F	A	
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.03	0.63	F	B	
	- With Improvements	TS	0	0	0	<b>2</b>	0	1>>	0	3	0	0	2	0	16.7	7.8	B	A	0.84	0.44	D	A	
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	<b>2</b>	0	1>>	0	3	0	0	2	0	-	-	-	-	0.86	0.51	D	A	
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	49.0	23.6	D	C	0.83	0.50	D	A	
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	23.4	0.0	C	A	NA	NA	NA	NA	
12	Avenida Barbosa / URP2 Dwy. 2 <sup>6</sup>																						
	- URP2 Dwy. 2 (eastbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	4.2	0.2	A	A	NA	NA	NA	NA	
	- Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	63.8	16.7	<b>F</b>	C	NA	NA	NA	NA	
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B	
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.4	20.4	B	C	NA	NA	NA	NA	
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.73	0.49	C	A	
16	Project Dwy. / Los Angeles St.	-	DOES NOT EXIST												-	-	-	-	-	-	-	-	

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Inwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersection. Therefore, ICU results based on the LA CMP parameters are also presented for the intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on the minor approach operating condition (unsignalized intersection).

<sup>7</sup> **BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

### 5.1.5 Long Range (2035) With Project

HCM delay and ICU calculations for Long Range (2035) With Project Buildout conditions are shown in Table 5-7. The operation analysis worksheets are included in Appendix “L”. Table 5-7 shows the operations analysis at the study area intersections with and without improvements. For Long Range (2035) With Project conditions, no additional intersection is projected to operate at unacceptable level of service compared to Long Range (2035) Without Project conditions.

Table 5-8 summarizes the intersection analysis operations for Long Range (2035) Without Project and Long Range (2035) With Project Buildout conditions. Table 5-8 also identifies any “significant impacts” (as defined in the City of Irwindale traffic study guidelines). As shown on Table 5-8, significant impacts are projected for the following locations:

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
4	Azusa Canyon Road / Arrow Highway	Irwindale
9	I-605 SB Off-Ramp / Arrow Highway	Caltrans

As mentioned previously, a significant impact is not anticipated at the intersection Avenida Barbosa / URP2 Driveway 2 (Private) since the project does not contribute to a traffic volume increase for the westbound left turns (deficient movement) at this intersection and the total/average control delay is operating at acceptable LOS.

As shown in Table 5-6 and Table 5-7, the following improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant and result in acceptable level of service operations with the addition of project traffic:

TABLE 5-7

LONG RANGE (2035) WITH PROJECT CONDITION:  
INTERSECTIONS ANALYSIS SUMMARY

#	INTERSECTION	TRAFFIC CONTROL <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>4</sup> (V/C)		ICU <sup>4</sup> LEVEL OF SERVICE		
			NORTH-BOUND			SOUTH-BOUND			EAST-BOUND			WEST-BOUND			AM	PM	AM	PM	AM	PM	AM	PM	
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM
1	Azusa Cyn. Rd. / Los Angeles St.																						
	- Without Improvements	AWS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	35.5	45.8	<b>E</b>	<b>E</b>	NA	NA	NA	NA	
	- With Improvements	TS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	52.0	52.6	D	D	0.69	0.90	B	D	
2	Azusa Cyn. Rd. / Cypress St.	TS	0	2	0	1	2	0	0	0	0	1	1!	1	28.6	28.6	C	C	0.51	0.67	A	B	
3	Azusa Cyn. Rd. / Olive St.	TS	1	2	0	1	2	d	1	1	d	1	1	d	11.8	26.5	B	C	0.43	0.35	A	A	
4	Azusa Cyn. Rd. / Arrow Hwy.																						
	- Without Improvements	TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	91.3	85.6	<b>F</b>	<b>F</b>	1.06	0.88	F	D	
	- With Improvements	TS	1.5	0.5	1	1	1	0	1	<b>3</b>	0	1	<b>3</b>	0	39.1	44.8	D	D	0.83	0.74	D	C	
5	Maine Av. / Arrow Hwy.	TS	2	0	1	0	0	0	0	2	d	1	3	0	19.9	15.7	B	B	0.88	0.89	D	D	
6	Arrow Hwy. / Live Oak Av.	TS	0	0	0	2	0	1	1	2	0	0	2	2>>	14.1	41.2	B	D	0.83	0.86	D	D	
7	Arrow Hwy. / Rivergrade Rd.	TS	1	2	0	0	2	1	2	0	1	0	0	0	10.0	8.3	A	A	0.80	0.60	C	A	
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy.	CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	13.2	16.2	B	C	NA	NA	NA	NA	
9	I-605 SB Off-Ramp / Arrow Hwy.																						
	- Without Improvements	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	65.5	10.8	<b>E</b>	B	1.08	0.60	F	A	
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	1	0	1>>	0	3	0	0	2	0	-	-	-	-	1.05	0.64	F	B	
	- With Improvements	TS	0	0	0	<b>2</b>	0	1>>	0	3	0	0	2	0	19.0	7.8	B	A	0.86	0.45	D	A	
	- LA CMP ICU Results <sup>5</sup>	TS	0	0	0	<b>2</b>	0	1>>	0	3	0	0	2	0	-	-	-	-	0.88	0.51	D	A	
10	Avenida Barbosa / Arrow Hwy.	TS	0	0	0	2	0	1	1	2	0	0	2	1	51.9	23.8	D	C	0.87	0.52	D	A	
11	URP2 Dwy. 1 / Arrow Hwy.	CSS	0	0	0	0	0	1	0	2	0	0	3	0	24.3	0.0	C	A	NA	NA	NA	NA	
12	Avenida Barbosa / URP2 Dwy. 2 <sup>6</sup>																						
	- URP2 Dwy. 2 (eastbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	0	1!	0	-	-	-	5.0	0.6	A	A	NA	NA	NA	NA	
	- Adjacent Dwy. (westbound approach) <sup>7</sup>	CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	9.7	11.5	A	B	NA	NA	NA	NA	
		CSS	0.5	1.5	0	0.5	1.5	0	-	-	-	0	1!	0	74.4	17.5	<b>F</b>	C	NA	NA	NA	NA	
13	Maine Av. / Los Angeles St.	TS	1	2	0	1	2	0	1	2	0	1	2	0	24.2	27.3	C	C	0.60	0.68	A	B	
14	Phelan Av. / Los Angeles St.	AWS	0	0	0	0	1!	0	0.5	1.5	0	0	2	0	13.6	20.7	B	C	NA	NA	NA	NA	
15	Ped Xing / Arrow Hwy.	TS	0	0	0	0	0	0	0	2	0	0	2	0	1.0	0.7	A	A	0.75	0.50	C	A	
16	Project Dwy. / Los Angeles St.	CSS	0	0	0	<b>1</b>	0	<b>1</b>	0	2	0	0	2	d	18.3	19.3	C	C	-	-	-	-	

<sup>1</sup> When a right turn is designated, the lane can either be striped or unstriped. To function as a right turn lane there must be sufficient width (23') for right turning vehicles to travel outside the through lanes.  
L = Left; T = Through; R = Right; 1>> = Free Right Turn Lane; d = Defacto Right Turn Lane

<sup>2</sup> Delay and level of service (LOS) is calculated using the following analysis software: Synchro 8. Per the 2010 Highway Capacity Manual, overall average intersection delay and level of service are shown for intersections with traffic signal or all way stop control. For intersections with cross street stop control, the delay and level of service for worst individual movement (or movements sharing a single lane) are shown. "NA" value is shown for unsignalized ICU values.

<sup>3</sup> AWS = All Way Stop; TS = Traffic Signal; CSS = Cross Street Stop.

<sup>4</sup> The Synchro v/c output results are discussed in the City of Inwindale Policy Guidelines for Traffic Impact Reports under Section B (page insert) and indicated that the v/c ratio results in the Synchro are based on ICU and should be presented in addition to delay information. It should be noted that the I-605 ramp intersections along Arrow Highway are identified as CMP intersection. Therefore, ICU results based on the LA CMP parameters are also presented for the intersection of I-605 SB ramps / Arrow Highway (#9).

<sup>5</sup> Volume-to-Capacity ratio (v/c) and level of service (LOS) is calculated based on the LA CMP Intersection Capacity Utilization (ICU) methodology using the following analysis software: Traffix Version 8.0 R1.

<sup>6</sup> LOS based on the minor approach operating condition (unsignalized intersection).

**BOLD** = LOS does not meet the applicable jurisdictional requirements (i.e., unacceptable LOS).

TABLE 5-8

LONG RANGE (2035)  
INTERSECTION ANALYSIS SUMMARY COMPARISON

#	INTERSECTION	TRAFFIC Control <sup>3</sup>	INTERSECTION APPROACH LANES <sup>1</sup>												HCM DELAY <sup>2</sup> (SECS.)		HCM LEVEL OF SERVICE <sup>2</sup>		ICU <sup>7</sup> (V/C)		ICU <sup>7</sup> LEVEL OF SERVICE		SIGNIFICANT IMPACT? <sup>4</sup>		Added Project Traffic	
			NORTH-BOUND		SOUTH-BOUND		EAST-BOUND		WEST-BOUND		L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM		
			L	T	R	L	T	R	L	T	R	L	T	R	L	T	R	AM	PM	AM	PM	AM	PM	AM	PM	
1	Azusa Cyn. Rd. / Los Angeles St. Without Improvements • 2035 Without Project • 2035 With Project With Improvements • 2035 With Project	AWS AWS IS	0	1!	0	0.5	0.5	1	0.5	0.5	1	0.5	0.5	1	33.5	45.0	D	E	NA	NA	NA	NA	NA	NA	125	85
2	Azusa Cyn. Rd. / Cypress St. • 2035 Without Project • 2035 With Project	TS TS	0	2	0	1	2	0	0	0	0	1	1!	1	26.8	28.3	C	C	0.49	0.65	A	B				
3	Azusa Cyn. Rd. / Olive St. • 2035 Without Project • 2035 With Project	TS TS	1	2	0	1	2	d	1	1	d	1	1	d	10.8	21.3	B	C	0.43	0.37	A	A				
4	Azusa Cyn. Rd. / Arrow Hwy. Without Improvements • 2035 Without Project • 2035 With Project With Improvements • 2035 Without Project • 2035 With Project	TS TS TS TS	1.5	0.5	1	1	1	0	1	2	d	1	2	d	86.1	84.8	F	F	1.04	0.86	F	D			120	81
5	Maine Av. / Arrow Hwy. • 2035 Without Project • 2035 With Project	TS TS	2	0	1	0	0	0	0	2	d	1	3	0	19.3	15.0	B	B	0.86	0.89	D	D				
6	Arrow Hwy. / Live Oak Av. • 2035 Without Project • 2035 With Project	TS TS	0	0	0	2	0	1	1	2	0	0	2	>>	12.5	36.5	B	D	0.78	0.85	C	D				
7	Arrow Hwy. / Rivergrade Rd. • 2035 Without Project • 2035 With Project	TS TS	1	2	0	0	2	1	2	0	1	2	0	1	14.1	41.2	B	D	0.83	0.86	D	D				
8	I-605 NB Ramp - Live Oak Ln. / Arrow Hwy. • 2035 Without Project • 2035 With Project	CSS CSS	0	0	1	0	0	0	0	2	d	0	2	1>>	12.8	15.8	B	C	NA	NA	NA	NA				





***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

***Azusa Canyon Road / Arrow Highway (#4)***

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

***I-605 SB Off-Ramp / Arrow Highway (#9)***

- Construct a 2<sup>nd</sup> southbound left turn lane.
  - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

## **6.0 IMPROVEMENT AND PROJECT FAIR SHARE CONTRIBUTION**

This section of the report summarizes the off-site improvements and fair share percentages required to meet level of service requirements at each of the analysis locations where improvements are required. Improvements which will eliminate all anticipated roadway operational deficiencies throughout the study area have been identified for Long Range (2035) With Project Buildout traffic conditions. The improvements were determined through the operations analysis sections of this traffic study. Per City of Irwindale guidelines, the project shall pay its fair share of improvements to eliminate any of the significant impacts identified in the analysis chapters of this report.

### **6.1 Off-Site Recommended Improvements**

For Existing plus Project conditions, the project will be required to construct the following improvement to mitigate the project's direct impact:

#### ***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

For Interim Year (2016) conditions, the project shall pay its fair share for the following improvements to mitigate the project's cumulative impact:

#### ***Azusa Canyon Road / Arrow Highway (#4)***

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

Long Range (2035) conditions, the project shall pay its fair share for the following improvement to mitigate the project's cumulative impact:

#### ***I-605 SB Off-Ramp / Arrow Highway (#9)***

- Construct a 2<sup>nd</sup> southbound left turn lane.
  - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

- Caltrans or the City may accept fair share funding contributions towards future improvements of its facilities so long as improvements are reasonably expected to be implemented in a reasonable time frame.

## 6.2 2035 With Project Fair Share Percentage

Per City of Irwindale Guidelines, the project shall pay its fair share of improvements to eliminate any of the significant impacts. Based on the intersection analysis results, the project is anticipated to contribute additional traffic causing significant impacts up to 2035 conditions, fair share calculation is therefore based on 2035 conditions to address all significant impacts caused by the project.

The project fair share percentages (%) towards the required improvements have also been calculated. Table 6-1 summarizes the 2035 With Project fair share percentages for the proposed project. As shown on Table 6-1, the project contributes approximately 19% of the new traffic at the intersection of Azusa Canyon Road / Arrow Highway (#4) and 17% of the new traffic at the intersection of I-605 SB Off-Ramp / Arrow Highway (#9). In addition, the project will be fully responsible for the intersection improvement at Azusa Canyon Road/Los Angeles Street (#1) to mitigate the project's direct impact to pre-project conditions.

**TABLE 6-1**  
**2035 WITH PROJECT BUILDOUT**  
**FAIR SHARE PERCENTAGES FOR OFF-SITE IMPROVEMENTS**

ID	INTERSECTION	EXISTING TRAFFIC	2035 WITHOUT PROJECT	2035 WITH PROJECT TRAFFIC	2035 PROJECT ONLY TRAFFIC	TOTAL NEW TRAFFIC <sup>1</sup>	PROJECT % OF NEW TRAFFIC <sup>2</sup>
1	Azusa Cyn. Rd. / Los Angeles St.						
	• AM Peak Hour	1,312	1,457	1,582	125	270	100% <sup>3</sup>
	• PM Peak Hour	1,677	1,859	1,944	85	267	100% <sup>3</sup>
4	Azusa Cyn. Rd. / Arrow Hwy.						
	• AM Peak Hour	3,639	4,148	4,268	120	629	<b>19%</b>
	• PM Peak Hour	3,357	3,888	3,969	81	612	13%
9	I-605 SB Off-Ramp (NS) / Live Oak Av. (EW)						
	• AM Peak Hour	3,098	3,676	3,793	117	695	<b>17%</b>
	• PM Peak Hour	1,856	2,344	2,422	78	566	14%

<sup>1</sup> Total New Traffic = (2035 With Project Traffic - Existing Traffic)

<sup>2</sup> Project % of New Traffic = (2035 Project Only Traffic / Total New Traffic)

<sup>3</sup> Project is responsible for the recommended improvement at the intersection of Azusa Cyn. Rd./Los Angeles St.

THIS PAGE IS INTENTIONALLY LEFT BLANK

## 7.0 FINDINGS AND RECOMMENDATIONS

---

This section of the report summarizes the overall findings and provides recommendations regarding project related traffic improvements.

### 7.1 Findings

#### 7.1.1 Existing Conditions

Regional access to the site is provided by a number of major freeways, including Interstate Freeway 10 (I-10) to the south, I-605 Freeway to the west and I-210 Freeway to the north. Local access to the project site is anticipated to be provided by the following roadways:

- Los Angeles Street
- Azusa Canyon Road

For Existing (2014) conditions, the following intersection currently operates at unacceptable level of service (LOS “E” or worse) during the peak hours:

ID	Intersection Location	Jurisdiction
1	Azusa Canyon Road / Los Angeles Street	Irwindale and West Covina
12	Avenida Barbosa / URP2 Driveway 2 (Private)	Irwindale

Based on the traffic signal warrants for Existing (2014) traffic conditions, the intersections of Azusa Canyon Road / Los Angeles Street (#1) and Phelan Avenue / Los Angeles Street (#14) both appear to warrant a traffic signal.

As mentioned previously, even though the intersection of Phelan Avenue / Los Angeles Street (#14) appear to warrant a traffic signal, this intersection is expected to continue operate at acceptable level of service “C” or better with an all-way-stop control through 2035 conditions. Therefore, a project significant impact is not anticipated and installation of a traffic signal is not recommended at this location.

### 7.1.2 Project Development

The Project is approximately 190 acres in size and the proposed Project plans involve three components: 1) construction of a new on-site access road; 2) phased extraction of mineral resources; and 3) site reclamation.

The project will be constructed in one phase and expected to become operational in 2016.

Table 2-1 (previously presented) present the project's trip generation. The proposed project is anticipated to generate approximately 866 passenger car equivalent (PCE) trip-ends per day with 133 AM peak hour trips and 92 PM peak hour trips.

### 7.1.3 Future Traffic Conditions

**For Existing (2014) Plus Project**, no new intersections are projected to operate at unacceptable level of service in addition to the previously identified locations under Existing (2014) conditions. It should be noted however that addition of project traffic will increase delay but will continue to operate at the same level of service as existing conditions (LOS "E").

Based on the intersection analysis results and number of traffic added by the Project, the intersection of Azusa Canyon Road / Los Angeles Street (#1) is significantly impacted by the project (comparing Existing to Existing Plus Project conditions). It should be noted that the project does not contribute to a traffic volume increase for the deficient movement (westbound left turn) at this intersection and the total/average control delay is operating at acceptable LOS. Therefore, the project impact at this location is considered less-than significant and improvements are not recommended.

**For Interim Year (2016) Without and With Project conditions**, the intersection of Azusa Canyon Road / Arrow Highway (#4) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Existing (2014) and Existing Plus Project conditions.

Based on the intersection analysis results and number of traffic added by the Project, the intersection of Azusa Canyon Road / Arrow Highway (#4) is significantly impacted by the project (comparing Interim Year 2016 Without Project to Interim Year 2016 With Project conditions).

**For Long Range (2035) Without and With Project conditions**, the I-605 SB Off-Ramp / Arrow Highway (#9) is projected to operate at unacceptable level of service (LOS “E” or worse) during the peak hours, with existing geometry, in addition to the previously identified locations under Interim Year (2016) Without and With Project conditions.

Based on the intersection analysis results and number of traffic added by the Project, the intersection of I-605 SB Off-Ramp / Arrow Highway (#9) is significantly impacted by the project (comparing Long Range 2035 Without Project to Long Range 2035 With Project conditions).

## 7.2 Project Recommendations

Recommended off-site and on-site improvements are presented on Exhibit’s 7-A through 7-D. It should be noted that the off-site improvements are necessary to reduce the Project’s proportionate increase in delay to pre-project levels or better, thus reducing the Project’s impact to less-than-significant and result in acceptable level of service operations with the addition of project traffic.

Exhibit 7-A illustrates the Existing Plus Project off-site improvements. For Existing plus Project conditions, the project will be required to construct the following improvement to mitigate the project's direct impact:

***Azusa Canyon Road / Los Angeles Street (#1)***

- Install a traffic signal

Exhibit 7-B illustrates the Interim Year (2016) With Project off-site improvements. The project shall pay its fair share for the following improvement to mitigate the project's cumulative impact:

***Azusa Canyon Road / Arrow Highway (#4)***

- Modify striping to provide a 3<sup>rd</sup> eastbound through lane.
- Modify striping to provide a 3<sup>rd</sup> westbound through lane and 3<sup>rd</sup> westbound receiving lane.

Exhibit 7-C illustrates the Long Range (2035) With Project off-site improvements. The project shall pay its fair share for the following improvement to mitigate the project's cumulative impact:

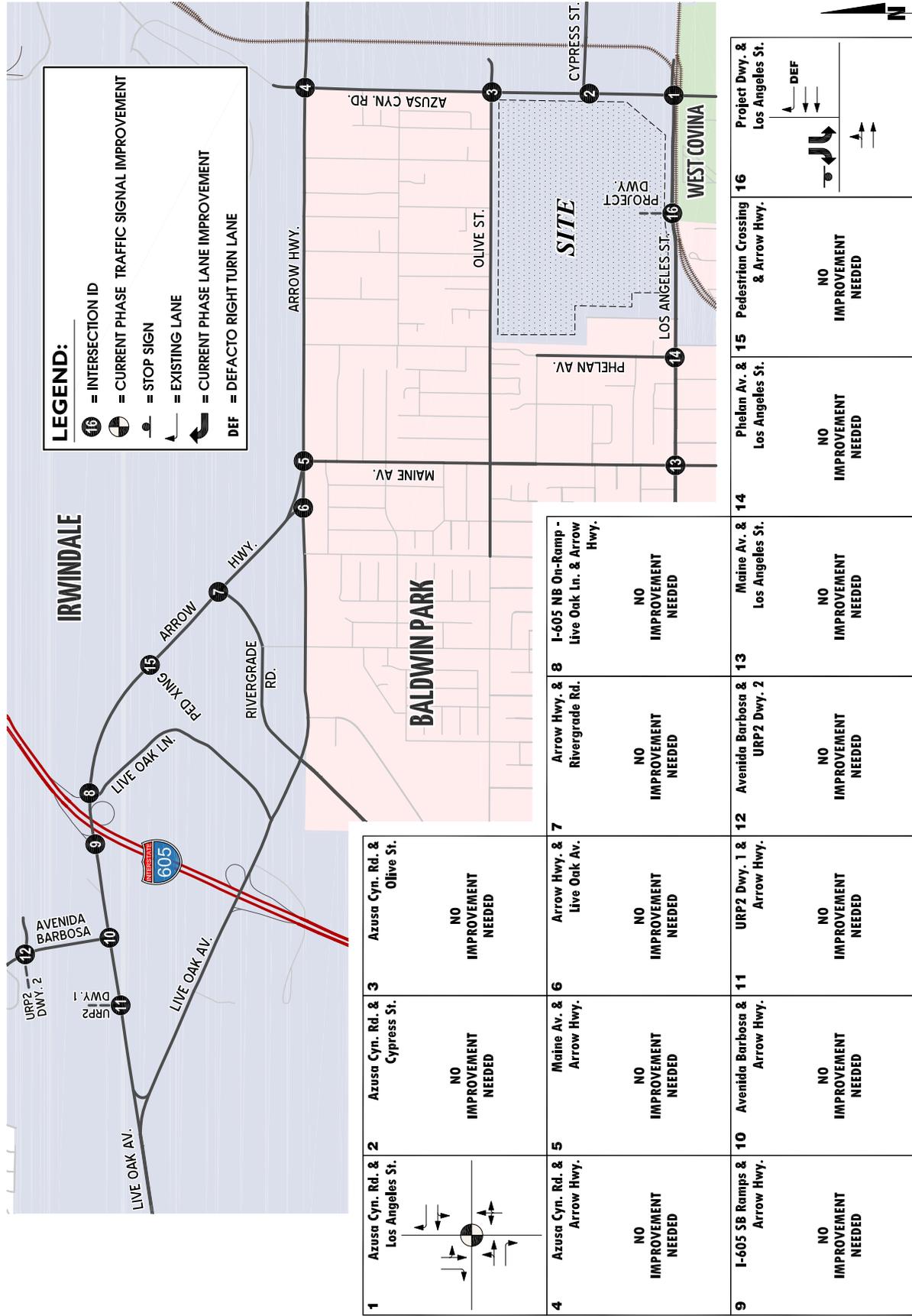
***I-605 SB Off-Ramp / Arrow Highway (#9)***

- Construct a 2<sup>nd</sup> southbound left turn lane.
  - It should be noted that this improvement is consistent with the Traffic/Circulation Study Draft for 1-605 Northbound Off-Ramp/Live Oak Avenue Interchange Improvements (November 2013) prepared by AECOM.

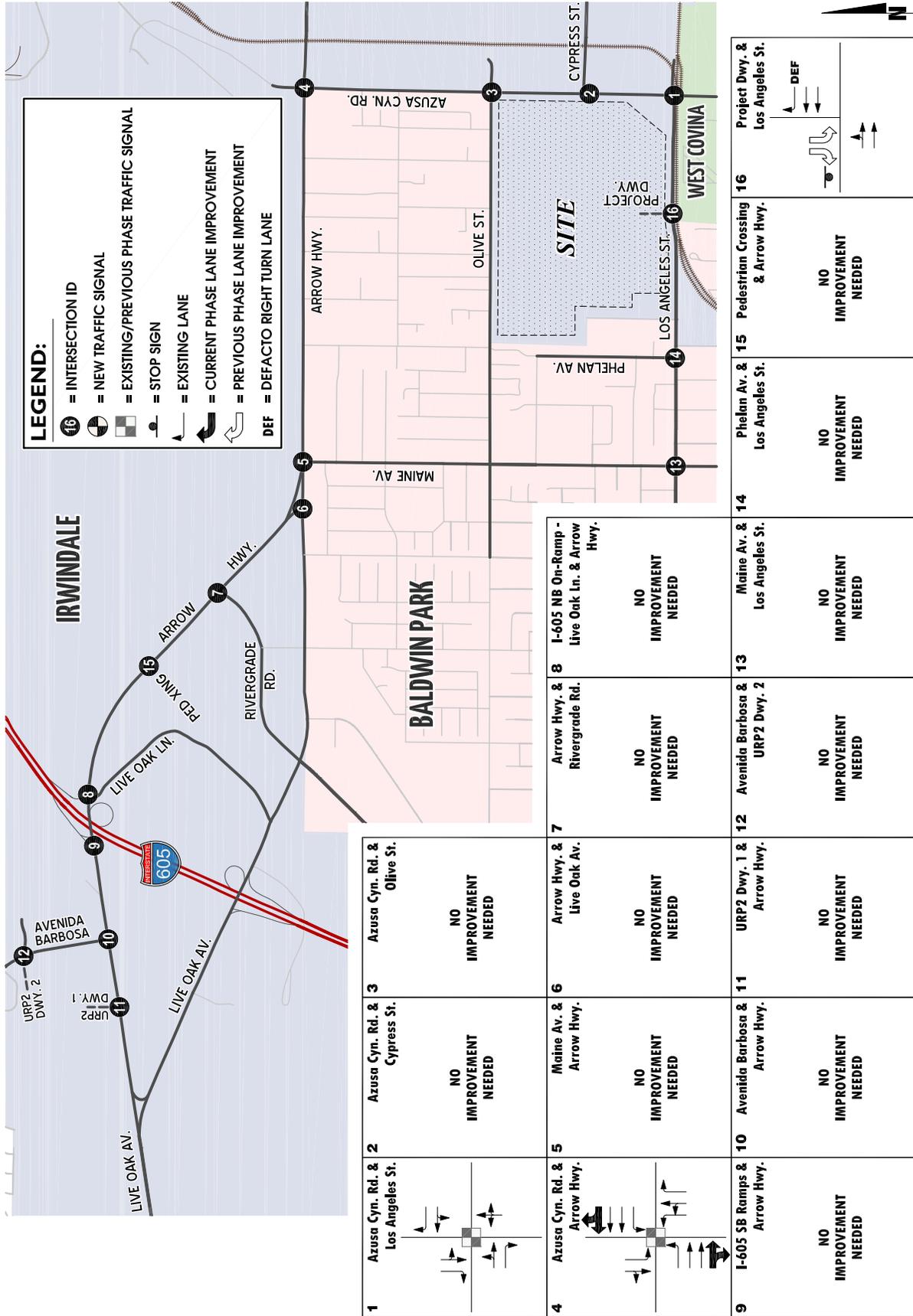
Exhibit 7-D presents the on-site improvements related to the project access intersection. As shown on Exhibit 7-D, the recommended on-site improvements are as follows:

***Project Driveway / Los Angeles Street (#16)*** – To mitigate potential traffic impacts at this location the project shall be required to install a stop control on the southbound approach and construct the intersection with the following geometrics prior to commencement of operations:

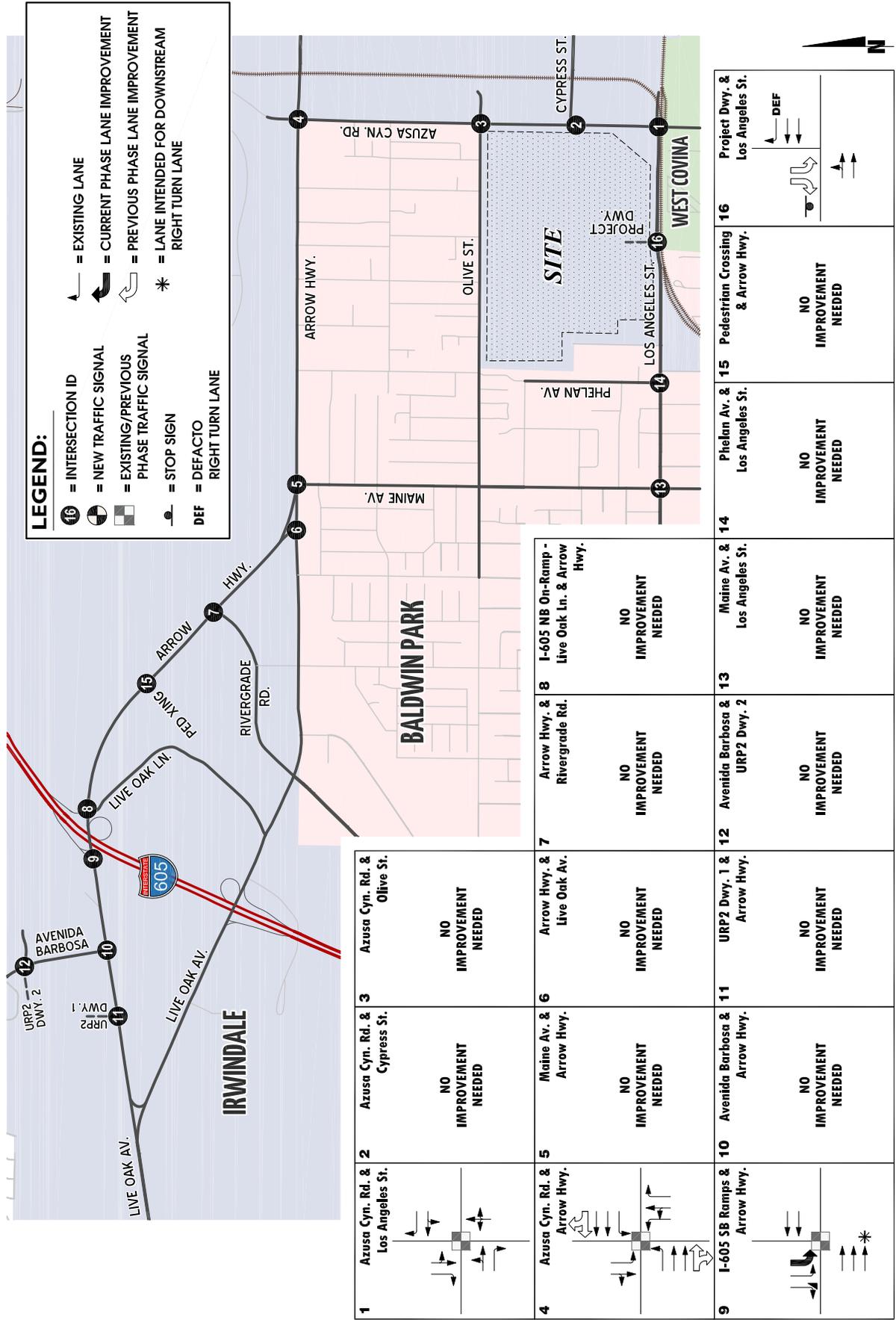
### EXHIBIT 7-A: Existing Plus Project Conditions Required Improvements



### EXHIBIT 7-B: Interim Year (2016) With Project Conditions Required Improvements

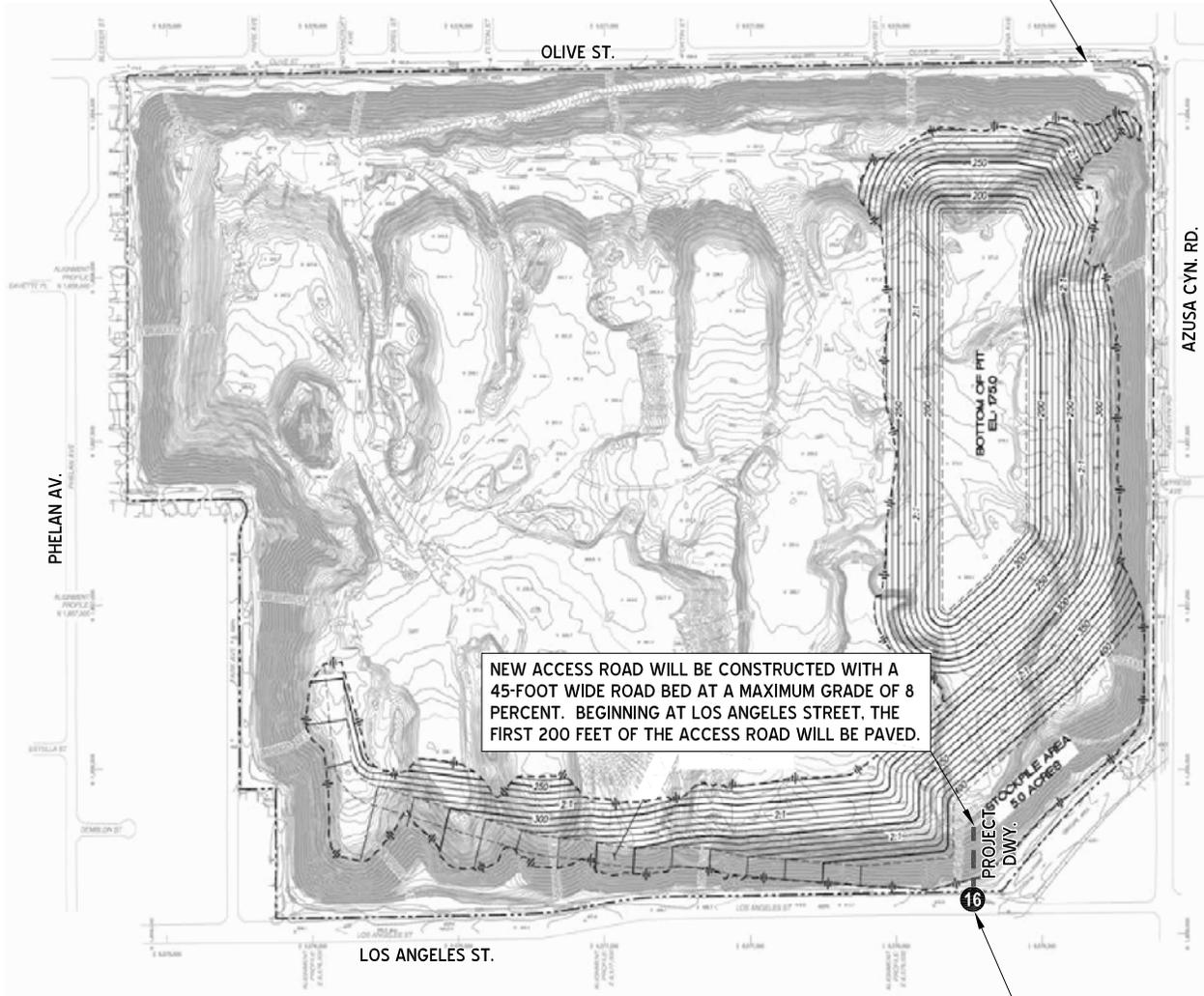


### EXHIBIT 7-c: Long Range (2035) With Project Conditions Required Improvements



**EXHIBIT 7-D: Site Access Recommendations**

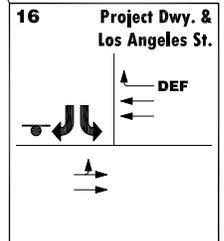
EXISTING SITE ACCESS ALONG OLIVE STREET WILL BE RELOCATED TO THE SOUTHERN PORTION OF THE PROPERTY ALONG LOS ANGELES STREET.



NEW ACCESS ROAD WILL BE CONSTRUCTED WITH A 45-FOOT WIDE ROAD BED AT A MAXIMUM GRADE OF 8 PERCENT. BEGINNING AT LOS ANGELES STREET, THE FIRST 200 FEET OF THE ACCESS ROAD WILL BE PAVED.

ON-SITE TRAFFIC SIGNING AND STRIPING SHOULD BE IMPLEMENTED IN CONJUNCTION WITH DETAILED CONSTRUCTION PLANS FOR THE PROJECT SITE.

SIGHT DISTANCE AT THE PROJECT ACCESS POINT SHOULD BE REVIEWED WITH RESPECT TO APPLICABLE LOCAL JURISDICTION'S SIGHT DISTANCE STANDARDS AT THE TIME OF PREPARATION OF FINAL GRADING, LANDSCAPE AND STREET IMPROVEMENT PLANS. IF THE LOCAL JURISDICTION DOES NOT HAVE SIGHT DISTANCE STANDARDS, CALTRANS HIGHWAY DESIGN MANUAL STANDARDS SHOULD BE USED.



**LEGEND:**

- = INTERSECTION ID
- = STOP SIGN
- = EXISTING LANE
- = CURRENT PHASE LANE IMPROVEMENT
- DEF** = DEFACTO RIGHT TURN LANE



- Northbound Approach: N/A
- Southbound Approach: One left turn lane and one right turn lane.
- Eastbound Approach: One shared left-through lane and 2<sup>nd</sup> through lane.
- Westbound Approach: Two through lanes and one defacto right turn lane.

On-site traffic signing and striping should be implemented in conjunction with detailed construction plans for the Project site.

Sight distance at the project access point should be reviewed with respect to applicable local jurisdiction's sight distance standards at the time of preparation of final grading, landscape and street improvement plans. If the local jurisdiction does not have sight distance standards, Caltrans Highway Design Manual standards should be used.

The City has no other plans, ordinances or policies that “establish measures of effectiveness for the performance of the circulation system, including related to mass transit and non-motorized travel, such as a pedestrian or bicycle circulation plan, which are applicable to the Proposed Project. The only bike path within the City of Irwindale is located on the River bed, west of Rivergrade Road and north of Arrow Highway. Based on the existing uses near the project site, and the project's trip generation characteristics, pedestrian activity is anticipated to be nominal.

The recommended project off-site and on-site improvements provide for safe and efficient access conditions, and accommodate the travel activities associated with the Proposed Project. Furthermore, implementation of the Project would not conflict with adopted policies, plans, or programs that would result in a decrease of the performance or safety of public transit, bicycle, or pedestrian facilities. Impacts are considered less than significant and no mitigation measures are required.

THIS PAGE IS INTENTIONALLY LEFT BLANK