

**SOLID WASTE DEPARTMENT (SWD)
TRANSFER STATION
TRAFFIC IMPACT ANALYSIS
DRAFT REPORT
(PRELIMINARY)**

June 2014

Prepared for:

**City of Albuquerque
New Mexico Department of Transportation
County of Bernalillo**

**Prepared by
Wilson & Company
4900 Lang Avenue, NE
Albuquerque, NM 87109
505-348-4055
Fax 505-348-4055
12-100-216-03**

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1.0 INTRODUCTION AND SUMMARY

This report was prepared in conformance with the Traffic Impact Analysis (TIA) guidelines established by Bernalillo County Public Works Division (BCPWD) in cooperation with the New Mexico Department of Transportation (NMDOT) and City of Albuquerque. It presents information relating to potential traffic impacts associated with reconfiguration of the existing City of Albuquerque Solid Waste Department (SWD) site located on the southeast corner of the intersection of Comanche Road and Edith Boulevard. Reconfiguration will include the addition of a new Transfer Station and other site improvements.

a. PURPOSE AND OBJECTIVES

The purpose of this TIA is to evaluate potential impacts of the proposed reconfiguration of the existing SWD facility and addition of the new Transfer Station. This report also presents a summary of findings related to the analysis of full build-out of the SWD site with Transfer Station and other improvements anticipated to be completed by the Year 2018.

b. SITE LOCATION AND STUDY AREA

The SWD site is located at 4600 Edith Boulevard in Albuquerque, New Mexico, on the southeast corner of the intersection of Comanche Road and Edith Boulevard. The study area and intersections relevant to this TIA were defined based on input from the City of Albuquerque, NMDOT, and Bernalillo County. The intersections selected for analysis include:

City of Albuquerque

Griegos Road & 4th Street

Griegos Road & 2nd Street

Griegos Road/Comanche Road & Edith Boulevard

NMDOT

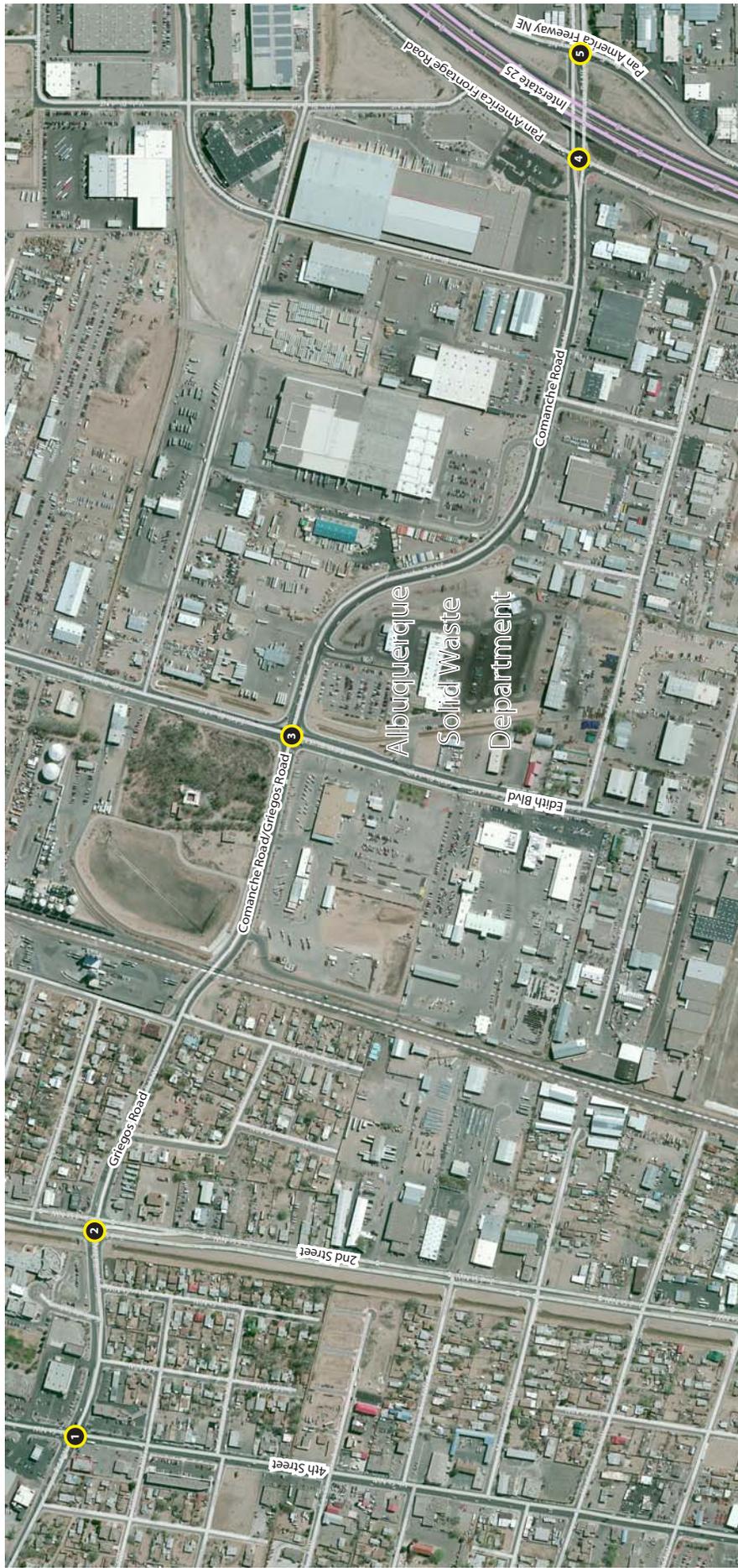
Comanche Road & I-25 Pan American Frontage Road S

Comanche Road & I-25 Pan American Frontage Road N

The study area and location of key intersections are shown in **Figure 1**.

c. BRIEF DESCRIPTION OF THE DEVELOPMENT

The proposed development involves reconfiguration of the existing City of Albuquerque SWD, which will create a primary center of operations for the Department. The central administrative offices and dispatch center of the SWD, as well as the main hauling yard for storage and maintenance of the collection fleet, are located at this facility. The proposed reconfiguration will repurpose the center to create a new Transfer Station, Household Hazardous Waste Collection Facility, and Recycling Drop-Off for the general public.



1

FIGURE

STUDY AREA

X INTERSECTION SUBJECT TO TIA

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CITY OF ALBUQUERQUE**

Access to the existing SWD currently is provided via two driveways. The waste processing and fleet storage and maintenance area is accessed via Comanche Road on the north side of the site, approximately 425 feet east of Edith Boulevard. The second access driveway serves the administrative offices. It is located on Edith Boulevard of the west side of site, approximately 550 feet south of Comanche Road. The proposed reconfiguration will be accomplished in a single phase, and it is anticipated to be complete in 2018.

d. APPROVED SCOPE

The analysis presented herein was conducted in conformance with the Project Scoping Report approved by BCPWD, City of Albuquerque and NMDOT.

e. CONDUCT OF THE STUDY

This report was prepared in conformance with TIA guidelines established by BCPWD. These guidelines require preparation of a TIA, when proposed development actions will result in the generation of 250 additional daily or 25 additional peak-hour trips.

1) Principal Assumptions Used in the Study

- A copy of the TIA guidelines is provided in **Appendix A**.

2) Resources Used in the Study

- The *Highway Capacity Manual, Special Report 209, Updated 2010* (HCM 2010).

3) Traffic Monitoring or Other Field Data Collected for the Study

Peak-hour turning movement counts were collected December 4, 2013, at the following locations:

- Griegos Road & 4th Street
- Griegos Road & 2nd Street
- Griegos Road/Comanche Road & Edith Boulevard.

Additional peak-hour turning movement counts were collected on December 12, 2013, at the following locations:

- Comanche Road & I-25 Pan American Frontage Road S
- Comanche Road & I-25 Pan American Frontage Road N.

The counts covered the AM (6:30–9:30), Mid-Day (11-1:30) and PM (3-6:30) peak periods. Count data is included in **Appendix B**.

f. FINDINGS AND/OR CONCLUSIONS

Traffic volumes on the adjacent street system were analyzed for weekday AM, Mid-Day, and PM peak periods. Analyses results for existing traffic operations at study area intersections indicate an acceptable Level of Service (LOS) currently is being attained at each intersection with the exception of 4th Street/Comanche Road/Griegos Road intersection. This intersection currently operates at LOS F in the PM peak-hour, and it is forecast to operate at LOS F during the PM peak period under the No-Build and With Project conditions, with an intersection delay of 102.9 seconds. The intersection delay does not increase with the addition of project traffic, because no new project trips are expected to enter this intersection during the PM peak period. Analysis results also indicate additional traffic generated following completion of the reconfiguration of the SWD site in 2018 will not have impacts on forecast year 2018 traffic operations.

2.0 PROPOSED DEVELOPMENT

a. LOCATION

The proposed reconfiguration of the existing City of Albuquerque SWD site will result in development of a primary center of operations. The SWD's central offices and dispatch center, as well as the main hauling yard for storage and maintenance of collection fleet will be located at the site. The proposed reconfiguration will add to these functions by creating a new Transfer Station, Household Hazardous Waste Collection Facility, and Recycling Drop-Off for the general public. The SWD site is located at 4600 Edith Boulevard in Albuquerque, New Mexico, on the southeast corner of the intersection of Comanche Road and Edith Boulevard. The study area and intersections relevant to this TIA were defined based on input from the City of Albuquerque, NMDOT, and Bernalillo County. The intersections selected for analysis include:

City of Albuquerque

Griegos Road & 4th Street

Griegos Road & 2nd Street

Griegos Road/Comanche Road & Edith Boulevard

NMDOT

Comanche Road & I-25 Pan American Frontage Road S

Comanche Road & I-25 Pan American Frontage Road N

The study area and location of key intersections were depicted previously in **Figure 1**.

b. LAND USE AND INTENSITY

The proposed reconfiguration of the SWD site is anticipated to be complete in 2018. Currently, drivers of collection vehicles break from their routes, when the bins are full, and direct haul to the landfill. With the proposed project, drivers will travel directly to the new Transfer Station, where they unload the collection vehicles. Drivers then will return to their routes. This new plan of operation represents new trips into and out of the study area. Based on preliminary data, there are currently 246 loads per day that are direct hauled to the landfill, which would represent approximately 500 daily directional trips.

The refuse deposited at the Transfer Station will then be transported to the landfill via a fleet of transfer trucks. It is estimated that 65 loads per day, or 130 truck trips, will occur in association with the operation of transfer trucks, moving refuse to the landfill.

c. SITE PLAN

The site plan developed for this reconfiguration project is depicted in **Figure 2**. Access to the existing SWD is provided from two driveways: one via Comanche Road, approximately 425 feet east of Edith Boulevard and a second via Edith Boulevard, approximately 550 feet south of Comanche Road.

3.0 AREA CONDITIONS

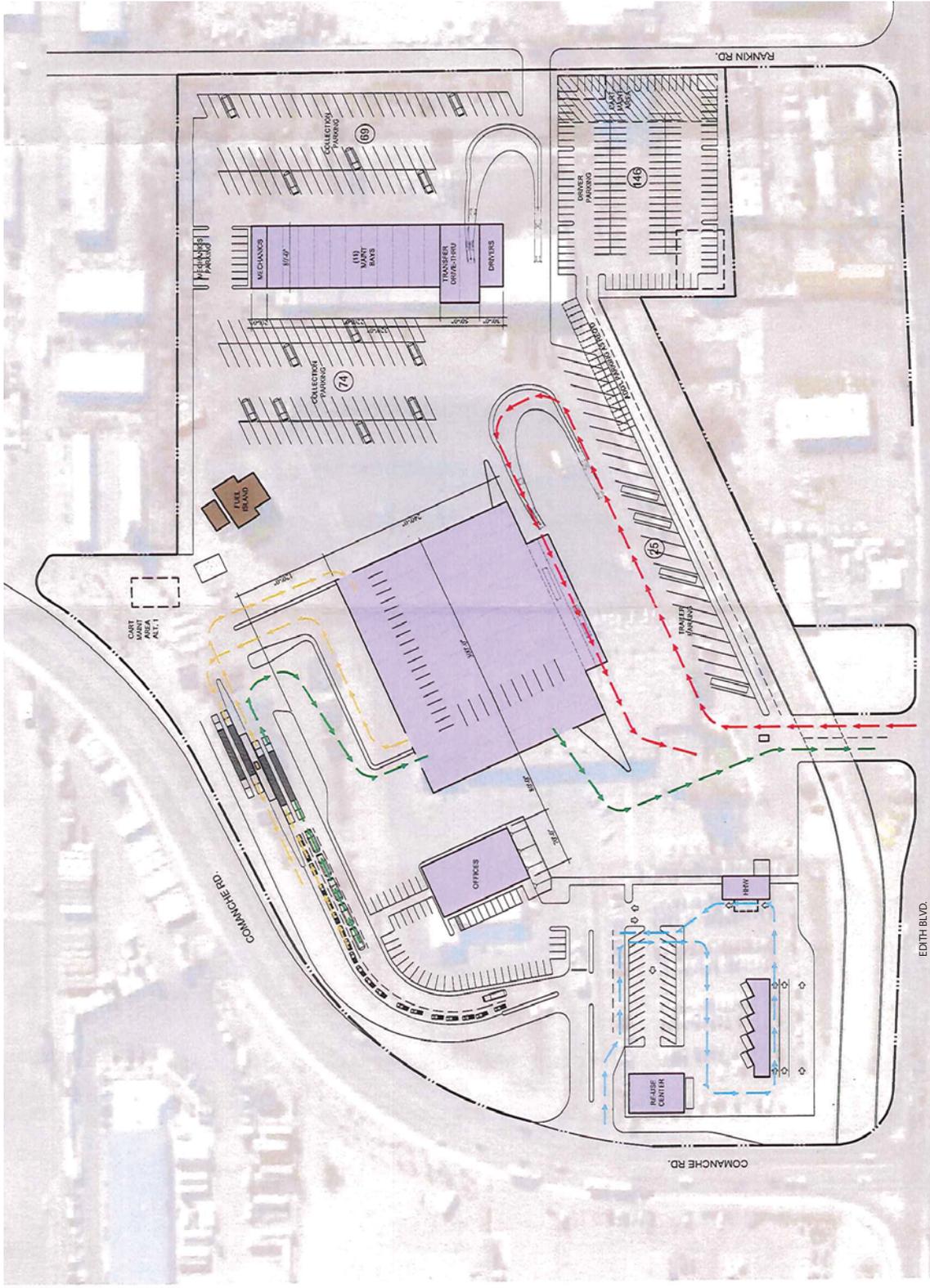
a. OFF-SITE STUDY AREA

The following provides a brief description of the study area transportation system.

1) Area of Influence

The following facilities lie within the study area:

- Comanche Road/Griegos Road: This roadway is an east-west arterial facility. Between 4th Street and 2nd Street, two travel lanes exist in each direction with a raised median and left-turn lanes at each intersecting roadway. Between 2nd Street and Carlton Street (just west of the railroad tracks), it narrows to one lane per direction with a center two-way left-turn lane. Two eastbound lanes and a single westbound lane exist east of Carlton Street. East of Edith Boulevard, it widens to two lanes in each direction with a center two-way left-turn



2

FIGURE

SITE PLAN

No Scale



lane and left-turn lanes at intersecting roadways, as it continues east to Interstate 25. In the study area, signalized intersections exist at 4th Street, 2nd Street, Edith Boulevard, and at the two Frontage Road intersections at I-25/Pan American Freeway. A school zone exists between 4th Street and 2nd street in association with La Luz Elementary School, which is located on the north side of Griegos Road.

- Edith Boulevard: This facility is a north-south arterial with a signalized intersection at Griegos Road/Comanche Road. The intersection has a full four-lane arterial cross section with left-turn lanes for each approach. A right-turn lane is provided on the northbound approach to the intersection, and a right-turn/yield ramp (served by through/right turn lane) is provided on the westbound approach on Comanche Road.
- 2nd Street: This roadway is a four-lane, north-south arterial with a raised median in the study area. A signal is located at the intersection of Griegos Road. Left-turn lanes are provided on all approaches to the intersection. A right-turn lane is provided on the southbound approach.
- 4th Street: This facility is a four-lane, north-south arterial in the study area. A signal is located at the intersection of Griegos Road. Left-turn lanes are provided on all approaches to the intersection.

2) Area of Potential Traffic Impact

The area of potential traffic impact is contiguous with the study area (refer to **Figure 1**) and includes the following intersections:

City of Albuquerque

Griegos Road & 4th Street

Griegos Road & 2nd Street

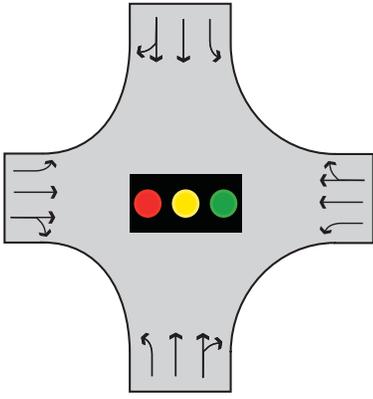
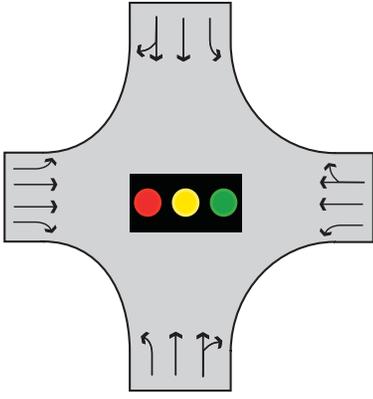
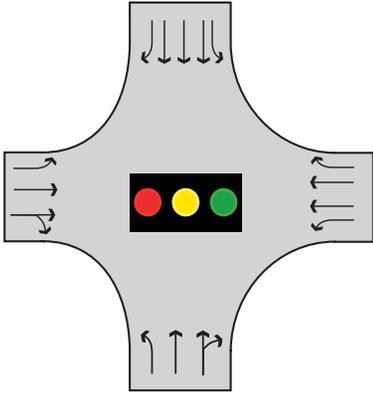
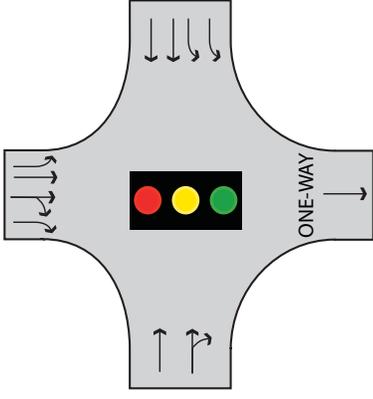
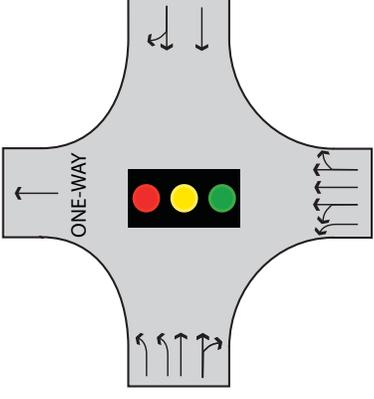
Griegos Road/Comanche Road & Edith Boulevard

NMDOT

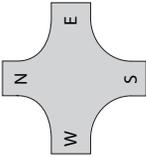
Comanche Road & I-25 Pan American Frontage Road S

Comanche Road & I-25 Pan American Frontage Road N

Figure 3 illustrates the existing geometry and traffic control at each of these intersections. **Figure 4** illustrates the existing AM, Mid-Day, and PM peak-hour intersection volumes at each intersection.

 <p>1 GRIEGOS ROAD AND 4TH STREET</p>	 <p>2 GRIEGOS ROAD AND 2ND STREET</p>	 <p>3 COMANCHE ROAD/GRIEGOS ROAD AND EDITH BOULEVARD</p>	 <p>4 COMANCHE ROAD AND I-25 PAN AMERICAN FREEWAY FRONTAGE ROAD (SOUTH)</p>
 <p>5 COMANCHE ROAD AND I-25 PAN AMERICAN FREEWAY FRONTAGE ROAD (NORTH)</p>			

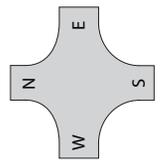
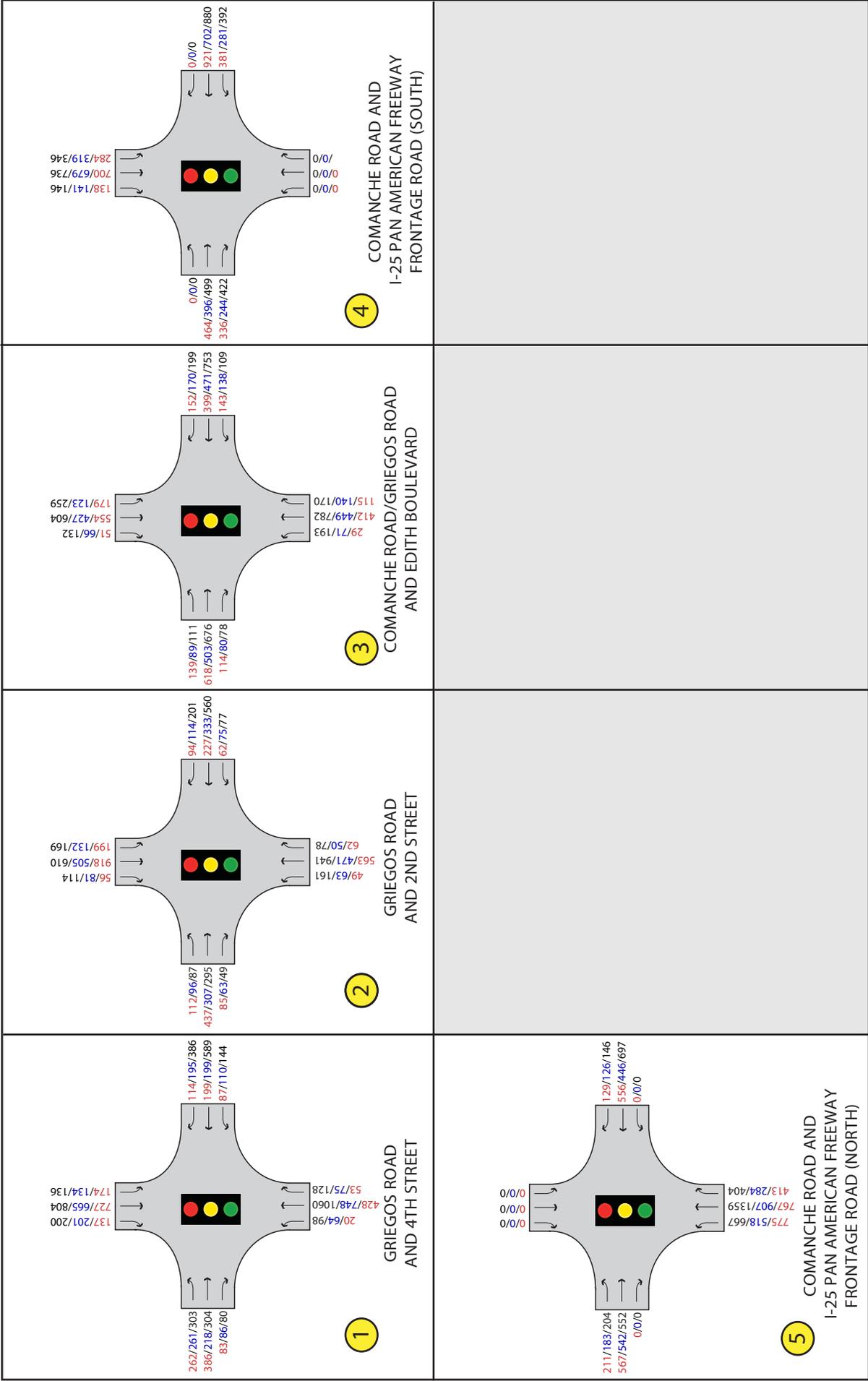
 SIGNALIZED INTERSECTION



No Scale

3 FIGURE
EXISTING INTERSECTION LANE GEOMETRY AND TRAFFIC CONTROL

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XX = AM VOLUMES
 XX = MID-DAY VOLUMES
 XX = PM VOLUMES

YEAR 2013 AM, MID-DAY, AND PM PEAK-HOUR VOLUMES

No Scale

4

FIGURE



b. ON-SITE STUDY AREA

The on-site study area encompasses the site of the existing Solid Waste Department (SWD) as well as the proposed area of reconfiguration (refer to **Figure 2**). The proposed reconfiguration will include:

- New Office Building;
- New Main Operations Building;
- New Vehicle Maintenance Building with maintenance bays and Drive-thru Transfer unit;
- Public Recycling Drop-Off Center;
- On-Site Circulation for Waste Collection Vehicles;
- Reconfigured Parking Areas;and
- Expansion in the southwest corner for additional employee parking.

1) Area of Influence

The area of influence for the site coincides with the project study area (refer to **Figure 1**).

2) Current Phase of Development

The proposed project will occur in a single phase, with the project anticipated to be completed in 2018.

c. SITE ACCESS

1) Existing and Proposed Road System

Access to the existing SWD is provided from two driveways: one via Comanche Road, approximately 425 feet east of Edith Boulevard and a second via Edith Boulevard, approximately 550 feet south of Comanche Road.

Several modifications are planned to the study area roadway system over the next twenty years. The Mid-Region Council of Governments (MRCOG) *2035 Metropolitan Transportation Plan* indicates the following key roadway network expansion projects in or adjacent to the study area:

- 2nd Street, between Interstate 40 and Montañó Road: widen from four to six lanes (Late-term: 2025-2035);
- Edith Boulevard, between Candelaria Road and Montañó Road: widen from two to five lanes (COMPLETED); and
- Comanche Road at Interstate 25: Interchange Modification (Mid-term: 2015-2025). It has not been programmed and is currently not in the Statewide Transportation Improvement Program (STIP); no funding is

available for this project. The intersection geometry will be the same for existing and future years.

2) Existing and Proposed Alternative Mode Systems

Bicycle

Currently, there are Bicycle Lanes provided in the study area along Griegos Road/Comanche Road. Bicycle Routes are located along Edith Road and 2nd Street, where bikes and vehicles share the road.

Public Transit

ABQ Ride offers regular scheduled service (Route 13) at Griegos Road and 2nd Street in the vicinity of the project. The route operates twice during both the AM and PM peak periods, with stops at Comanche Road/2nd Street. Route 10/North 4th Street provides weekday and weekend service through the study area along 4th Street, with a stop at 4th Street/Griegos Road.

3) Improvements to Accommodate Site Traffic

Existing two-way site access drives off Edith Boulevard and Comanche Road will accommodate reconfiguration of site facilities, functions, and circulation. A new access drive will be created at the south end of the site off Rankin Road generally for maintenance purposes and will not be available for regular access.

4.0 PROJECTED TRAFFIC

a. GROWTH RATE

Historical traffic data from MRCOG was reviewed to establish an appropriate annual growth rate for travel in the study area. Reviewed data, indicates application of a 1.00% annual growth rate would be reasonable and appropriate for the Year 2018 Opening Day analysis.

b. SITE MOTORIZED VEHICLE TRAFFIC

Collection Vehicle Trip Activity

Currently, the drivers of collection vehicles break from their routes when bins are full and direct haul to the landfill. Subsequent to this proposed reconfiguration and creation of the primary center of operations at the existing SWD site, drivers will travel directly to the new Transfer Station, where the vehicles will be unloaded. Drivers then will return to their routes. This new process for handling the community's waste represents new trips to/from the study area during the day.

Based on preliminary data relating to current SWD operations, there are currently 246 loads per day directly hauled to the landfill, which would represent approximately 500 daily directional trips. These are existing trips that are part of the existing background traffic, i.e., traffic levels exclusive of any trips associated with this proposed reconfiguration project. Although trips that occur between the collection vehicle routes and the landfill will be removed from the circulation system, these trips occur outside of the project study area and, therefore, have no effect on this analysis.

New trips in the study area will occur as drivers travel to/from the new Transfer Station in association with their respective existing collection routes. However, based on the proposed schedule for the facility and the transfer operation, it is assumed new trips between the Transfer Station and collection routes will occur outside the AM, Mid-Day, or PM peak hours that are being analyzed. Also, because existing collection vehicles currently depart the existing SWD facility in the AM and arrive back in the PM, those outbound and inbound trips are already accounted for in the existing background traffic. Therefore, the only project-related additional trips anticipated to occur during the peak hours in the study area, as a result of this proposed reconfiguration, are associated with transfer trucks traveling between the new Transfer Station and the landfill, as described below.

Transfer Truck Trip Activity

New trips associated with the project will be due to the estimated 65 loads per day, or 130 trips, expected to occur when transfer trucks deliver loads to the landfill. To provide a conservative, worst case scenario, it is assumed that all 130 trips (65 outbound and 65 inbound); will occur during the Mid-Day or PM peak hour. For purposes of this analysis, it is assumed that half of these trips will occur during the Mid-Day peak hour and the other half during the PM peak hour. New trips will enter and exit the driveway located on Edith Boulevard, south of Comanche Road.

Recycling Drop-Off Center Trip Activity

Data was obtained for the three existing, off-site Convenience Centers (Eagle Rock, Montessa, and Don Reservoir) in the vicinity of the study area. It was determined that data provided for Tuesday would be the most appropriate to use to represent potential diversion of these trips to the new recycling facility. The proposed diversion of trips from these facilities is assumed to be twenty-five (25) percent of the total customers using these facilities during the AM, Mid-Day, and PM peak hours. Diverted, new trips to the SWD site were assumed to come to/from location proximate to the existing sites and were distributed to the new facility from those locations.

These three existing Convenience Centers are located northeast, southeast, and southwest of the new Recycling Drop-Off Center. Total new trips expected to be diverted from the three existing Convenience Centers to the new Recycling Drop-Off Center are: 12 in/12 out during the AM peak, 20 in/20 out during the Mid-Day peak, and 16 in/16 out during the PM peak.

Employees

Since no new employees are proposed to be hired for office operations, and their access to office and parking will remain the same, these trips are accounted for in the existing background traffic. Existing and proposed access for the employee parking is located off the driveway on Comanche Road, east of Edith Boulevard.

Trip Distribution

Transfer trucks will be traveling to/from the Cerro Colorado landfill located southwest of the study area. The most direct route is via Interstate 25 and Interstate 40. Therefore, it is assumed that all transfer vehicles will travel to and from Interstate 25 via Comanche Drive, accessing the site by way of the Edith Boulevard driveway. **Figure 5A** illustrates the resulting distribution of SWD Transfer truck trips in the study area. New trips for the Recycling Drop-Off Center were assumed to come from three existing sites close to the SWD site. The trips were distributed to the new facility from those locations. **Figure 5B** illustrates the resulting distribution of the Recycling Drop-Off Center in the study area. **Figures 6A** illustrates the additional Transfer Truck project trips at each study area intersection in conjunction with Opening Day (2018) conditions. **Figures 6B** illustrates the additional Recycling Drop-Off Center project trips at each study area intersection in conjunction with Opening Day (2018) conditions.

c. SITE NON-MOTORIZED VEHICLE AND PEDESTRIAN TRAFFIC

Estimates of the level of pedestrian and/or bicycle activity are not known at this time. However, the proposed site reconfiguration is not anticipated to result in any new non-motorized and/or pedestrian trips.

d. OFF-SITE TRAFFIC

1) Year 2018

As discussed previously, at study area intersections, a 1.00% annual growth rate was applied to existing traffic volumes to arrive at the 2018 background traffic volumes. Resulting Year 2018 No-Build traffic volumes are illustrated in **Figure 7**. The additional project trips associated with the reconfigured SWD and new Transfer Station project trips, illustrated in

Figure 6, were added to the Year 2018 No-Build volumes to determine the resulting volumes after opening of the proposed reconfiguration. The resulting volumes are illustrated in **Figure 8**.



Note: All Transfer Truck Tips Enter/Exit Driveway Located on Edith Blvd, South of Comanche



**PROJECT (TRANSFER TRUCKS ONLY)
TRIP DISTRIBUTION**

5A

FIGURE





Note: All Transfer Truck Tips Enter/Exit Driveway Located on Edith Blvd. South of Comanche

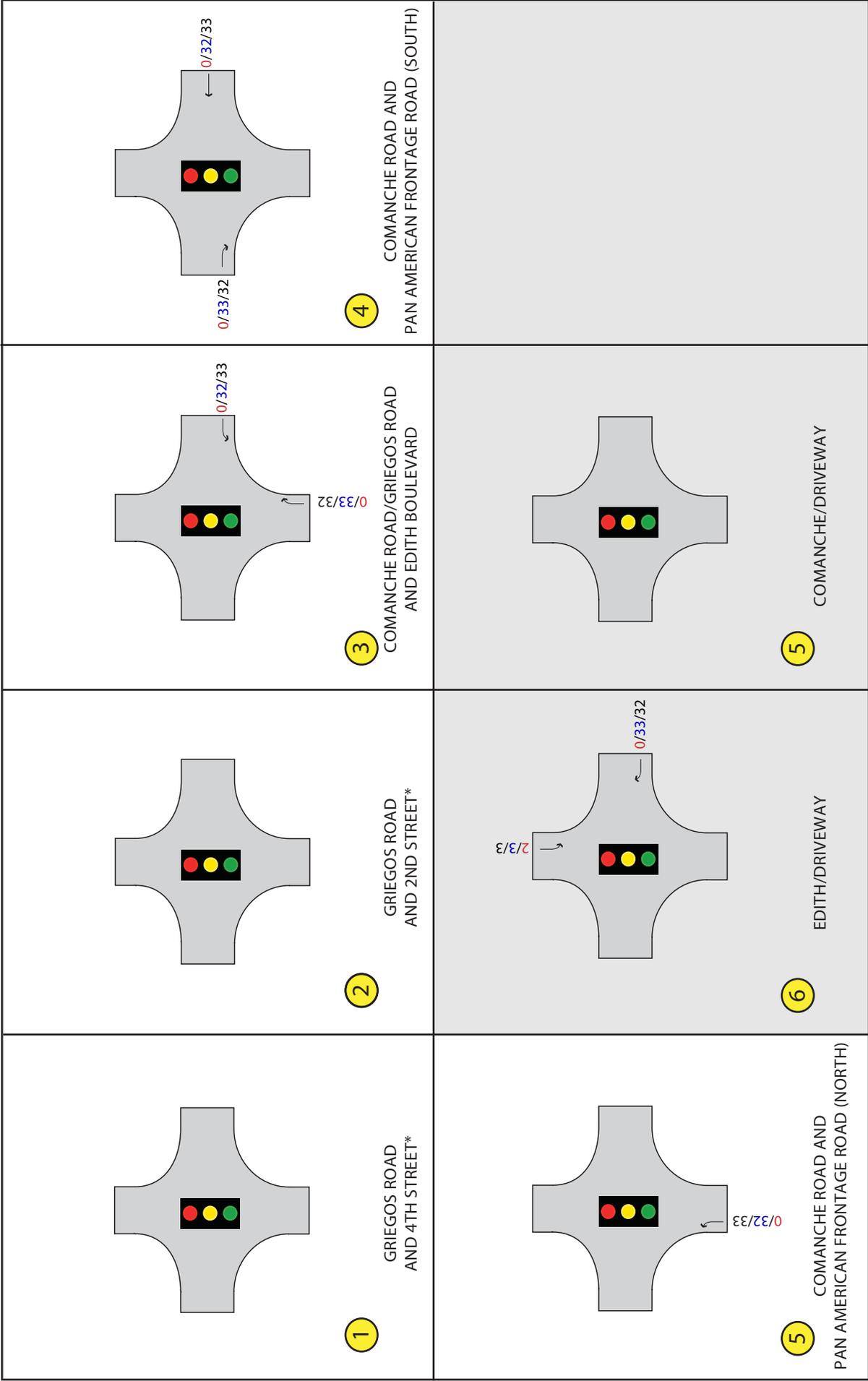


PROJECT (RECYCLING CENTER ONLY) TRIP DISTRIBUTION

5B

FIGURE

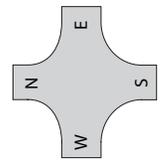




Note: Includes Truck and Recycling Facility Project Trips

XX = AM VOLUMES
 XX = MID-DAY VOLUMES
 XX = PM VOLUMES

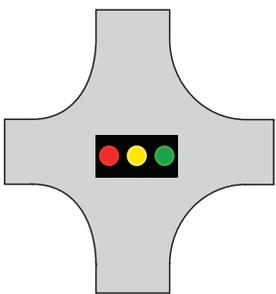
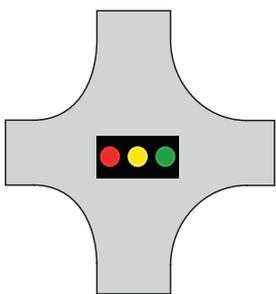
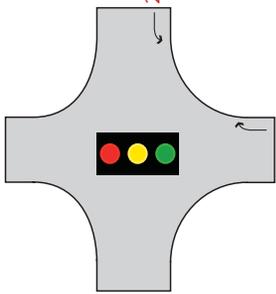
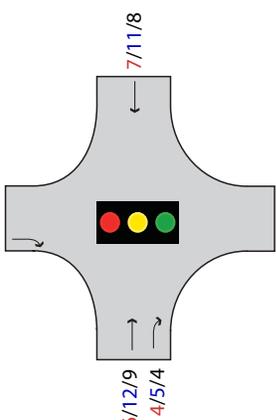
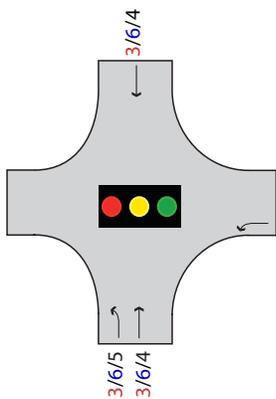
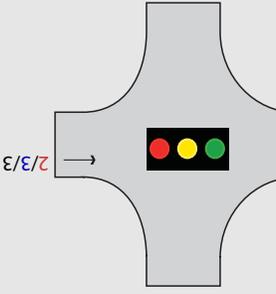
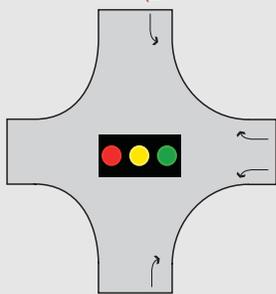
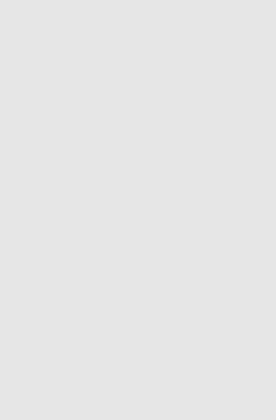
* NOTE: Project does not result in additional traffic at this intersection.



ADDITIONAL (TRANSFER TRUCKS ONLY) PROJECT TRIPS (YEAR 2018)

6A
 FIGURE

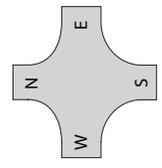


<p>1</p>  <p>GRIEGOS ROAD AND 4TH STREET*</p>	<p>2</p>  <p>GRIEGOS ROAD AND 2ND STREET*</p>	<p>3</p>  <p>COMANCHE ROAD/GRIEGOS ROAD AND EDITH BOULEVARD</p>	<p>4</p>  <p>COMANCHE ROAD AND PAN AMERICAN FRONTAGE ROAD (SOUTH)</p>
<p>5</p>  <p>COMANCHE ROAD AND PAN AMERICAN FRONTAGE ROAD (NORTH)</p>	<p>6</p>  <p>EDITH/DRIVEWAY</p>	<p>5</p>  <p>COMANCHE/DRIVEWAY</p>	<p>5</p>  <p>COMANCHE ROAD AND PAN AMERICAN FRONTAGE ROAD (NORTH)</p>

Note: Includes Truck and Recycling Facility Project Trips

- XX = AM VOLUMES
- XX = MID-DAY VOLUMES
- XX = PM VOLUMES

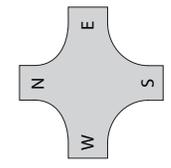
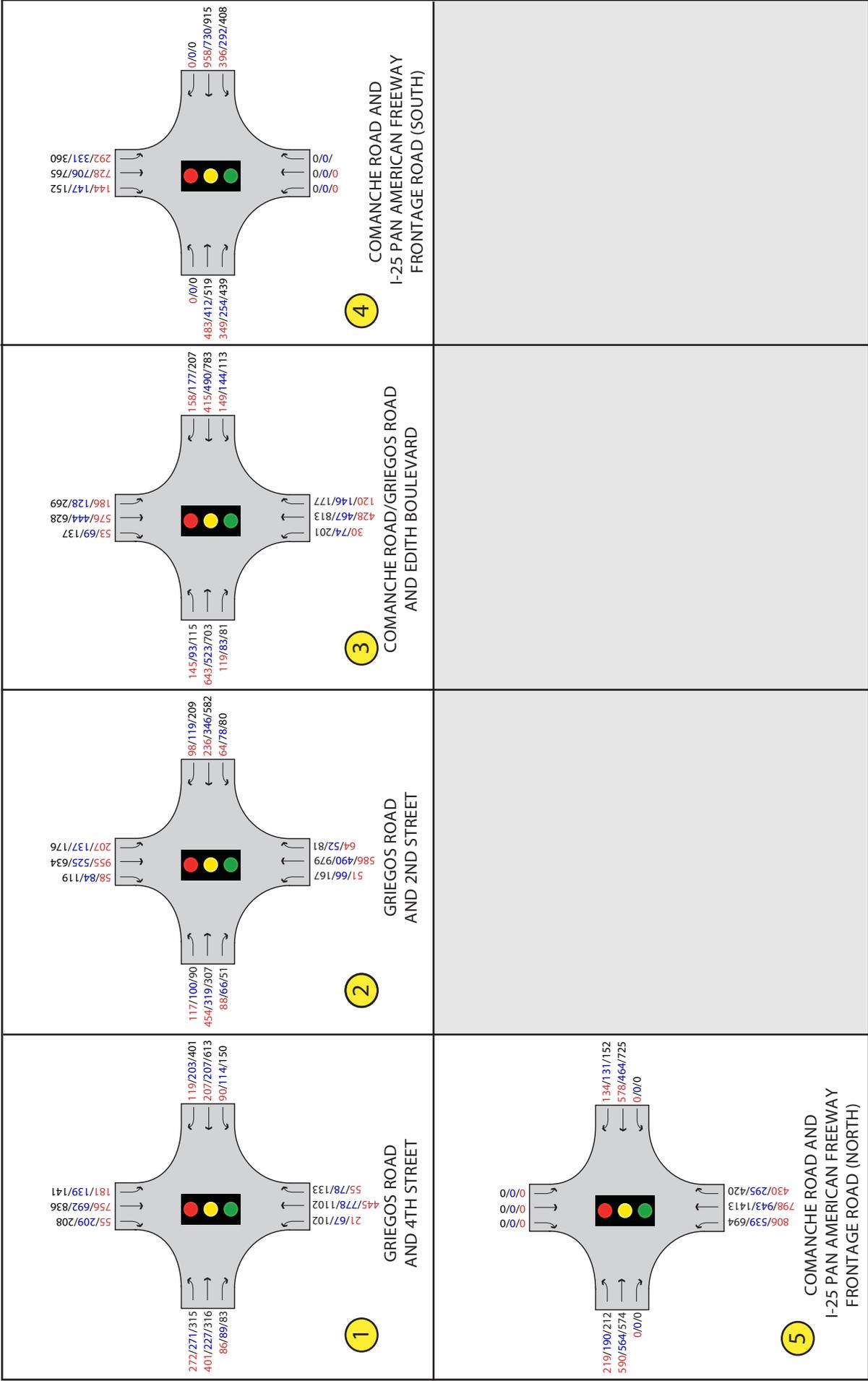
* NOTE: Project does not result in additional traffic at this intersection.



ADDITIONAL (RECYCLING CENTER ONLY) PROJECT TRIPS (YEAR 2018)

6B
FIGURE



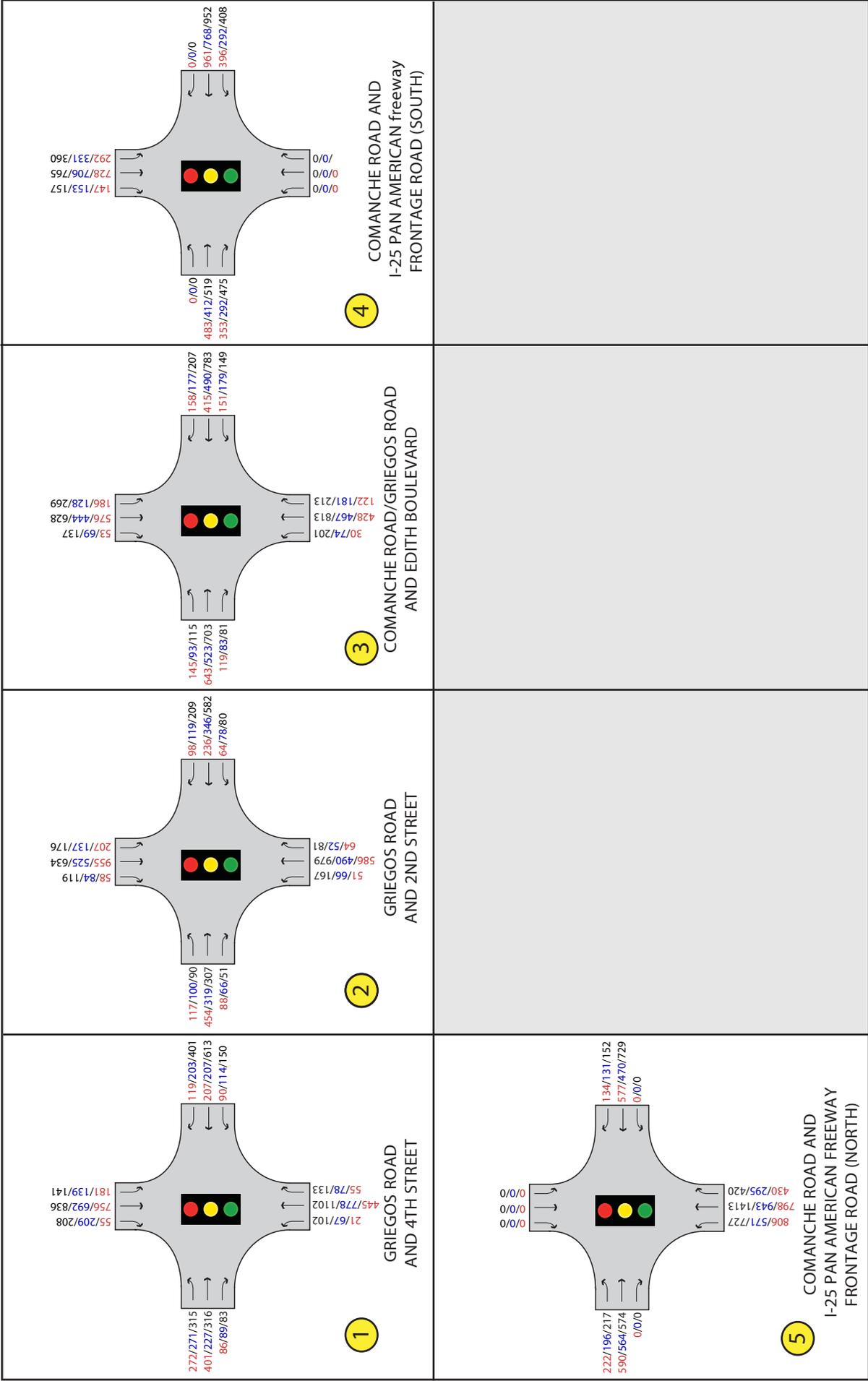


7 YEAR 2018 No-Build AM, Mid-Day, AND PM PEAK-HOUR VOLUMES

FIGURE



No Scale

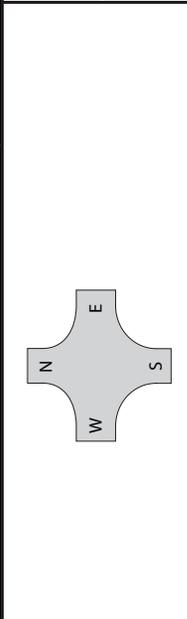


8 YEAR 2018 WITH PROJECT AM, MID-DAY, AND PM PEAK-HOUR VOLUMES

FIGURE

No Scale

WILSON & COMPANY



XX = AM VOLUMES
 XX = MID-DAY VOLUMES
 XX = PM VOLUMES

5.0 TRAFFIC ANALYSIS

a. CAPACITY AND LEVEL OF SERVICE

The *Highway Capacity Manual*, (HCM 2010) defines operational measures of effectiveness for all types of roadways and junctions in terms of qualitative levels of service (LOS). This study is concerned with levels of service for signalized intersections. LOS at intersections is measured in terms of average vehicle delay, in seconds, for each approaching vehicle. Control delay is the sum of the deceleration, queue, stop, and acceleration delays, computed for each approach movement. **Table 1** summarizes LOS definitions and criteria for signalized and intersections.

Table 1 Intersection Level of Service Criteria

Level of Service	Signalized Intersection Control Delay (sec/veh)	Definition
A	≤ 10	Very Low Delay – Free Flow
B	> 10 - 20	Minimal Delays - Good Progression
C	> 20 - 35	Moderate Delay
D	> 35 – 55	Significant Delay
E	> 55 - 80	High Delay
F	> 80	Excessive Delay

Attainment of an overall LOS D or higher is generally the desirable base condition for intersection operations in urban areas. However, LOS E may be acceptable for certain low-volume approaches or minor movements, especially where a higher LOS may significantly degrade a major movement or where the LOS E is based upon the intersection cycle length or low approach volumes. Additionally, a poor LOS in conjunction with the addition of project traffic may be acceptable if the poor LOS existed prior to the addition of new project trips and the addition of project trips does not result in a notable increase in delay.

b. OFF-SITE ROADWAYS AND INTERSECTIONS (BUILD AND NO-BUILD)

1) Existing Conditions

HCM 2010 methodologies were employed, using Synchro 8 software, to assess existing intersection LOS during peak hours. Traffic volumes at each intersection were analyzed under weekday AM, Mid-Day and PM peak hour conditions.

Table 2 summarizes the results of this analysis of existing conditions, which indicates that each of the analyzed study area intersections is currently operating with acceptable levels of service during the peak periods with the exception of Fourth Street/Comanche Road/Griegos Road, which currently operates at LOS F during the PM peak period.

Capacity analysis worksheets are provided in the **Appendix C**.

2) Year 2018 Conditions

Analysis was also conducted to determine anticipated levels of service at study area intersections in Year 2018, both with and without the proposed project.

Forecast traffic volumes on the Year 2018 roadway network were analyzed using the Synchro 8 software. **Tables 3** and **4** summarize the results of this analysis for the Year 2018 No-Build and With-Project conditions, respectively. Capacity analysis worksheets are provided in the **Appendix C**.

Results indicate that each of the analyzed intersections is forecast to operate at LOS D or better during the AM and Mid-Day peak period under both the No-Build and With-Project conditions. During the PM peak period, the intersection of Fourth Street/Comanche/Road Griegos Road is forecast to continue to operate with poor LOS under both the No-Build and With-Project conditions. All other intersections are forecast to operate at LOS D or better during the PM peak.

The intersection of Fourth Street/Comanche Road/Griegos Road is forecast to operate at LOS F, with an intersection delay of 102.9 seconds during the PM peak period under the No-Build condition. With the addition of project traffic, the intersection delay does not increase because no new project trips enter the intersection during the PM peak period.

Table 2 Existing Year 2013 Peak Hour Intersection Level of Service

Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R
1	FOURTH ST & COMANCHE RD /GRIEGOS RD											
Volume to Capacity (v/c)	0.79 / 0.81 / 1.51	0.53 / 0.41 / 0.49	N/A	0.45 / 0.53 / 0.76	0.53 / 0.62 / 1.18	N/A	0.15 / 0.38 / 0.58	0.55 / 0.82 / 1.09	N/A	0.75 / 0.65 / 0.74	0.66 / 0.75 / 0.84	N/A
Approach Delay (sec)	35.1 / 38.8 / 143.4			27.3 / 26.5 / 115.5			28.7 / 36.0 / 82.4			29.8 / 32.7 / 38.8		
Approach LOS	D / D / F			C / C / F			C / C / F			C / C / D		
Intersection Delay (sec)	30.7 / 33.8 / 89.3											
Intersection HCM-LOS	C / C / F											
2	SECOND ST & COMANCHE RD /GRIEGOS RD											
Volume to Capacity (v/c)	0.60 / 0.53 / 0.57	0.66 / 0.55 / 0.36	N/A	0.40 / 0.45 / 0.52	0.49 / 0.68 / 0.79	N/A	0.34 / 0.39 / 0.71	0.61 / 0.43 / 0.96	N/A	0.74 / 0.59 / 0.81	0.67 / 0.35 / 0.35	0.09 / 0.12 / 0.21
Approach Delay (sec)	38.5 / 37.8 / 36.3			32.2 / 38.2 / 41.3			31.8 / 27.2 / 56.4			30.6 / 24.4 / 39.7		
Approach LOS	D / D / D			C / D / D			C / C / E			C / C / D		
Intersection Delay (sec)	32.8 / 31.0 / 45.5											
Intersection HCM-LOS	C / C / D											
3	EDITH BLVD & COMANCHE RD											
Volume to Capacity (v/c)	0.64 / 0.45 / 0.63	0.78 / 0.68 / 0.86	N/A	0.67 / 0.59 / 0.63	0.41 / 0.44 / 0.85	0.28 / 0.29 / 0.37	0.21 / 0.38 / 0.81	0.62 / 0.64 / 0.89	0.23 / 0.29 / 0.33	0.72 / 0.54 / 0.92	0.58 / 0.56 / 0.77	N/A
Approach Delay (sec)	36.1 / 32.6 / 47.1			27.1 / 24.4 / 38.8			29.5 / 28.7 / 45.7			33.6 / 31.5 / 47.8		
Approach LOS	D / C / D			C / C / D			C / C / D			C / C / D		
Intersection Delay (sec)	32.0 / 29.1 / 44.7											
Intersection HCM-LOS	C / C / D											
4	I-25 SB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	N/A	0.75 / 0.56 / 0.90	N/A	0.77 / 0.64 / 0.80	0.52 / 0.39 / 0.50	N/A	N/A	N/A	N/A	0.55 / 0.62 / 0.65	0.73 / 0.71 / 0.74	0.26 / 0.26 / 0.27
Approach Delay (sec)	31.2 / 24.0 / 41.3			24.4 / 24.5 / 23.7			N/A			28.6 / 28.3 / 29.2		
Approach LOS	C / C / D			C / C / C			N/A			C / C / C		
Intersection Delay (sec)	27.5 / 25.9 / 30.4											
Intersection HCM-LOS	C / C / C											
5	I-25 NB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	0.56 / 0.51 / 0.53	0.41 / 0.33 / 0.38	N/A	N/A	0.83 / 0.53 / 0.98	N/A	0.77 / 0.82 / 0.98	0.73 / 0.79 / 0.96	N/A	N/A	N/A	N/A
Approach Delay (sec)	27.3 / 23.3 / 25.7			43.5 / 25.1 / 59.8			24.1 / 30.9 / 42.5			N/A		
Approach LOS	C / C / C			D / C / E			C / C / D			N/A		
Intersection Delay (sec)	28.7 / 28.0 / 43.0											
Intersection HCM-LOS	C / C / D											

Note: N/A in this table refers to "not applicable" as the particular lane group does not exist at certain intersections.

Table 3 Year 2018 No-Build Peak Hour Intersection Level of Service

Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R
1	FOURTH ST & COMANCHE RD/GRIEGOS RD											
Volume to Capacity (v/c)	0.81 / 0.83 / 1.58	0.54 / 0.43 / 0.51	N/A	0.46 / 0.54 / 0.78	0.54 / 0.64 / 1.23	N/A	0.16 / 0.40 / 0.59	0.58 / 0.86 / 1.13	N/A	0.78 / 0.67 / 0.76	0.69 / 0.78 / 0.93	N/A
Approach Delay (sec)	35.9 / 40.1 / 155.49			27.9 / 26.7 / 133.2			29.5 / 38.5 / 97.8			31.3 / 34.3 / 47.0		
Approach LOS	D / D / F			C / C / F			C / D / F			C / C / D		
Intersection Delay (sec)	31.7 / 35.4 / 102.9											
Intersection HCM-LOS	C / D / F											
Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R	LT	TH	R
2	SECOND ST & COMANCHE RD/GRIEGOS RD											
Volume to Capacity (v/c)	0.62 / 0.56 / 0.60	0.68 / 0.51 / 0.34	N/A	0.41 / 0.47 / 0.55	0.50 / 0.71 / 0.82	N/A	0.35 / 0.42 / 0.74	0.64 / 0.47 / 1.04	N/A	0.76 / 0.63 / 0.86	0.70 / 0.38 / 0.84	0.09 / 0.13 / 0.23
Approach Delay (sec)	39.0 / 37.4 / 36.3			32.5 / 39.8 / 43.3			33.0 / 28.7 / 75.4			32.6 / 25.5 / 43.2		
Approach LOS	D / D / D			C / D / D			C / C / E			C / C / D		
Intersection Delay (sec)	33.9 / 32.0 / 47.5											
Intersection HCM-LOS	C / C / D											
Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	LT	TH	R	LT	TH	R	LT	TH/R	R
3	EDITH BLVD & COMANCHE RD											
Volume to Capacity (v/c)	0.67 / 0.48 / 0.65	0.80 / 0.70 / 0.89	N/A	0.69 / 0.61 / 0.66	0.42 / 0.46 / 0.88	0.29 / 0.30 / 0.38	0.22 / 0.40 / 0.84	0.63 / 0.65 / 0.92	0.23 / 0.30 / 0.34	0.75 / 0.56 / 0.96	0.60 / 0.57 / 0.80	N/A
Approach Delay (sec)	37.7 / 33.9 / 49.5			27.8 / 25.1 / 40.8			30.0 / 29.2 / 48.5			34.8 / 32.2 / 51.6		
Approach LOS	D / C / D			C / C / D			C / C / D			C / C / D		
Intersection Delay (sec)	33.1 / 29.9 / 47.5											
Intersection HCM-LOS	C / C / D											
Intersection	Eastbound			Westbound			Northbound			Southbound		
	N/A	TH/R	N/A	LT	TH	N/A	N/A	N/A	N/A	LT	TH	R
4	I-25 SB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	N/A	0.80 / 0.61 / 0.96	N/A	0.81 / 0.66 / 0.82	0.54 / 0.42 / 0.53	N/A	N/A	N/A	N/A	0.56 / 0.62 / 0.67	0.74 / 0.71 / 0.76	0.27 / 0.26 / 0.28
Approach Delay (sec)	33.8 / 26.1 / 41.3			25.6 / 25.4 / 23.0			N/A			28.6 / 27.5 / 29.5		
Approach LOS	C / C / D			C / C / C			N/A			C / C / C		
Intersection Delay (sec)	28.7 / 26.5 / 32.9											
Intersection HCM-LOS	C / C / C											
Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	N/A	TH/R	R	LT	TH/R	R	LT	TH	R
5	I-25 NB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	0.57 / 0.51 / 0.54	0.43 / 0.34 / 0.40	N/A	N/A	0.87 / 0.55 / 1.03	N/A	0.79 / 0.85 / 1.02	0.76 / 0.82 / 1.00	N/A	N/A	N/A	N/A
Approach Delay (sec)	27.5 / 23.9 / 25.8			46.6 / 25.7 / 71.3			25.1 / 32.6 / 51.2			N/A		
Approach LOS	C / C / C			D / C / E			C / C / D			N/A		
Intersection Delay (sec)	30.0 / 29.2 / 50.6											
Intersection HCM-LOS	C / C / D											

Table 4 Year 2018 with Project Peak Hour Intersection Level of Service

Intersection	Eastbound			Westbound			Northbound			Southbound		
	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R	LT	TH/R	R
1	FOURTH ST & COMANCHE RD /GRIEGOS RD											
Volume to Capacity (v/c)	0.81 / 0.83 / 1.58	0.54 / 0.43 / 0.51	N/A	0.46 / 0.54 / 0.78	0.54 / 0.64 / 1.23	N/A	0.16 / 0.40 / 0.59	0.58 / 0.86 / 1.13	N/A	0.78 / 0.67 / 0.76	0.69 / 0.78 / 0.93	N/A
Approach Delay (sec)	35.9 / 40.1 / 155.49			27.9 / 26.7 / 133.2			29.5 / 38.5 / 97.8			31.3 / 34.3 / 47.0		
Approach LOS	D / D / F			C / C / F			C / D / F			C / C / D		
Intersection Delay (sec)	31.7 / 35.4 / 102.9											
Intersection HCM-LOS	C / D / F											
2	SECOND ST & COMANCHE RD /GRIEGOS RD											
Volume to Capacity (v/c)	0.62 / 0.56 / 0.60	0.68 / 0.51 / 0.34	N/A	0.41 / 0.47 / 0.55	0.50 / 0.71 / 0.82	N/A	0.35 / 0.42 / 0.74	0.64 / 0.47 / 1.04	N/A	0.76 / 0.63 / 0.86	0.70 / 0.38 / 0.64	0.09 / 0.13 / 0.23
Approach Delay (sec)	39.0 / 37.4 / 36.3			32.5 / 39.8 / 43.3			33.0 / 28.7 / 75.4			32.6 / 25.5 / 43.2		
Approach LOS	D / D / D			C / D / D			C / C / E			C / C / D		
Intersection Delay (sec)	33.9 / 32.0 / 47.5											
Intersection HCM-LOS	C / C / D											
3	EDITH BLVD & COMANCHE RD											
Volume to Capacity (v/c)	0.67 / 0.49 / 0.65	0.80 / 0.74 / 0.90	N/A	0.70 / 0.71 / 0.82	0.42 / 0.44 / 0.86	0.29 / 0.30 / 0.38	0.22 / 0.41 / 0.85	0.63 / 0.66 / 0.93	0.23 / 0.30 / 0.34	0.76 / 0.57 / 0.97	0.60 / 0.58 / 0.81	N/A
Approach Delay (sec)	37.7 / 35.2 / 50.4			27.9 / 29.9 / 42.2			29.9 / 30.0 / 48.2			34.9 / 33.2 / 52.9		
Approach LOS	D / D / D			C / C / D			C / C / D			C / C / D		
Intersection Delay (sec)	33.1 / 31.1 / 48.2											
Intersection HCM-LOS	C / C / D											
4	I-25 SB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	N/A	0.81 / 0.65 / 1.01	N/A	0.81 / 0.66 / 0.75	0.54 / 0.44 / 0.55	N/A	N/A	N/A	N/A	0.56 / 0.62 / 0.67	0.74 / 0.71 / 0.76	0.27 / 0.27 / 0.29
Approach Delay (sec)	34.0 / 27.1 / 62.3			25.6 / 25.5 / 22.3			N/A			28.6 / 27.6 / 29.6		
Approach LOS	C / C / E			C / C / C			N/A			C / C / C		
Intersection Delay (sec)	28.7 / 26.7 / 36.2											
Intersection HCM-LOS	C / C / D											
5	I-25 NB FRONTAGE RD & COMANCHE RD											
Volume to Capacity (v/c)	0.57 / 0.52 / 0.55	0.43 / 0.34 / 0.40	N/A	N/A	0.88 / 0.56 / 1.04	N/A	0.79 / 0.87 / 1.04	0.76 / 0.84 / 1.01	N/A	N/A	N/A	N/A
Approach Delay (sec)	27.5 / 23.8 / 25.6			47.2 / 26.1 / 74.2			25.1 / 33.7 / 54.4			N/A		
Approach LOS	C / C / C			D / C / E			C / C / D			N/A		
Intersection Delay (sec)	30.1 / 29.9 / 53.1											
Intersection HCM-LOS	C / C / D											

6.0 IMPROVEMENT ANALYSIS

One intersection was forecast to operate with a poor LOS under the 2013 Existing Conditions: Fourth Street/Comanche Road/Griegos Road currently operates at LOS F during the PM peak period. However, the proposed project is not anticipated to increase delays at this intersection. Therefore, no project-related improvements are considered at this location.

7.0 FINDINGS

Traffic associated with the project is not anticipated to result in additional unacceptable operations at any of the analyzed study area intersections. The Year 2013 and 2018 study area roadway network will not experience any additional deficiencies due to traffic generated by the project.

8.0 RECOMMENDATIONS

a. SITE ACCESS AND CIRCULATION PLAN

It is assumed that traffic will utilize the existing site driveways. No improvements are proposed.

b. OFF-SITE IMPROVEMENTS AND MITIGATION MEASURES

Analysis of traffic operations following opening of the project in Year 2018 indicates that the additional traffic generated by the proposed project will not result in any new peak-hour deficiencies, assuming improvements to study area roadways are implemented (by others) as planned.

No project-related, off-site improvements, beyond those already anticipated to be constructed by others, are recommended.