

TRAFFIC IMPACT ANALYSIS

BERNARDO SHORES

Imperial Beach, California
September 8, 2014

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EXECUTIVE SUMMARY

Linscott, Law & Greenspan, Engineers (LLG) has been retained to assess the traffic impacts associated with the Bernardo Shores redevelopment (hereby referred to as the proposed “Project”). The site is located north of State Route 75 (Palm Avenue) at the intersection of Rainbow Drive in the City of Imperial Beach. An adult recreational vehicle park with approximately 124 spaces currently occupies the site. The Project proposes to redevelop the existing site with 194 residential dwelling units (DU).

Since the preparation of this traffic study, the total unit count has been reduced from 194 DU to 193 DU. The analysis provided in the traffic study was conducted using the 194 DU amount which represents a slightly conservative analysis. This minor reduction in the number of units has little to no effect on the Project trip generation and therefore, no changes to the conclusions of significance for traffic impacts would result.

Using the SANDAG rates for multi-family residential, and crediting the traffic generated by the existing on-site land uses, the Project is anticipated to generate 1,064 net ADT with 87 AM net peak hour trips and 106 PM net peak hour trips. Under long-term Year 2040 conditions, no trip credits were taken for the existing site uses.

Based on the City of Imperial Beach significance criteria, *one (1) significant cumulative impact* was calculated with the addition of Project traffic to the long-term baseline condition. Therefore, mitigation measures are required and are detailed later on in this report.

The Project proposes primary gated access, with two inbound lanes providing for the storage of six vehicles. A turnaround is also provided for entering vehicles denied entry. This design meets local and regional criteria (e.g. City of Chula Vista, County of San Diego), and a queuing analysis prepared for the PM peak hour inbound trips indicates that peak hour Project queuing will be accommodated on-site. A secondary, emergency-only access is provided to 7th Street.

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1.0 INTRODUCTION

The following traffic study has been prepared to determine and evaluate the traffic impacts on the local circulation system due to the development of the proposed Bernardo Shores Project (“Project”) in the city of Imperial Beach. The purpose of this study is to assess the potential impacts to the local circulation system as a result of the addition of Project traffic.

Included in this traffic study are the following:

- Project Description
- Existing Conditions Discussion
- Study Area, Analysis Approach & Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Trip Generation, Distribution & Assignment
- Analysis of Existing + Project Scenario
- Near-Term Cumulative Projects Discussion
- Analysis of Near-Term Scenarios
- Year 2040 Long-Term Conditions Discussion
- Analysis of Year 2040 Long-Term Scenarios
- Access Assessment
- Conclusions & Recommendations

Figure 1-1 shows the vicinity map. *Figure 1-2* shows a more detailed Project area map.

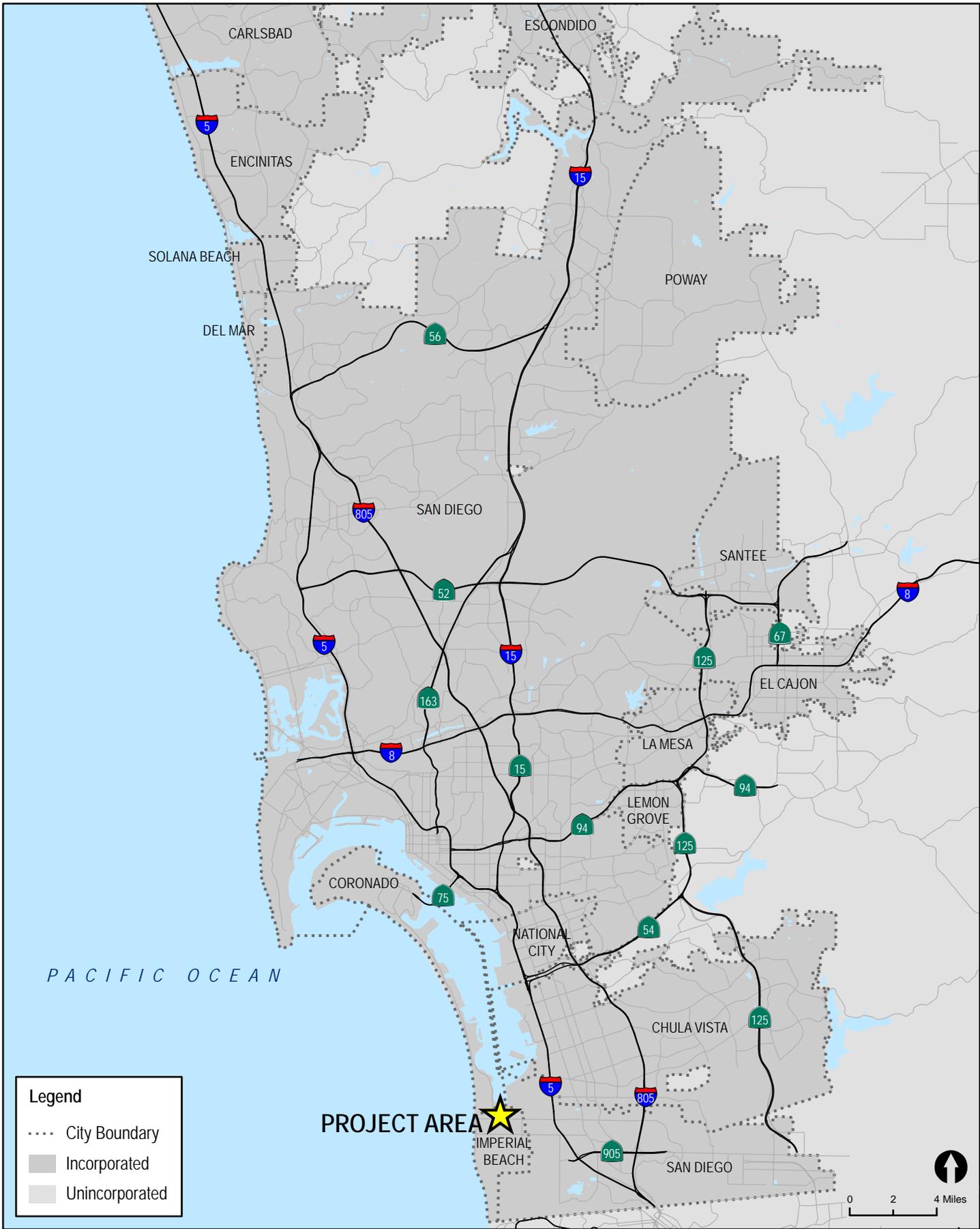
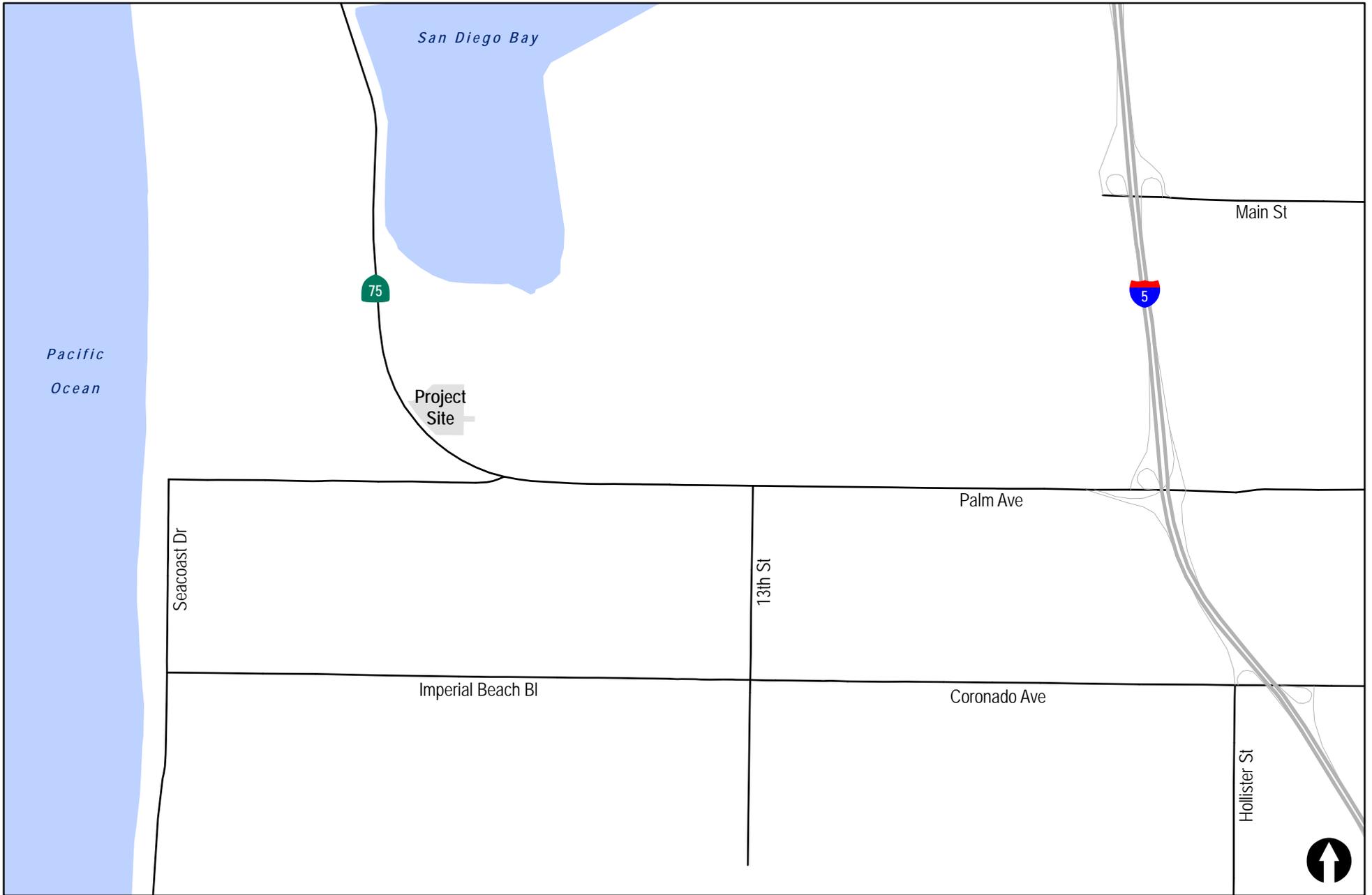


Figure 1-1

Vicinity Map

BERNARDO SHORES



2.0 PROJECT DESCRIPTION

2.1 Project Location

The Project is located on the north side of SR 75 (Palm Avenue), opposite Rainbow Drive, in the City of Imperial Beach. The site is currently used as an adult RV park, which provides approximately 124 spaces for rent year round. The Project is generally north and west of the residential core of Imperial Beach, and south of Coronado. Regional access to Interstate 5 is east via Palm Avenue, or north via SR 75 and the Coronado Bridge. Access to the Project will be provided at the existing SR 75/ Rainbow Drive signalized intersection.

2.2 Project Description

Bernardo Shores is a residential development on approximately 9.3 acres (plus a contiguous .76 acre parcel that is a narrow 20' x 1,400' parcel) of land currently designated for the development located in the City of Imperial Beach, the southwestern most city in San Diego County.

When fully developed, Bernardo Shores will provide 190 attached “for sale” residential units and four (4) single-family detached units. The product is positioned to meet the entry level segment of the market with average home sizes ranging from approximately 1,200 SF to 2,000 SF.

Since the preparation of this traffic study, the total unit count has been reduced from 194 DU to 193 DU. The analysis provided in the traffic study was conducted using the 194 DU amount which represents a slightly conservative analysis. This minor reduction in the number of units has little to no effect on the Project trip generation and therefore, no changes to the conclusions of significance for traffic impacts would result.

Figure 1-1 shows the Project vicinity map and *Figure 1-2* depicts the Project area.

3.0 EXISTING CONDITIONS

3.1 Existing Street Network

The following provides a brief description of the street system in the Project area. Roadway classifications are based on the City of Imperial Beach General Plan and Local Coastal Plan Circulation Element, 1997 (updated 2010). A review of the SANTEC/ITE guidelines was used to develop the appropriate capacity based on the Imperial Beach classifications. *Figure 3-1* shows an existing conditions diagram, including signalized intersections and lane configurations.

State Route 75 (SR 75)/Palm Avenue is an east-west facility in the City of Imperial Beach that turns north past Rainbow Drive as it continues to Coronado. In the study area SR 75 is classified on the Imperial Beach Circulation Element as a Four-Lane Major Street north of Rainbow Drive (where it transitions to Silver Strand Boulevard) and as a Six-Lane Prime Arterial east of Rainbow Drive to the City boundary. It is currently built to its ultimate classification as a Four-Lane Major Street from just west of 7th Street to north of Rainbow Drive continuing up Silver Strand Boulevard. From 7th Street to east of 9th Street, SR 75 it is built as a six-lane roadway with a raised median with cross-sections corresponding to Major Arterial standards, per SANTEC/ITE guidelines. The speed limit is 55 miles per hour (mph) north of Rainbow Road along Silver Strand Boulevard. From Rainbow Drive to the east, the posted speed limit is 40 mph. Bus stops are provided; curbside parking is prohibited.

Palm Avenue as a separate facility runs from Seacoast Drive to just east of 7th Street, where it merges and becomes SR 75. It is classified on the Imperial Beach Circulation Element as a Two-Lane Class III Collector. It is currently built as a two-lane roadway divided by a two-way left-turn lane (TWLTL) with cross-sections corresponding to Collector (continuous left-turn lane) standards, per SANTEC/ITE guidelines. The posted speed limit is 35 mph and curbside parking is prohibited. Two MTS bus routes use Palm Avenue but there are no stops in the study area between Rainbow Drive and SR 75.

Rainbow Drive is classified as a Three-Lane Class II Collector from SR 75 to Palm Avenue. It is currently built as a two-lane undivided roadway with cross-sections corresponding to Collector standards, per SANTEC/ITE guidelines. The posted speed limit is 30 mph and curbside parking is permitted along both sides of the roadway. One bus stop is provided on the west side of Rainbow Drive.

3.2 Existing Bicycle Network

In June 2008, the City of Imperial Beach approved the Final Draft Bicycle Transportation Plan, prepared by KTU+A and KOA Corporation. As documented in this plan, the Bayshore Bikeway traverses the City of Imperial Beach. The Bayshore Bikeway provides a 26-mile bicycle facility connecting cyclists around San Diego Bay through the cities of San Diego, National City, Chula Vista, Imperial Beach, and Coronado. Currently, approximately 13 miles of bicycle paths are in use on the Bikeway. The rest of the facility consists of on-street sections designated as either bicycle lanes or bicycle routes. The 0.81 mile section of bikeway within the City of Imperial Beach runs

along the northern boundary between the City and the San Diego Bay. This Class 1 bike path is the only bike path within the City.

There is one section of a Class II bike lane within the City limits. This bike lane is on Palm Avenue from 13th Street to 12th Street, only 760 feet long with parallel parking between the bike lane and the curb. Signage includes one faint bike lane symbol.

According to SANDAG, there are three sections of Class III bike routes totaling 1.2 miles that can be found on 7th Street from the Bayshore Bikeway to Cypress Avenue, east on Cypress Avenue from 7th Street to 13th Street and 13th Street from the Bayshore Bikeway to Palm Avenue. The Class III route has been removed from Cypress Avenue based on the City of Imperial Beach General Plan. It stated that once the Bayshore Bikeway was complete, the east-west Cypress Avenue connection between 7th Street to 13th Street would be replaced by the Bayshore Bikeway.

Bicycle facilities connecting with adjacent cities are along the Class II section of Palm Avenue which heads east to the City of San Diego and the Bayshore Bikeway which connects to the Silver Strand Bike Path and into the City of Coronado to the north and Chula Vista to the east. Coronado Avenue is a Class III bike route which ends its designation when it turns into Imperial Beach Boulevard at the City limit line.

3.3 Existing Pedestrian Conditions

Based on field observations within the study area, the following pedestrian conditions are noted.

Continuous sidewalks are provided along both sides Palm Avenue and Rainbow Drive in the study area, with the exception of a gap on the south side of Palm Avenue between Delaware Street and 9th Street. SR 75 along Silver Strand Boulevard do not provide paved sidewalks as this roadway serves as a high speed highway connecting to Coronado with no developed land uses abutting the roadway for an extended distance.

3.4 Existing Transit Conditions

Based on the most recent information on the San Diego Metropolitan Transit System (MTS) website, the following transit conditions are noted.

Current local bus transit service is provided in the study area via Routes 901, 933, and 934. Bus stops are located directly adjacent to the Project access on SR 75 at Rainbow Drive, on the west side of Rainbow Drive just south of SR 75, as well as along Palm Avenue and SR 75 within close proximity to the Project site.

Route 901 travels from the Iris Avenue Trolley Station to Downtown San Diego via Coronado and travels along Palm Avenue within the study area. This route generally provides 15-minute headways during peak weekday hours and 30-minute headways the rest of the day, operating between 4:30 AM and 1:00 AM. Service is hourly on the weekends.

Routes 933 and 934 travel in opposite directions in a loop bounded by Seacoast Drive in the west, Palm Avenue in the north, Dennery Road in the east, and Tocayo Avenue in the south. These routes travel along SR 75 and Palm Avenue within the study area and serve both the Palm Avenue and Iris Avenue Trolley Stations. Routes 933 and 934 generally provide 15-minute peak hour headways and operate until 1:00 AM during the weekday and generally 30-minute headways during the weekend. Service ends at 8:00 PM on Sundays.

3.5 Existing Traffic Volumes

Existing 7:00-9:00 AM and 4:00-6:00 PM peak hour traffic volumes at key area intersections and 24-hour street segment volumes were collected in March 2013. These counts were supplemented with additional segment volumes for portions of SR 75 from Caltrans dated 2011, the most recent available year. Peak hour intersection volumes were balanced and adjusted, where appropriate, to account for minor discrepancies that can result with manual traffic counts.

Table 3-1 is a summary of the existing average daily traffic volumes (ADTs) in the Project area.

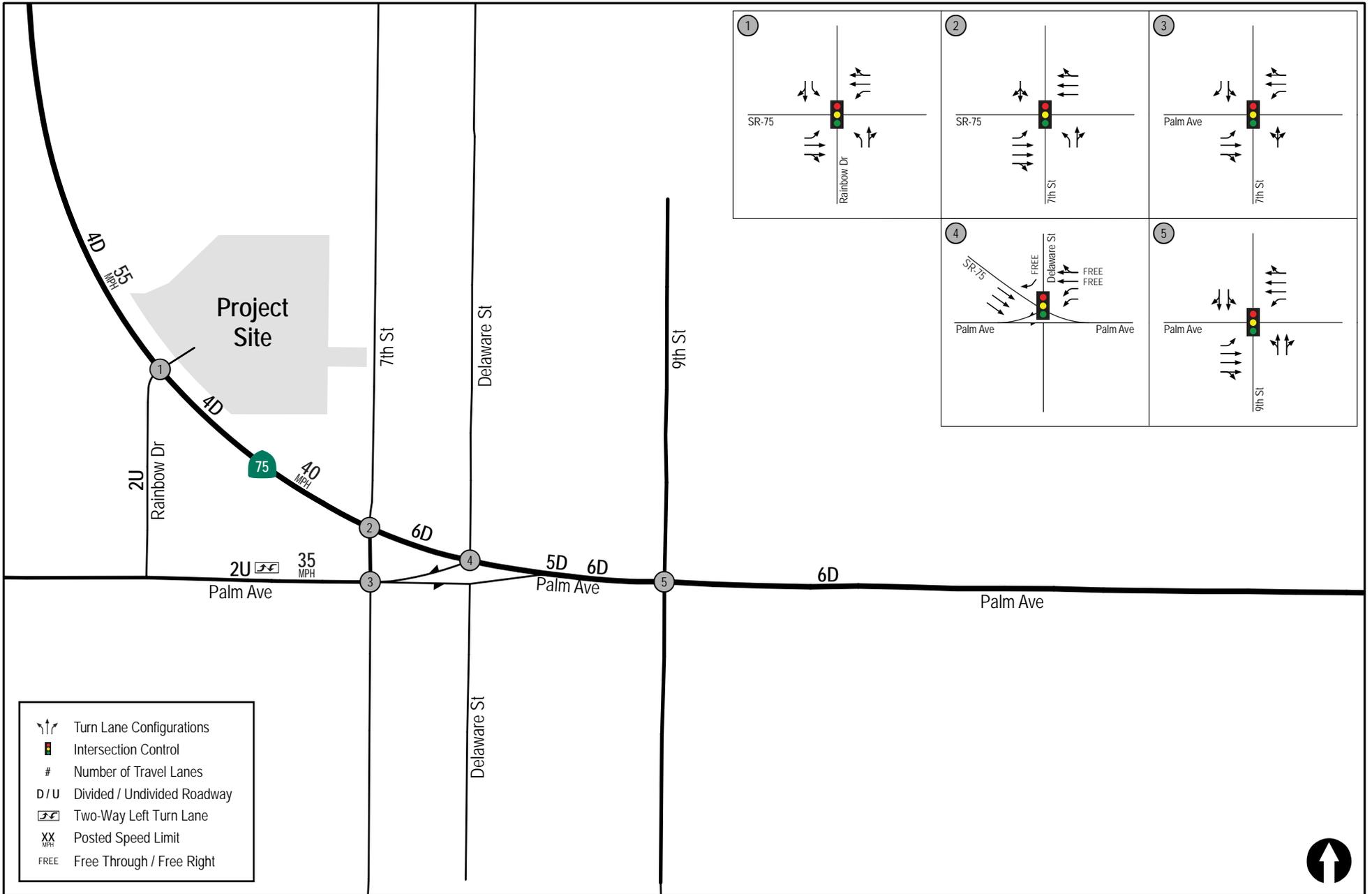
Figure 3-2 shows the Existing AM/PM peak hour turning movement volumes and daily traffic volumes. *Appendix A* contains the peak hour intersection and daily segment count sheets.

TABLE 3-1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT ^a	Date	Source
SR 75			
1. North of Rainbow Drive	16,300	2011	Caltrans
2. Rainbow Drive to 7 th Street	16,600	2013	LLG ^b
3. 7 th Street to Delaware Street	19,700	2011	Caltrans
4. Delaware Street to 9 th Street	22,000	2011	Caltrans
5. 9 th Street to Florida Street	32,500	2011	Caltrans
Palm Avenue			
6. Rainbow Drive to SR 75	11,600	2013	LLG
Rainbow Drive			
7. SR 75 to Palm Avenue	4,690	2013	LLG

Footnotes:

- a. Average Daily Traffic Volumes. Volumes rounded to the nearest one-hundredth or tenth.
- b. Year 2013 LLG volume used in the analysis since the observed count was higher than the Year 2011 Caltrans volumes of 15,500 ADT.



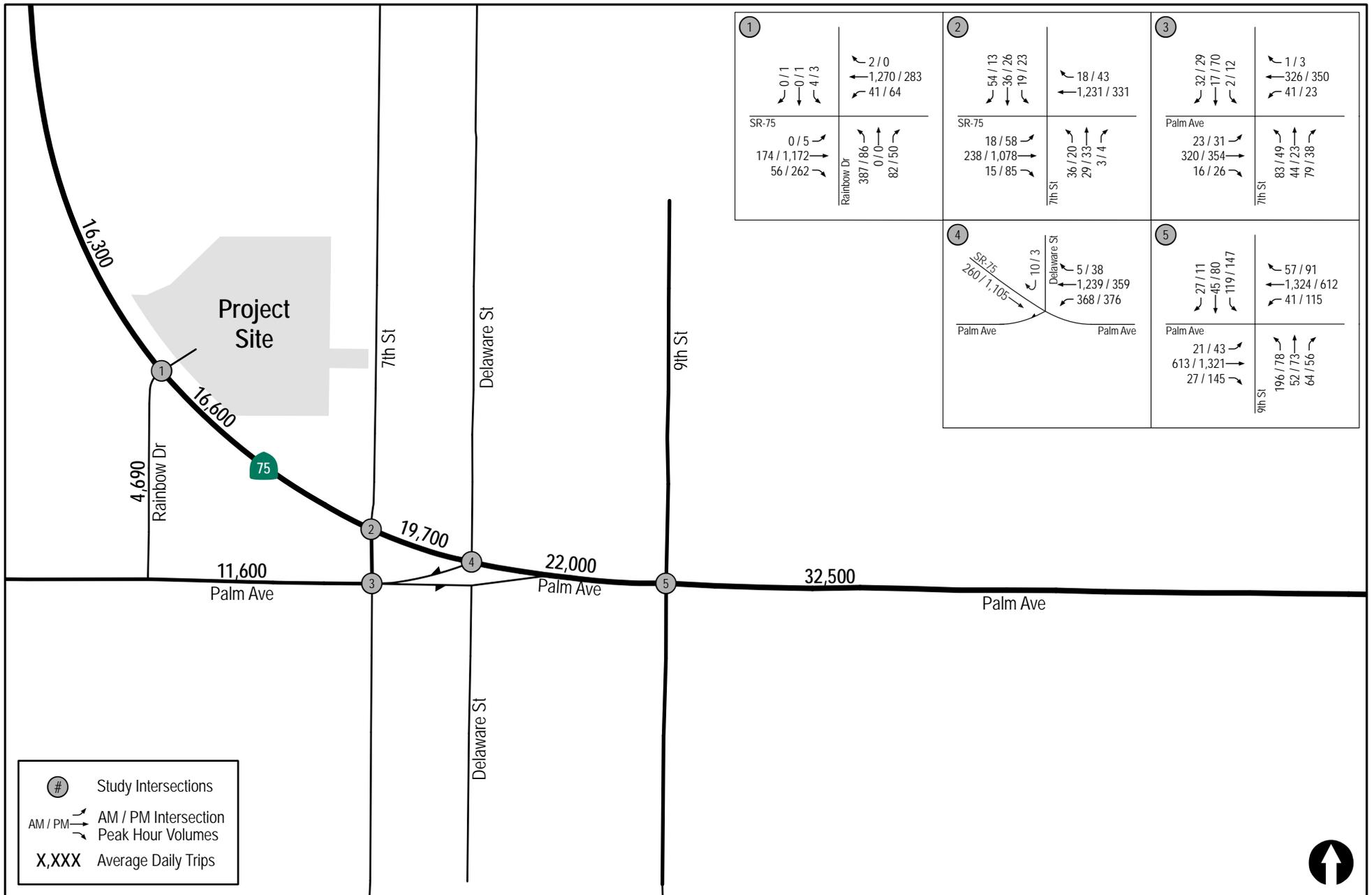


Figure 3-2

Existing Traffic Volumes

4.0 STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

4.1 Study Area

The study area was based on the criteria identified in the San Diego Traffic Engineering Council (SANTEC)/Institute of Traffic Engineers (ITE) *Guidelines for Traffic Impact Studies in the San Diego Region*, March 2, 2000. Based on this criteria, the traffic study must include “all local roadway segments, intersections, and mainline freeway locations where the Project will add 50 or more peak hour trips in either direction to the existing roadway traffic.”

Using the above criteria along with input from City staff, the Project study area includes the following locations:

Intersections

1. SR 75 (Palm Avenue) / Rainbow Drive
2. SR 75 (Palm Avenue) / 7th Street
3. Palm Avenue/ 7th Street
4. SR 75 (Palm Avenue) / Delaware Street
5. SR 75 (Palm Avenue) / 9th Street

Segments

SR 75

1. North of Rainbow Drive
2. Rainbow Drive to 7th Street
3. 7th Street to Delaware Street
4. Delaware Street to 9th Street
5. 9th Street to Florida Street

Palm Avenue

6. Rainbow Drive to SR 75

Rainbow Drive

7. Rainbow Drive to SR 75

4.2 Analysis Approach

The site is currently occupied by an adult-oriented RV Park providing approximately 124 lots. The RV Park occupancy is temporary in nature with lots rented by the day, week and month. Since the RV Park is currently generating traffic, trip generation credits were taken for this existing land use in the existing and near-term analyses. For purposes of analyzing long-term conditions in the area, the gross Project trip generation was added to the baseline Year 2040 scenario.

LLG conducted a review of published trip generation rates to determine the appropriate method for calculating the trip credits for the existing RV Park. Ultimately, the existing traffic volumes counted at the SR 75/ Rainbow Drive intersection entering and exiting the RV Park were used to account for

the site trips already on the roadway system when the existing counts were conducted. A more detailed discussion on the trip generation reductions is provided in *Section 7.0* of this report.

Table 4-1 lists the scenarios analyzed in this report.

TABLE 4-1
ANALYSIS SCENARIOS

<i>Existing & Near-Term Conditions</i>
<ul style="list-style-type: none"> ▪ Existing ▪ Existing + Project ▪ Near-Term Without Project ▪ Near-Term With Project
<i>Year 2040 Conditions</i>
<ul style="list-style-type: none"> ▪ Year 2040 Without Project ▪ Year 2040 With Project

4.3 Methodology

Level of Service is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of Service provides an index to the operational qualities of a roadway segment or an intersection. Level of Service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of Service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

4.3.1 Intersections

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 16 of the *2000 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 7) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection LOS.

Signalized intersections (all study area intersections along SR 75) were analyzed using the most recent Caltrans signal timing plans. **Appendix B** contains copies of the Caltrans signal timing plans.

4.3.2 Street Segments

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the SANTEC/ITE *Roadway Classification, Level of Service, and ADT Table*. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The roadway classification table is attached in **Appendix C**.

5.0 SIGNIFICANCE CRITERIA

The City of Imperial Beach uses the published SANTEC/ITE guidelines for the determination of the significance of impacts. A project is considered to have a significant impact if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. The defined thresholds are shown in *Table 5-1* below for freeway segments, roadway segments, intersections, and ramp meter facilities.

If the project exceeds the thresholds in *Table 5-1*, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated.

TABLE 5-1
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project ^a	Allowable Increase Due to Project Impacts ^b	
	Roadway Segments	Intersections
	V/C	Delay (sec.)
E & F	0.02	2

Source: SANTEC/ITE Guidelines for Traffic Impact Studies in the San Diego Region, March 2, 2000.

Footnotes:

- a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.
- b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note "a" above), the project applicant shall be responsible for mitigating significant impact changes.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections.
4. LOS = Level of Service

6.0 ANALYSIS OF EXISTING CONDITIONS

The following section presents the analysis of existing study area locations.

6.1 Peak Hour Intersection Operations

Table 6-1 summarizes the existing intersections LOS. As seen in *Table 6-1*, all intersections are calculated to currently operate at LOS D or better.

Appendix D contains the existing intersection analysis worksheets.

6.2 Daily Street Segment Operations

Table 6-2 summarizes the existing roadway segment operations. As seen in *Table 6-2*, the study area segments are calculated to currently operate at LOS D or better.

TABLE 6-1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay ^a	LOS ^b
1. SR 75 (Palm Avenue) / Rainbow Drive/ Project Driveway	Signal	AM	29.6	C
		PM	22.3	C
2. SR 75 (Palm Avenue) / 7 th Street	Signal	AM	23.4	C
		PM	20.0	B
3. Palm Avenue / 7 th Street	Signal	AM	36.1	D
		PM	33.6	C
4. SR 75 (Palm Avenue) / Delaware Street	Signal	AM	16.2	B
		PM	21.5	C
5. SR 75 (Palm Avenue) / 9 th Street	Signal	AM	29.4	C
		PM	25.4	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.

SIGNALIZED DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

**TABLE 6-2
EXISTING STREET SEGMENT OPERATIONS**

Street Segment	Currently Built As ^a	Capacity (LOS E) ^a	ADT ^b	LOS ^c	V/C ^d
SR 75					
1. North of Rainbow Drive/ Project Driveway	4-lane Major Arterial	40,000	16,300	B	0.408
2. Rainbow Drive/Project Driveway to 7 th Street	4-lane Major Arterial	40,000	16,600	B	0.415
3. 7 th Street to Delaware Street	6-lane Major Arterial	50,000	19,700	A	0.394
4. Delaware Street to 9 th Street	6-lane Major Arterial	50,000	22,000	B	0.440
5. 9 th Street to Florida Street	6-lane Major Arterial	50,000	32,500	C	0.650
Palm Avenue					
6. Rainbow Drive to SR 75	2-lane Collector w/ TWLTL	15,000	11,600	D	0.773
Rainbow Drive					
7. SR 75 to Palm Avenue	2-Ln Collector	8,000	4,690	C	0.586

Footnotes:

- a. Classification based on City of Imperial Beach Circulation Element and capacities based on SANTEC/ITE Roadway Classification Table (See *Appendix C*).
- b. Average Daily Traffic Volumes.
- c. Level of Service.
- d. Volume to Capacity.

General Notes:

1. TWLTL = Two-way left-turn lane.

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

7.1 Proposed Land Use

The Project proposes to develop 194 residential dwelling units. Using the SANDAG (*Not so*) *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, the Project would be expected to generate 1,164 daily trips with 93 AM and 116 PM peak hour trips.

Since the preparation of this traffic study, the total unit count has been reduced from 194 DU to 193 DU. The analysis provided in the traffic study was conducted using the 194 DU amount which represents a slightly conservative analysis. This minor reduction in the number of units has little to no effect on the Project trip generation and therefore, no changes to the conclusions of significance for traffic impacts would result.

7.2 Existing On-Site Land Use

As previously mentioned in this report, the site is currently occupied by an adult-oriented RV Park providing approximately 124 lots. The RV Park occupancy is temporary in nature with lots rented by the day, week and month. Since the RV Park is currently generating traffic, trip generation credits were taken for this existing land use in the existing and near-term analyses.

LLG conducted a review of published trip generation rates to determine the appropriate method for calculating the trip credits for the existing RV Park. The SANDAG trip manual does not provide a land use rate for RV park land use types. The Institute of Transportation Engineers (ITE) *Trip Generation Manual* provides rates for “campground/recreational vehicle parks”. As defined in the ITE manual, “campgrounds and recreational vehicle parks are recreational sites that accommodate campers, trailers, tents, and recreational vehicles on a transient basis.” Using the ITE rates, at full occupancy, the RV Park would be expected to generate 26 AM and 33 PM peak hour trips. The ITE manual does not currently provide a daily rate for this land use type.

On the day LLG conducted traffic counts in the study area, the RV Park was at low occupancy. A total of 6 AM and 10 PM peak hour trips were observed at the RV Park driveway (SR 75/ Rainbow Drive intersection). Therefore, for purposes of being conservative, the existing traffic counts collected in March 2013 were used in calculating the net Project trip generation.

Table 7-1 shows a comparison between the ITE trip generation and the existing driveway counts.

TABLE 7-1
EXISTING SITE TRIP GENERATION COMPARISON

Recreational Vehicle Park	Size	Daily Trip Ends (ADT) ^a		AM Peak Hour					PM Peak Hour						
		Rate	Volume	Rate	In:Out		Volume			Rate	In:Out		Volume		
					Split %	In	Out	Total	Split %		In	Out	Total		
ITE Rates	124 Lots	^b	330	0.21	36:64	9	17	26	0.27	65:35	21	12	33		
Existing Driveway Counts	124 Lots	^b	100	—	—	2	4	6	—	—	5	5	10		

Footnotes:

- a. ADT = Average Daily Traffic.
- b. ITE Trip Manual does not provide a daily rate for RV Park land use. The SANDAG 10% PM rate of the total ADT for the “mobile home park” land use was applied to both the ITE calculated trip generation and the existing 2013 traffic counts.

7.3 Trip Generation

As shown in the sections above, the Project is anticipated to generate a net increase in traffic over the existing RV Park-related traffic. The existing driveway counts already on the street system were deducted from the townhome trip generation totals to arrive at the net new trips generated by the proposed Project.

Table 7-2 tabulates the net Project traffic generation. The Project is calculated to generate approximately 1,064 net ADT with 87 net trips during the AM peak hour (17 inbound/ 70 outbound) and 106 net trips during the PM peak hour (76 inbound/ 30 outbound).

TABLE 7-2
PROJECT TRIP GENERATION

Recreational Vehicle Park	Size	Daily Trip Ends (ADT) ^a		AM Peak Hour					PM Peak Hour						
		Rate ^b	Volume	Rate	In:Out		Volume			Rate	In:Out		Volume		
					Split %	In	Out	Total	Split %		In	Out	Total		
Proposed Project															
Townhomes	194 DU	6 /DU	1,164	8%	20:80	19	74	93	10%	70:30	81	35	116		
Existing Land Use															
Existing Driveway Counts	124 Lots	—	(100)	—	—	(2)	(4)	(6)	—	—	(5)	(5)	(10)		
Net Project Trip Generation		—	1,064	—	—	17	70	87	—	—	76	30	106		

Footnotes:

- a. ADT = Average Daily Traffic.
- b. Rates based on SANDAG’s *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The rate of 6 trips/DU applies to multifamily developments where density is greater than 20.0 DU/AC. The Project’s density is 21 DU/AC (194 units ÷ 9.3 AC = 21 DU/AC). Existing land use RV Park trips taken from existing March 2013 traffic counts.

General Notes:

- 1. DU = Dwelling units

7.4 Trip Distribution/Assignment

The trip distribution for the proposed Project was based on the land use type, nearby areas of employment, commercial shopping opportunities and schools and the review of a SANDAG Select Zone Assignment (SZA) traffic model run. The Project proposes to develop attached townhomes which would be anticipated to serve as entry-level housing. The site is located in a unique area in close proximity to the military uses along the Silver Strand, the Coronado Naval Base, and along SR 75 which provides access to Interstate 5 (I-5) both to the east along SR 75 (Palm Avenue) and to the northwest along Silver Strand Boulevard to the Coronado Bridge to I-5.

7.4.1 Existing Peak Hour Traffic Patterns

Current traffic patterns observed in the immediate vicinity of the Project site indicate the flow of traffic in the AM peak hour travels northwest on SR 75 from Imperial Beach toward Coronado and the PM peak hour flow of traffic completes the returning trip from Coronado to Imperial Beach. Several factors could be attributed to these travel patterns. First, a substantial amount of multi-family housing as well as low to moderately priced housing is provided in Imperial Beach. Data obtained from the SANDAG Data Warehouse indicates that the majority of the Imperial Beach population lies between the ages of 20-29 years old. The combination of these economic and demographic factors could result in a large population base of Coronado Naval Base personnel living in Imperial Beach and working at North Island or other Naval facilities within the area.

Another reason for the west/east AM/PM peak hour flow of traffic adjacent to the Project site could be due to Imperial Beach residents as well as residents of the City of San Diego Community of Otay Mesa-Nestor using SR 75 as a route to reach I-5 via Coronado. Traffic along SR 75 closer to I-5 in the City San Diego is congested during peak hour operations (Caltrans data indicates over 60,000 ADT east of Saturn Boulevard at the I-5/SR 75 (Palm Avenue) interchange). Interstate 5 is also heavily congested during the peak hours for commuter traffic in the morning and evening hours. These congested conditions would encourage drivers to travel on SR 75 to Silver Strand Boulevard, over the Coronado Bridge, and onto I-5 to reach their ultimate destination.

7.4.2 Existing Daily Traffic Patterns

Daily traffic patterns outside the AM and PM peak commuter hours is generally reflective of trips purposed to/from shopping areas, schools, off-peak job shifts, and other miscellaneous errands/trip types. In reviewing the travel patterns within close proximity to the Project site, traffic flow over the course of daily operations was also observed. Although a clear distinction was found between the east/west flow of traffic during the AM and PM peak hours, daily traffic outside the peak hours appeared to be more evenly distributed along SR 75.

7.4.3 Select Zone Assignment

LLG obtained a SANDAG Series 12 Select Zone Assignment (SZA) for a nearby Traffic Analysis Zone (TAZ) consisting mostly of residential land uses. The centroid connectors for the TAZ (the primary distribution points for TAZ traffic to major area roadways) distributed the majority of the TAZ traffic (75%) to eastbound Cypress Street ultimately connecting to 11th Street and 13th Street. The remaining 25% was assigned to 7th Street with an orientation to/from the immediate vicinity

south of SR 75 within the City of Imperial Beach. According to the SZA, only 5% of TAZ traffic was assumed to be oriented to/from the Silver Strand. However, these results are not supported by observations of existing peak hour traffic volumes along SR 75, which indicate an 80:20 NB:SB bias towards the Silver Strand during the AM peak hour, and a complementary 25:75 NB:SB bias away from the Silver Strand during the PM peak hour. Existing volumes show that the naval facilities on Coronado are a substantial attractor of peak hour trips.

7.4.4 Proposed Project Distribution/Assignment

Based on a combination of the information discussed above – the proposed entry-level home product type and its proximity to the Naval Base, existing peak hour and daily travel patterns in the area, and a review of the SANDAG SZA – it was assumed that 25% of Project trips would be oriented to/from the northwest on SR 75, 10% would be oriented to/from the south on Rainbow Drive, and 65% of Project trips would be oriented to the east on SR 75 either dropping off within the City of Imperial Beach, Community of Otay Mesa-Nestor or continuing to other destinations within the County. Once the Project traffic distribution was established, the Project-generated traffic was assigned to the adjacent street system.

For informational purposes only, the SZA is attached in *Appendix E*.

Figure 7-1 shows the Project traffic distribution. *Figure 7-2* depicts the total Project traffic assignment and *Figure 7-3* depicts the Existing + Project traffic volumes.

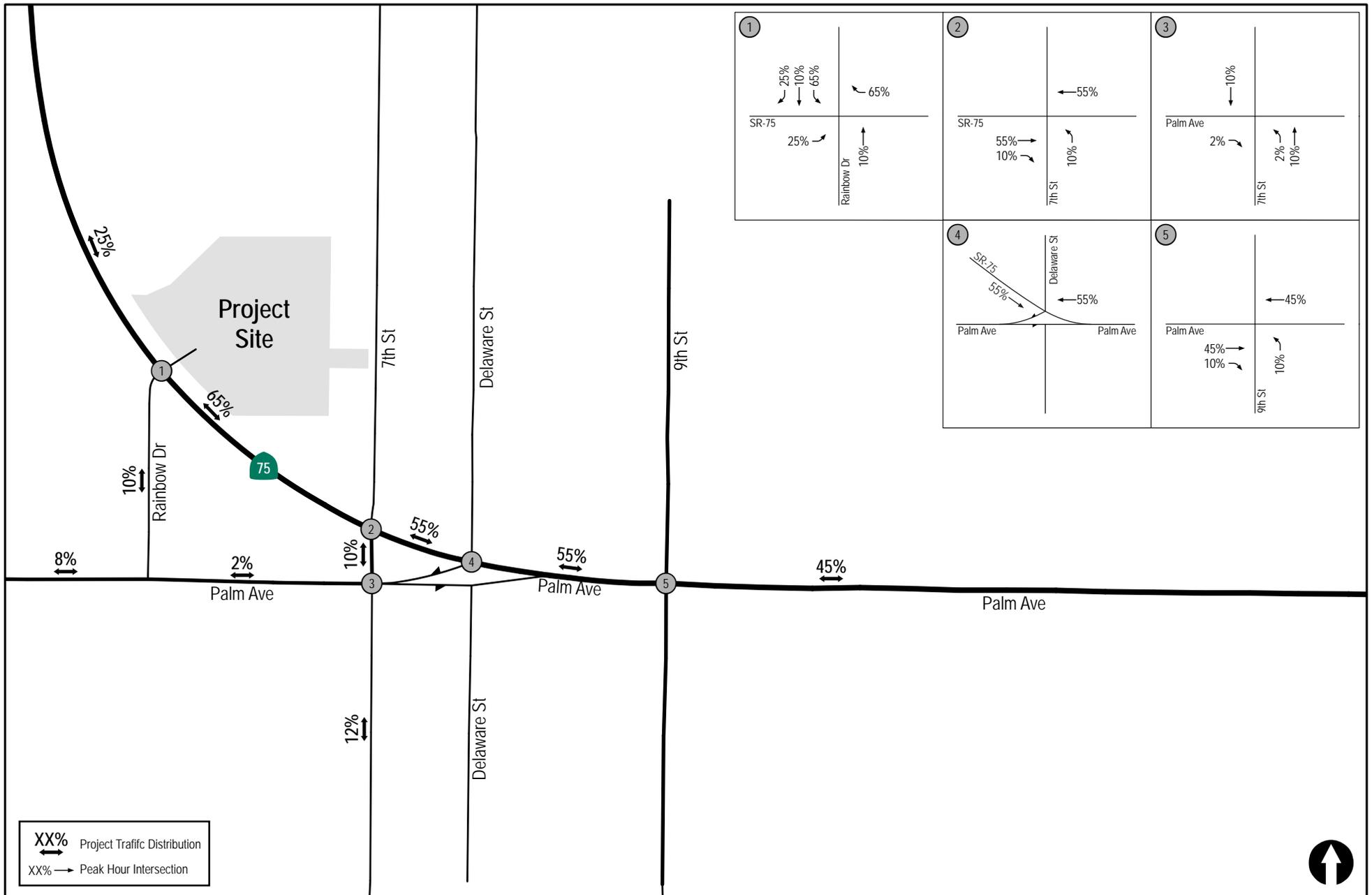


Figure 7-1

Project Traffic Distribution

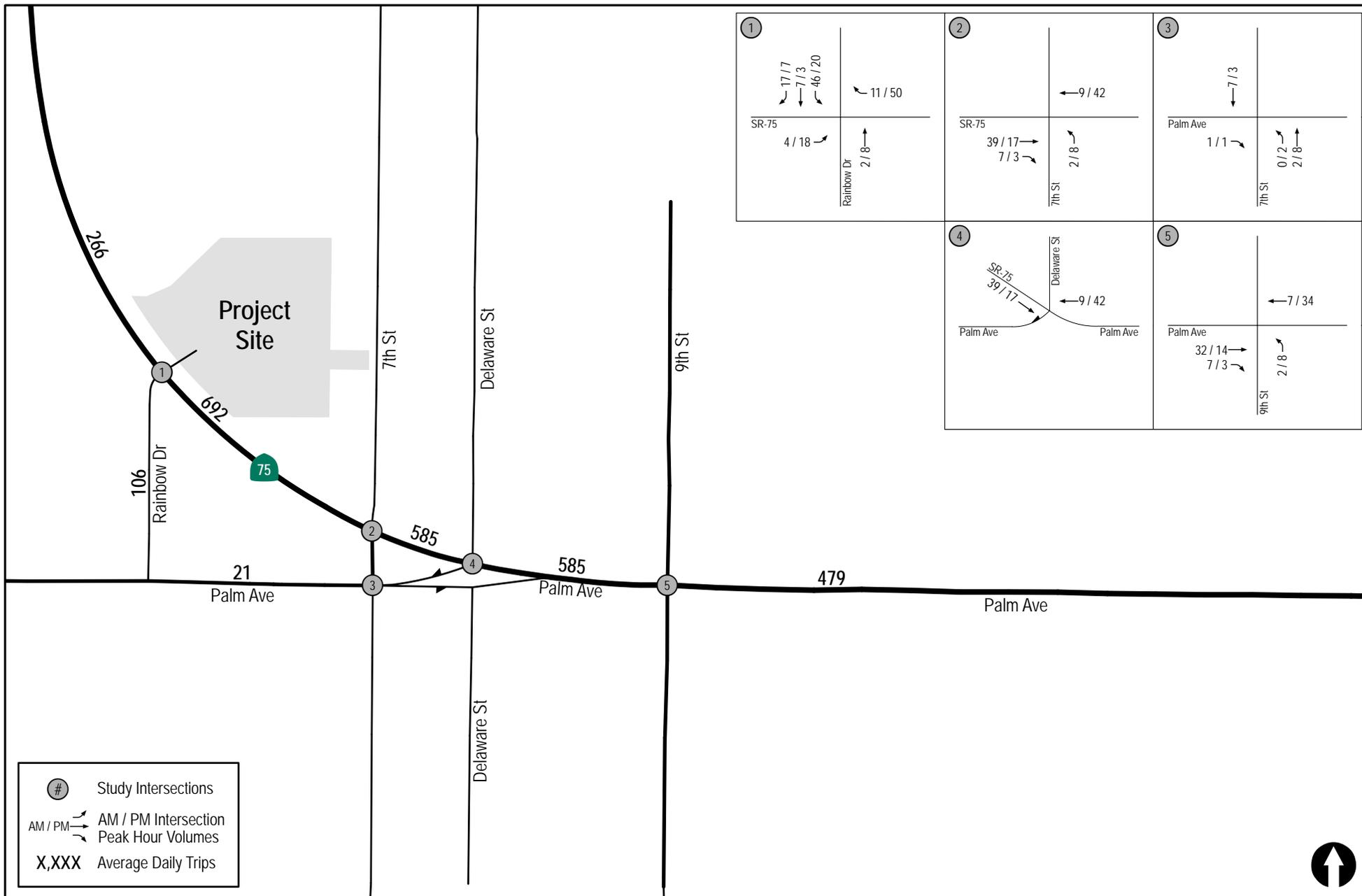


Figure 7-2

Project Traffic Volumes

BERNARDO SHORES

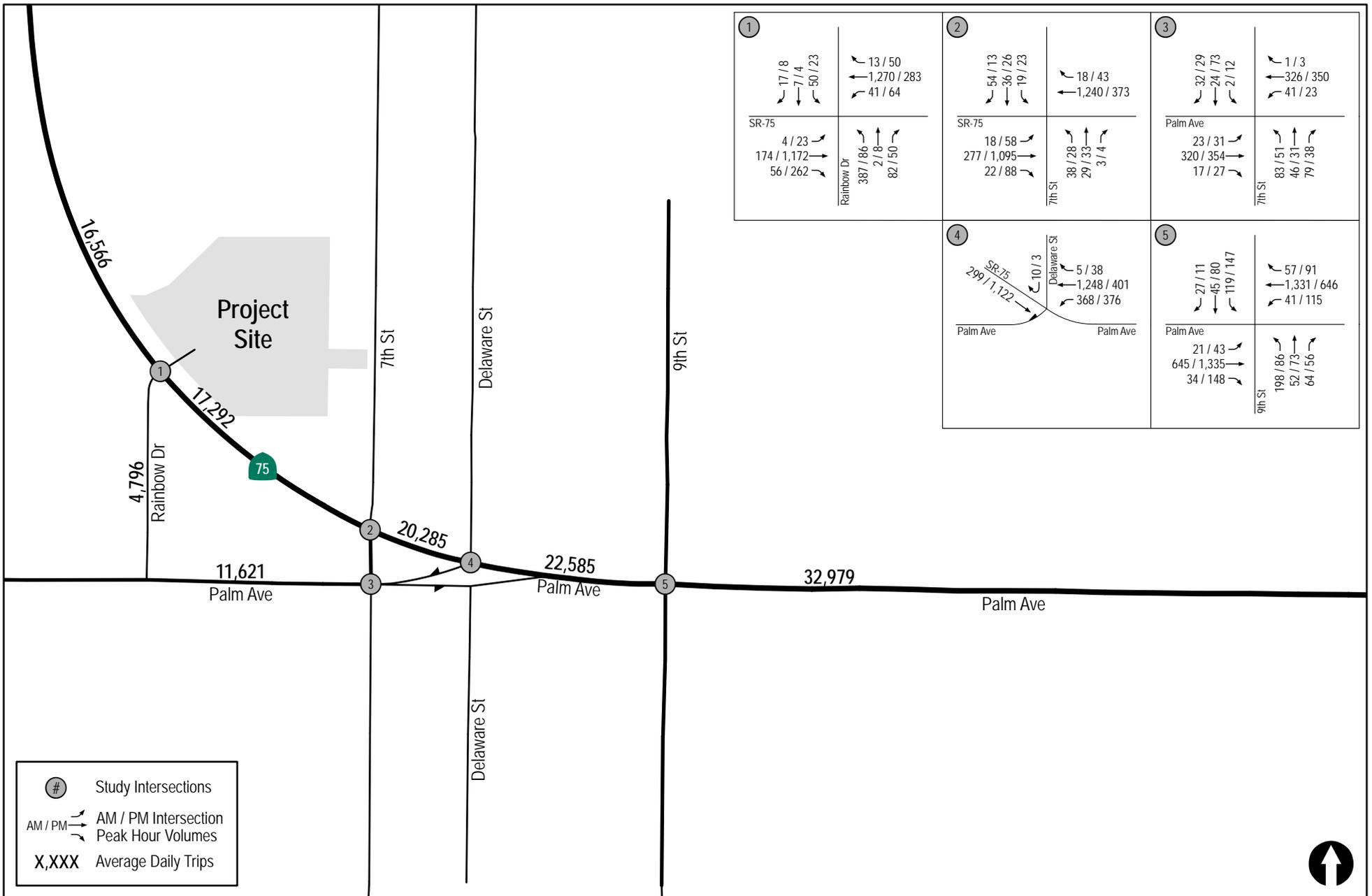


Figure 7-3
Existing + Project Traffic Volumes

8.0 ANALYSIS OF EXISTING + PROJECT CONDITIONS

The following section presents the analysis of existing study area locations with the addition of Project traffic.

8.1 Peak Hour Intersection Operations

Table 8-1 summarizes the existing intersections LOS. As seen in *Table 8-1*, with the addition of Project traffic, all intersections were calculated to continue to operate at LOS D or better.

Appendix F contains the Existing + Project intersection analysis worksheets.

8.2 Daily Street Segment Operations

Table 8-2 summarizes the existing roadway segment operations. As seen in *Table 8-2*, with the addition of Project traffic, the study area segments were calculated to continue to operate at LOS D or better.

Since all study area intersections and street segments were calculated to operate at acceptable LOS D or better operations with the addition of Project traffic to existing conditions, ***no significant direct impacts*** would be expected with the Project.

**TABLE 8-1
EXISTING + PROJECT INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Delay Δ^c	Sig?
			Delay ^a	LOS ^b	Delay	LOS		
1. SR 75 (Palm Avenue) / Rainbow Drive/ Project Driveway	Signal	AM	29.6	C	35.0	C	5.4	No
		PM	22.3	C	23.3	C	1.0	
2. SR 75 (Palm Avenue) / 7 th Street	Signal	AM	23.4	C	23.5	C	0.1	No
		PM	20.0	B	20.4	C	0.4	
3. Palm Avenue/ 7 th Street	Signal	AM	36.1	D	37.9	D	1.8	No
		PM	33.6	C	33.7	C	0.1	
4. SR 75 (Palm Avenue) / Delaware Street	Signal	AM	16.2	B	16.3	B	0.1	No
		PM	21.5	C	21.6	C	0.1	
5. SR 75 (Palm Avenue) / 9 th Street	Signal	AM	29.4	C	29.5	C	0.1	No
		PM	25.4	C	25.5	C	0.1	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Δ denotes the increase in delay due to Project.

General Notes:

- 1. Sig = Significant impact, yes or no.

SIGNALIZED

DELAY/LOS THRESHOLDS

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 8-2
EXISTING + PROJECT STREET SEGMENT OPERATIONS

Street Segment	Existing Capacity (LOS E) ^a	Existing			Existing + Project			Δ ^e		Sig?
		ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	V/C	
SR 75										
1. North of Rainbow Drive/ Project Driveway	40,000	16,300	B	0.408	16,566	B	0.414	266	0.006	No
2. Rainbow Drive/ Project Driveway to 7 th Street	40,000	16,600	B	0.415	17,292	B	0.432	692	0.017	No
3. 7 th Street to Delaware Street	50,000	19,700	A	0.394	20,285	B	0.406	585	0.012	No
4. Delaware Street to 9 th Street	50,000	22,000	B	0.440	22,585	B	0.452	585	0.012	No
5. 9 th Street to Florida Street	50,000	32,500	C	0.650	32,979	C	0.660	479	0.010	No
Palm Avenue										
6. Rainbow Drive to SR 75	15,000	11,600	D	0.773	11,621	D	0.775	21	0.002	No
Rainbow Drive										
7. SR 75 to Palm Avenue	8,000	4,690	C	0.586	4,796	C	0.600	106	0.014	No

Footnotes:

- a. Capacities based on SANTEC/ITE Roadway Classification & LOS table (See Appendix C).
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity ratio.
- e. Δ denotes a Project-induced increase in ADT and Volume to Capacity ratio.

General Notes:

1. Sig = Significant impact, yes or no.

9.0 NEAR-TERM CUMULATIVE PROJECTS

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. LLG consulted with City of San Diego and City of Imperial Beach staff to identify relevant, pending cumulative projects in the study area that could be constructed and generating traffic in the Project vicinity. Based on information received from City staff, five (5) cumulative projects are planned for the area. Traffic generated by these projects was added to the existing traffic volumes to develop the Near-Term Without Project conditions. Project traffic was added to the near-term traffic volumes to arrive at the Near-Term With Project conditions. The following is a brief description of each of the cumulative projects.

9.1 Description of Projects

1. **Pier South (Seacoast Inn)** proposes to demolish an existing 38-room hotel and construct a new hotel located in the City of Imperial Beach bound by Seacoast Drive, Daisy Avenue, Date Avenue and the Pacific Ocean. The project will construct 78 hotel rooms and about 3,700 SF of restaurant space. The project is calculated to generate approximately 597 net ADT with 14 inbound and 19 outbound net trips in the AM peak hour, and 33 inbound and 19 outbound net trips in the PM peak hour. *Trip generation, distribution, and assignment taken from the LLG Engineers Seacoast Inn Traffic Impact Analysis, January 2007.*
2. **Imperial Beach Bikeway Village** proposes to develop 18,983 SF of strip commercial space and a 50-bed hostel. The site is located on the north side of Cypress Avenue, between 13th Street and Florence Street in the City of Imperial Beach. The project is calculated to generate approximately 864 net ADT with 14 inbound and 19 outbound net trips in the AM peak hour and 43 inbound and 36 outbound net trips in the PM peak hour. *Trip generation, distribution, and assignment taken from the KOA Corporation Imperial Beach Bikeway Village Traffic Impact Analysis, April 2011.*
3. **American Legion Post** proposes to redevelop the existing American Legion Post, a single-family residence, and six (6) attached residential units located at 1252 and 1268 Palm Avenue and 655 Florence Street in the City of Imperial Beach. The redevelopment will include the construction of a new mixed-use project that will provide 30 residential units (29 affordable units, 1 manager unit) and a 3,600 SF American Legion Post. The project is calculated to generate approximately 23 net ADT with 3 inbound and 13 outbound net trips in the AM peak hour and 12 inbound and 5 outbound net trips during the PM peak hour. *Trip generation, distribution, and assignment was manually conducted by LLG Engineers based on information provided in the October 2011 City of Imperial Beach Staff Report.*
4. **City of Imperial Beach Rezone** is a General Plan Amendment and Zoning Ordinance to revise existing land use designations and zoning regulations in four study areas of Imperial Beach: Palm Avenue (SR 75), Old Palm Avenue, Seacoast Drive, and 13th Street corridors. These zoning changes result in an increase of approximately 1,800 dwelling units and 150,000 SF of mixed-use retail. The project is calculated to generate approximately

22,856 net ADT with 466 inbound and 647 outbound net trips in the AM peak hour and 1,353 inbound and 1,105 outbound net trips in the PM hour over existing conditions. In the Year 2040, the net increase in traffic over the General Plan is expected to amount to approximately 3,955 net ADT with 89 inbound and 50 outbound net trips in the AM peak hour and 189 inbound and 187 outbound net trips in the PM peak hour. *Trip generation, distribution, and assignment taken from the KOA Corporation City of Imperial Beach Rezone Traffic Impact Analysis, August 2011.*

5. **9th & Palm Project (Breakwater Shopping Center)** proposes to redevelop an existing commercial site located south of Palm Avenue (SR 75) and west of 9th Street in the City of Imperial Beach. The project includes a mix of commercial-retail uses including a market, specialty retail, food service, fast food with a drive-thru and a drug store. The project is calculated to generate approximately 1,963 net ADT with 93 inbound and 78 outbound net trips in the AM peak hour and 72 inbound and 63 outbound net trips during the PM peak hour. *Trip generation, distribution, and assignment taken from the Urban Systems Associates, Inc. 9th and Palm Project Traffic Impact Analysis, October 2011.*

The Navy Base Coronado Coastal Campus (NBC) project has released a draft Environmental Impact Statement (EIS) in July 2014 analyzing several locations within the Project study area. A review of the EIS noted the earliest completion date for the project in the Year 2024. The cumulative condition analyzed in this report represents the near-term three to five year time frame. Therefore, it would not be expected that NBC cumulative project traffic would be on the roadway system under the near-term with and without Project conditions. No cumulative traffic from the NBC project was included in the near-term analysis.

9.2 Summary of Near-Term Cumulative Projects Trips

Table 9-1 shows the summary of the cumulative projects' trip generation.

**TABLE 9-1
NEAR-TERM CUMULATIVE PROJECTS SUMMARY**

No.	Name	Project	ADT	AM		PM	
				In	Out	In	Out
1	Pier South (Seacoast Inn)	78 hotel rooms and about 3,700 SF of restaurant space	597	14	19	33	19
2	Imperial Beach Bikeway Village	18,983 SF of strip commercial space and a 50-bed hostel	864	14	19	43	36
3	American Legion Post	Redevelopment of 30 residential units (29 affordable units, 1 manager unit) and a 3,600 SF American Legion Post	23	3	13	12	5
4	City of Imperial Beach Rezone	General Plan commercial zoning ordinance	22,856	466	647	1,353	1,105
5	9 th & Palm Project (Breakwater Shopping Center)	Mix of commercial-retail uses including a market, specialty retail, food service, fast food with a drive-thru and a drug store	1,963	93	78	72	63
Total Cumulative Projects			26,303	590	776	1,513	1,228

Figure 9-1 illustrates the locations of the near-term cumulative projects within the study area. *Figure 9-2* depicts the Near-Term Without Project traffic volumes and *Figure 9-3* depicts the Near-Term With Project traffic volumes.

Appendix G contains the individual near-term cumulative projects assignment sheets.

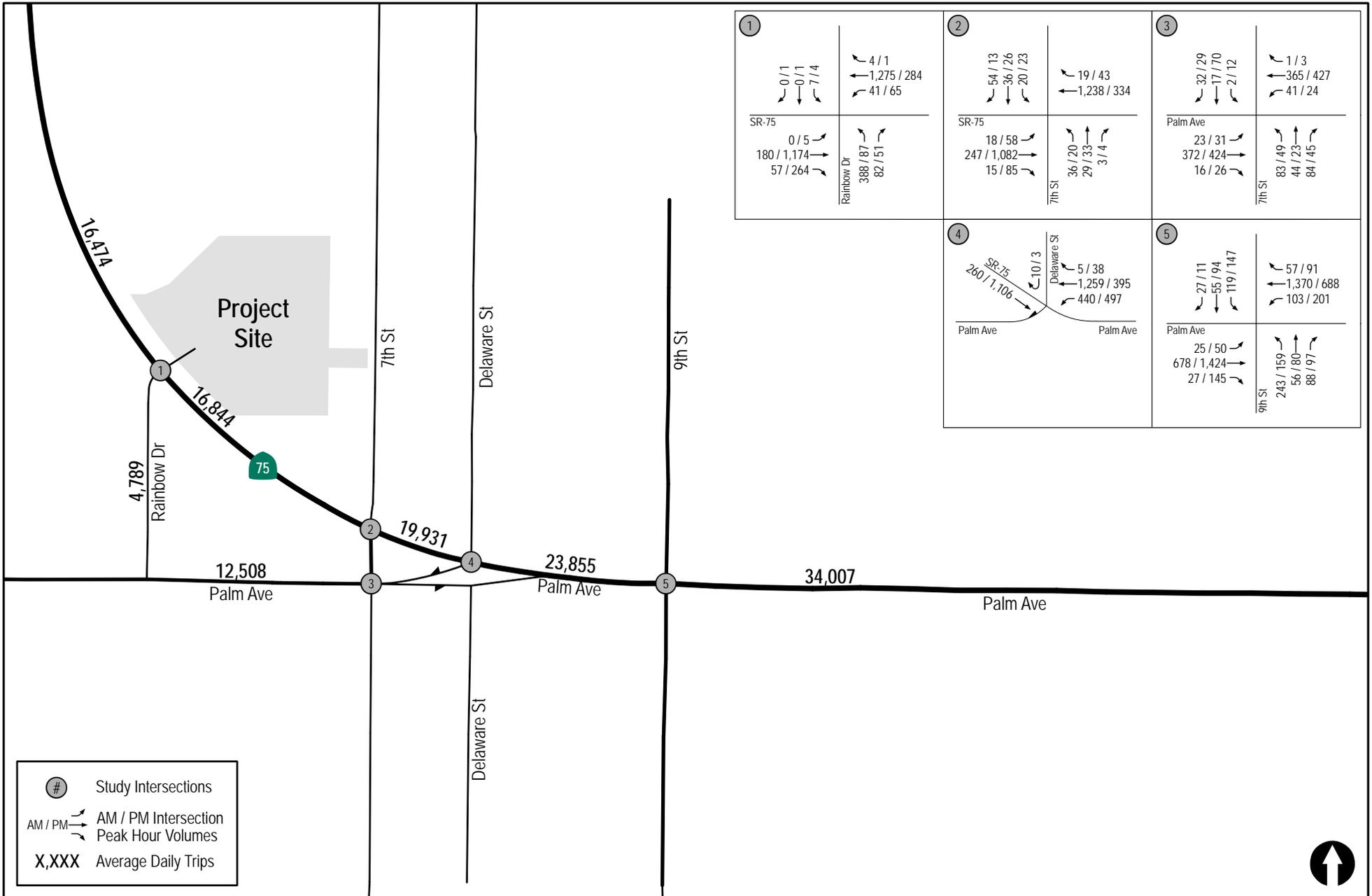


Figure 9-2
Near-Term Without Project Traffic Volumes

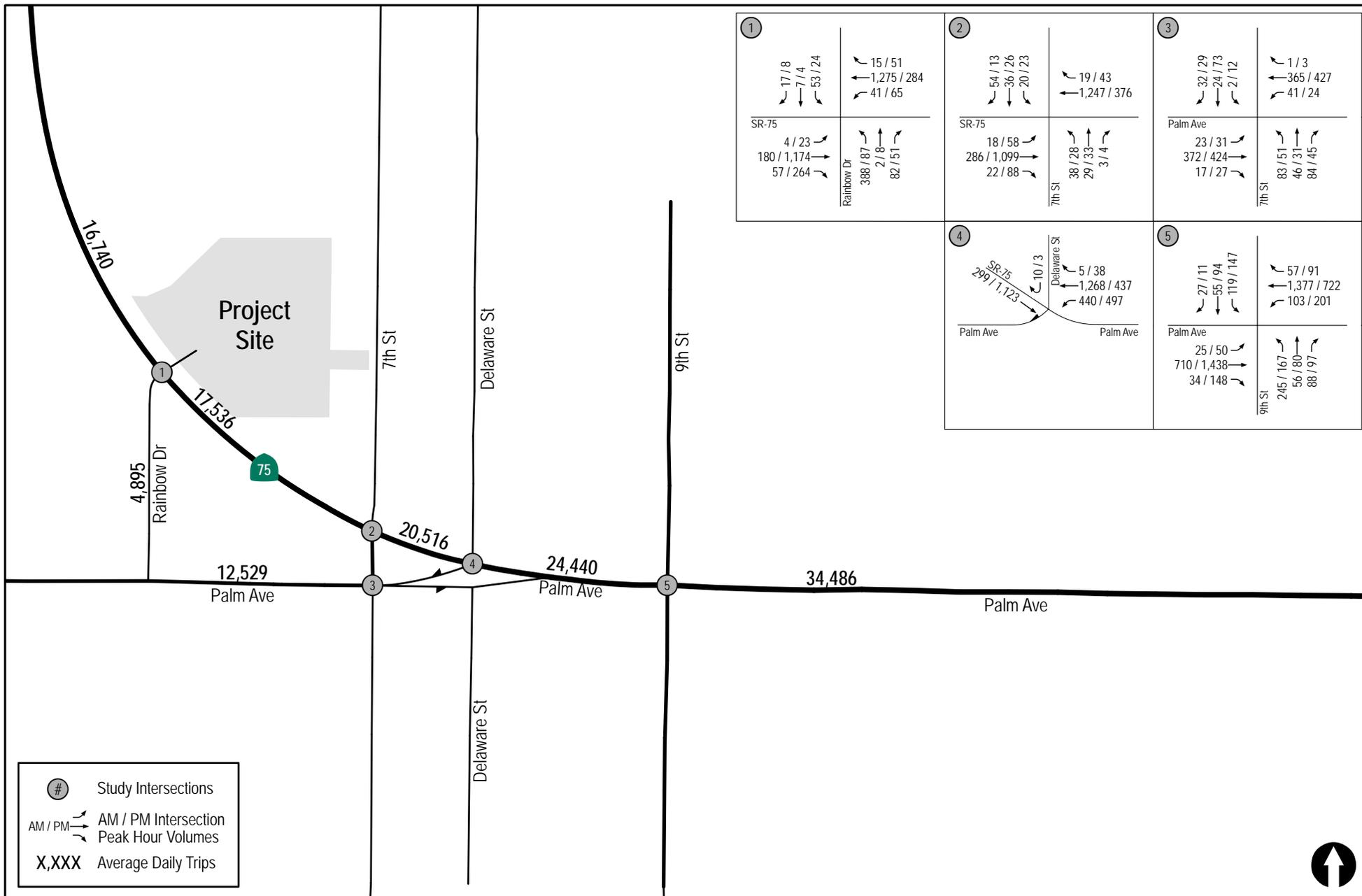


Figure 9-3
Near-Term With Project Traffic Volumes

10.0 ANALYSIS OF NEAR-TERM SCENARIOS

The following section presents the near-term cumulative analysis of existing study area locations without and with Project traffic.

10.1 Near-Term Without Project

10.1.1 *Intersection Analysis*

Table 10-1 summarizes the peak hour intersection operations in the study area for the Near-Term Without Project condition. As seen in *Table 10-1*, with the addition of cumulative projects traffic, all study area intersections are calculated to operate at LOS D or better.

Appendix H contains the Near-Term Without Project intersection analysis worksheets.

10.1.2 *Segment Operations*

Table 10-2 summarizes the key segment operations in the study area for the Near-Term Without Project condition. As seen in *Table 10-2*, with the addition of cumulative projects traffic, all study area segments are calculated to operate at LOS D or better.

10.2 Near-Term With Project

10.2.1 *Intersection Analysis*

Table 10-1 summarizes the peak hour intersection operations in the study area for the Near-Term With Project condition. As seen in *Table 10-1*, with the addition of cumulative projects and Project traffic, all study area intersections are calculated to continue to operate at LOS D or better.

Appendix I contains the Near-Term With Project intersection analysis worksheets.

10.2.2 *Segment Operations*

Table 10-2 summarizes the key segment operations in the study area for the Near-Term With Project condition. As seen in *Table 10-2*, with the addition of cumulative projects and Project traffic, all study area segments are calculated to continue to operate at LOS D or better.

Since all study area intersections and street segments were calculated to operate at acceptable LOS D or better operations with the addition of Project traffic to the near-term cumulative condition, ***no significant direct impacts*** would be expected with the Project.

**TABLE 10-1
NEAR-TERM INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Near-Term Without Project		Near-Term With Project		Delay Δ^c	Sig?
			Delay ^a	LOS ^b	Delay	LOS		
1. SR 75 (Palm Avenue) / Rainbow Drive/ Project Driveway	Signal	AM	29.7	C	35.4	D	5.7	No
		PM	22.5	C	23.4	C	0.9	
2. SR 75 (Palm Avenue) / 7 th Street	Signal	AM	25.0	C	25.1	C	0.1	No
		PM	22.2	C	22.7	C	0.5	
3. Palm Avenue / 7 th Street	Signal	AM	36.8	D	38.4	D	1.6	No
		PM	34.8	C	35.0	C	0.2	
4. SR 75 (Palm Avenue) / Delaware Street	Signal	AM	17.9	B	18.0	B	0.1	No
		PM	25.8	C	25.9	C	0.1	
5. SR 75 (Palm Avenue) / 9 th Street	Signal	AM	34.6	C	34.7	C	0.1	No
		PM	38.2	D	38.3	D	0.1	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Δ denotes the increase in delay due to Project.

General Notes:

- 1. Sig = Significant impact, yes or no.

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

**TABLE 10-2
NEAR-TERM STREET SEGMENT OPERATIONS**

Street Segment	Existing Capacity (LOS E) ^a	Near-Term Without Project			Near-Term With Project			Δ ^e		Sig?
		ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	V/C	
SR 75										
1. North of Rainbow Drive/ Project Driveway	40,000	16,474	B	0.412	16,740	B	0.419	266	0.007	No
2. Rainbow Drive/ Project Driveway to 7 th Street	40,000	16,844	B	0.421	17,536	B	0.438	692	0.017	No
3. 7 th Street to Delaware Street	50,000	19,931	A	0.399	20,516	B	0.410	585	0.011	No
4. Delaware Street to 9 th Street	50,000	23,855	B	0.477	24,440	B	0.489	585	0.012	No
5. 9 th Street to Florida Street	50,000	34,007	C	0.680	34,486	C	0.690	479	0.010	No
Palm Avenue										
6. Rainbow Drive to SR 75	15,000	12,508	D	0.834	12,529	D	0.835	21	0.001	No
Rainbow Drive										
7. SR 75 to Palm Avenue	8,000	4,789	C	0.599	4,895	C	0.612	106	0.013	No

Footnotes:

- a. Capacities based on SANTEC/ITE Roadway Classification & LOS table (See Appendix C).
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity ratio.
- e. Δ denotes a Project-induced increase in ADT and Volume to Capacity ratio.

General Notes:

1. Sig = Significant impact, yes or no.

11.0 YEAR 2040 CONDITIONS

11.1 Year 2040 Network Conditions

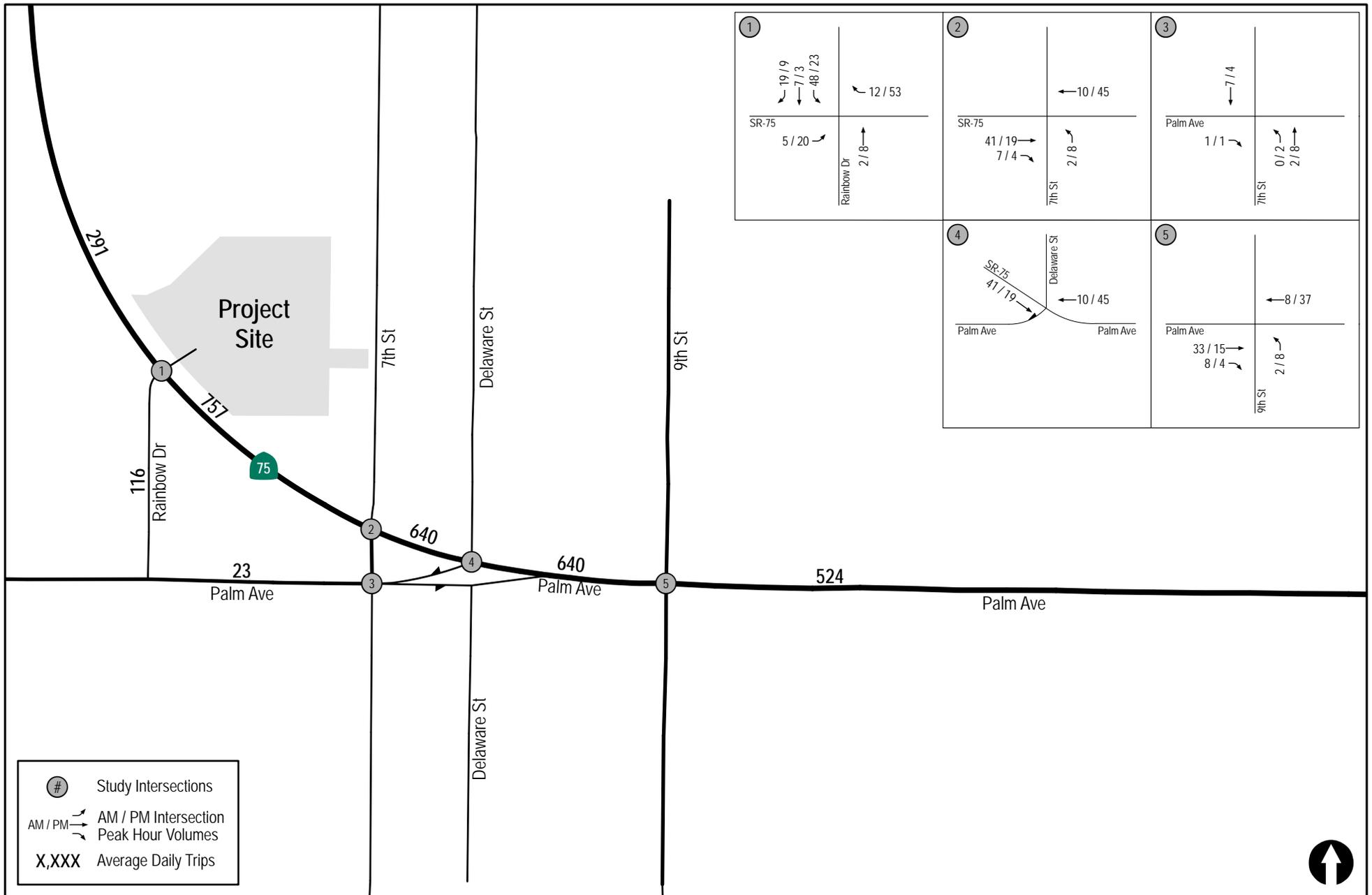
The City of Imperial Beach General Plan and the Otay Mesa-Nestor Community Plan identify several vehicular capacity enhancing projects; however, in order to be conservative, no circulation network changes or improvements are assumed for the Year 2040 conditions. These vehicular capacity enhancing projects are not fully funded. There are currently two planning projects proposed that would alter the geometry of the future roadway network that are not necessarily capacity enhancing. The *Imperial Beach Eco-Bikeway Traffic Impact Study* and the *Palm Avenue Commercial Corridor Master Plan Study*, both prepared by KOA Corporation (2008 and 2009, respectively). The *Imperial Beach Eco-Bikeway* project proposes to reduce the number of vehicular travel lanes on Palm Avenue from Third Street to Seventh Street. The *Palm Avenue Commercial Corridor Master Plan* project proposes to reconfigure, but not reduce the capacity of on Palm Avenue between 13th Street and Rainbow Drive to create more of a main street character. Neither project is funded; therefore, they are not included in as part of the background base assumptions for the Year 2040 analysis.

11.2 Year 2040 Traffic Volumes

The long-term forecast traffic volumes were reviewed from the *City of Imperial Beach Rezone Traffic Impact Study* (KOA Corporation 2011). This study analyzed the traffic-related impacts due to the City's proposed plan to rezone several commercial areas within the City as part of a Local Coastal Plan Amendment in the Year 2030. Since the initial preparation of this document, the Navy Base Coronado Coastal Campus (NBC) project has released a draft Environmental Impact Statement (EIS) analyzing several locations within the Project study area for the forecast Year 2040. Based upon a thorough comparison of the Year 2040 NBC assumptions to the Year 2030 traffic volumes provided in the *Imperial Beach Rezone* study, traffic generated by the NBC project along the SR 75 corridor increases traffic volumes in the east/west directions substantially. To provide for a conservative analysis consistent with the NBC project, the Year 2040 traffic volumes from the NBC EIS were used in this report. These volumes reported traffic volumes associated with the proposed Bernardo Shores project at the Palm Avenue (SR 75)/ Rainbow Drive access intersection, as well as at other study area locations. Therefore, to arrive at Year 2040 Without Project traffic volumes, the trips generated by the proposed Project were subtracted from the NBC volumes.

When adding Project traffic back into the Year 2040 condition, no trip reductions were taken for the existing land use. The gross trip generation of 1,164 ADT with 93 AM and 116 PM peak hour trips, as shown in *Table 7-2* of this report, was added to the Year 2040 condition to arrive at the Year 2040 With Project traffic volumes.

Figure 11-1 depicts the Year 2040 Project traffic volumes. **Figure 11-2** shows the Year 2040 Without Project traffic volumes and **Figure 11-3** shows the Year 2040 With Project traffic volumes.



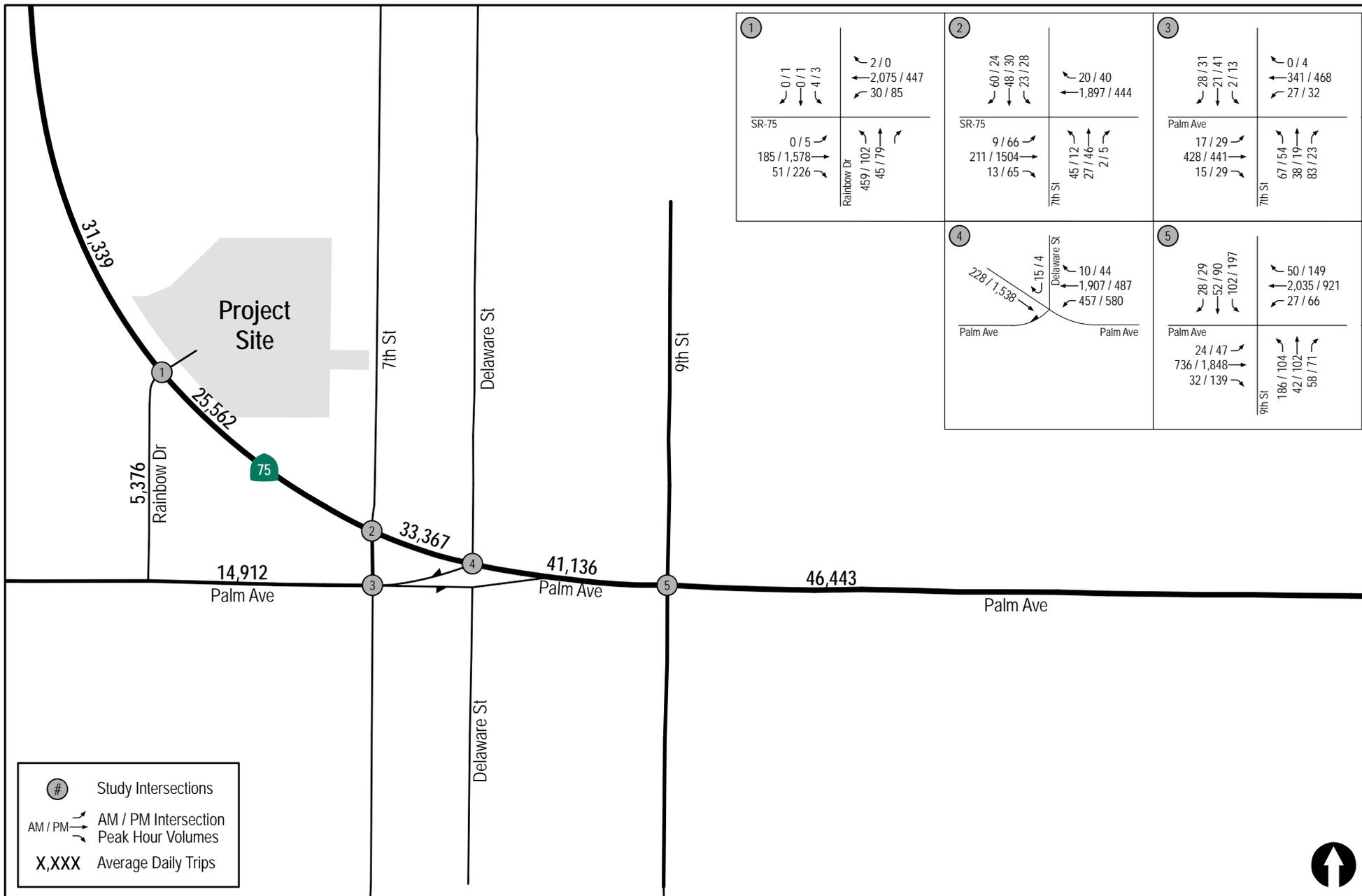
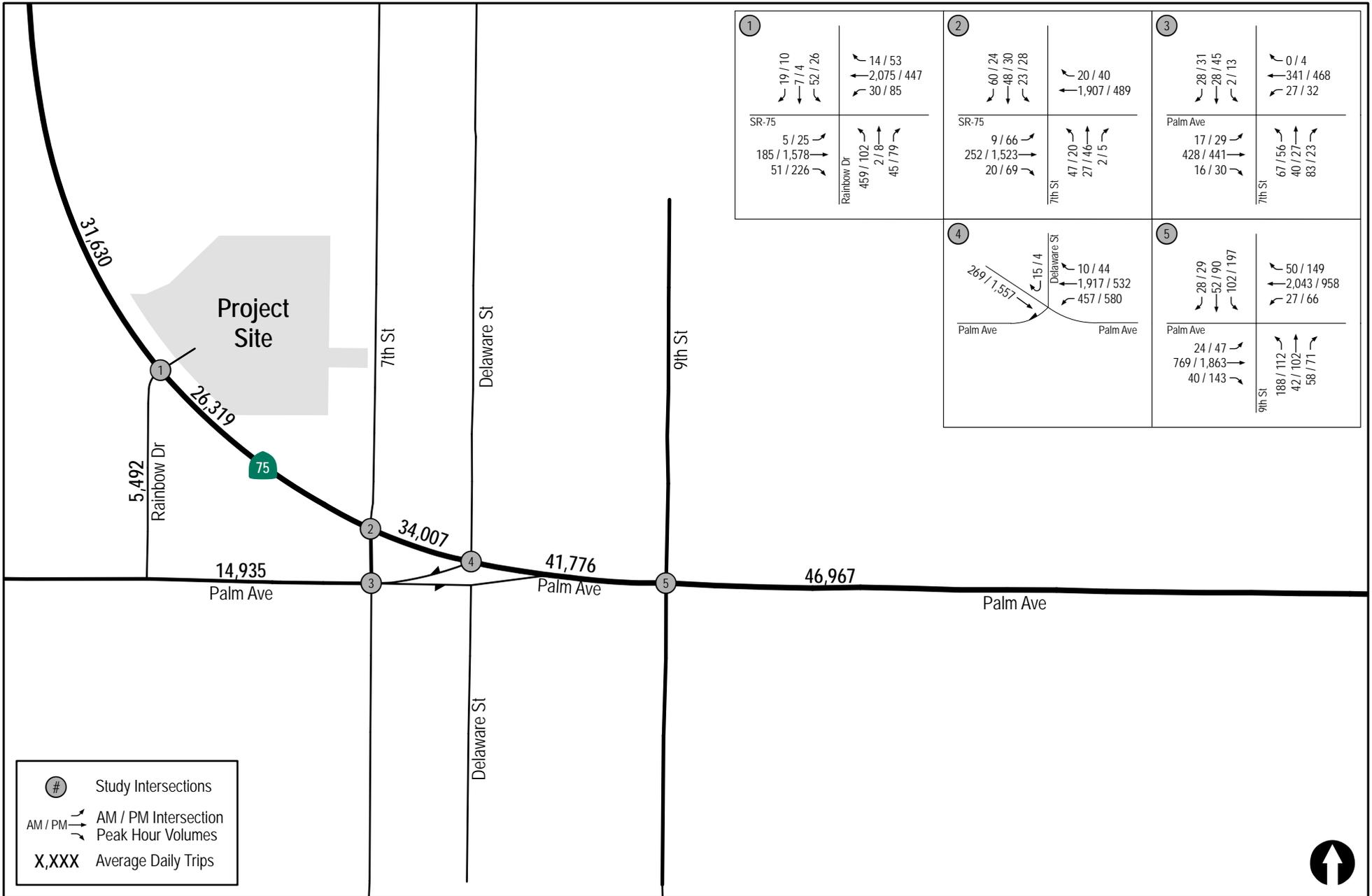


Figure 11-2

Year 2040 Without Project Traffic Volumes



12.0 ANALYSIS OF YEAR 2040 SCENARIOS

The following section presents the long-term Year 2040 analysis of existing study area locations without and with Project traffic.

12.1 Year 2040 Without Project

12.1.1 Intersection Analysis

Table 12-1 summarizes the peak hour intersection operations in the study area for the Year 2040 Without Project condition. As seen in **Table 12-1**, all study area intersections are calculated to operate at LOS D or better.

Appendix J contains the Year 2040 Without Project intersection analysis worksheets.

12.1.2 Segment Operations

Table 12-2 summarizes the key segment operations in the study area for the Year 2040 Without Project condition. As seen in **Table 12-2**, all study area segments are calculated to operate at LOS D or better except for the segment of Palm Avenue between Rainbow Drive and SR 75 which is forecasted to operate at LOS E.

12.2 Year 2040 With Project

12.2.1 Intersection Analysis

Table 12-1 summarizes the peak hour intersection operations in the study area for the Year 2040 With Project condition. As seen in **Table 12-1**, with the addition of Project traffic, all study area intersections are calculated to continue to operate at LOS D or better except for the following:

Palm Avenue (SR 75)/ Rainbow Drive – LOS F/F during the AM/PM peak hours

Since the increase in delay at the LOS F operating intersection under AM peak hour conditions is greater than the allowable 2.0 second threshold with the addition of Project traffic to the Year 2040 baseline condition, **one (1) significant cumulative intersection impact** would be expected to occur with the Project.

Appendix K contains the Year 2040 Without Project intersection analysis worksheets.

12.2.2 Segment Operations

Table 12-2 summarizes the key segment operations in the study area for the Year 2040 With Project condition. As seen in **Table 12-2**, with the addition of Project traffic, all study area segments are calculated to continue to operate at LOS D or better except for the following:

Palm Avenue (SR 75) between 9th Street and Florida Street – LOS E

Palm Avenue between Rainbow Drive and SR 75 – LOS E

Since the change in the v/c ratio on these LOS E operating segments does not increase by more than the allowable threshold of 0.02, *no significant cumulative street segment impacts* would be expected with the Project.

TABLE 12-1
YEAR 2040 INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Year 2040 Without Project		Year 2040 With Project		Delay Δ^c	Sig?
			Delay ^a	LOS ^b	Delay	LOS		
1. SR 75 (Palm Avenue) / Rainbow Drive/ Project Driveway	Signal	AM	111.9	F	148.1	F	>1.0	Yes
		PM	73.6	E	73.7	E	0.1	
2. SR 75 (Palm Avenue) / 7 th Street	Signal	AM	30.1	C	30.2	C	0.1	No
		PM	29.2	C	29.5	C	0.3	
3. Palm Avenue / 7 th Street	Signal	AM	45.4	D	45.7	D	0.3	No
		PM	33.3	C	34.5	C	1.2	
4. SR 75 (Palm Avenue) / Delaware Street	Signal	AM	13.6	B	13.7	B	0.1	No
		PM	26.6	C	26.7	C	0.1	
5. SR 75 (Palm Avenue) / 9 th Street	Signal	AM	27.5	C	27.6	C	0.1	No
		PM	25.7	C	25.8	C	0.1	

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Δ denotes the increase in delay due to Project.

General Notes:

1. Sig = Significant impact, yes **or** no.
2. **Bold** typeface and **shading** represents a significant cumulative impact.

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

TABLE 12-2
YEAR 2040 STREET SEGMENT OPERATIONS

Street Segment	Existing Capacity (LOS E) ^a	Year 2040 Without Project			Year 2040 With Project			Δ ^e		Sig?
		ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	V/C	
SR 75										
1. North of Rainbow Drive/ Project Driveway	40,000	31,339	D	0.783	31,630	D	0.791	291	0.008	No
2. Rainbow Drive/ Project Driveway to 7 th Street	40,000	25,562	C	0.639	26,319	C	0.658	757	0.019	No
3. 7 th Street to Delaware Street	50,000	33,367	C	0.667	34,007	C	0.680	640	0.013	No
4. Delaware Street to 9 th Street	50,000	41,136	D	0.823	41,776	D	0.836	640	0.013	No
5. 9 th Street to Florida Street	50,000	46,443	E	0.929	46,967	E	0.939	524	0.010	No
Palm Avenue										
6. Rainbow Drive to SR 75	15,000	14,912	E	0.994	14,935	E	0.996	23	0.002	No
Rainbow Drive										
7. SR 75 to Palm Avenue	8,000	5,376	D	0.672	5,492	D	0.687	116	0.015	No

Footnotes:

- a. Capacities based on SANTEC/ITE Roadway Classification & LOS table (See Appendix C).
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity ratio.
- e. Δ denotes a Project-induced increase in ADT and Volume to Capacity ratio.

General Notes:

1. Sig = Significant impact, yes or no.

13.0 ACCESS ASSESSMENT

Project access is proposed via the existing signalized driveway on SR 75 (Palm Avenue) aligned opposite of Rainbow Drive. This intersection is currently signalized, with east/west lead/lag left-turn signal phasing (from Palm Avenue) and north/south split signal phasing (from Rainbow Drive). The existing eastbound left-turn pocket from SR 75 to the site is approximately 110 feet long, and contains a queue of four (4) passenger cars. The left-turn pocket as-built does not currently meet Caltrans standards. A secondary, emergency-only access is proposed to 7th Street.

13.1 Gated Entry

The Project proposes a gated entry, and the inbound lane configuration would provide stacking for a maximum of six vehicles total in two inbound lanes (each eleven feet wide). The No. 1 lane provides a median with a call box, and provides queuing for 60 feet, which can store two (2) vehicles. The No. 2 lane (curb lane) provides approximately 120 feet of storage for drivers with remote control entry, and would accommodate four (4) vehicles. Two outbound lanes are proposed; a 10-foot left turn and 14-foot shared thru/right lane (24 feet total). A turnaround is provided for the No. 1 (left-most) inbound lane for visitors denied entry.

Table 12-1 showed the intersection is forecasted to operate at unacceptable LOS F during the AM and PM peak hours under worst-case buildout cumulative conditions. A significant impact would be expected to occur with the addition of Project traffic at this location; however, since the impact would be considered cumulative-only, the Project alone would not be solely responsible for physical improvements at this intersection. It should be noted that these poor LOS results are conservative in that they assume current signal timing, which is not optimized to serve forecasted buildout traffic or proposed Project traffic. Also, the existing north/south “split” intersection phasing was assumed in both the near-term and long-term analyses, and is less efficient than alternative “protected” or “permissive” phasing. An improvement in overall LOS (and subsequently LOS for each movement) could be achieved with either of these more efficient phasing profiles; however, the intersection is part of a larger coordinated signal timing system, and Caltrans may not desire or approve such a change. More information on the cumulative impact to this intersection is provided in *Section 14.0*.

LLG conducted a SimTraffic simulation analysis of the intersection utilizing the traffic volumes, geometrics and signal timing data from the HCM analyses presented in this report. This analysis showed that during the critical PM peak hour, when eastbound left-turn volumes from SR 75 into the site would be greatest, no excessive queuing in the eastbound left-turn movement (from SR 75 to the Project site) would occur, partly because of low demand (30 peak hour trips), and partly because of non-traffic related queuing in the eastbound thru lanes, which partially restricts access to the eastbound left-turn lane during the peak period. The simulation showed that when the eastbound thru queues cleared, the eastbound left-turn demand was accommodated in the existing 110-foot pocket.

Neither the City of Imperial Beach, Caltrans, nor the City of San Diego has formal, published design guidelines for residential gated communities. The City of Chula Vista design practice requires

queuing for two vehicles, as well as a 50 to 70-foot minimum radius turnaround for denied vehicles. The County of San Diego also requires minimum storage for two (2) vehicles, along with a 30-foot minimum radius turnaround. The Project design meets these criteria.

LLG also completed a queuing analysis based on Transportation Research Board (TRB) and Institute of Transportation Engineers (ITE) published methodology for drive-thrus. Assuming 100% of the PM inbound arrival and a 20 second processing time, the maximum queue length is calculated at two (2) vehicles, and the required storage at 44 feet. The Project design meets these criteria. **Appendix L** contains this analysis.

13.2 Eastbound SR 75 Left-Turn Pocket Length

The eastbound left-turn pocket serves eastbound to westbound U-turns on SR 75 as well as left turns into the Project site. The majority of Project traffic is distributed to the east of the site on Palm Avenue (SR 75), with 25% of traffic oriented to/from the west. The resulting maximum peak hour Project traffic load for this movement is 20 trips, the queuing of which can be accommodated within the existing 110-foot pocket.

Caltrans has commented that the current length does not allow for deceleration prior to queuing, and does not meet current standards. In order to comply with Caltrans' requirements, this intersection shall be considered part of the Project frontage and the Project shall improve this left-turn pocket to meet current Caltrans standards.

14.0 PROJECT DESIGN FEATURES, SIGNIFICANCE OF IMPACTS, AND MITIGATION MEASURES

14.1 Project Design Features

The following traffic design features are recommended as part of the Project to minimize traffic impacts.

The gated Project access provides six (6) queuing positions in two (2) lanes. This design meets published standards for local and regional jurisdictions, and accommodates the queue calculations prepared using published methodology adapted from commercial drive-thrus. It is recommended that residents be provided with remote control gate actuators to expedite gate operations during the PM peak hour, when the potential for queuing at the gate is greatest.

As part of the required frontage improvements, the Project shall lengthen the eastbound left-turn pocket on SR 75 at Rainbow Drive to meet current Caltrans standards.

14.2 Significance of Impacts

Per City of Imperial Beach significance thresholds and the analysis methodology presented in this report, ***one (1) significant cumulative impact was calculated*** with the addition of Project traffic to the baseline analyses under Year 2040 long-term conditions. Therefore, mitigation measures are required. The section below identifies the significance of impacts and recommended mitigation measures to address operating deficiencies.

14.2.1 Cumulative Impacts

Based on the applied significance criteria, the Project is calculated to have one (1) long-term Year 2040 cumulative impact at the following intersection with the addition of Project traffic:

INTERSECTIONS

TRA-1. Intersection #1. Palm Avenue (SR 75)/ Rainbow Drive

14.3 Mitigation Measures

14.3.1 Cumulative Mitigation Measures

The following mitigation measures are recommended to mitigate the cumulative impact:

INTERSECTIONS

- TRA-1. **Intersection #1. Palm Avenue (SR 75)/ Rainbow Drive** – The Project shall restripe the northbound approach at this intersection to provide one (1) left-turn lane and one (1) shared left-turn/thru/right-turn lane, along with extending the existing turn pocket to the intersection of Bonito Avenue to the south to increase the capacity and queue area. This improvement would not require any road widening but would result in the loss of two-hour on-street parking on the east side of Rainbow Drive. The recommended improvements are consistent with the *Palm Avenue Commercial Corridor Master Plan* as well as the NBC EIS and would mitigate the cumulative impact to below a level of significance.

End of Report