Photograph 9: View of the adjacent 76 gasoline service station (5740 Atlantic Avenue) adjacent to the south of the site.

Photograph 10: View of the southern adjacent commercial building (5735 Atlantic Ave. and 510-526 E. South Street).

Photograph 11: View of the adjacent residences (5802-5890 Lime Ave.) to the east of the site looking to the northeast.

Photograph 12: View of the adjacent residences (5823-5855 Linden Avenue) to the west of the site looking to the southwest.

Site Photographs

Photograph 13: View of staining on the asphalt paved parking area behind the 635 E. South Street site building in the southeast corner of the eastern block.

Photograph 14: View of the soil stockpiles and gravel stockpiles on the western block of the site looking to the southeast.

Photograph 15: View of the unidentified concrete structure (possible sump) observed in the middle of the western block.

Photograph 16: View of the USA markout and an asphalt patch from soil boring B8 located in the parking lot adjacent to the south of the 5875 Atlantic Ave. site building.

Site Photographs

Appendix F

Noise Data

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing Atlantic Avenue btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1738.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	36.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	36.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	68.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing +ProjA Atlantic btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2228.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	46.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	46.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

5-6AExisting+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	69.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+ProjB Atlantic btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2227.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	46.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	46.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

5-6BExisting+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase Atlantic btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2230.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	46.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	46.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBasePM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA Atlantic btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2363.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	49.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB Atlantic btw 59th and 60th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2363.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	49.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	49.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	71.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	1.5
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	1.5
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ExistingPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	54.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	162.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A6-9PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	57.5

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	154.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

B6-9PM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 57.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	77.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	2.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	2.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBasePM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 54.8

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	167.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.5
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.5
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 57.8

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB 59th btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	158.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.5
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.5
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 57.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	151.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.2
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.2
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	57.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	177.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	4.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	4.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A2-3PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	58.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	177.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	4.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	4.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing+B

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	58.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	169.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.5
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.5
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBasePM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 57.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	188.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	4.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	4.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 58.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+B Linden btw 59th and Hullet

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	182.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	4.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	4.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Cum+B

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	58.3

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	44.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	0.9
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	0.9
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	52.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	142.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A9-10PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	57.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	134.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	2.8
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	2.8
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing+B

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	56.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	46.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	1.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	1.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBase

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 52.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+A Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	145.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Cum+A

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	57.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB Lime btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	137.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	3.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	3.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 57.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	723.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	10.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	10.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ExistingPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	63.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	823.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	17.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	17.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A4-7PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	64.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	817.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	17.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	17.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

SouthbtwLinden&AtlanticExis+B

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 64.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	780.5
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	16.3
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	16.3
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

SouthbtwLinden&AtlanticCumBase

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	64.5

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	880.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	18.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	18.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB South btw Linden and Atlantic

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	874.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	18.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	18.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1080.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	22.5
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	22.8
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ExistingPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	65.9

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1214.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	25.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	25.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A7-10PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	66.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1216.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	25.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	25.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

B7-10PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	66.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1166.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	24.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	24.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBasePM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1300.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	26.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	26.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB South btw Atlantic and Lime

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1302.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	27.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	27.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing Atlantic btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1816.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	38.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	38.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ExistingPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	68.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2265.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	47.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	47.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

A6-7PM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	69.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B Atlantic btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2279.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	48.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	48.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

B6-7PM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBase Atlantic btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2319.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	48.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	48.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

CumBasePM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.2

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjA Atlantic btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2409.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	50.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	50.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ACum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 69.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+ProjB Atlantic btw 59th and South

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2424.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	50.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	50.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft):	50.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	69.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1258.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	26.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	26.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

ExistingPM

Distance from center of 12-ft wide, single lane roadway (ft):	100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	63.4

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+A Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1814.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	37.8
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	37.8
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing+A

Distance from center of 12-ft wide, single lane roadway (ft): 100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existing+B Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	1814.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	37.8
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	37.8
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Existing+B

Distance from center of 12-ft wide, single lane roadway (ft):	100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA):	65.0

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

CumBaseB Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2121.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	44.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	44.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

BCum+ProjPM

Distance from center of 12-ft wide, single lane roadway (ft): 100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 65.7

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Existimg+cumA Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2321.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	48.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	48.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Aexistimg+cumPM

Distance from center of 12-ft wide, single lane roadway (ft): 100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.1

* * * * CASE INFORMATION * * * *

* * * * Results calculated with TNM Version 2.5 * * * *

Cum+B Atlantic btw South and 56th

* * * * TRAFFIC VOLUME/SPEED INFORMATION * * * *

Automobile volume (v/h):	2320.0
Average automobile speed (mph):	35.0
Medium truck volume (v/h):	48.0
Average medium truck speed (mph):	30.0
Heavy truck volume (v/h):	48.0
Average heavy truck speed (mph):	30.0
Bus volume (v/h):	0.0
Average bus speed (mph):	0.0
Motorcycle volume (v/h):	0.0
Average Motorcycle speed (mph):	0.0

* * * * TERRAIN SURFACE INFORMATION * * * *

Terrain surface: hard

* * * * RECEIVER INFORMATION * * * *

DESCRIPTION OF RECEIVER # 1

Cum+B

Distance from center of 12-ft wide, single lane roadway (ft): 100.0
A-weighted Hourly Equivalent Sound Level without Barrier (dBA): 66.1

Appendix G

Traffic Study

Technical Appendices to the Traffic Study are available for review at the Development Services Department, Long Beach City Hall

REPORT

North Village Center
EIR TRAFFIC IMPACT ANALYSIS

Prepared for:

The Redevelopment Agency of the City of Long Beach

Prepared by:

400 Oceangate, Suite 480
Long Beach, CA 90802-4307

May 26, 2009

21-J08-2106

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

The proposed project is a mixed use "village center" on an approximately 6.3-acre site in the City of Long Beach. The project site encompasses two full city blocks on either side of Atlantic Avenue between South Street and 59th Street as illustrated in **Figure 1**. The North Village Center is comprised of 61 residential units, up to 36,000 square feet of neighborhood-serving commercial/retail space (including 5,400 square feet of restaurant) and public library/community center totaling approximately up to 30,000 square feet (which will be referred to as "library"). On-site parking spaces will be provided in private garages and surface parking lots. Although, some on-street parking will be likely available along Atlantic Avenue between South Street and 59th Street for use by the project, per the City's request no on-street parking was included in the analysis to provide conservative parking demand analysis. **Table 1** illustrates the trip generation of the proposed Project.

Table 1 Site Trip Generation

CODE	DENSITY	Var.	USE	AM PEAK HOUR IN	AM PEAK HOUR OUT	AM Peak TOTAL	PM PEAK HOUR IN	PM PEAK HOUR OUT	PM Peak TOTAL	DAILY (2-way)
	Phase I - West Block									
932	5.4 ksf		High-Turnover (Sit-Down) Rest.	32	30	62	36	23	59	687
820	8.6 ksf	(1)	Shopping Center @ 8.6 ksf	22	14	36	60	64	124	1,378
230	54 DU		Residential Condominiums/Townhouse	4	20	24	20	9	29	316
			Total West Block	**58**	**64**	**122**	**116**	**96**	**212**	**2,381**
	Phase II (Option A and Option B) - East Block									
820	22 ksf	(1)	Shopping Center @ 22 ksf	38	25	63	110	120	230	2,538
590	30 ksf		Library	23	9	32	102	111	213	1,620
230	7 DU		Residential Condominiums/Townhouse	1	2	3	3	1	4	41
			Total East Block	**62**	**36**	**98**	**215**	**232**	**447**	**4,199**
Total Project Trips (without existing land use credits)				**120**	**100**	**220**	**331**	**328**	**659**	**6,580**

Source: ITE Trip Generation Manual, 7th Edition.
(1) Trip rates based on Equation.
Note: The trip generation does not indicate trip red*uction credit for the existing AutoZone store included in the analysis.*

The Phase I of the development will include the development of the west-block and will be built-out by year 2011 and the Phase II of the proposed development will include the development of the east-block with a build-out by year 2016. There are two project options for the Phase II - East Block. Both have similar space programs, density and trip generation potential. The first option - Option A, will place the library/community center uses at the southeast corner of 59th Street and Atlantic Avenue and commercial/mixed uses at the northeast corner of South Street and Atlantic Avenue. The second option – Option B will reverse this arrangement, placing commercial mixed uses at the southeast corner of 59th Street and Atlantic Avenue and the library/community center uses at the northeast corner of South Street and Atlantic Avenue. The trip generation, trip distribution, site access and circulation will all remain the same in both the options.

A mid-block signalized pedestrian crossing is proposed to enhance walkability between the two portions of the project. Additional automobile access to interior block parking would be accessed from South Street, Linden Avenue, Lime Avenue, Atlantic Avenue and 59th Street.

Existing Conditions

Existing year 2008 AM (7:00 – 9:00 AM) and PM (4:00 – 6:00 PM) peak hour traffic counts were collected on a typical weekday when schools were in session. AM and PM peak hour LOS analyses were conducted for the ten study intersections based on existing traffic volumes, geometries, unsignalized/signalized operations and the previously described methodologies. All intersection analyses are performed using the TRAFFIX (Traffic Impact Analysis) software program. The results indicate that all study intersections currently operate at LOS C or better during weekday peak hours.

Future Without-Project Conditions

The anticipated buildout year of Phase I and Phase II is expected to be prior to 2011 and 2016, respectively. The build year scenarios for Phase I and Phase II are analyzed as shown below:

Phase I (year 2011): The projection of Year 2011 Without-Project traffic consists of existing traffic plus ambient traffic growth (general background regional growth of 1.00 percent per year) plus growth in traffic generated by specific related projects expected to be completed by 2011.

Phase II (year 2016): The projection of Year 2016 Without-Project traffic consists of existing traffic plus ambient traffic growth (general background regional growth of 1.00 percent per year) plus growth in traffic generated by specific related projects expected to be completed by 2016 plus proposed Phase I of the project.

Related Projects Traffic Generation

Morning and evening peak-hour trip estimates for the related projects were developed generally based on rates published in the Institute of Transportation Engineer's publication *Trip Generation, 7th Edition*. Based on an approximate regional distribution and the proximity of the cumulative projects to the subject site, a total of 376 AM and 1,297 PM trips will be generated by a total of 10 related developments in the study area. The trips generated by the related projects were assigned to the area street system based on the patterns of existing area traffic for similar types of developments and on patterns listed in previous traffic studies for the area.

Year 2011 and Year 2016 Without-Project Traffic Operations

Year 2011 Without-Project, results indicate that all study intersections will operate at LOS C or better during the weekday peak hours.

Year 2016 Without-Project, results indicate that all study intersections will operate at LOS C or better during the weekday peak hours.

Future With-Project Conditions

Project Traffic Generation

The first step in analyzing future traffic conditions with the Project is to estimate trip generation from the Project. For purposes of this study, existing AutoZone related trips were isolated based on its trip generation potential and they are removed from future trip estimates since the AutoZone will be relocated and is included in the cumulative projects list. *ITE Trip Generation, 7th Edition* rates were used to estimate future project-related trips.

Phase I: The project is expected to generate 122 trips in the AM peak hour and 212 trips in the PM peak hour.

Phase II: The project is expected to generate 98 trips in the AM peak hour and 447 trips in the PM peak hour. The existing AutoZone related trips located on the east lot will be replaced in the future. With the AutoZone trips removed, the trips associated with the Phase II development are 80 and 398 trips in the AM and PM peak hour, respectively.

Overall, the project (Phase I plus Phase II) is expected to generate 202 trips in the AM peak hour and 610 trips in the PM peak hour.

Project Trip Distribution and Assignment

The routes people will use traveling to and from the project sites were determined based on the patterns of existing area traffic for similar types of developments, patterns listed in previous traffic studies for the area, the access driveway configurations and consultation with the city staff. The site access was based on the data in the project descriptions and a review of conceptual site plans.

With-Project (Phase I – 2011 and Phase II – 2016) Traffic Operations

For the 2011 With-Project conditions, the results indicate that the study intersections will continue to operate at LOS C or better during the weekday peak hours and there will be no significant project-related impacts based on City of Long Beach threshold of significance.

For the 2016 With-Project conditions, the results indicate that the study intersections will continue to operate at LOS C during the weekday AM and PM peak hour in the Phase II (Option A and Option B) except the Atlantic Avenue/59th Street intersection which would operate at LOS D during the PM peak hour in the Phase II (Option A). However, there will be no significant project-related impacts at the study intersections based on City of Long Beach thresholds of significance.

Congestion Management Program System Analysis

There are no intersections that are part of the CMP Arterial intersection monitoring system within the study area. Therefore, the project will not impact the CMP intersections. A CMP arterial analysis was also completed for the CMP freeway monitoring station located along the I-710 Freeway. The analysis shows that the proposed project does not contribute more than the minimum 150 peak-period trips at the CMP mainline location and therefore will not require further CMP analysis.

Site Parking Analysis

The proposed site plan would provide a total of 355 parking spaces as against the estimated shared parking demand of 377 spaces during the weekday with a parking deficiency of twenty-two (22) spaces. Similarly the shared parking demand of 372 spaces during the peak weekend results in a parking deficiency of 17 spaces. However, along Atlantic Avenue between South Street and 59th Street approximately 30 on-street parking spaces could be available for use by patrons/residents of the proposed project since the proposed project entirely surrounds this segment and will primarily serve commercial/retail uses of the proposed site. Therefore, this analysis recommends that a variance be requested to provide fewer parking spaces than the city code requirements.

INTRODUCTION AND ENVIRONMENTAL SETTING

This report summarizes the traffic impact analyses results for the proposed North Village Center project in the City of Long Beach. The report summarizes the methodology, findings and conclusions of the traffic analysis. A total of ten intersections within the City of Long Beach were analyzed. The analysis considered new vehicle trip making that will result from the proposed site, as well as traffic growth from other development (background growth and identified related projects) in the surrounding area. City of Long Beach guidelines for traffic impact studies were followed and County of Los Angeles Congestion Management Program (CMP) guidelines were also used to assess the designated CMP roadway system.

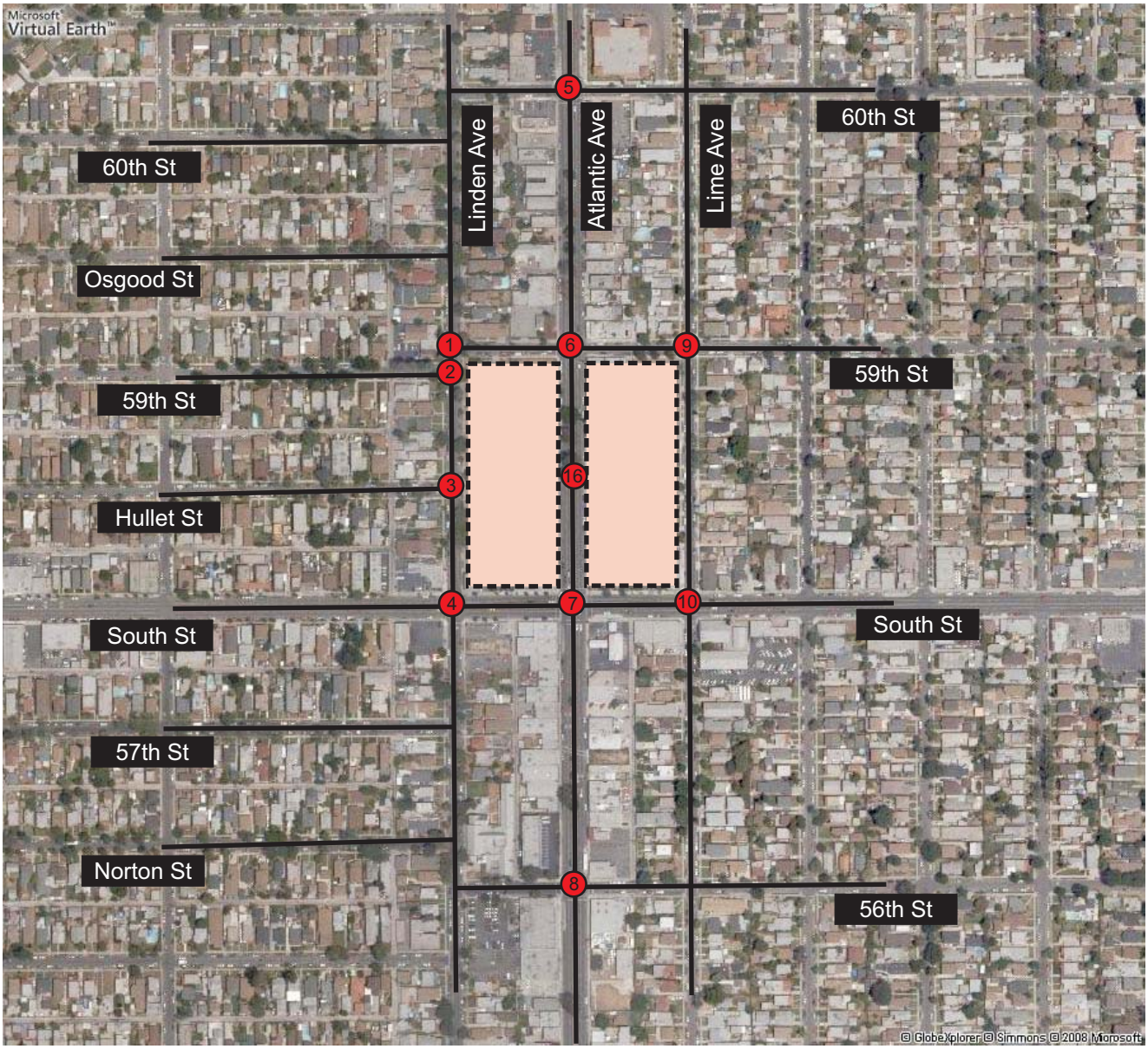
Study Area

The proposed project is a mixed use "village center" on an approximately 6.3-acre site in the City of Long Beach. The project site encompasses two full city blocks on either side of Atlantic Avenue between South Street and 59th Street as illustrated in **Figure 1**. The North Village Center is comprised of 61 residential units, up to 36,000 square feet of neighborhood-serving commercial/retail space (including 8,600 square feet of restaurant) and public library/community center totaling approximately up to 30,000 square feet (which will be referred to as "library"). On-site parking spaces will be provided in private garages for residential and surface parking lots.

There are two project options for the East Block. Both have similar space programs. The first option, East Block Option A, will place the public institutional uses at the southeast corner of 59th Street and Atlantic Avenue and commercial/mixed uses at the northeast corner of South Street and Atlantic Avenue. The second option, East Block Option B, will reverse this arrangement, placing commercial mixed uses at the southeast corner of 59th Street and Atlantic Avenue and the public institutional uses at the northeast corner of South Street and Atlantic Avenue. The trip generation, trip distribution, site access and circulation will all remain the same in both the options.

Figure 1 depicts the study area, the locations of the analyzed intersections, and the location of the proposed project. Based on consultation with the City of Long Beach traffic engineering staff, ten key intersections were selected for analysis. These intersections could experience significant impacts from the Project and therefore warranted detailed analysis. Of the ten study intersections, four intersections are signalized and the other six intersections are unsignalized and stop-controlled as follows:

1. Linden Avenue/59th Street –north (un-signalized)
2. Linden Avenue/59th Street – south (un-signalized)
3. Linden Avenue/Hullett Street (un-signalized)
4. Linden Street/South Street (un-signalized)
5. Atlantic Avenue/60th Street (signalized)
6. Atlantic Avenue/59th Street (signalized)
7. Atlantic Avenue/South Street (signalized)
8. Atlantic Avenue/56th Street (signalized)
9. Line Avenue/59th Street (un-signalized)
10. Lime Avenue/South Street (un-signalized)



Legend

- Street
- Proposed Site Location
- 8 Study Intersection Location

NOT TO SCALE

ITERIS

North Village Center TIA
Figure 1
Project Site Location

Key Roadway Descriptions

The following describes key roadways within the study area:

Atlantic Avenue is a four lane, north-south Major Arterial per the City of Long Beach General Plans that extends north from Ocean Boulevard to north of Artesia Freeway. On-street parking is allowed along most of Atlantic Avenue in the study area. In the study area, the Average Daily Traffic (ADT) ranges between 20,000 and 25,000 vehicles per day.

South Street is a four lane, east-west Minor Arterial that extends east from Atlantic Avenue to Cherry Avenue and becomes a Major Arterial to the east of Cherry Avenue. On-street parking is allowed along South Street in the study area. In the study area, the ADT east of Cherry Avenue ranges between 15,000 and 20,000 vehicles per day. South Street to the west of Atlantic Avenue is classified as a local street and the ADT ranges between 10,000 and 15,000 vehicles per day.

60th Street is a four lane, east-west Minor Arterial that extends east from Atlantic Avenue to Cherry Avenue. On-street parking is allowed along 60th Street in the study area. In the study area, the ADT east of Cherry Avenue ranges between 5,000 and 10,000 vehicles per day.

59 Street is a two lane, east-west local street with on-street parking allowed on either direction. Linden Avenue and Lime Avenue are north-south local street with parking along on either side.

Project Description/Background/Existing Site Conditions

The site is divided between the following General Plan Land Use designations: Townhomes (3A), Mixed Style Homes (2), Traditional Retail Strip Commercial (8A) and Mixed Retail/Residential Strip (8R). Zoning designations are Townhomes or Row House Residential (R-3-T), Two-Family Residential (R-2-N), Neighborhood Automobile-Oriented Commercial (CNA) and Community Automobile-Oriented Commercial (CCA).

All land uses on the west block have been demolished except for one unoccupied structure. All improvements on the east block have been demolished except for four structures. One of these, an Auto-Zone store, is presently occupied. The Long Beach Redevelopment Agency (RDA) owns the subject property in its entirety. It is our understanding that the existing AutoZone will be relocated with the build-out of Phase II (year 2016).

EXISTING CONDITIONS

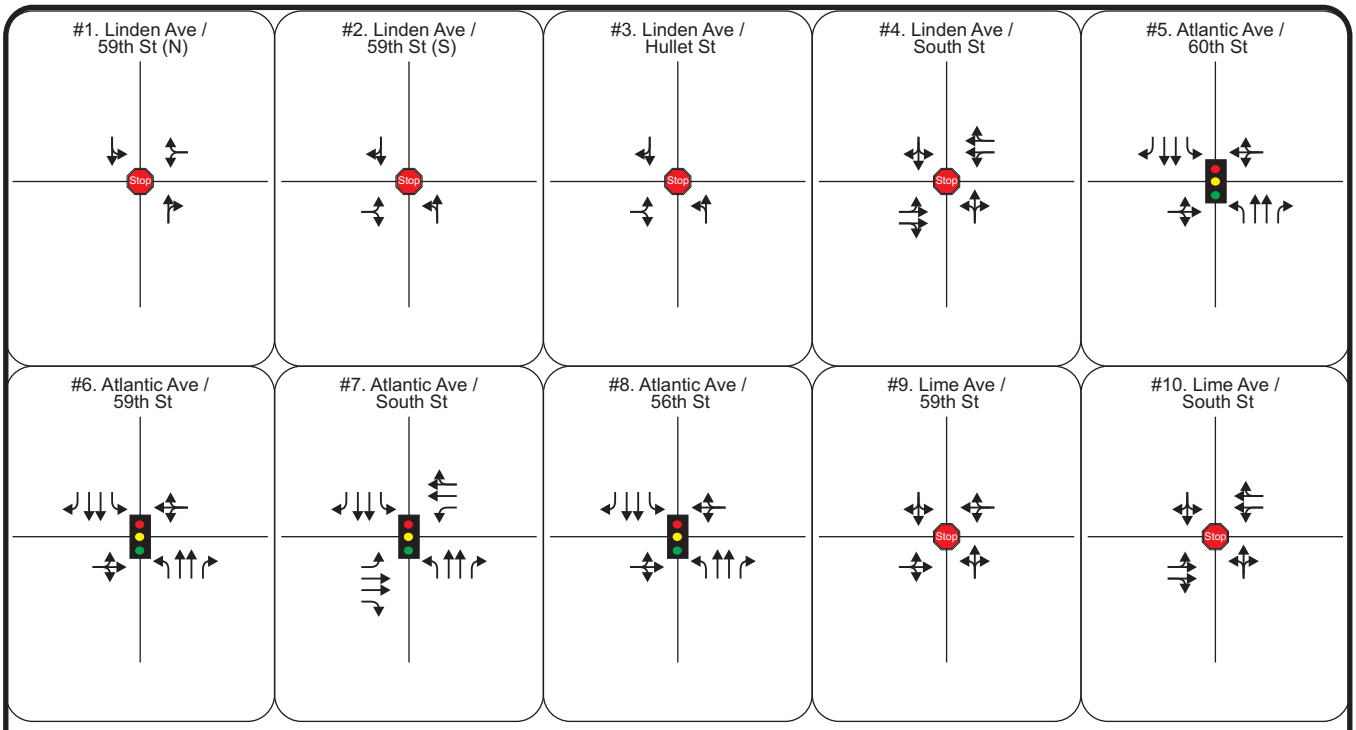
Traffic Data Collection

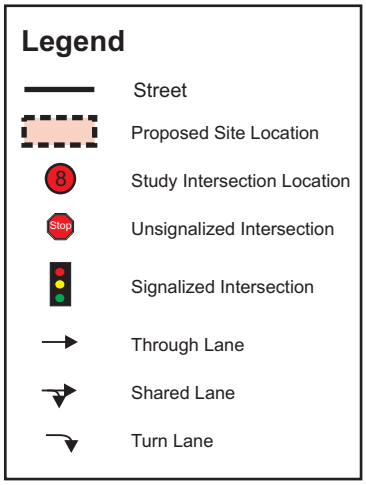
Existing year (2008) peak hour turning movement traffic volumes for Atlantic Avenue/South Street intersection were obtained from the City of Long Beach. Based on conversations with the city staff, existing intersection AM and PM peak hour traffic volumes were collected at the following study intersections:

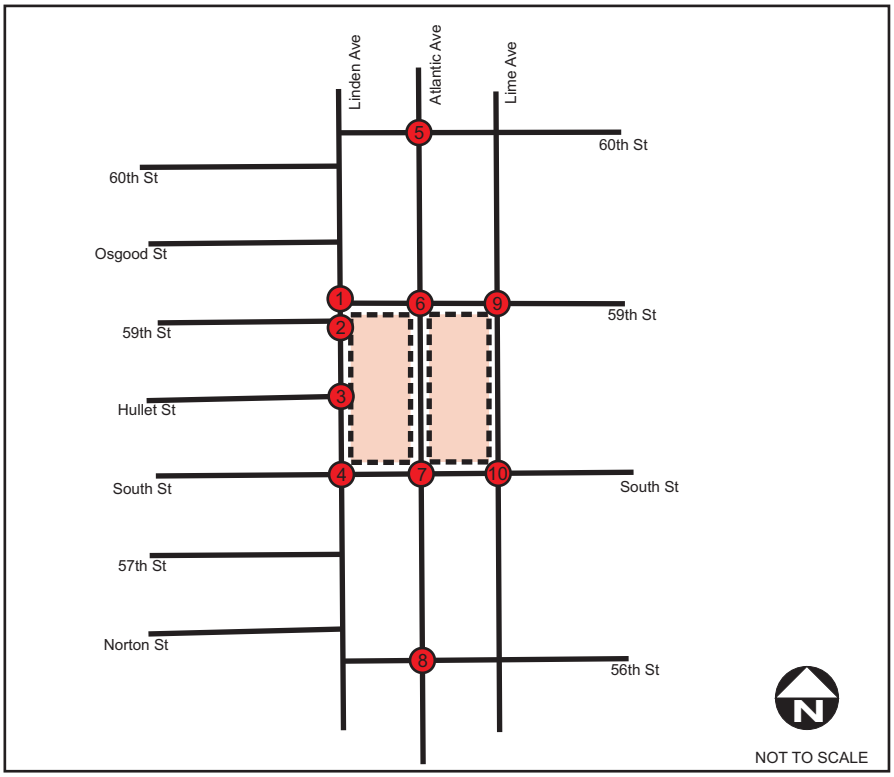
- Linden Avenue/59th Street –north (un-signalized)
- Linden Avenue/59th Street – south (un-signalized)
- Linden Avenue/Hullett Street (un-signalized)
- Linden Street/South Street (un-signalized)
- Atlantic Avenue/60th Street (signalized)
- Atlantic Avenue/59th Street (signalized)
- Atlantic Avenue/56th Street (signalized)
- Line Avenue/59th Street (un-signalized)
- Lime Avenue/South Street (un-signalized)

An AutoZone store currently operates on the eastern block of the project. Therefore, the existing counts at the study intersections include trips associated with the AutoZone store. The peak hour intersection turning volumes at the study intersections were collected in September 2008 between 7:00 – 9:00 AM and 4:00 – 6:00 PM. As part of the project an extensive field review which included establishing existing traffic operations and conditions, verification of project descriptions, observing travel patterns and on-street parking operations.

The existing roadway lane configurations and traffic control are illustrated in **Figure 2**. The status of the existing buildings and building sites within the Project site and influence area was also noted. A summary of the existing intersections traffic volumes is illustrated in **Figure 3**.





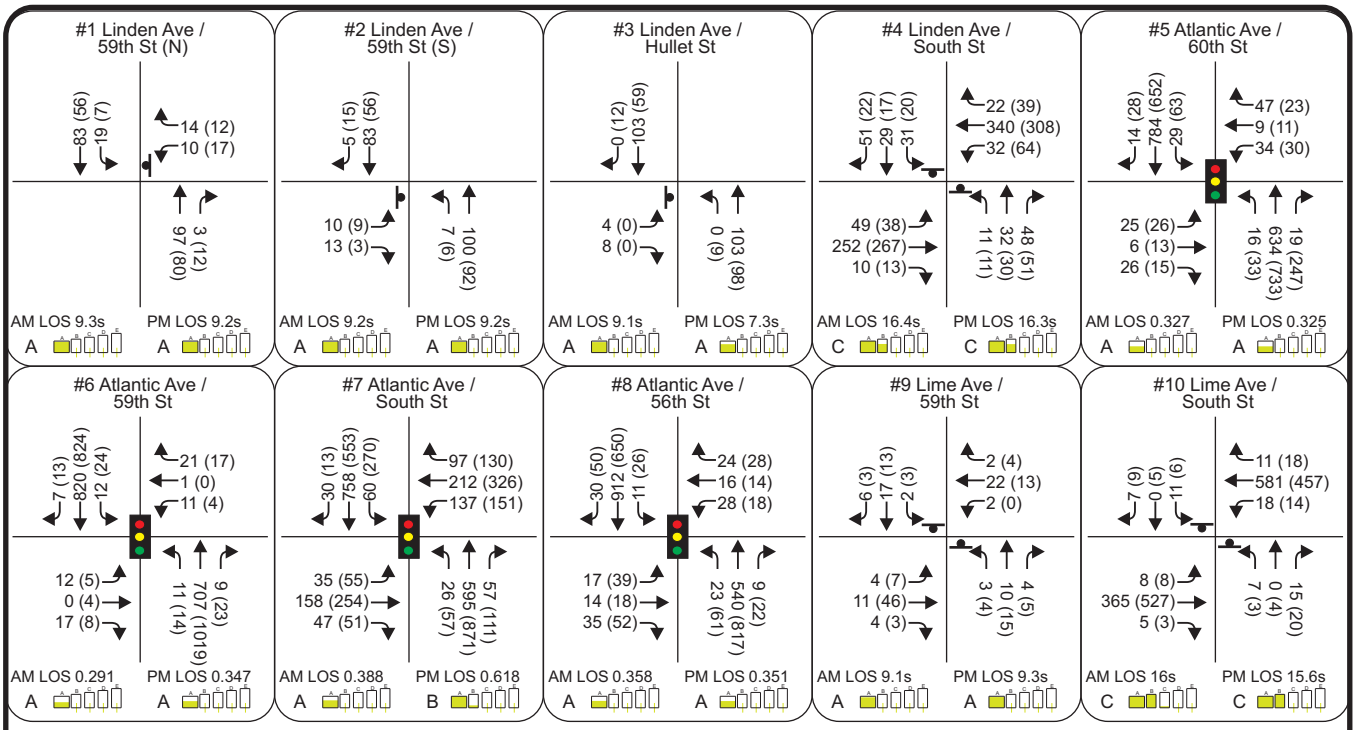


ITERIS

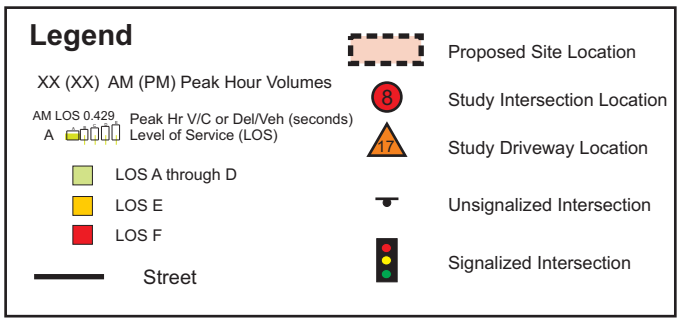
North Village Center TIA

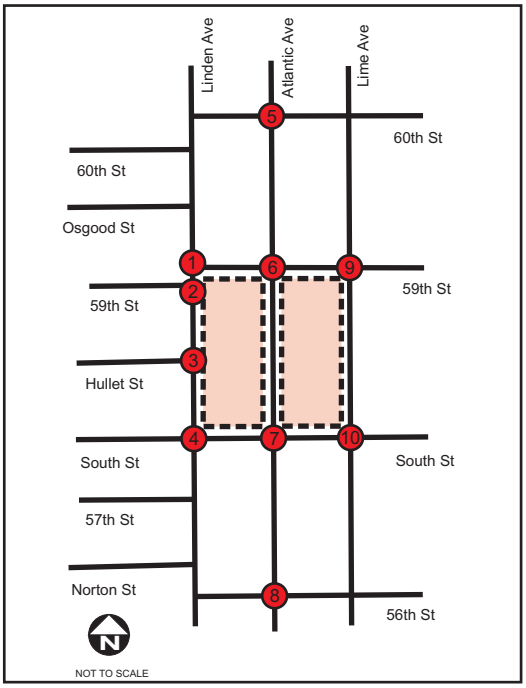
Figure 2

Existing Lane Configuration / Traffic Control



*Note: The traffic volumes at intersections #6 & #7 have been modified to show balancing of traffic volumes between the intersections.





ITERIS

North Village Center TIA

Figure 3

Peak-Hour Traffic Volumes and Level of Service - Existing (2008)

Traffic Operations Analysis Methodology

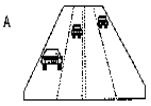
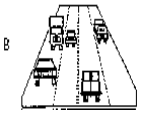
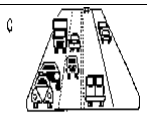
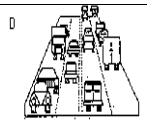
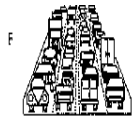
Consistent with City of Long Beach guidelines for traffic impact analyses, traffic conditions in the vicinity of the project were analyzed using intersection capacity-based methodology known as the "Intersection Capacity Utilization Methodology" which is referred to hereinafter as the ICU Methodology.

The efficiency of traffic operations at a location is measured in terms of Level of Service (LOS). Level of service is a description of traffic performance at intersections. The level of service concept is a measure of average operating conditions at intersections during an hour. It is based on volume-to-capacity (V/C) ratio. Levels range from A to F with A representing excellent (free-flow) conditions and F representing extreme congestion. The ICU methodology compares the level of traffic during the peak hours at an intersection (volume) to the amount of traffic that intersection is able to carry (capacity). Intersections with vehicular volumes that are at or near capacity (V/C $\cong$ 1.0) experience greater congestion and longer vehicle delays.

Analysis of unsignalized intersections is conducted differently from signalized intersections due to different operating characteristics. Stop controlled intersections are analyzed using the delay-based Highway Capacity Manual (HCM) method of determining level of service which measures average vehicle delay to affected vehicles.

Table 2 describes the LOS concept and the operating conditions for signalized and stop-controlled intersections.

Table 2: Intersection LOS Definitions

Level of Service	Description	Signalized Intersection Volume to Capacity Ratio (V/C)	Stop-Controlled Intersection Delay (seconds per vehicle)
A 	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000-0.600	≤ 10
B 	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>0.600-0.700	>10 and ≤ 15
C 	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>0.700-0.800	>15 and ≤ 25
D 	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>0.800-0.900	>25 and ≤ 35
E 	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>0.900-1.000	>35 and ≤ 50
F 	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 1.000	> 50
Source: *Highway Capacity Manual 2000*, Transportation Research Board, Washington, D.C., 2000.			

Existing Traffic Operations Analysis

AM and PM peak-hour LOS analyses were conducted for the ten study intersections based on the measured traffic volumes, geometries, signal timings, and the previously described methodologies. All intersection analyses were performed using the TRAFFIX (Traffic Impact Analysis) software program. The existing conditions LOS analyses results are summarized in **Table 3**.

LOS D is generally considered to be the lowest acceptable LOS in an urban or suburban area. LOS E and F are considered to be unacceptable operating conditions that warrant mitigation. The results, shown in **Table 3**, indicate that all of the study intersections are currently operating at LOS C or better during the AM and PM peak hour. The level of service analysis worksheets are provided in the **Appendix**.

Table 3: Existing (Year 2008) Operating Conditions at the Study Area Intersection

Study Intersection		AM Peak		PM Peak	
		LOS	V/C or Delay	LOS	V/C or Delay
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.2
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.2
3	Linden Avenue & Hullett Street (un-signalized)	A	9.1	A	7.3
4	Linden Avenue & South Street (un-signalized)	C	16.4	C	16.3
5	Atlantic Avenue & 60th Street (signalized)	A	0.327	A	0.325
6	Atlantic Avenue & 59th Street (signalized)	A	0.291	A	0.347
7	Atlantic Avenue & South Street (signalized)	A	0.388	B	0.618
8	Atlantic Avenue & 56th Street (signalized)	A	0.358	A	0.351
9	Lime Avenue & 59th Street (un-signalized)	A	9.1	A	9.3
10	Lime Avenue & South Street (un-signalized)	C	16.0	C	15.6

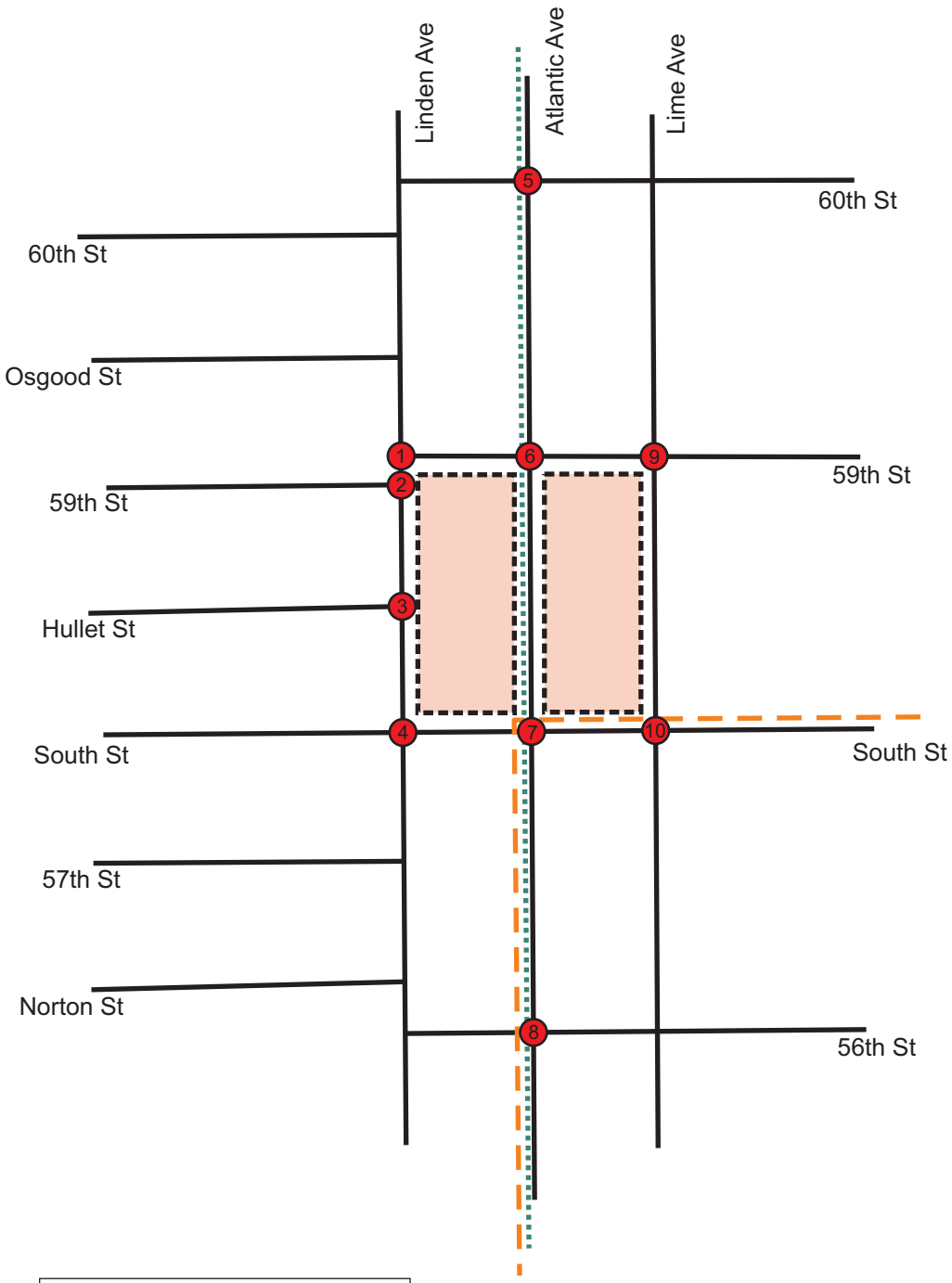
City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio
Unsignalized Intersection – HCM Methodology – Delay per Vehicle in seconds

Existing Transit Service

Long Beach Transit (LBT) provides service around the proposed redevelopment. They operate several bus routes near the boundaries of the proposed project, as described below:

- *Long Beach Transit Line 61 (Atlantic Avenue to Artesia Station)*
- *Long Beach Transit Line 62 (Atlantic Avenue to Alondra Boulevard)*
- *Long Beach Transit Line 63 (Atlantic Avenue to Artesia Boulevard)*
- *Long Beach Transit Line 66 (ZAP Atlantic)*
- *Long Beach Transit Line 192 (Santa Fe / South Street)*

Figure 4 illustrates the existing transit lines within the study area.



North Village Center TIA
Figure 4
Transit Lines - Existing (2008) Transit

FUTURE YEAR 2011 WITHOUT-PROJECT ANALYSIS

To evaluate the potential impact of the proposed project on local traffic conditions, it is first necessary to develop a forecast of future traffic volumes in the study area under future conditions without the Project. This provides a basis against which to measure the Project's traffic impacts.

The anticipated buildout year of the Phase I of proposed Project is Year 2011. The projection of Year 2011 No-Project traffic consists of existing traffic plus ambient traffic growth (general background regional growth) plus growth in traffic generated by specific cumulative projects expected to be completed by 2011. The following describes the two growth components.

Background Traffic Growth

Ambient growth accounts for regional background growth from development and growth located outside the study area as well as increased activity at current development sites within the study area. Based on discussions with the City of Long Beach staff, an annual background growth rate of 1.00 percent was factored into the future traffic volumes. This is also consistent with Los Angeles County CMP guidelines for ambient growth.

Growth from Cumulative (Related) Projects

In addition to background traffic growth, there are adjacent projects in the study area that will be generating AM and PM trips impacting the study area.

It was recognized that additional traffic growth will occur from cumulative development projects adjacent to the study area including residential, and shopping centers. The City provided a list of new development and redevelopment projects in the general area. The list also provided key information concerning the location, number of units or square footage and a tentative build-out year of 2011. For this analysis, all cumulative projects are assumed to be completed by the Year 2011.

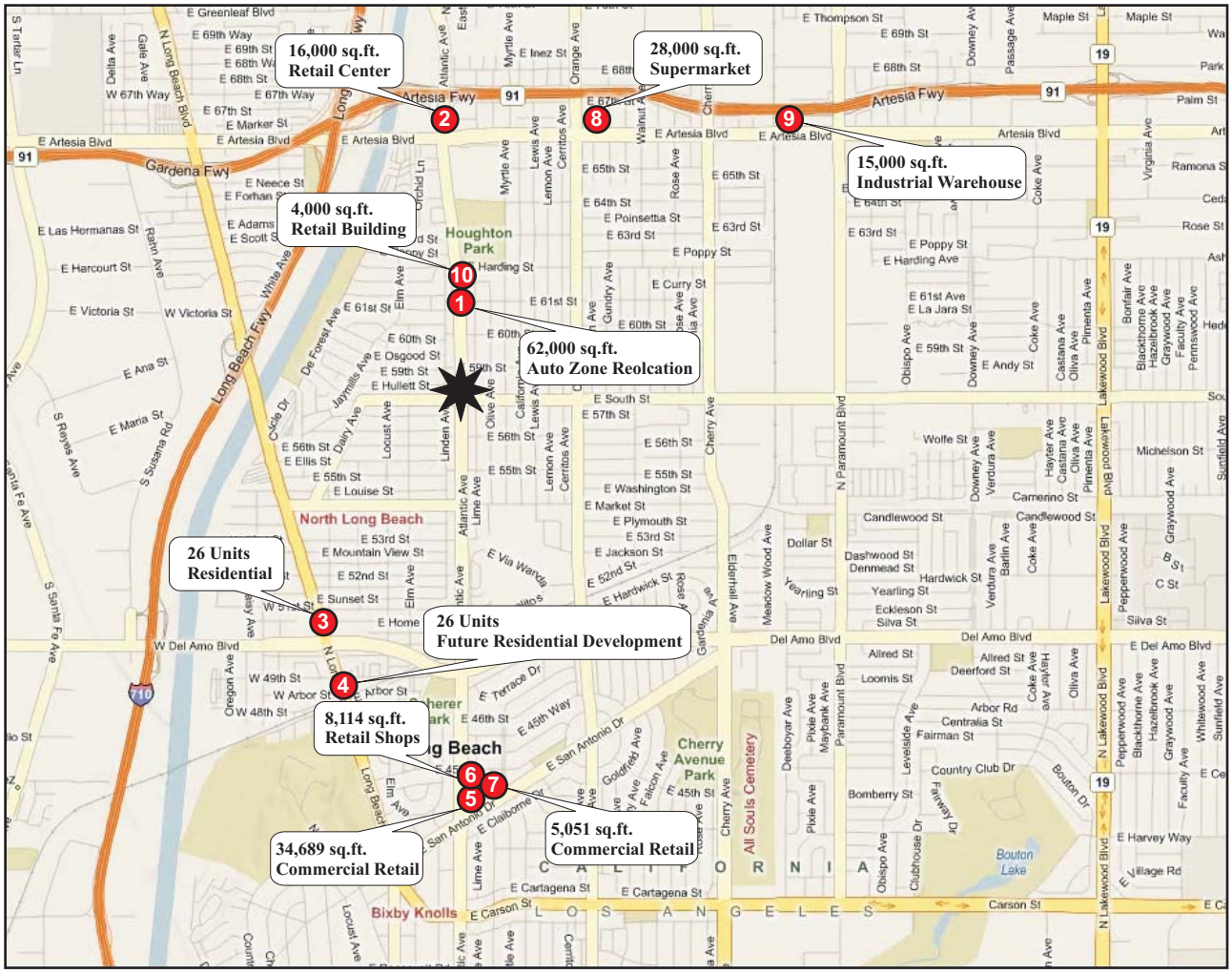
Morning and evening peak-hour trip estimates for these cumulative projects were developed based on rates published in the Institute of Transportation Engineer's publication *Trip Generation, 7th Edition*. Adjustments for pass-by and transit reductions were not included for conservative purposes. Therefore, the trip estimates may be considered a worst-case projection. Depending on the proximity of the cumulative projects to the site as well as the geographical location with respect to the project site, a total of 376 AM and 1,297 PM trips will be generated by the cumulative developments in the study area. **Table 4** presents a summary of the number of AM and PM trips generated from the cumulative projects. **Figure 5** illustrates the approximate location of the cumulative projects within the study area.

The routes people will use traveling to and from the related project sites was determined based on the patterns of existing area traffic for similar types of developments and on patterns listed in previous traffic studies for the area. The trips generated by the related projects were assigned to the area street system based on this directional distribution.

Table 4: Cumulative Project Development Trip Generation (Overall)

CODE	DENSITY	Var.	USE	AM PEAK HOUR IN	AM PEAK HOUR OUT	AM Peak TOTAL	PM PEAK HOUR IN	PM PEAK HOUR OUT	PM Peak TOTAL	DAILY (2-way)
	Cumulative Projects									
843	8.245	*ksf*	*Auto Parts Sales*	0	0	0	24	25	49	**510**
820	16	ksf	Shopping Center	32	20	52	90	97	187	2,064
210	26	DU	Single Family Detanched	14	9	23	36	39	75	146
210	26	DU	Single Family Detanched	14	9	23	36	39	75	838
820	34.689	ksf	Shopping Center	5	15	20	17	10	27	249
820	8.114	ksf	Shopping Center	51	32	83	149	162	311	3,412
820	5.051	ksf	Shopping Center	21	14	35	57	62	119	1,327
850	28	ksf	Supermarket	16	10	26	42	45	87	975
150	15	ksf	Warehousing	55	36	91	149	143	292	2,863
210	4	ksf	Shopping Center	14	9	23	36	39	75	74
Total Cumulative Project				**222**	**154**	**376**	**636**	**661**	**1,297**	**12,458**

Source: *ITE Trip Generation Manual, 7th Edition.*
Note: The Cumulative project list was obtained from the City of Long Beach staff.



Legend

1 Related Project

North Village Center Project Location

NOT TO SCALE

ITERIS

North Village Center TIA
Figure 5
Related Projects - Location

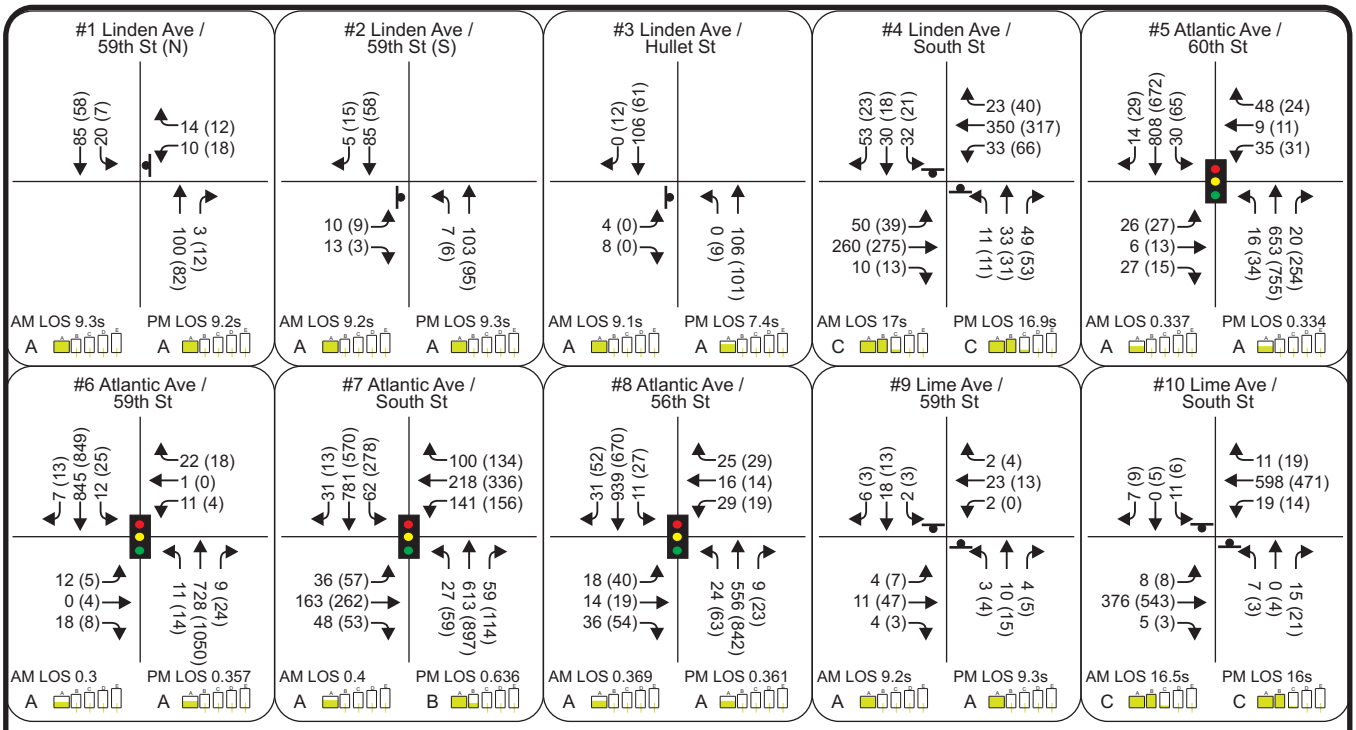
Year 2011 Without-Project Traffic Operations

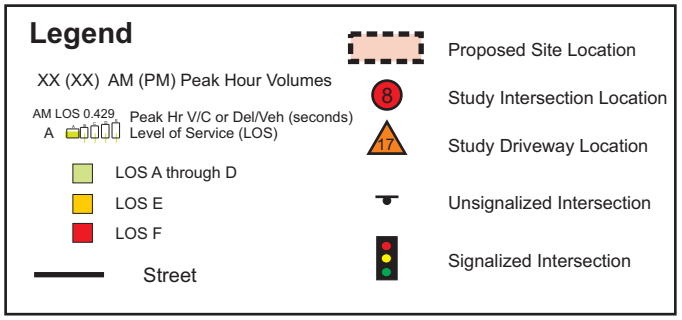
The projection of Year 2011 Without-Project traffic consists of existing traffic plus ambient traffic growth and traffic generated by the related projects, all of which were assumed to be completed by the Year 2011. The total Year 2011 Without-Project traffic volumes are illustrated in **Figure 6**. Based on these traffic forecasts, all the study intersections continue to operate at LOS C or better during the AM and PM peak hour traffic conditions. **Table 5** summarizes the capacity analysis results. The level of service analysis worksheets are provided in the **Appendix**.

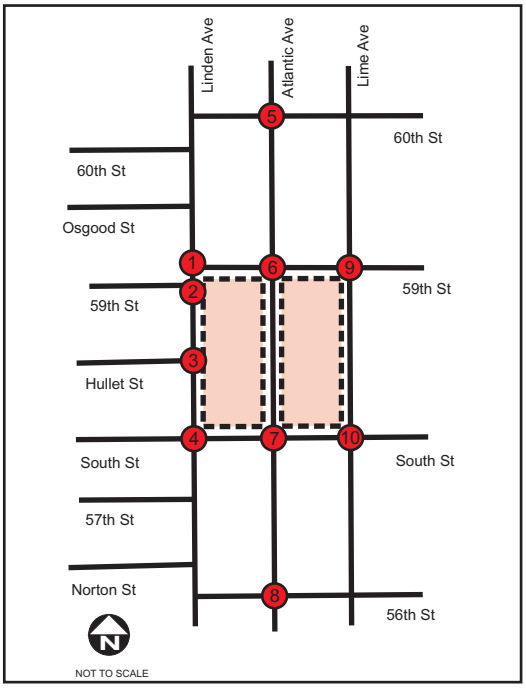
Table 5: Year 2011 – Without-Project Intersection Conditions

Study Intersection		AM Peak		PM Peak	
		LOS	V/C or Delay (sec)	LOS	V/C or Delay (sec)
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.2
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.3
3	Linden Avenue & Hullett Street (un-signalized)	A	9.1	A	7.4
4	Linden Avenue & South Street (un-signalized)	C	17.0	C	16.9
5	Atlantic Avenue & 60th Street (signalized)	A	0.337	A	0.334
6	Atlantic Avenue & 59th Street (signalized)	A	0.300	A	0.357
7	Atlantic Avenue & South Street (signalized)	A	0.400	B	0.636
8	Atlantic Avenue & 56th Street (signalized)	A	0.369	A	0.361
9	Lime Avenue & 59th Street (un-signalized)	A	9.2	A	9.3
10	Lime Avenue & South Street (un-signalized)	C	16.5	C	16.0

City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio
Unsignalized Intersection – HCM Methodology – Delay per Vehicle in seconds







ITERIS

North Village Center TIA

Figure 6

Without-Project Peak-Hour Traffic Volumes and LOS - Year 2011

NORTH VILLAGE CENTER PROJECT DESCRIPTION

The proposed project is a mixed use "village center" on an approximately 6.3-acre site in the City of Long Beach. The project site encompasses two full city blocks on either side of Atlantic Avenue between South Street and 59th Street as illustrated in **Figure 1**. The North Village Center is comprised of 61 residential units, up to 36,000 square feet of neighborhood-serving commercial/retail space (including 8,600 square feet of restaurant) and public library/community center totaling approximately up to 30,000 square feet. On-site parking spaces will be provided in private garages for residential and surface parking lots for retail and commercial land uses.

Site Plan Review

There are two project options for the East Block. Both have similar space programs. The first option, East Block Option A, will place the public institutional uses at the southeast corner of 59th Street and Atlantic Avenue and commercial/mixed uses at the northeast corner of South Street and Atlantic Avenue. The second option, East Block Option B, will reverse this arrangement, placing commercial mixed uses at the southeast corner of 59th Street and Atlantic Avenue and the public institutional uses at the northeast corner of South Street and Atlantic Avenue. The trip generation, trip distribution, site access and circulation will all remain the same in both the options.

Based on the trip generation potential of the proposed site, preliminary signal warrant analysis indicated that the Peak Hour Signal Warrant (Warrant 3) and the Pedestrian Volume Warrant (Warrant 4) did not warrant a traffic signal at the site driveway along Atlantic Avenue (see **Appendix**). However, the east block and the west block together operate as one Project and therefore, inherent pedestrian crossing between the two blocks is anticipated. Without the proposed signalized pedestrian crossing, pedestrians would have to walk approximately 285 feet in each direction to either Atlantic Avenue/South Street intersection or Atlantic Avenue/59th Street intersection to cross Atlantic Avenue with a protected signal phase. A signalized pedestrian crossing proposed mid-block between 59th Street and South Street as part of the project will enhance pedestrian access between the two sides of the project on Atlantic Avenue and prevent patrons from "jay walking". *MUTCD – Part 4 Highway Traffic Signal*, 2003 Edition (Section 4C.05), also recommends the proposed traffic signal should not restrict the progressive movement of traffic and therefore, the City should consider coordinating the proposed traffic signal with traffic signals at 59th Street and South Street along Atlantic Avenue. Note, due to the left-turn prohibitions at this intersection, the right-in-right-out traffic causes minimal conflicts for pedestrians crossing Atlantic Boulevard. Finally, providing a signalized crossing will encourage patrons to park on either side of the project and walk to the other side as needed without relocating their car, and thereby maximize the efficiency of the parking supply.

All primary automobile access to interior block parking would be accessed from South Street, Linden Avenue, Lime Avenue, Atlantic Avenue and 59th Street. The vehicular site access along South Street and Atlantic Avenue will be exclusively right-in/right-out only turning movements. Vehicular access to interior parking from Atlantic Avenue would be right-in-right-out only at the signalized mid-block pedestrian crossing to avoid vehicular/pedestrian conflicts. The entrances along Linden Avenue and Lime Avenue will primarily serve residential uses. Hullett Street, which currently terminates mid-block on Linden Avenue at the site's western border, would continue eastbound through the site as a pedestrian paseo. The extended centerline of Hullett Street would then continue on to the East Block. The pedestrian attributes of the proposed commercial/retail/residential mixed use and institutional space would be oriented primarily towards Atlantic Avenue.

The following is a summary of comments with respect to the existing site plan:

- As proposed in the site plan, there would be two new pedestrian crossings on either side of the new mid-block signalized driveways on Atlantic Avenue. Vehicle traffic entering and exiting the site would be forced to cross and conflict with the pedestrian crossings on the inbound move (the right-turning inbound traffic would cross one of the pedestrian crossings) and on the outbound move, the vehicles would conflict with other pedestrian crossing. To reduce some of the new potential conflicts between vehicles and pedestrians at these new driveways, they should be "offset" so that only one of the vehicular movements conflicts with the driveways (the inbound move only would conflict). Thus, the driveways would not be directly opposite each other, they would be offset by the width of a single crosswalk, with the single cross walk located between the driveways. The driveways would be located on the far side of the crosswalk, thus an approaching driver would receive a flashing red signal indication when pedestrians are present, and they would stop for the pedestrians before proceeding into the driveway. Exiting vehicles would have no conflicts and could turn and exit freely. This design modification is proposed to reduce vehicle/pedestrian conflicts and increase safety at the new driveways.
- Driveway 1/ South Street (intersection # 15) site entrance is located approximately 75 feet from the signalized Atlantic Avenue/South Street intersection. In order to accommodate vehicle queuing along the westbound South Street approach, the City should consider shifting the entrance mid-block between Atlantic Avenue and Linden Avenue.
- Phase-I Driveway/59th Street (intersection # 14) site entrance is located approximately 75 feet from the signalized Atlantic Avenue/59th Street intersection. The eastbound traffic waiting at the signal may block passage of the westbound 59th Street site related traffic from making a left-turn. This may lead to queuing along 59th Street. Therefore, the City should consider shifting the entrance mid-block between Atlantic Avenue and Linden Avenue.
- Linden Avenue/South Site Driveway (intersection # 13) is located approximately 50 feet from the stop-controlled Linden Avenue/South Street intersection. The City should consider shifting intersection #13 approximately mid-block between Hullett Street and South Street. Furthermore, there are two additional driveways along Linden Avenue forming two off-set intersections with the stop-controlled Linden Avenue/ Hullett Street intersection. The driveway south of Hullett Street forms an off-set intersection alignment resulting in potential conflicts with the left-turn movements to/from the site. Therefore, the City should consider combining Linden Avenue/North Site Driveway (intersection # 11) and Linden Avenue/Center Site Driveway (intersection # 12) thereby eliminating one driveway along Linden Avenue.

Project Traffic Generation

The first step in analyzing future traffic conditions with the Project is to estimate trip generation from the Project. Similar to the related projects in the previous chapter, the ITE Trip Generation rates were used to estimate future Project-related trips. For this analysis, it was assumed that Phase I of the Project would be completed by 2011 and Phase II of the project will be completed by the Year 2016. Adjustments were included for pass-by trips based on information in the ITE publication and rates developed for other developments within the study area. The Phase I is expected to generate approximately 122 new trips in the AM peak hour and 212 new trips in the PM peak hour as shown in **Table 6**.

The Phase II is expected to generate approximately 98 trips in the AM peak hour and 447 trips in the PM peak hour as shown in **Table 6**. Since the existing AutoZone located on the east lot will be acquired and replaced by the proposed project in Phase II, trips associated with the AutoZone were isolated and removed from future total Phase II trip generation calculation. Therefore, Phase II will generate

approximately 80 new AM peak hour trips and 398 new PM peak hour trips as illustrated in **Table 6**. These trips represent the number of additional trips that will be generated above existing levels.

Table 6: Trip Generation Rates and Estimates

PHASE		CODE	DENSITY	Var.		USE	AM PEAK HOUR IN	AM PEAK HOUR OUT	AM Peak TOTAL	PM PEAK HOUR IN	PM PEAK HOUR OUT	PM Peak TOTAL	DAILY (2-way)
2011 Phase I West Block		932	5.4	ksf		High-Turnover (Sit-Down) Rest.	32	30	62	36	23	59	687
		820	8.6	ksf	(1)	Shopping Center @ 8.6 ksf	22	14	36	60	64	124	1,378
		230	31	DU		Residential Condominiums/Townhouse	2	12	14	11	5	16	182
		230	11	DU		Residential Condominiums/Townhouse	1	4	5	4	2	6	64
		230	5	DU		Residential Condominiums/Townhouse	0	2	2	2	1	3	29
		230	7	DU		Residential Condominiums/Townhouse	1	2	3	3	1	4	41
						Sub-Total West Block	**58**	**64**	**122**	**116**	**96**	**212**	**2,381**
			PM Peak 30%	Daily 10%	(2)	Pass-By Trips (30% - PM Peak Hour & 10% Daily)	0	0	0	-18	-18	-37	-138
2016 Phase II East Block		820	22	ksf	(1)	Shopping Center @ 22 ksf	38	25	63	110	120	230	2,538
		590	30	ksf		Library	23	9	32	102	111	213	1,620
		230	7	DU		Residential Condominiums/Townhouse	1	2	3	3	1	4	41
						Sub-Total East Block (without existing land use credit)	**62**	**36**	**98**	**215**	**232**	**447**	**4,199**
			PM Peak 30%	Daily 10%	(2)	Pass-By Trips (30% - PM Peak Hour & 10% Daily)	0	0	0	-33	-33	-69	-254
	Existing Land Use (AutoZone)	843	8.245	ksf	(3)	Auto Parts Sales	9	9	18	24	25	49	510
						Total Existing Land Use	**9**	**9**	**18**	**24**	**25**	**49**	**510**
						Sub-Total East Block (with existing land use credit)	**53**	**27**	**80**	**191**	**207**	**398**	**3,689**
						Total Project Trips (with existing land use credits)	**111**	**91**	**202**	**307**	**303**	**610**	**6,070**

Source: *ITE Trip Generation Manual, 7th Edition.*

(1) Trip rates based on Equation.

(2) Pass-by trip rates are based on 30% and 10% for PM Peak Hour and Daily, respectively. And the rates are consistent with similar projects in Long Beach - Sea Port Marina Project - TIA, August 2006, Meyer, Mohaddes Associates.

(3) AM inbound and outbound percentage based on 50% split assumption.

Threshold of Significance

Based on the City of Long Beach Traffic Impact Guidelines, an impact is considered significant when the resulting level-of service with the project traffic is E or F and project related traffic contributes a V/C of 0.020 or more to the critical movements. At unsignalized intersections, a significant adverse traffic impact is defined as a project that: adds 2 percent or more traffic to delay (seconds per vehicle) at an intersection operating at LOS E or LOS F.

Phase I – Year 2011

Phase I includes the development of the west block which will include 54 residential units, 8.6 ksf of shopping center and 5.4 ksf of restaurant. All primary automobile access to interior block parking would be accessed via:

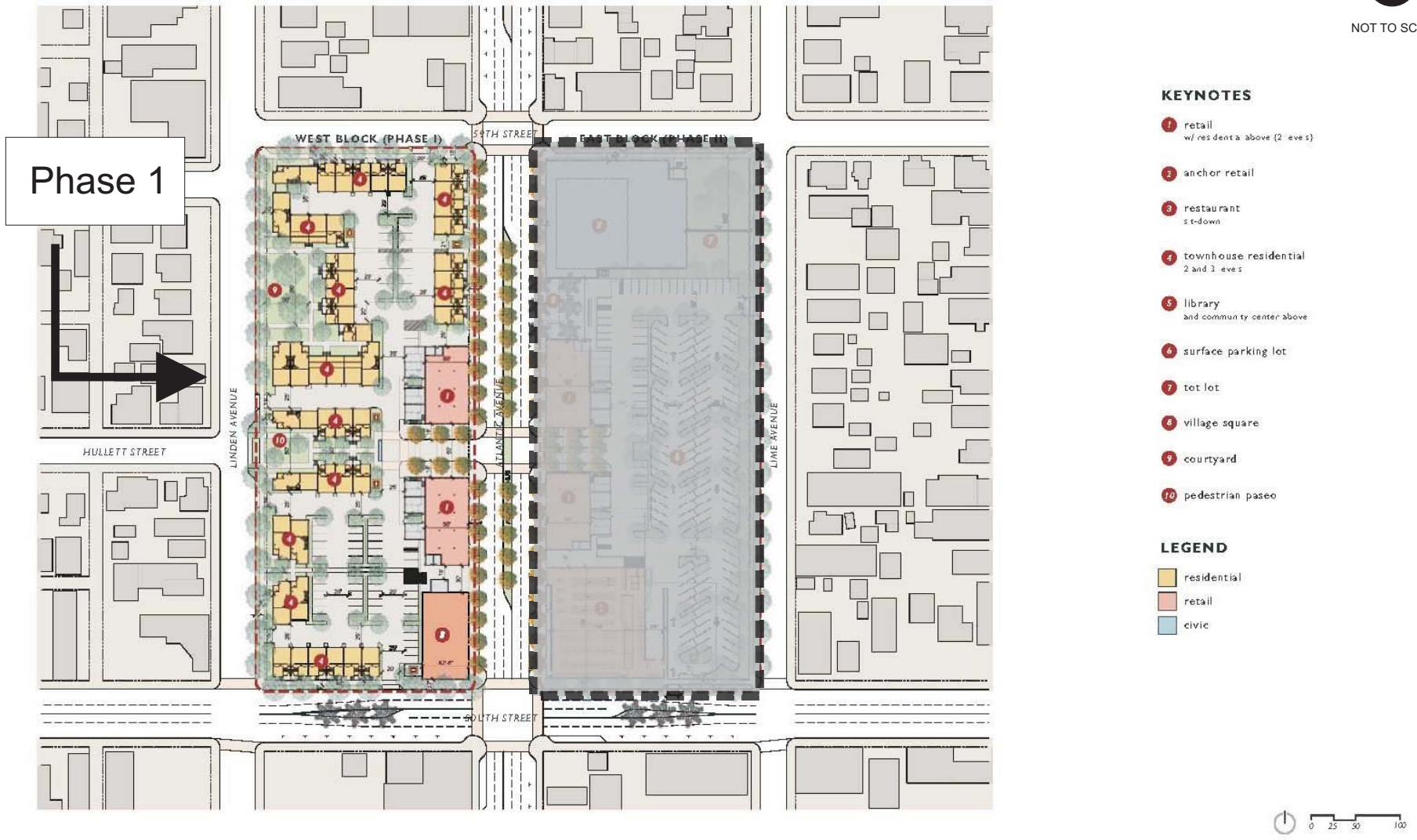
- one right-in-right-out access along South Street
- three full access driveways along Linden Avenue
- one right-in-right-out access along 59th Street and
- one right-in-right-out access along Atlantic Avenue

Phase I – Project Trip Distribution

The routes people will use traveling to and from the Project were determined based on the patterns of existing area traffic for similar types of developments and patterns listed in previous traffic studies for the area. For the Project, the trip assignment is primarily based on the site access points and parking. **Figure 7** illustrates the site plan and **Figure 8** illustrates the site traffic regional distribution.

Phase I – Project Trip Assignment

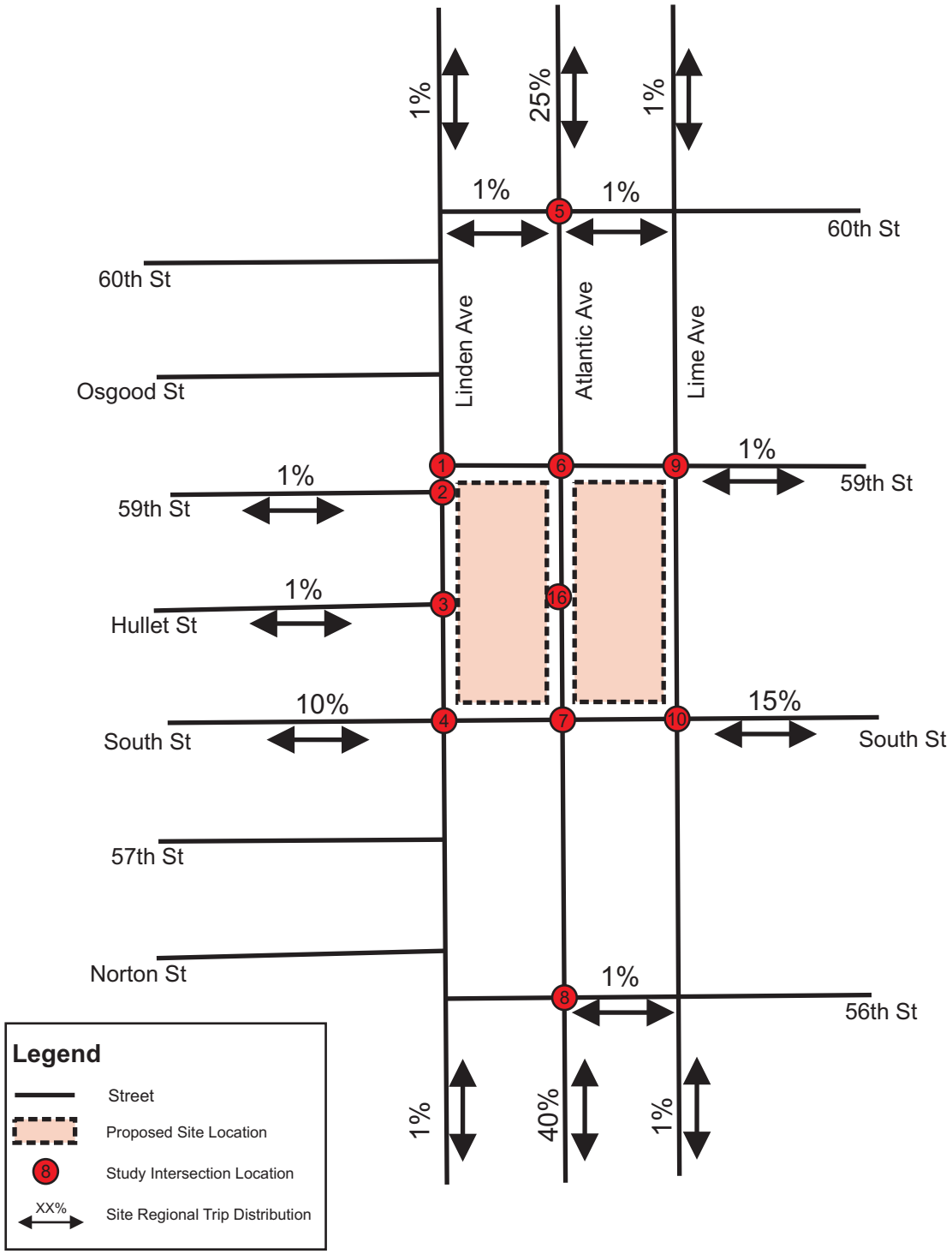
The trips generated by the Project for the Year 2011 analysis periods were assigned to the area street system using the directional distribution described above. The overall "project only" trip assignment is illustrated in **Figure 9**.



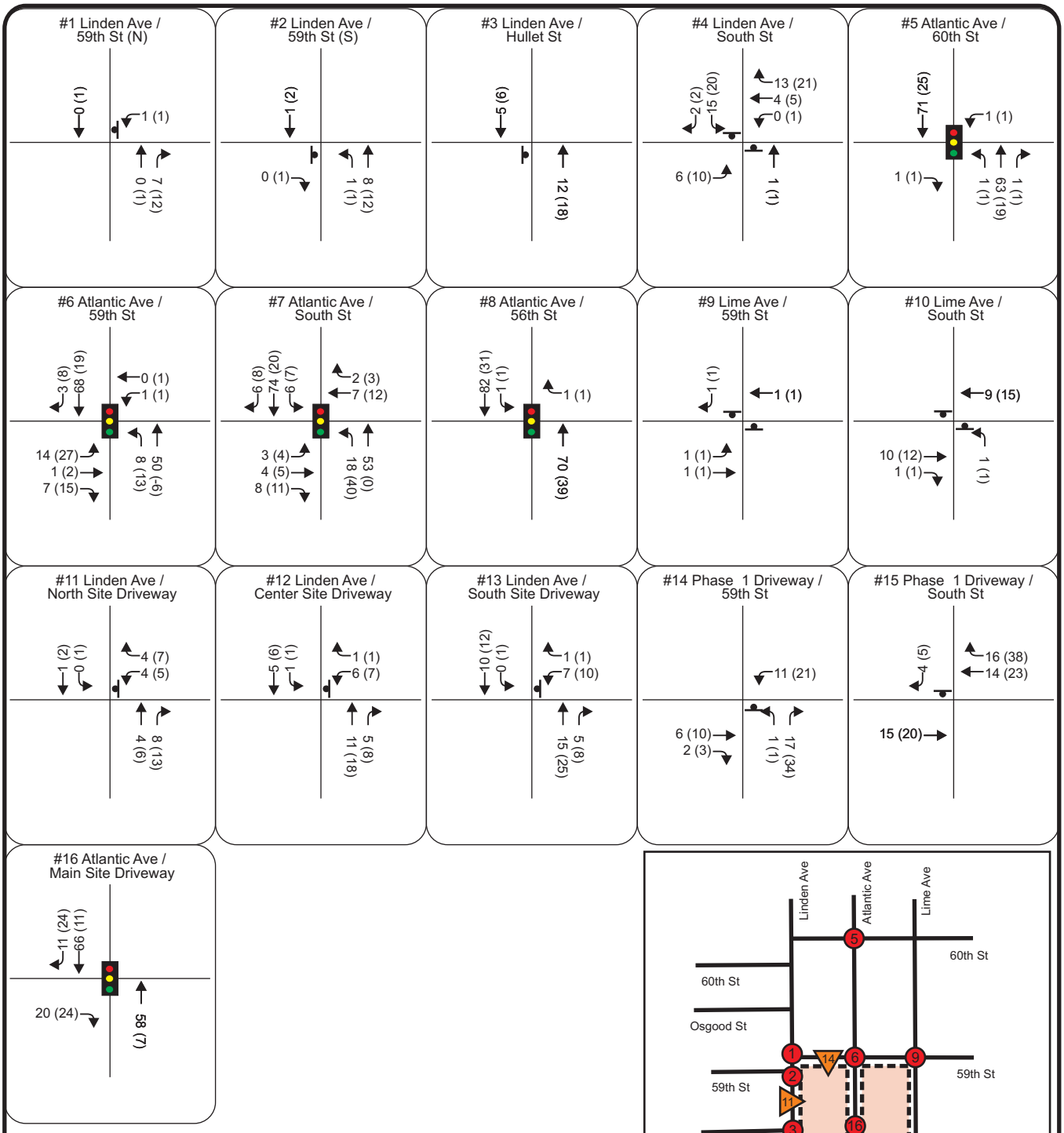
Source - North Long Beach Partners LLC December 11,2008

ITERIS

North Village Center TIA
Figure 7
Project Site Plan - Phase I



North Village Center TIA
Figure 8
Site Traffic Distribution



North Village Center TIA

Figure 9

Project Only Peak Hour Traffic Volumes - 2011 Phase I

Year 2011 Phase I With-Project Traffic Operations

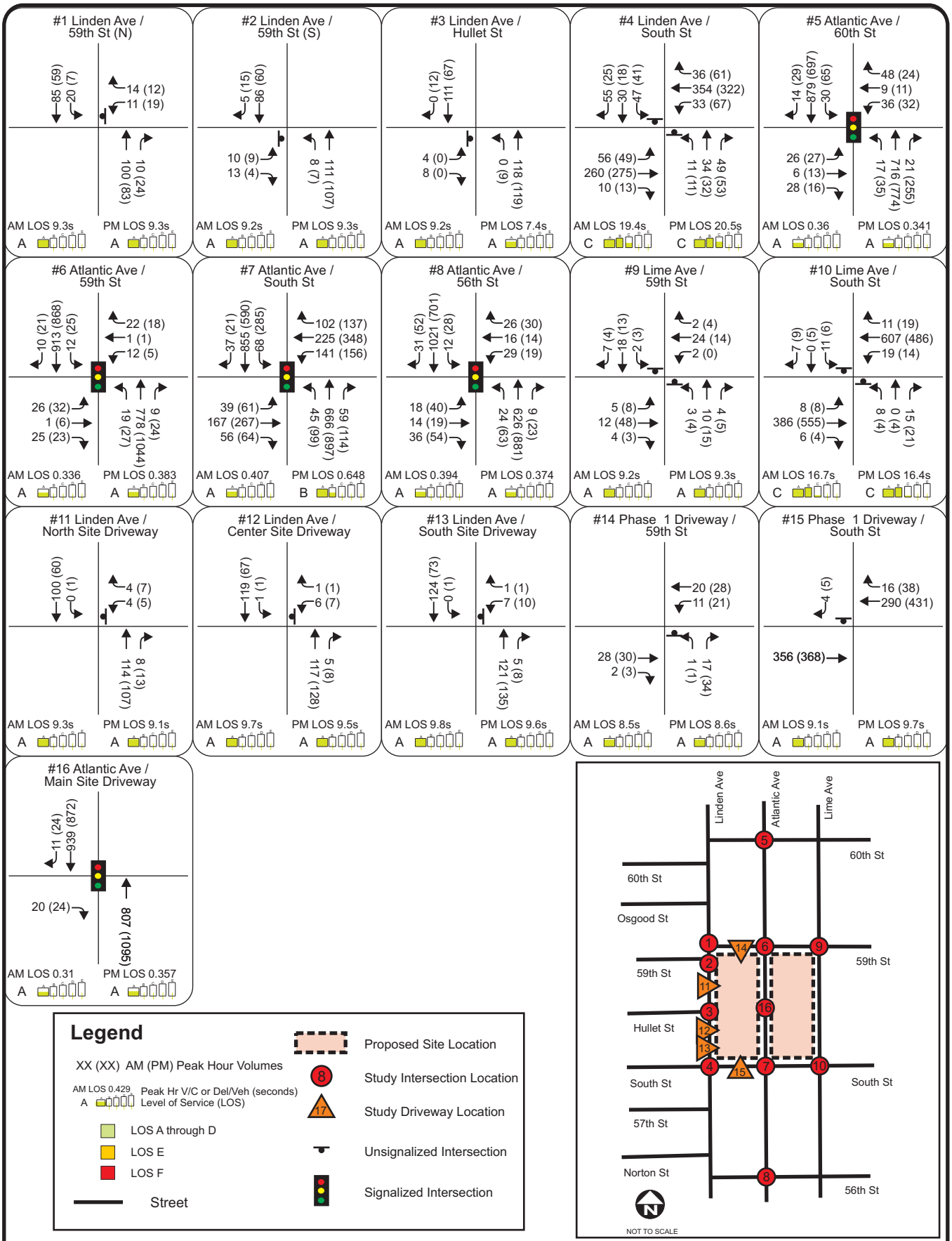
The total intersection volumes for the Year 2011 are illustrated in **Figure 10**. For the Phase I - 2011 With-Project conditions, the study intersections are projected to be operating at LOS C or better during the AM peak hour and PM peak hours. **Table 7** summarizes the level of service results. The level of service analysis worksheets are provided in the **Appendix**.

Table 7: Year 2011 Phase I – With Project Intersection Conditions

	Study Intersection	Year 2011											
		AM Peak Hour						PM Peak Hour					
		No Project		With Project		Δ	Impact Yes/No	No Project		With Project		Δ	Impact Yes/No
		LOS	Delay or V/C	LOS	Delay or V/C	Delay or Δ V/C		LOS	Delay or V/C	LOS	Delay or V/C	Delay or Δ V/C	
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.3	0.0	NO	A	9.2	A	9.3	0.1	NO
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.2	0.0	NO	A	9.3	A	9.3	0.0	NO
3	Linden Avenue & Hullett Street (un-signalized)	A	9.1	A	9.2	0.1	NO	A	7.4	A	7.4	0.0	NO
4	Linden Avenue & South Street (un-signalized)	C	17.0	C	19.4	2.4	NO	C	16.9	C	20.5	3.6	NO
5	Atlantic Avenue & 60th Street (signalized)	A	0.337	A	0.360	0.023	NO	A	0.334	A	0.341	0.007	NO
6	Atlantic Avenue & 59th Street (signalized)	A	0.300	A	0.336	0.036	NO	A	0.357	A	0.383	0.026	NO
7	Atlantic Avenue & South Street (signalized)	A	0.400	A	0.407	0.007	NO	B	0.636	C	0.648	0.012	NO
8	Atlantic Avenue & 56 Street (signalized)	A	0.369	A	0.394	0.025	NO	A	0.361	A	0.374	0.013	NO
9	Lime Avenue & 59 Street (un-signalized)	A	9.2	A	9.2	0.0	NO	A	9.3	A	9.3	0.0	NO
10	Lime Avenue & South Street (un-signalized)	C	16.5	C	16.7	0.2	NO	C	16.0	C	16.4	0.4	NO
11	Linden Avenue & North Site Driveway (un-signalized)	-	-	A	9.3	-	NO	-	-	A	9.1	-	NO
12	Linden Avenue & Center Site Driveway (un-signalized)	-	-	A	9.7	-	NO	-	-	A	9.5	-	NO
13	Linden Avenue & South Site Driveway (un-signalized)	-	-	A	9.8	-	NO	-	-	A	9.6	-	NO
14	Phase I Driveway & 59 Street (un-signalized)	-	-	A	8.5	-	NO	-	-	A	8.6	-	NO
15	Phase I Driveway & South Street (un-signalized)	-	-	A	9.1	-	NO	-	-	A	9.7	-	NO
16	Atlantic Avenue & Main Site Driveway (signalized)	-	-	A	0.310	-	NO	-	-	A	0.357	-	NO

City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio (1,600 vplph)
Unsignalized Intersection – 2000 HCM Methodology – Delay (in seconds) per Vehicle
Signalized Impact Criteria and Threshold – LOS E or F with the project and/or an increase in V/C of 0.02 or greater

Based on the City's significance criteria, the Phase I of the proposed Project would have no ***significant impact*** at any of the study area intersections. Traffic impacts associated with the Phase I of the proposed site development are minimal and therefore no mitigation measures are required.



ITERIS

North Village Center TIA

Figure 10

With-Project Peak-Hour Traffic Volumes and LOS - 2011 Phase I

FUTURE YEAR 2016 WITHOUT-PROJECT ANALYSIS

The anticipated build-out year of the Phase II of the Project is Year 2016. The projection of Year 2016 No-Project traffic consists of existing traffic plus ambient traffic growth (general background regional growth) plus growth in traffic generated by specific cumulative projects expected to be completed by 2016. Similar to the Phase I – 2011 scenario, an annual background growth rate of 1.00 percent was factored into the future traffic volumes. As mentioned earlier in the report all the related projects were assumed to be built-out by year 2011.

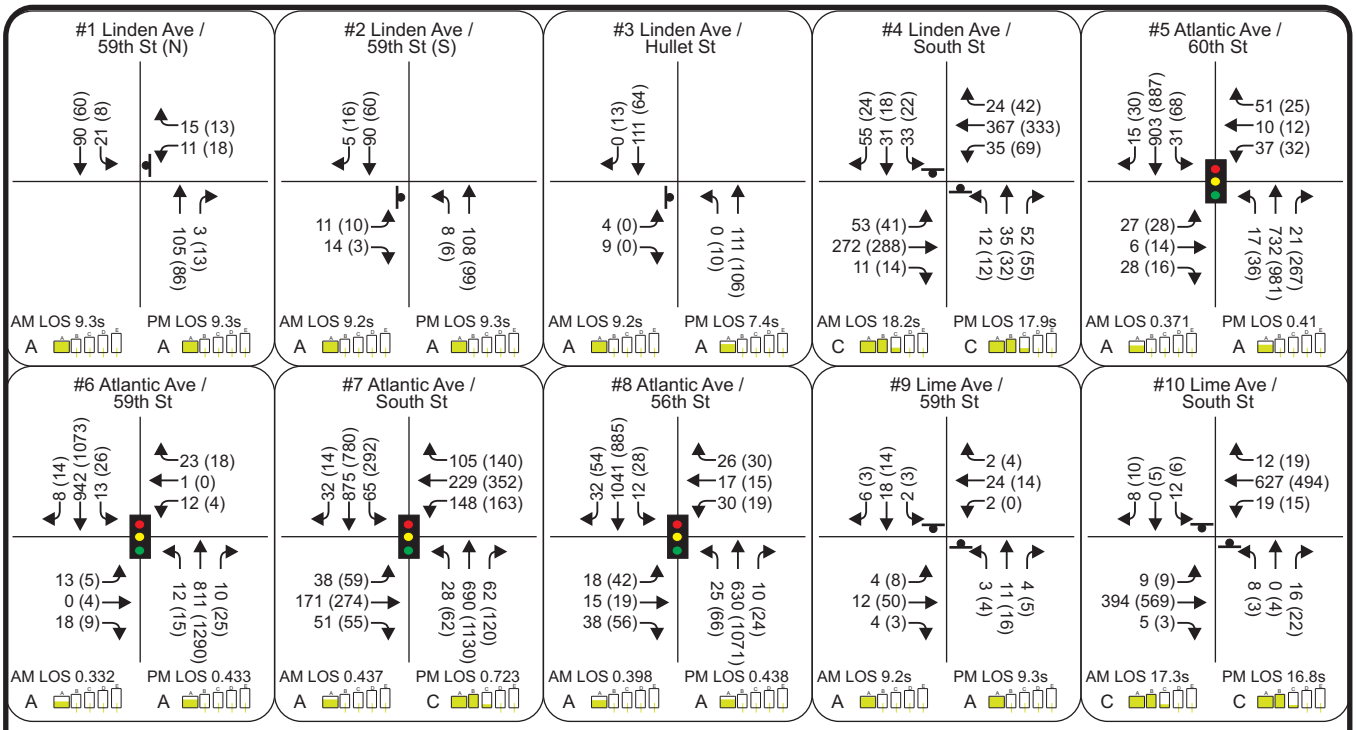
Year 2016 Without-Project Traffic Operations

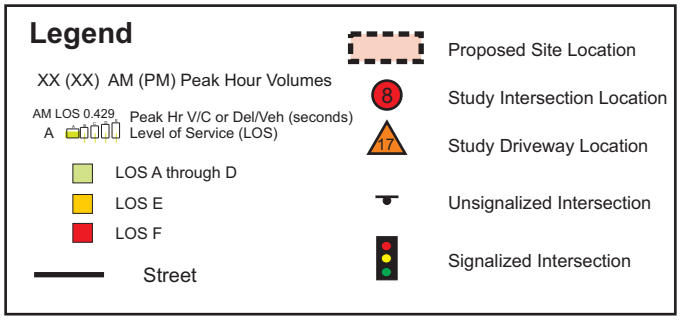
The projection of Year 2016 Without-Project traffic consists of existing traffic plus ambient traffic growth and traffic generated by the related projects, all of which were assumed to be completed by the Year 2011. The total Year 2016 Without-Project (excluding Phase I development) traffic volumes are illustrated in **Figure 11**. Based on these traffic forecasts, all the study intersections continue to operate at LOS C or better during the AM and PM peak hour traffic conditions. **Table 8** summarizes the capacity analysis results. The level of service analysis worksheets are provided in the **Appendix**.

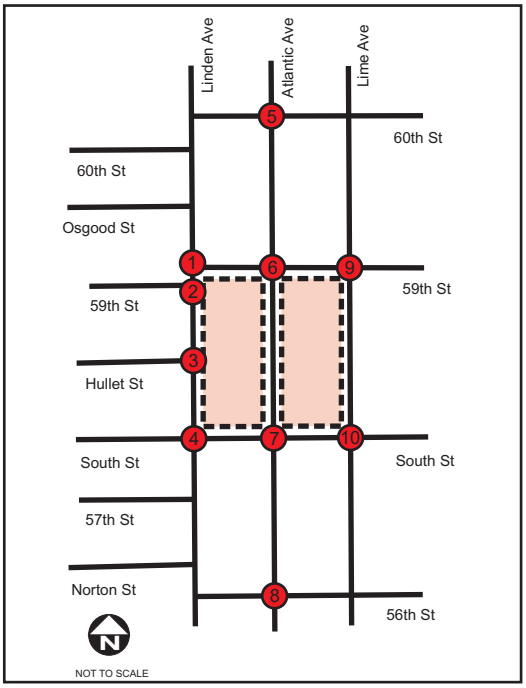
Table 8: Year 2016 – Without-Project Intersection Conditions

Study Intersection		AM Peak		PM Peak	
		LOS	V/C or Delay (sec)	LOS	V/C or Delay (sec)
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.3
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.3
3	Linden Avenue & Hullett Street (un-signalized)	A	9.2	A	7.4
4	Linden Avenue & South Street (un-signalized)	C	18.2	C	17.9
5	Atlantic Avenue & 60th Street (signalized)	A	0.371	A	0.410
6	Atlantic Avenue & 59th Street (signalized)	A	0.332	A	0.433
7	Atlantic Avenue & South Street (signalized)	A	0.437	C	0.723
8	Atlantic Avenue & 56th Street (signalized)	A	0.398	A	0.438
9	Lime Avenue & 59th Street (un-signalized)	A	9.2	A	9.3
10	Lime Avenue & South Street (un-signalized)	C	17.3	C	16.8

City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio
Unsignalized Intersection – HCM Methodology – Delay per Vehicle in seconds







ITERIS

North Village Center TIA

Figure 11

Without-Project Peak-Hour Traffic Volumes and LOS - Year 2016

FUTURE YEAR 2016 WITH PROJECT ANALYSIS

There are two project options for the East Block. Both have similar space programs. Phase II includes the development of the east block which will include 7 residential units, 22 ksf of shopping center and 30 ksf of library/community center. The first option, East Block – Option A, will place the library/community center uses at the southeast corner of 59th Street and Atlantic Avenue and commercial/mixed uses at the northeast corner of South Street and Atlantic Avenue. The second option, East Block Option B, will reverse this arrangement, placing commercial mixed uses at the southeast corner of 59th Street and Atlantic Avenue and the library/community center uses at the northeast corner of South Street and Atlantic Avenue. The trip generation will all remain the same in both options. The traffic analysis of both Phase II Options includes the full project (Phase I and Phase II) trips. Thus, the measured incremental impacts are for the full project (Phase I and Phase II).

2016 Phase II – Project Trip Distribution

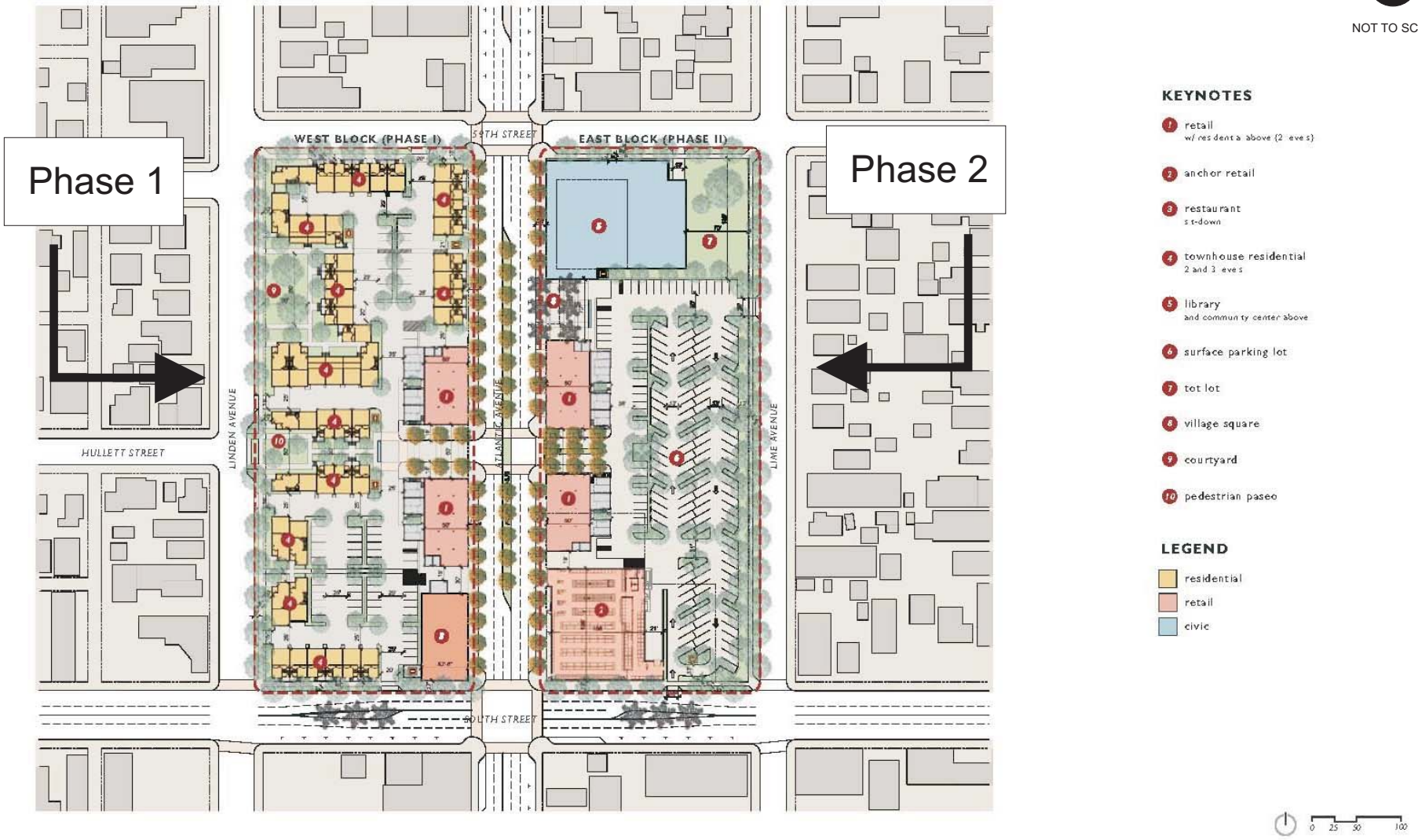
The routes people will use traveling to and from the Project were determined based on the patterns of existing area traffic for similar types of developments and patterns listed in previous traffic studies for the area. For the Project, the trip assignment is primarily based on the site access points and parking. The site traffic distribution is consistent with the Phase I regional distribution as illustrated previously in **Figure 8**.

2016 Phase II (Option A) – Project Trip Assignment

Figure 12 illustrates the Phase II (year 2016) – Option A site plan. All primary automobile access to interior block parking with Option A would be accessed via:

- one right-in-right-out access driveway along South Street
- one right-in-right-out access driveway along Atlantic Avenue
- one full access driveway along Lime Avenue

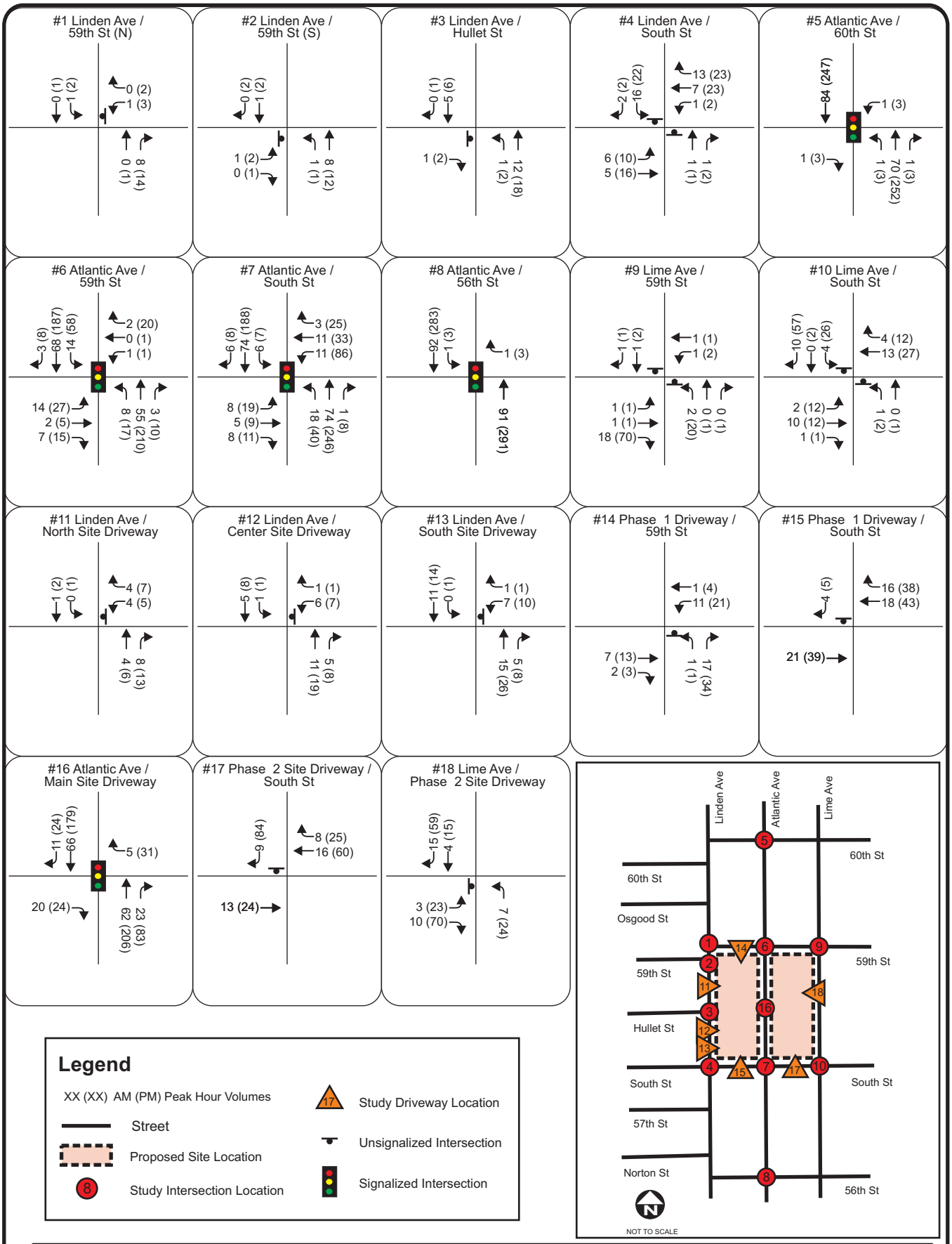
The trips generated by the Phase II – Option A scenario were assigned to the area street system using the directional distribution described above and is illustrated in **Figure 13**.



Source - North Long Beach Partners LLC December 11,2008

ITERIS

North Village Center TIA
Figure 12
Project Site Plan - 2016 Phase II (Option A)



North Village Center TIA

Figure 13

Project Only Peak-Hour Traffic Volumes - 2016 Phase II (Option A)

2016 Phase II (Option A) With-Project Traffic Operations

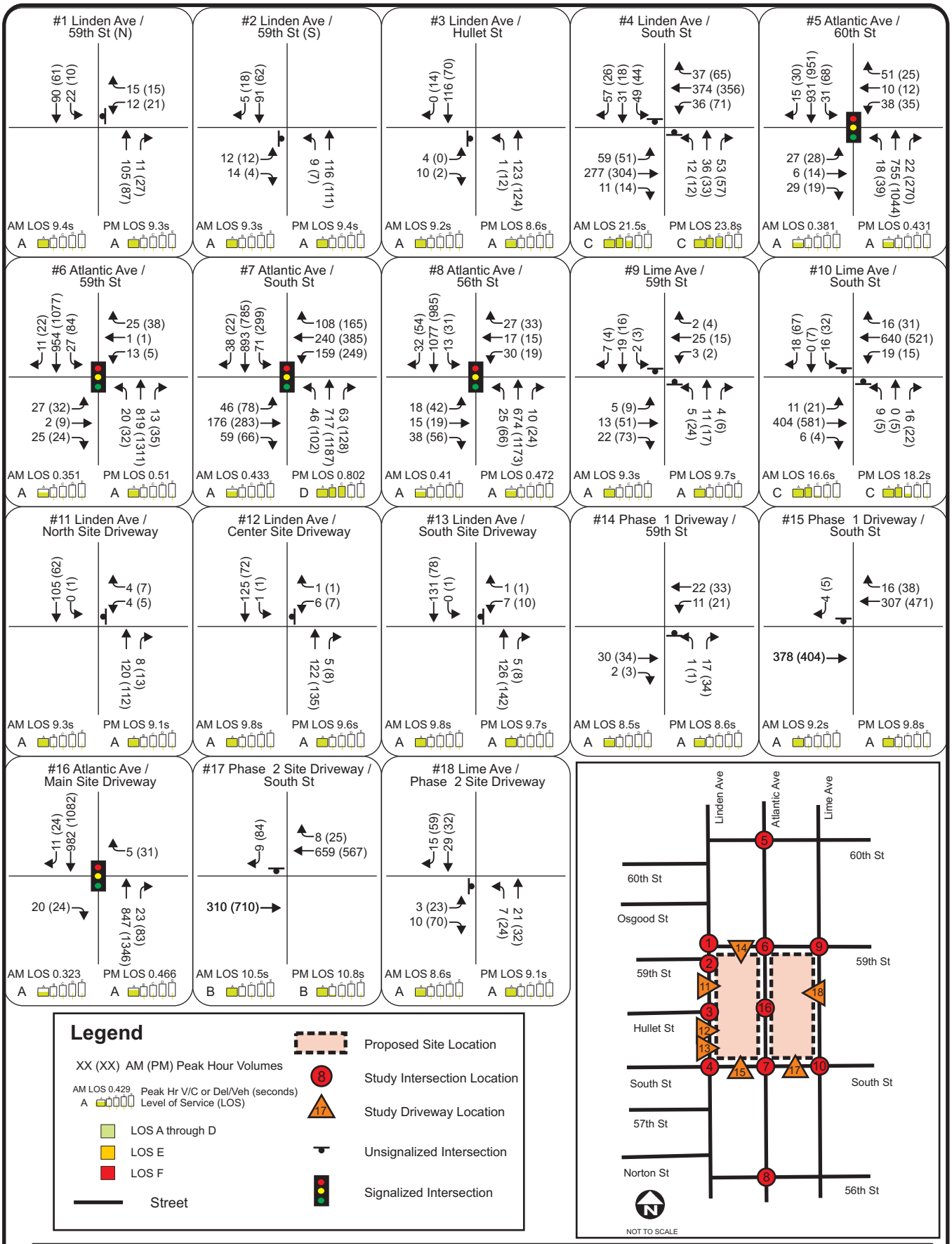
The total intersection volumes for the Year 2016 Phase I plus Phase II (Option A) are illustrated in **Figure 14**. For the 2016 Phase II – Option A with-Project conditions, the study intersections are projected to be operating at LOS C or better during the AM peak hour and LOS D or better during the weekday PM peak hour. **Table 9** summarizes the level of service results. The level of service analysis worksheets are provided in the **Appendix**.

Table 9: 2016 Phase I + Phase II (Option A) – With Project Intersection Conditions

	Study Intersection	Year 2016											
		AM Peak Hour						PM Peak Hour					
		No Project		With Project				No Project		With Project			
		LOS	Delay or V/C	LOS	Delay or V/C	Δ Delay or Δ V/C	Impact Yes/No	LOS	Delay or V/C	LOS	Delay or V/C	Δ Delay or Δ V/C	Impact Yes/No
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.4	0.1	NO	A	9.3	A	9.3	0.0	NO
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.3	0.1	NO	A	9.3	A	9.4	0.1	NO
3	Linden Avenue & Hullett Street (un-signalized)	A	9.2	A	9.2	0.0	NO	A	7.4	A	8.6	1.2	NO
4	Linden Avenue & South Street (un-signalized)	C	18.2	C	21.5	3.3	NO	C	17.9	C	23.8	5.9	NO
5	Atlantic Avenue & 60th Street (signalized)	A	0.371	A	0.381	0.010	NO	A	0.410	A	0.431	0.021	NO
6	Atlantic Avenue & 59th Street (signalized)	A	0.332	A	0.351	0.019	NO	A	0.433	A	0.510	0.077	NO
7	Atlantic Avenue & South Street (signalized)	A	0.437	A	0.433	-0.004	NO	C	0.723	D	0.802	0.079	NO
8	Atlantic Avenue & 56th Street (signalized)	A	0.398	A	0.410	0.012	NO	A	0.438	A	0.472	0.034	NO
9	Lime Avenue & 59th Street (un-signalized)	A	9.2	A	9.3	0.1	NO	A	9.3	A	9.7	0.4	NO
10	Lime Avenue & South Street (un-signalized)	C	17.3	C	16.6	-0.7	NO	C	16.8	C	18.2	1.4	NO
11	Linden Avenue & North Site Driveway (un-signalized)	-	-	A	9.3	-	NO	-	-	A	9.1	-	NO
12	Linden Avenue & Center Site Driveway (un-signalized)	-	-	A	9.8	-	NO	-	-	A	9.6	-	NO
13	Linden Avenue & South Site Driveway (un-signalized)	-	-	A	9.8	-	NO	-	-	A	9.7	-	NO
14	Phase I Driveway & 59th Street (un-signalized)	-	-	A	8.5	-	NO	-	-	A	8.6	-	NO
15	Phase I Driveway & South Street (un-signalized)	-	-	A	9.2	-	NO	-	-	A	9.8	-	NO
16	Atlantic Avenue & Main Site Driveway (signalized)	-	-	A	0.323	-	NO	-	-	A	0.466	-	NO
17	Phase II Driveway & South Street (un-signalized)	-	-	B	10.5	-	NO	-	-	B	10.8	-	NO
18	Lime Avenue & Phase II Site Driveway (un-signalized)	-	-	A	8.6	-	NO	-	-	A	9.1	-	NO

City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio (1,600 vplph)
Unsignalized Intersection – 2000 HCM Methodology – Delay (in seconds) per Vehicle
Signalized Impact Criteria and Threshold – LOS E or F with the project and/or an increase in V/C of 0.02 or greater

Based on the City's significance criteria, the Project would have no ***significant impact*** at any of the study area intersections. Traffic impacts associated with the proposed site development are minimal and therefore no mitigation measures are required.



ITERIS

North Village Center TIA

Figure 14

With-Project Peak-Hour Traffic Volumes and LOS - 2016 Phase II (Option A)

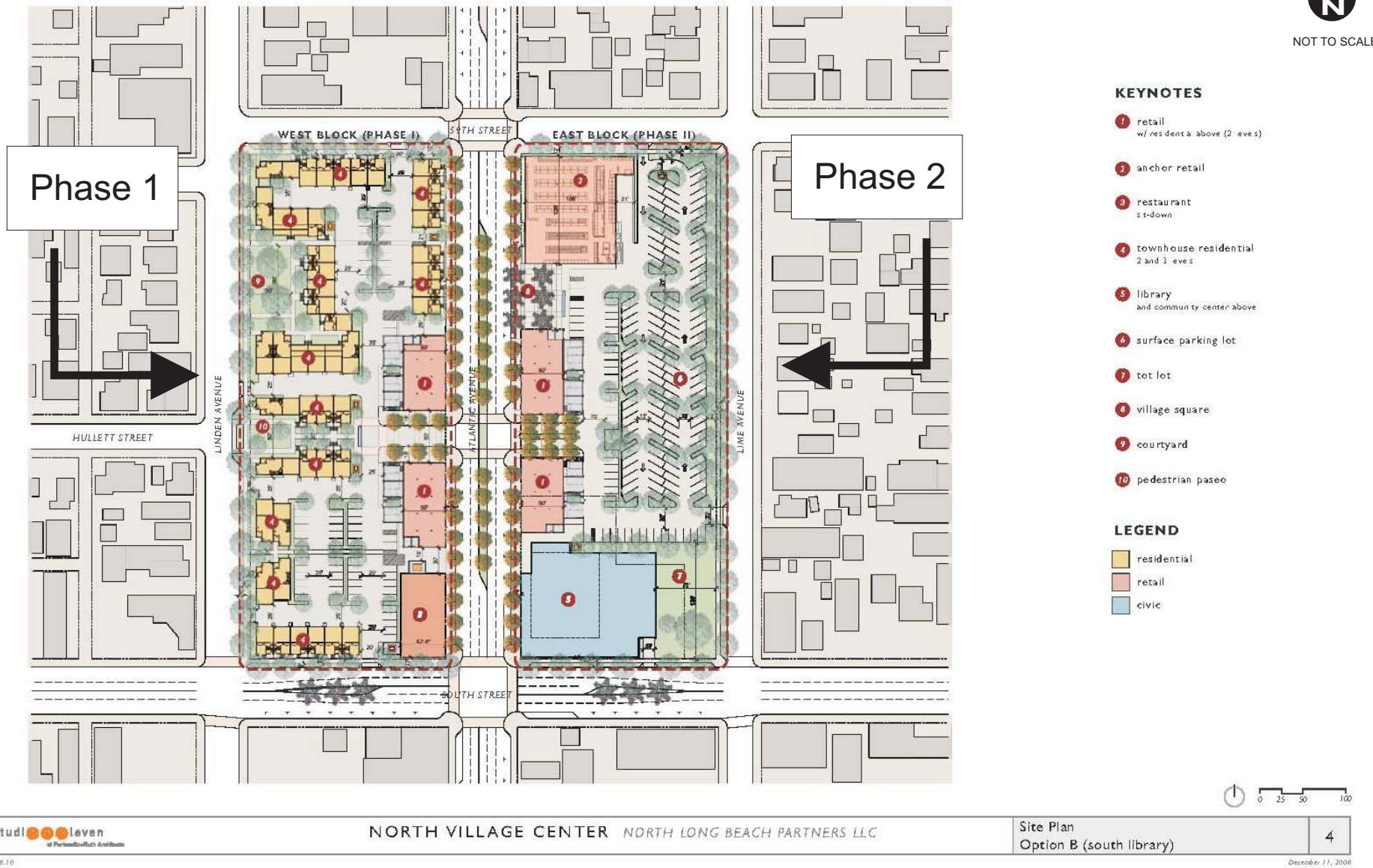
2016 Phase II (Option B) – Project Trip Assignment

As mentioned in the previous section, in the 2016 Phase II – Option B, the commercial mixed uses will be situated at the southeast corner of 59th Street and Atlantic Avenue and the library/community center uses at the northeast corner of South Street and Atlantic Avenue. The trip generation will remain the same in both the options.

Figure 15 illustrates the 2016 Phase II – Option B site plan. All primary automobile access to interior block parking with Option B would be accessed via:

- one right-in-right-out access along Atlantic Avenue
- one full access driveway along 59th Street
- one full access driveway along Lime Avenue

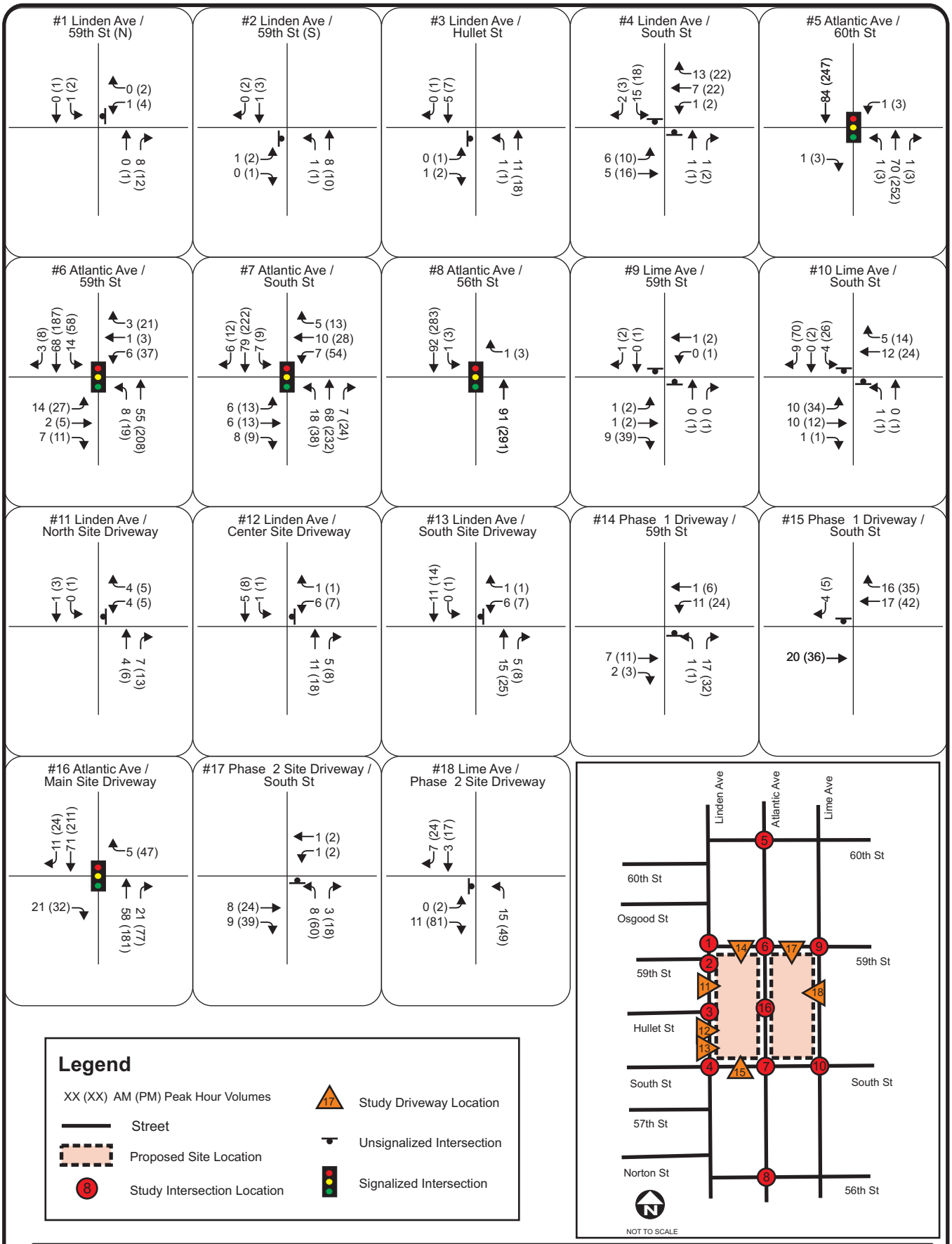
The trips generated by the Phase II – Option B scenario were assigned to the area street system using the directional distribution described above and is illustrated in **Figure 16**.



Source - North Long Beach Partners LLC December 11,2008

ITERIS

North Village TIA
Figure 15
Project Site Plan - 2016 Phase II (Option B)



ITERIS

North Village Center TIA

Figure 16

Project Only Peak-Hour Traffic Volumes - 2016 Phase II (Option B)

2016 Phase II (Option B) With-Project Traffic Operations

The total intersection volumes for the Year 2016 Phase I plus Phase II (Option B) are illustrated in **Figure 17**. For the the 2016 Phase II – Option B with-Project conditions, the study intersections are projected to be operating at LOS C or better during the AM peak hour and PM peak hour. **Table 10** summarizes the level of service results. The level of service analysis worksheets are provided in the **Appendix**.

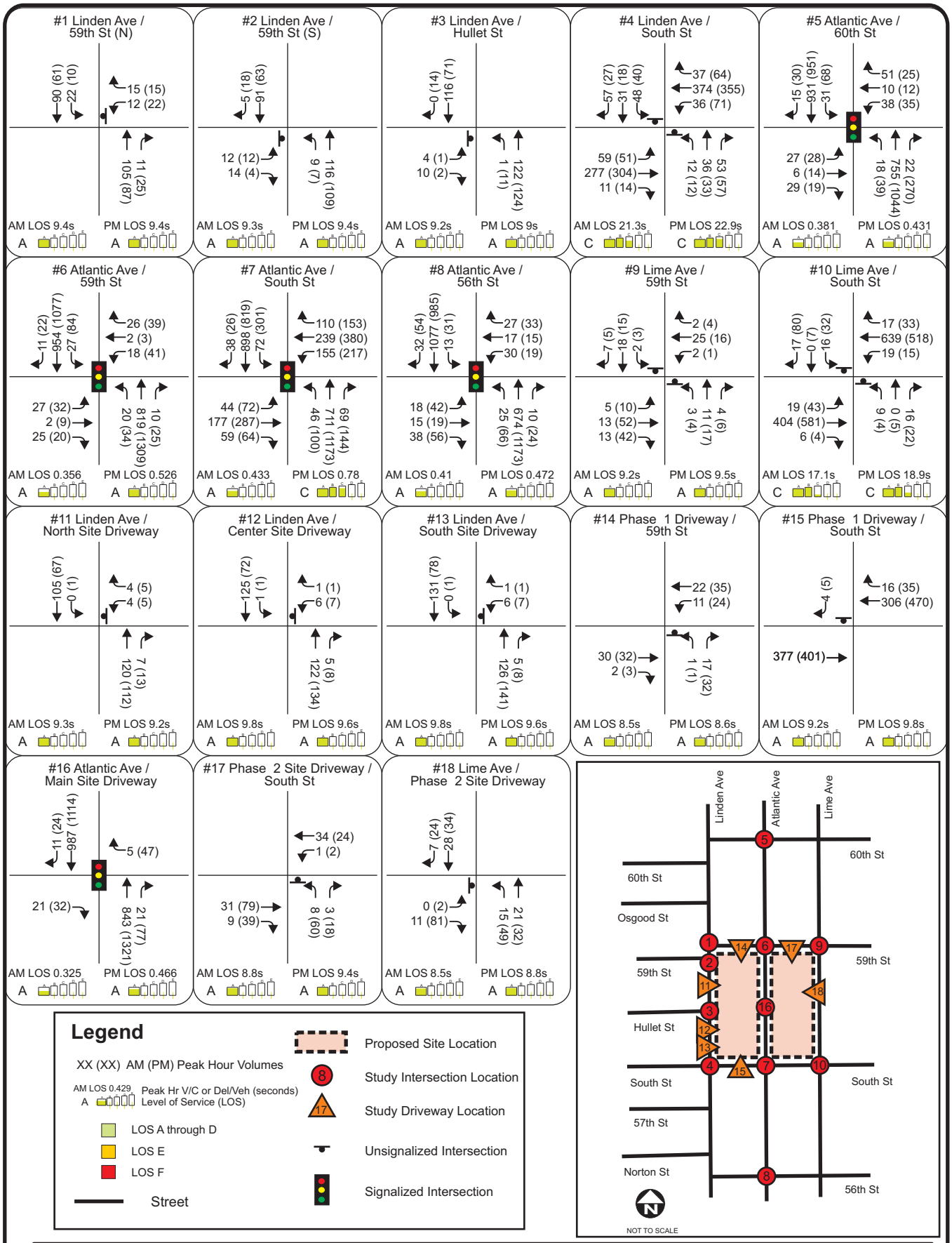
Table 10: Year 2016 Phase I + Phase II (Option B) – With Project Intersection Conditions

	Study Intersection	Year 2016											
		AM Peak Hour						PM Peak Hour					
		No Project		With		Diff.	Impact Yes/No	No Project		With		Diff.	Impact Yes/No
		LOS	Delay or V/C	LOS	Delay or V/C			LOS	Delay or V/C	LOS	Delay or V/C		
1	Linden Avenue & 59th Street (N) (un-signalized)	A	9.3	A	9.4	0.1	NO	A	9.3	A	9.4	0.1	NO
2	Linden Avenue & 59th Street (S) (un-signalized)	A	9.2	A	9.3	0.1	NO	A	9.3	A	9.4	0.1	NO
3	Linden Avenue & Hullett Street (un-signalized)	A	9.2	A	9.2	0.0	NO	A	7.4	A	9.0	1.6	NO
4	Linden Avenue & South Street (un-signalized)	C	18.2	C	21.3	3.1	NO	C	17.9	C	22.9	5.0	NO
5	Atlantic Avenue & 60th Street (signalized)	A	0.371	A	0.381	0.010	NO	A	0.410	A	0.431	0.021	NO
6	Atlantic Avenue & 59th Street (signalized)	A	0.332	A	0.356	0.024	NO	A	0.433	A	0.526	0.093	NO
7	Atlantic Avenue & South Street (signalized)	A	0.437	A	0.433	-0.004	NO	C	0.723	C	0.780	0.057	NO
8	Atlantic Avenue & 56th Street (signalized)	A	0.398	A	0.410	0.012	NO	A	0.438	A	0.472	0.034	NO
9	Lime Avenue & 59th Street (un-signalized)	A	9.2	A	9.2	0.0	NO	A	9.3	A	9.5	0.2	NO
10	Lime Avenue & South Street (un-signalized)	C	17.3	C	17.1	-0.2	NO	C	16.8	C	18.9	2.1	NO
11	Linden Avenue & North Site Driveway (un-signalized)	-	-	A	9.3	-	NO	-	-	A	9.2	-	NO
12	Linden Avenue & Center Site Driveway (un-signalized)	-	-	A	9.8	-	NO	-	-	A	9.6	-	NO
13	Linden Avenue & South Site Driveway (un-signalized)	-	-	A	9.8	-	NO	-	-	A	9.6	-	NO
14	Phase I Driveway & 59th Street (un-signalized)	-	-	A	8.5	-	NO	-	-	A	8.6	-	NO
15	Phase I Driveway & South Street (un-signalized)	-	-	A	9.2	-	NO	-	-	A	9.8	-	NO
16	Atlantic Avenue & Main Site Driveway (signalized)	-	-	A	0.325	-	NO	-	-	A	0.466	-	NO
17	Phase II Driveway & 59th Street (un-signalized)	-	-	A	8.8	-	NO	-	-	A	9.4	-	NO
18	Lime Avenue & Phase II Site Driveway (un-signalized)	-	-	A	8.5	-	NO	-	-	A	8.8	-	NO

City of Long Beach Standards:
Signalized Intersection – ICU Methodology – Volume to Capacity Ratio (1,600 vplph)
Unsignalized Intersection – 2000 HCM Methodology – Delay (in seconds) per Vehicle
Signalized Impact Criteria and Threshold – LOS E or F with the project and/or an increase in V/C of 0.02 or greater

Based on the City's significance criteria, the Project would have no ***significant impact*** at any of the study area intersections. Traffic impacts associated with the proposed site development are minimal and therefore no mitigation measures are required.

Figure 18 illustrates the future lane configuration and traffic control at the study intersections and site driveways. As shown in **Figure 18**, the site driveways along Linden Avenue, Lime Avenue and 59th Street will be stop controlled with stop-sign along the driveway outbound direction. The driveways along South Street will be stop-controlled right-in-right-out only driveway with stop sign recommended along the driveway outbound direction. The mid-block driveway along Atlantic Avenue will be a signalized right-in-right-out driveway with pedestrian crossing.

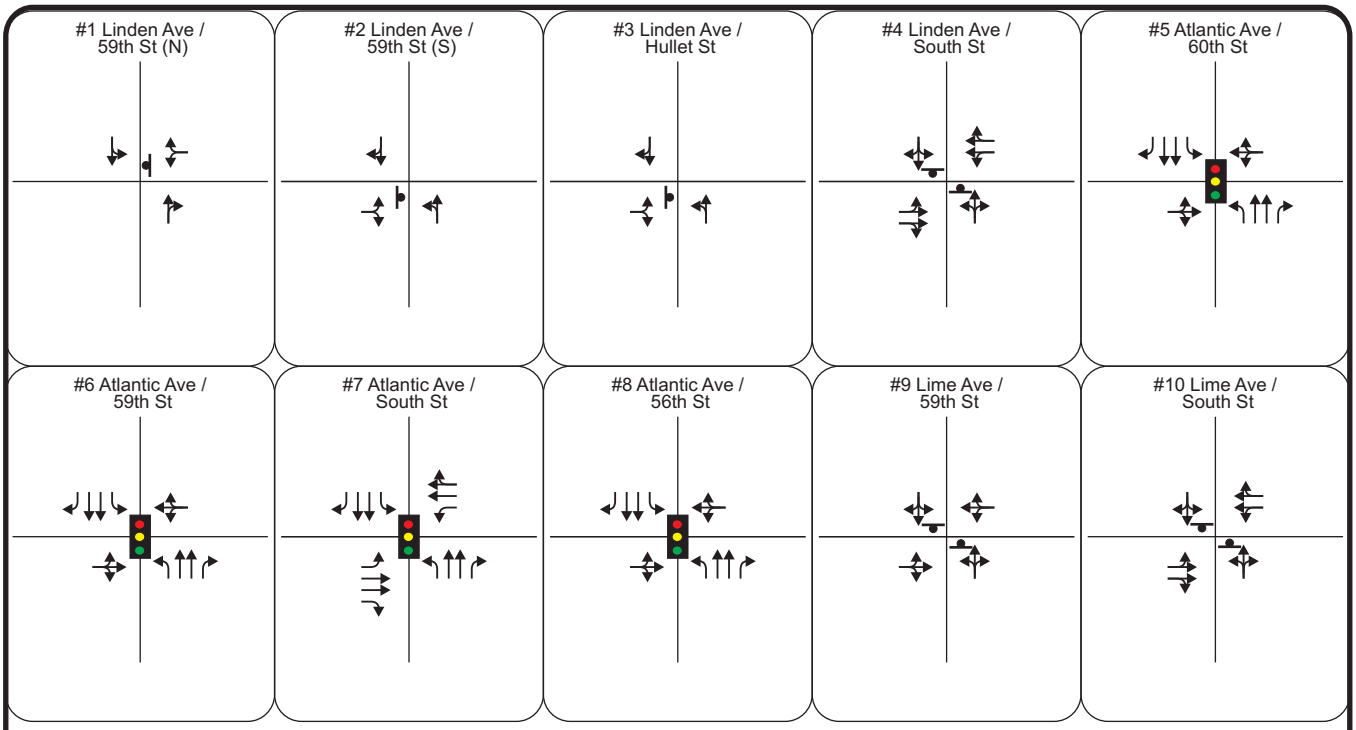


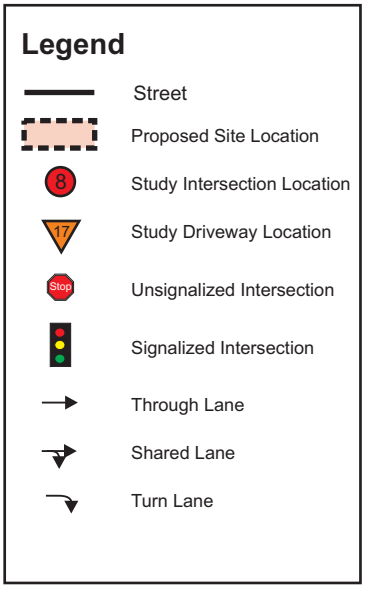
ITERIS

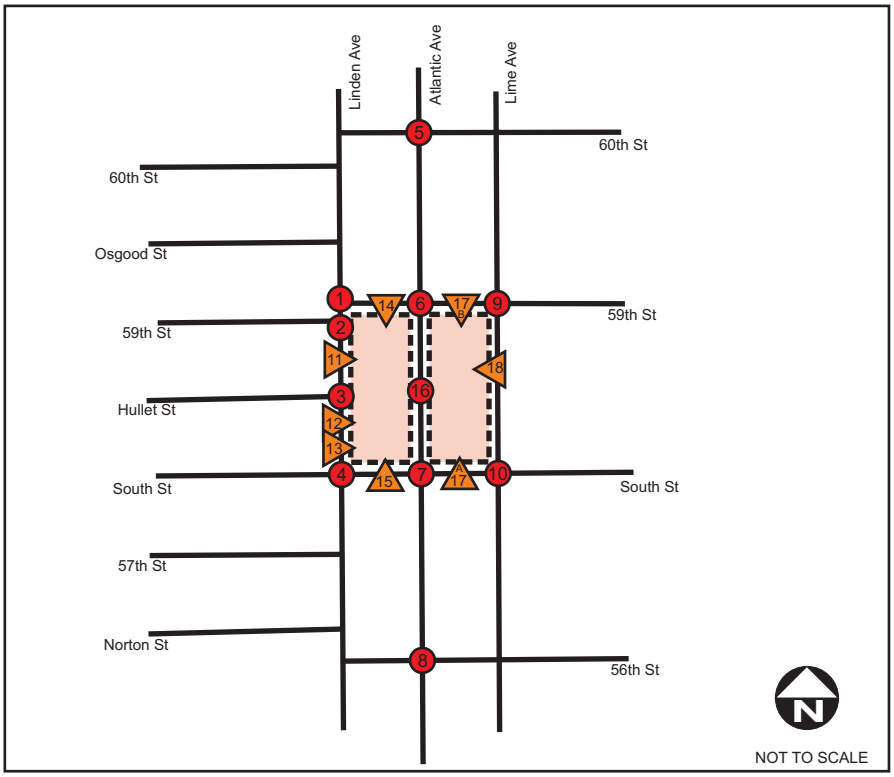
North Village Center TIA

Figure 17

With-Project Peak-Hour Traffic Volumes and LOS - 2016 Phase II (Option B)

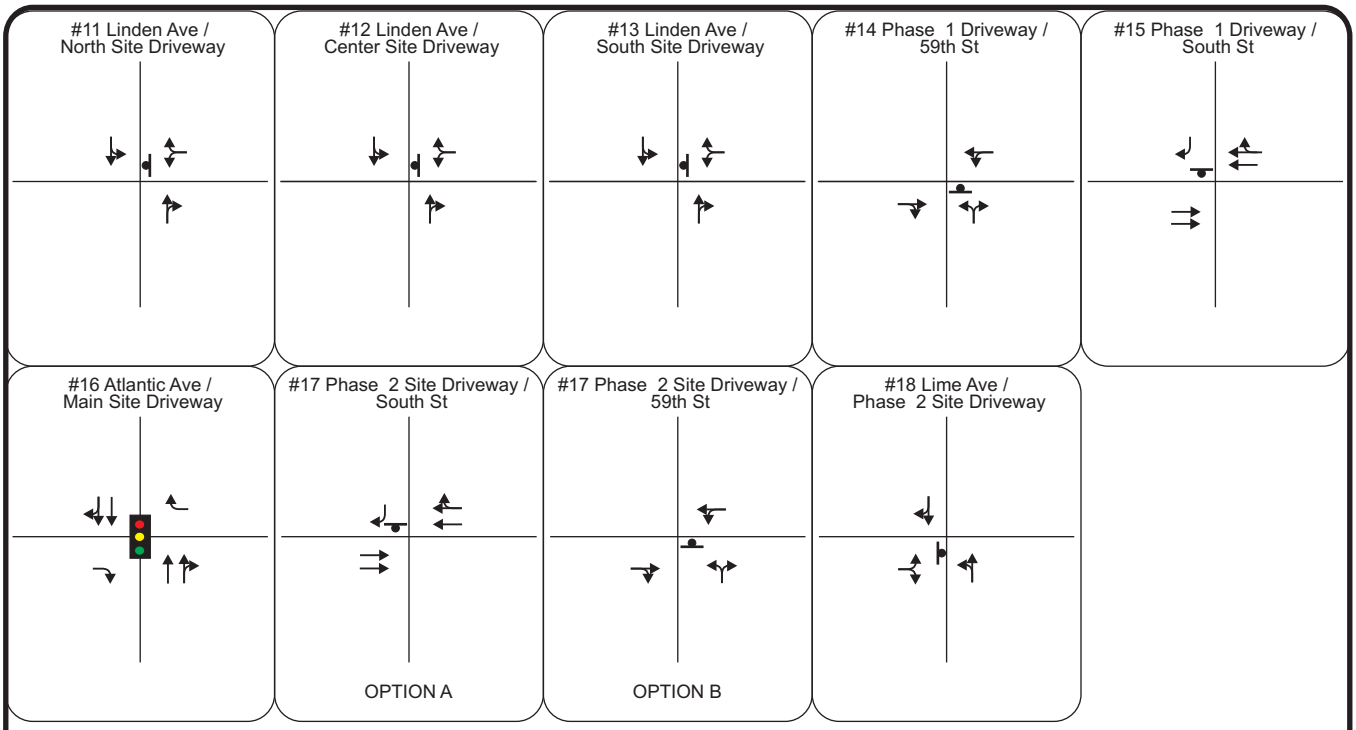


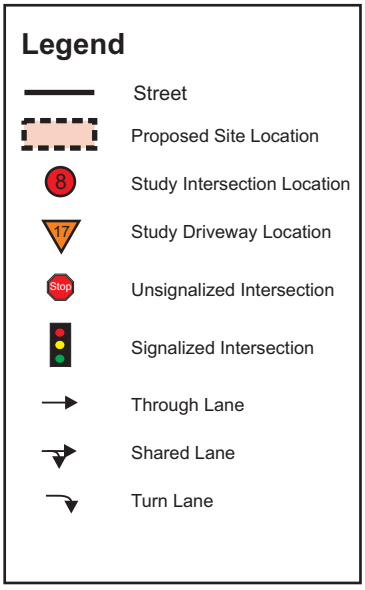


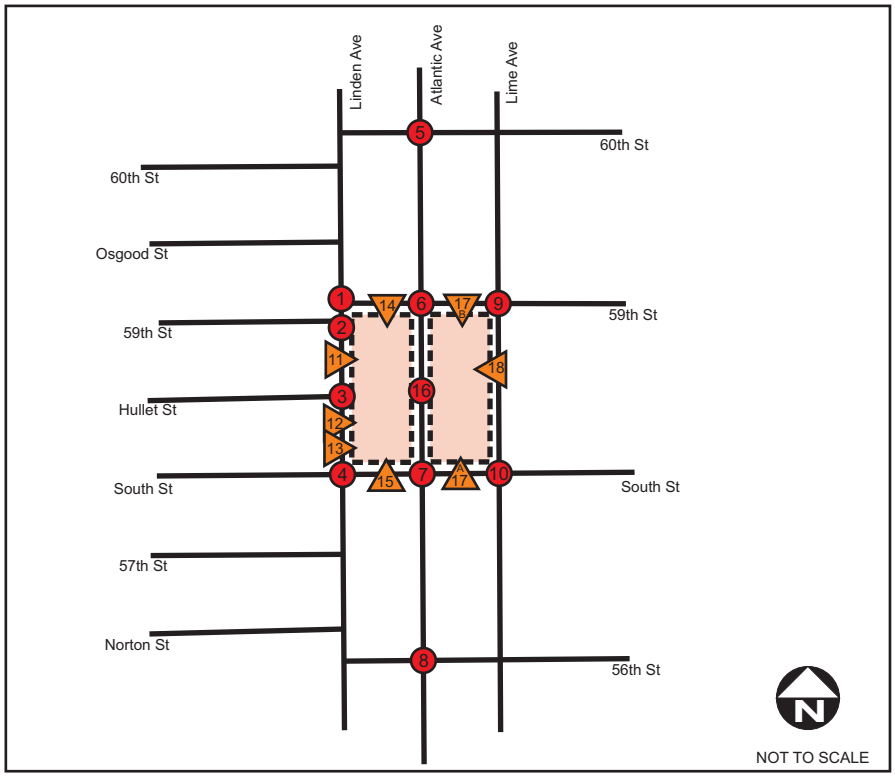


ITERIS

North Village Center TIA
Figure 18
Future Lane Configuration / Traffic Control







ITERIS

North Village Center TIA
Figure 18
Future Lane Configuration / Traffic Control

Congestion Management Program System Analysis

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (LACMTA). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system.

CMP Intersection Analysis

For purposes of the CMP, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by two percent of capacity (V/C ≥ 0.02), causing LOS F (V/C > 1.00). If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by two percent of capacity (V/C ≥ 0.02). A total of 164 intersections are identified for monitoring on the system in Los Angeles County. None of the study intersections is part of the CMP Arterial monitoring locations.

CMP Mainline Freeway Segment Analysis

The focus of this analysis is to determine whether project related trips would significantly impact the freeway system according to CMP guidelines and threshold of significance. For purposes of analyzing the mainline freeway impact of the project, the nearest freeway monitoring station is located along the I-710 Freeway. **Table 11** summarizes the project added trips by time period, direction and location. The project added trips were compared with CMP Traffic Impact Analysis guidelines to determine if additional traffic impact analysis is needed at the freeway monitoring station.

The trips associated with the commercial/retail portion of the site are localized. Therefore, assuming 25 percent of the residential trips associated with the proposed project are being travelled along the nearest CMP Freeway Monitoring Station, Table 11 illustrates that the the proposed project does not contribute more than minimum threshold of 150 peak-period trips at any CMP mainline location. Based on CMP criteria described previously, detailed impact analysis is not warranted and no CMP impact would occur.

Table 11: Project Added Trips at Freeway Monitoring Stations

Freeway Analysis Segment	Project Added Trips by Direction		Traffic Impact Analysis Required?	
	NB	SB	NB	SB
Weekday AM Peak Hour				
I-710 Freeway (Post Mile-10.31) n/o JCT Rte 405, S/o Del Amo Blvd	2	6	No	No
Weekday PM Peak Hour				
I-710 Freeway (Post Mile-10.31) n/o JCT Rte 405, S/o Del Amo Blvd	6	3	No	No

Note: The NB and SB weekday AM and PM peak hour project related trips are based on the fact that 25% of the trips associated with the residential component of the site traverse the nearest CMP segment.

PARKING

An analysis of the Project's parking supply and demand was completed to determine whether the Project will have sufficient parking.

Parking Required By Code

Parking for the residential and commercial components of the project will be provided consistent with Chapter 21.41 of the Long Beach Municipal Code, "Off Street Parking and Loading Requirements".

The residential components of the project will be parked as follows:

- Two-bedroom and larger units, 2 spaces per unit
- Guest parking, 1 space per 4 units

The commercial components of the project will be parked as follows:

- Restaurant, 5 spaces per 1000 sq. ft.
- Commercial, 5 spaces per 1000 sq. ft.
- Community Center/Library, 4 spaces per 1000 sq. ft.
- Community Center/Library, 1 bus parking stall per 5000 sq. ft

On-site Parking Proposed by the Development

Parking for residential land uses will be provided in attached garages. The Project will provide up to 177 and 178 onsite parking spaces on the west block and east block, respectively for a total of 355 parking spaces.

It should be noted that the zoning code does not allow on-street parking on major arterials to be used to satisfy parking demand. In this case the proposed project entirely surrounds Atlantic Avenue between South Street and 59th Street and will primarily serve commercial/retail uses of the proposed site. Along Atlantic Avenue between South Street and 59th Street approximately 30 on-street parking spaces can be accommodated that may be available for patrons/residents of the proposed project. However, to provide a code compliant parking analysis, no on-street parking was considered as part of the parking supply proposed by the project.

Furthermore, parking reductions for transit and captive market were also not included in the parking analysis for conservative purposes. Therefore, based on the existing code requirements, a total of 192 parking spaces on the west block and 252 spaces for a total of 444 parking spaces will be required as shown in **Table 12**. The proposed project will provide 355 parking spaces resulting in a total parking deficiency of 89 spaces.

Table 12: Code Required Project Parking Supply/Demand Summary

Land Use	*Size*	*Units*	*Code Rate*	*# of Parking Spaces*
West Block (with Adjustments)				
Residential	54	D.U.'s	2 per unit	108
Residential Guest Parking	54	D.U.'s	0.25	14
Restaurant	5.4	000's S.F	5 per 1000 s.f.	27
Commercial	8.6	000's S.F	5 per 1000 s.f.	43
			Require Parking Subtotal	**192**
			Proposed New On-site Parking	177
East Block (with Adjustments)				
Residential	7	D.U.'s	2 per unit	14
Residential Guest Parking	7	D.U.'s	0.25	2
Community Center/Library	30	000's S.F	4 per 1000 s.f.	120
Library Bus Parking	30	000's S.F	0.2 per 1000 s.f.	6
Commercial	22	000's S.F	5 per 1000 s.f.	110
			Required Parking Subtotal	**252**
			Proposed New On-site Parking	178
Total Project Parking Requirement by Code				**444**
Total Project Parking Supply				**355**
Total Project Parking Deficiency				**-89**

Shared Parking Analysis

Due to the multi-use characteristic of the proposed site a shared use parking analysis was conducted for the proposed development. This analysis looks at the parking supply and demand relationships for the project area, by time of day. This methodology recognizes that parking demand for each type of land use varies by time of day and/or day of the week (weekday versus weekend day) and thus some of the parking can be shared (note only residential guest parking is included in the shared parking analysis). When one land-use has a lower parking demand during the day, that parking will be available for other land-uses on-site. For example, during the times that the library is not open, those parking spaces may be used by retail and restaurant patrons.

ULI–The Urban Land Institute parking rates were used for all land uses, except for the library/convention center land use. Library parking ratios by time of day were obtained from a field parking survey conducted at a similar land use (Mark Twain Library) within the City of Long Beach. The ULI rates differentiate between weekday and weekend use, which may provide a more accurate analysis of parking needs. The parking survey results obtained at the Mark Twain library are shown in the **Appendix**. The survey was conducted on a typical Tuesday (March 31st, 2009) and Saturday (April 4th, 2009) during typical library working hours. The parking rate shows the demand by hour for various land-use types.

A time of day analysis was conducted using ULI procedures, which generally results in a parking demand that is lower than the summation of the demand for each individual land-use based on City Parking Code. The benefits of sharing parking spaces allow parking usage by different types of visitors in the morning or night, weekday or weekend. An example of this may be a patron going to the library who parks during the day, and in the evening that same space is available for restaurant or retail parking. This analysis does recognize that some of the residential guest spaces may be used by patrons of other site uses. To provide a conservative parking analysis, it was assumed that 138 residential parking spaces (61 units X 2.0 spaces/unit + 61 units X .25 spaces/unit = 138 parking spaces) and 6 parking spaces for library bus use would be reserved for these uses and would not be available as shared parking with other retail site uses. Each block was analyzed by time of day, which established the overall demand by time of day for the site.

Table 13 and **Table 14** illustrate a summary of the shared parking analysis results. Detailed shared parking analysis calculations are provided in the **Appendix**. The combined peak parking demand for the two blocks are 233 and 228 spaces during the weekday and weekend, respectively. The weekday combined peak hour occurs at around 12:00 PM and the weekend combined peak hour occurs around 2:00 PM.

A summary of parking analysis in **Table 15** indicates that per City parking code, the proposed project is required to provide 444 parking spaces. Based on the shared parking analysis, the peak parking demand shows a need to provide 377 (138+6+233) and 372 (138+6+228) parking spaces during the weekday and weekend peak period, respectively. The weekday analysis shows a parking deficiency of twenty-two (22) spaces and a weekend parking deficiency of seventeen (17) spaces, using the shared parking analysis results.

Table 13: Project Shared Parking Supply/Demand Summary (Weekday)

Land Use	Institutional/Library (Convention Center rates)		Restaurant		Retail		Total
Peak Demand	120		27		153		315
Hour	Percentage Occupancy	# of Spaces	Percentage Occupancy	# of Spaces	Percentage Occupancy	# of Spaces	Spaces
6:00 AM	0%	0	25%	7	1%	2	8
7:00 AM	0%	0	50%	14	5%	8	21
8:00 AM	0%	0	60%	16	15%	23	39
9:00 AM	0%	0	75%	20	35%	54	74
10:00 AM	0%	0	85%	23	65%	99	122
11:00 AM	48%	58	90%	24	85%	130	212
12:00 PM	48%	58	100%	27	97%	148	233
1:00 PM	45%	54	90%	24	100%	153	231
2:00 PM	57%	68	50%	14	98%	150	231
3:00 PM	60%	72	45%	12	95%	145	230
4:00 PM	72%	86	45%	12	87%	133	231
5:00 PM	52%	62	75%	20	79%	121	203
6:00 PM	45%	54	80%	22	82%	125	201
7:00 PM	30%	36	80%	22	89%	136	194
8:00 PM	30%	36	80%	22	87%	133	191
9:00 PM	0%	0	60%	16	61%	93	110
10:00 PM	0%	0	55%	15	32%	49	64
11:00 PM	0%	0	50%	14	13%	20	33
12:00 AM	0%	0	25%	7	0%	0	8

Summary - Shared Parking Analysis (Total Project)

	Non-Shared Parking Requirement		Shared Parking Requirement		Total w/o on-street parking	
Land Use	Residential Parking	Library Bus Parking				
Parking Code Requirement	2/ Unit	0.2/1,000 ksf	Shared Parking Analysis			
	Parking requirement per City Code (61 units plus guest parking)	Parking requirement per City Code (30,000 ksf)	Total Peak Demand with Shared Parking Requirement (See Table 13)	Total Shared Parking Demand	Total Parking Supply	Surplus / Deficiency
Total Project	138	6	233	377	355	-22

Note: Library rates are based on occupancy rates of Mark Twain Library in Long Beach.

Table 14: Project Shared Parking Supply/Demand Summary (Weekend)

Land Use	Institutional/Library (Convention Center rates)		Restaurant		Retail		Total
Peak Demand	120		27		153		315
Hour	Percentage Occupancy	# of Spaces	Percentage Occupancy	# of Spaces	Percentage Occupancy	# of Spaces	Spaces
6:00 AM	0%	0	0%	0	1%	2	2
7:00 AM	0%	0	0%	0	5%	8	8
8:00 AM	0%	0	0%	0	10%	15	15
9:00 AM	0%	0	0%	0	30%	46	46
10:00 AM	32%	38	0%	0	50%	77	115
11:00 AM	35%	42	15%	4	65%	99	146
12:00 PM	47%	56	50%	14	80%	122	192
1:00 PM	48%	58	55%	15	90%	138	210
2:00 PM	52%	62	45%	12	100%	153	228
3:00 PM	42%	50	45%	12	100%	153	216
4:00 PM	45%	54	45%	12	95%	145	212
5:00 PM	53%	64	60%	16	90%	138	218
6:00 PM	25%	30	90%	24	80%	122	177
7:00 PM	0%	0	95%	26	75%	115	140
8:00 PM	0%	0	100%	27	65%	99	126
9:00 PM	0%	0	90%	24	50%	77	101
10:00 PM	0%	0	90%	24	35%	54	78
11:00 PM	0%	0	90%	24	15%	23	47
12:00 AM	0%	0	50%	14	0%	0	14

Summary - Shared Parking Analysis (Total Project)

	Non-Shared Parking Requirement		Shared Parking Requirement		Total w/o on-street parking	
Land Use	Residential Parking	Library Bus Parking	Shared Parking Analysis			
Parking Code Requirement	2/ Unit	0.2/1,000 ksf				
	Parking requirement per City Code (61 units plus guest parking)	Parking requirement per City Code (30,000 ksf)	Total Peak Demand with Shared Parking Requirement (See Table 13)	Total Shared Parking Demand	Total Parking Supply	Surplus / Deficiency
Total Project	138	6	228	372	355	-17

Note: Library rates are based on occupancy rates of Mark Twain Library in Long Beach.

Table 15: Shared Parking Analysis Summary

	Based on City Parking Code	Based on Shared Parking Analysis	
	Weekday	Weekday	Weekend
Parking Demand	444	377	372
Parking Supply	355	355	355
Surplus / Deficiency	**-89**	**-22**	**-17**

SUMMARY

In summary, the impacts associated with the proposed North Village Center project are negligible at the study intersections as well as the nearest CMP Freeway Segments. All the study intersections currently operate at acceptable LOS and continue to operate at LOS C or better during 2011 Phase I scenario and 2016 Phase II – Option B. The Atlantic Avenue/South Street signalized intersection operates at LOS D in the 2016 Phase II – Option A scenario. However, this is acceptable under city standards.

The proposed project would provide a total of 355 parking spaces compared to the code required parking of 444 spaces and the estimated shared parking demand of 377 spaces during the weekday. This is a deficiency of 89 code required parking spaces, or twenty-two (22) spaces under the shared parking scenario. Similarly, the shared parking demand indicates a need for 372 spaces during the peak weekend time, period resulting in a parking deficiency of seventeen (17) spaces. However, along Atlantic Avenue between South Street and 59th Street approximately 30 on-street parking spaces could be available for use by patrons/residents of the proposed project since the proposed project entirely surrounds this segment and will primarily serve commercial/retail uses of the proposed site. Therefore, this analysis recommends that a variance be requested to provide fewer parking spaces than the city code requirements.

TRAFFIC COUNTS

CAPACITY ANALYSES

EXISTING YEAR 2008 CONDITIONS

CAPACITY ANALYSES

YEAR 2011 – WITHOUT-PROJECT

CAPACITY ANALYSIS

PHASE I (YEAR 2011) – WITH-PROJECT

CAPACITY ANALYSIS

YEAR 2016 – WITHOUT-PROJECT

CAPACITY ANALYSIS

PHASE II (YEAR 2016) – WITH-PROJECT (Option A)

CAPACITY ANALYSIS

PHASE II (YEAR 2016) – WITH-PROJECT (Option B)

WARRANT ANALYSIS

PHASE II (YEAR 2016) – WITH-PROJECT (Option B)

SHARED PARKING ANALYSIS

Raw Data and Analysis Spreadsheets