

APPENDIX I
ALTERNATIVES

TRANSPORTATION PLANNING ASSUMPTIONS: LOWER DENSITY ALTERNATIVE

Land Use:	<u>Local Retail</u>		<u>Residential</u>		<u>Supermarket</u>		<u>PS School</u>		<u>PS Staff</u>		<u>Existing Industrial</u>	
Size/Units:	84,470	gsf	1,256	DU*	25,000	gsf	456	seats	35	staff	-194,700	gsf
Trip Generation:	(1)		(1)		(1)		(9)		(9)		(7)	
Weekday	205		8.075		175		2		2		NA	
Saturday	240		9.6		231		0		0		NA	
	per 1,000 sf		per DU		per 1,000 sf		per student		per staff			
Temporal Distribution:	(1)		(1)		(5)		(9)		(9)		(7)	
AM	3.0%		10.0%		5.0%		50%		50%		NA	
MD	19.0%		5.0%		6.0%		0%		0%		NA	
PM	10.0%		11.0%		10.0%		5%		50%		NA	
Sat MD	10.0%		8.0%		9.0%		0%		0%		NA	
Modal Splits:	(2)		(3)		(5)		(10)		(8)		(7)	
	All Periods		All Periods		AM	MD	PM	Sat MD	Outsider	Internal	All Periods	All Periods
Auto/Auto-dropoff	2.0%		32.4%		61.0%	68.0%	67.0%	76.0%	5.0%	0	57.0%	NA
Taxi	3.0%		0.5%		0.0%	0.0%	0.0%	0.0%	0.0%	0	1.0%	NA
Subway/Shuttle	6.0%		55.4%		1.0%	0.0%	0.0%	0.0%	0.0%	0	18.0%	NA
Bus	6.0%		3.2%		5.0%	5.0%	3.0%	6.0%	0.0%	0	11.0%	NA
Schoolbus									5.0%	0		NA
Walk/Ferry/Other	83.0%		8.5%		33.0%	27.0%	30.0%	18.0%	5.0%	85%	13.0%	NA
	100.0%		100.0%		100.0%	100.0%	100.0%	100.0%	15.0%	85.0%	100.0%	NA
In/Out Splits:	(2)		(4)		(5)		(9)		(9)		(7)	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
AM	50%	50%	20.0%	80.0%	57%	43%	100%	0%	100%	0%	NA	NA
MD	50%	50%	50.0%	50.0%	50%	50%	0%	0%	0%	0%	NA	NA
PM	50%	50%	65.0%	35.0%	52%	48%	0%	100%	0%	100%	NA	NA
Sat MD	50%	50%	50.0%	50.0%	52%	48%	0%	0%	0%	0%	NA	NA
Vehicle Occupancy:	(2)		(3)		(5)		(9)		(8)		(7)	
	All Periods		All Periods		AM	MD	PM	Sat MD	Weekday	Weekday	All Periods	
Auto	2.00		1.11		1.12	1.32	1.34	1.48	1.3	1.20	NA	
Taxi	2.00		1.4						1.3	1.20	NA	
Truck Trip Generation:	(1)		(1)		(11)		(6)				(7)	
Weekday	0.35		0.06		0.35		6.25				NA	
Saturday	0.04		0.02		0.04						NA	
	per 1,000 sf		per DU		per 1,000 sf		students/bus					
	(1)		(1)		(1)						(7)	
AM	8.0%		12.0%		8.0%						NA	
MD	11.0%		9.0%		11.0%						NA	
PM	2.0%		2.0%		2.0%						NA	
Sat MD	11.0%		9.0%		4.0%						1.0%	
	In	Out	In	Out	In	Out					In	Out
AM	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%					NA	NA
MD	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%					NA	NA
PM	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%					NA	NA
Sat MD	50.0%	50.0%	50.0%	50.0%	50.0%	50.0%						

Notes :

- (1) 2012 City Environmental Quality Review (CEQR) Technical Manual.
- (2) Dutch Kills Rezoning and Related Actions FEIS , CEQR #08DCP021Q (2008).
- (3) Model split and vehicle occupancy data are based on 2007 -2011 ACS Journey to Work data(Tract 81,83,91,97,101,103,105) in Queens.
- (4) Based on ITE Trip Generation Handbook, 8th Edition , Land Use Code (220) Apartment.
- (5) Based on 1525 Albany Avenue Pathmark Supermarket Survey, 2009.
- (6) Based on data from survey conducted by PHA (October 2012) on PS 35,Hollis,Queen.
- (7) Vehicular travel demand was based on counts in 2013. Credit for transit and pedestrian trips are not being taken for conservative purposes.
- (8) Model split and vehicle occupancy data are based on 2000 census reverse-journey-to-work data(Tract 87,91) in Queens.
- (9) Brownsville Ascend Charter School Assessment, 2011.
- (10) Halletts Point FEIS.
- (11) Instructed by DCP to use CEQR local retail delivery truck trip generation rate.

* 166 residential units in the upland area in no build condition (1422 DU in LDA condition). With the net increment of 1256 units (1422 -166)

TRIP GENERATION: LOWER DENSITY ALTERNATIVE

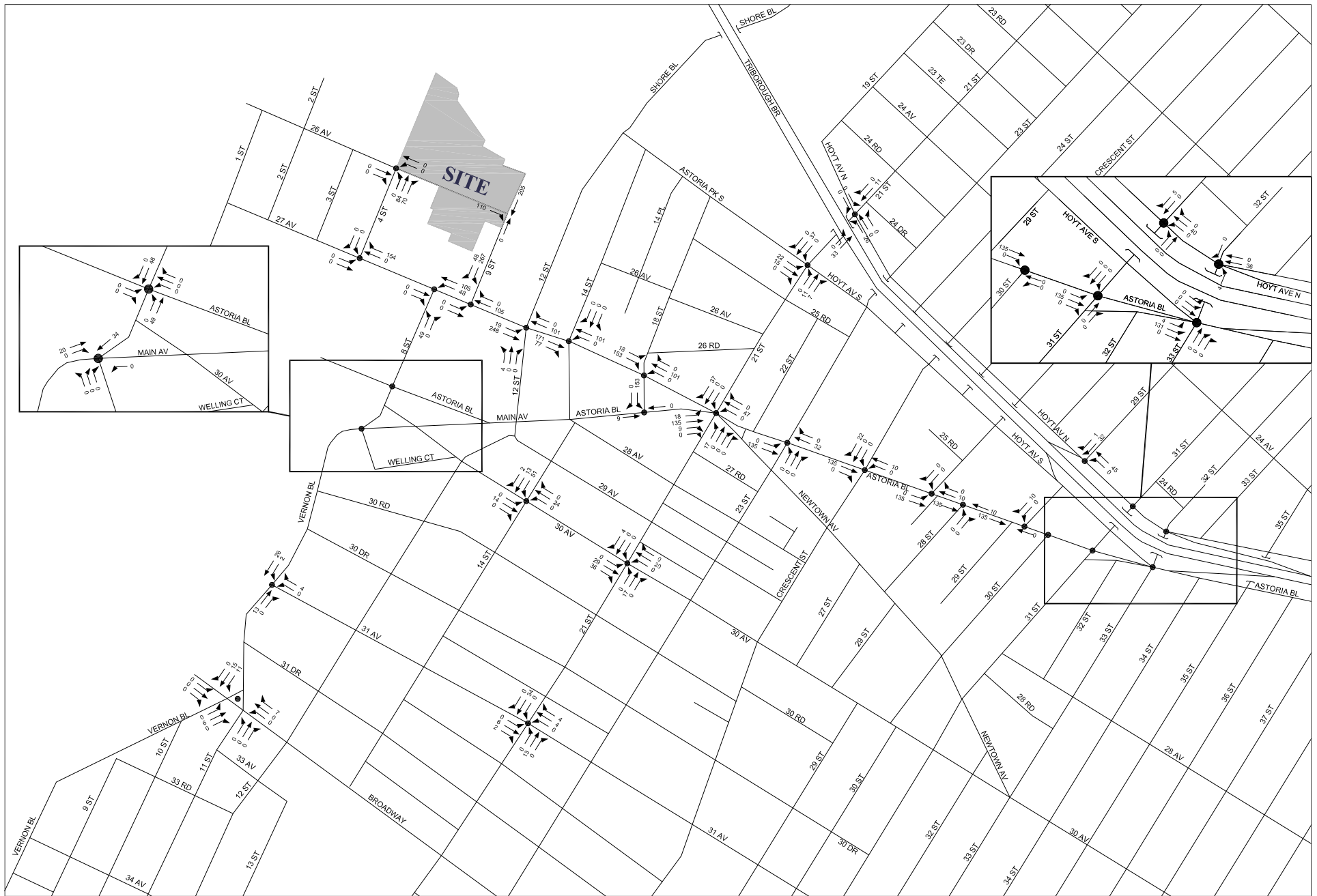
Land Use:		Local Retail		Residential		Supermarket		PS School				PS Staff		Existing Industrial			
Size/Units:		84,470	gsf	1,256	DU	25,000	gsf	456	seats		35	staff	-194,700	gsf	Total		
Peak Hour Trips:																	
	AM	390		1,016		165		412				35		NA		2,018	
	MD	2,468		508		198		0				0		NA		3,174	
	PM	1,300		1,116		329		42				35		NA		2,822	
	Sat MD	1,520		966		390		0				0		NA		2,876	
Person Trips:																	
		In	Out	In	Out	In	Out	Off-site		On-site		In	Out	In	Out	In	Out
AM	Auto	4	4	66	263	57	43	21	0	0	0	20	0	NA	NA	168	310
	Taxi	6	6	1	4	0	0	0	0	0	0	0	0	NA	NA	7	10
	Subway	12	12	113	450	1	1	0	0	0	0	6	0	NA	NA	132	463
	Bus	12	12	7	26	5	5	0	0	0	0	4	0	NA	NA	28	43
	Schoolbus							20	0	0	0			NA	NA	20	0
	Walk/Other	161	161	17	69	30	23	21	0	350	0	5	0	NA	NA	584	253
	Total	195	195	204	812	93	72	62	0	350	0	35	0	NA	NA	939	1,079
MD		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	25	25	82	82	67	67	0	0	0	0	0	0	NA	NA	174	174
	Taxi	37	37	1	1	0	0	0	0	0	0	0	0	NA	NA	38	38
	Subway	74	74	141	141	0	0	0	0	0	0	0	0	NA	NA	215	215
	Bus	74	74	8	8	6	6	0	0	0	0	0	0	NA	NA	88	88
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	1,024	1,024	22	22	26	26	0	0	0	0	0	0	NA	NA	1,072	1,072
Total	1,234	1,234	254	254	99	99	0	0	0	0	0	0	NA	NA	1,587	1,587	
PM		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	13	13	235	127	115	106	0	3	0	0	0	20	NA	NA	363	269
	Taxi	20	20	4	2	0	0	0	0	0	0	0	0	NA	NA	24	22
	Subway	39	39	402	216	0	0	0	0	0	0	0	6	NA	NA	441	261
	Bus	39	39	23	12	5	5	0	0	0	0	0	4	NA	NA	67	60
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	539	539	62	33	50	48	0	3	0	36	0	5	NA	NA	651	664
Total	650	650	726	390	170	159	0	6	0	36	0	35	NA	NA	1,546	1,276	
Sat MD		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto	15	15	156	156	154	142	0	0	0	0	0	0	NA	NA	325	313
	Taxi	23	23	2	2	0	0	0	0	0	0	0	0	NA	NA	25	25
	Subway	46	46	269	269	0	0	0	0	0	0	0	0	NA	NA	315	315
	Bus	46	46	15	15	12	11	0	0	0	0	0	0	NA	NA	73	72
	Schoolbus							0	0	0	0			NA	NA	0	0
	Walk/Other	630	630	41	41	37	34	0	0	0	0	0	0	NA	NA	708	705
Total	760	760	483	483	203	187	0	0	0	0	0	0	NA	NA	1,446	1,430	
Vehicle Trips :																	
AM		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto (Total)	2	2	59	237	51	39	16	16	0	0	17	0	-18	-8	127	286
	Taxi	3	3	1	3	0	0	0	0	0	0	0	0	0	0	4	6
	Taxi Balanced	6	6	4	4	0	0	0	0	0	0	0	0	0	0	10	10
	Shuttle/Schoolbus			9	9			3	3	0	0			0	0	12	12
	Truck	1	1	5	5	1	1	0	0	0	0	0	0	-2	0	5	7
Total	9	9	77	255	52	40	19	19	0	0	17	0	-20	-8	154	315	
MD		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto (Total)	13	13	74	74	51	51	0	0	0	0	0	0	-11	-15	127	123
	Taxi	19	19	1	1	0	0	0	0	0	0	0	0	0	0	20	20
	Taxi Balanced	38	38	2	2	0	0	0	0	0	0	0	0	0	0	40	40
	Shuttle/Schoolbus			0	0			0	0					0	-1	0	-1
	Truck	1	1	3	3	1	1	0	0	0	0	0	0	-2	-2	3	3
Total	52	52	79	79	52	52	0	0	0	0	0	0	-13	-18	170	165	
PM		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto (Total)	7	7	212	114	85	79	2	2	0	0	0	17	-5	-16	301	203
	Taxi	10	10	3	1	0	0	0	0	0	0	0	0	0	0	13	11
	Taxi Balanced	20	20	4	4	0	0	0	0	0	0	0	0	0	0	24	24
	Shuttle/Schoolbus			9	9			0	0					-3	0	6	9
	Truck	0	0	1	1	0	0	0	0	0	0	0	0	-1	0	0	1
Total	27	27	226	128	85	79	2	2	0	0	0	17	-9	-16	331	237	
Sat MD		In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
	Auto (Total)	8	8	141	141	104	96	0	0					-8	-14	245	231
	Taxi	12	12	1	1	0	0	0	0					0	0	13	13
	Taxi Balanced	24	24	2	2	0	0	0	0					0	0	26	26
	Shuttle/Schoolbus			0	0			0	0					0	0	0	0
	Truck	0	0	1	1	0	0							0	0	1	1
Total	32	32	144	144	104	96							-8	-14	272	258	
		Total				Q103 Bus Demand*											
	Total Vehicle	In	Out	Total													
	AM	154	315	469		34 108 142											
	MD	170	165	335		72 72 144											
	PM	331	237	568		109 71 180											
	Sat MD	272	258	530		87 87 174											

Notes : 25% link trips applied to Retail and Supermarket Uses

80% of resident subway users will be shuttled to subway station at 30th Ave and 31st Street during the weekday AM and PM peak hours.

10% Absentee rate is applied for students of the public school.

* 20% of subway demand added to 1/3 of bus users that would utilize Q103.

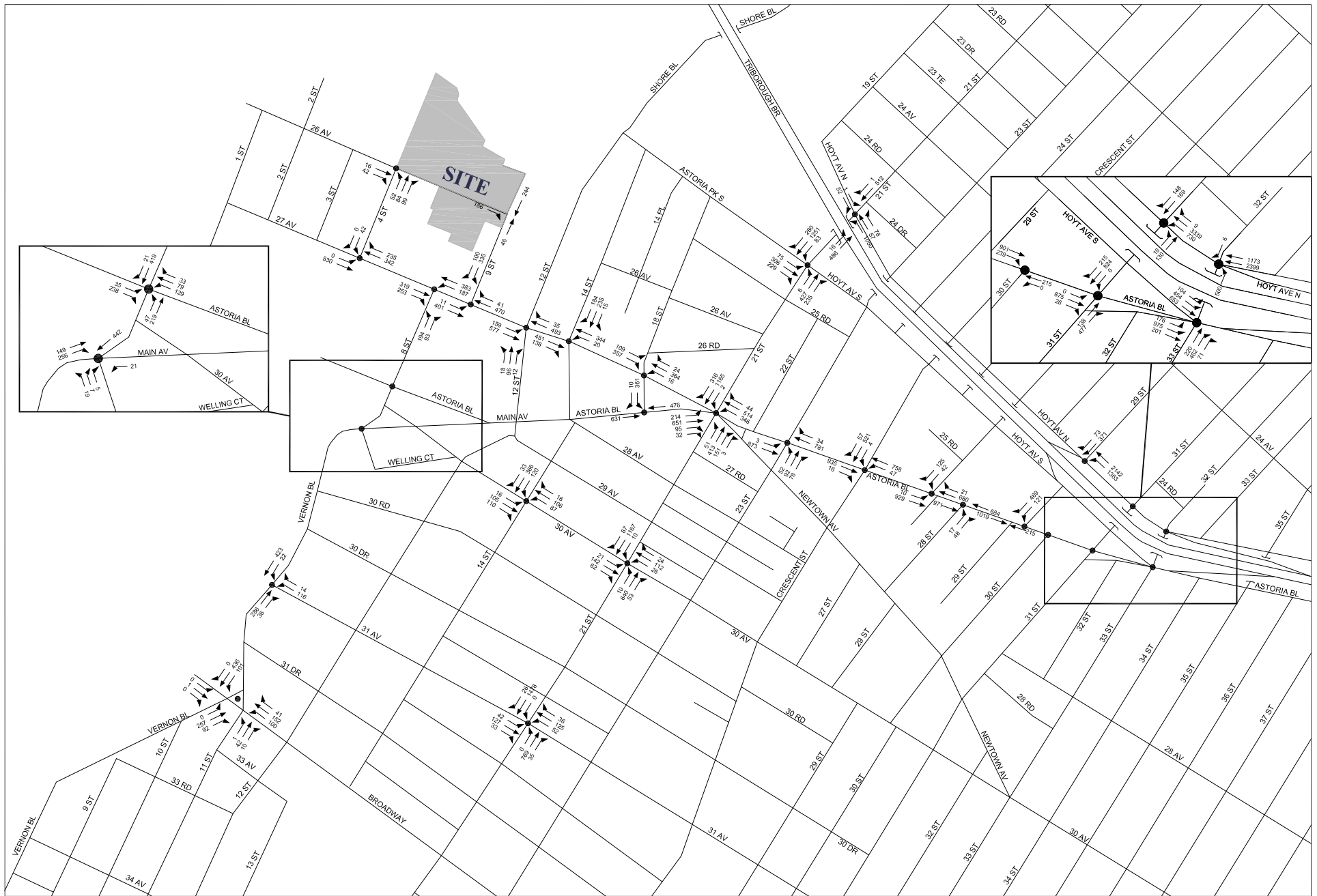


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Increment Volumes - AM Peak Hour

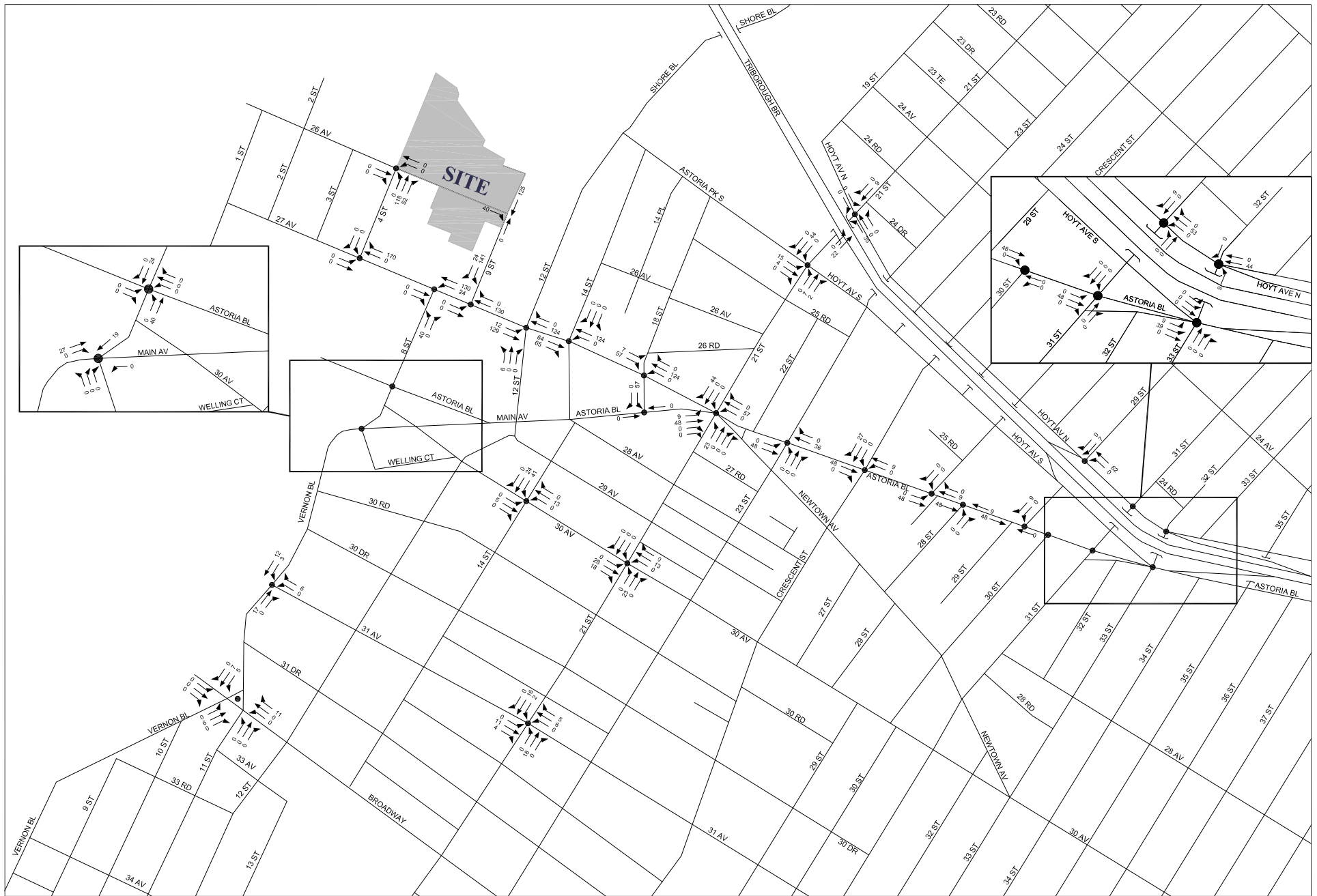


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Volumes - AM Peak Hour

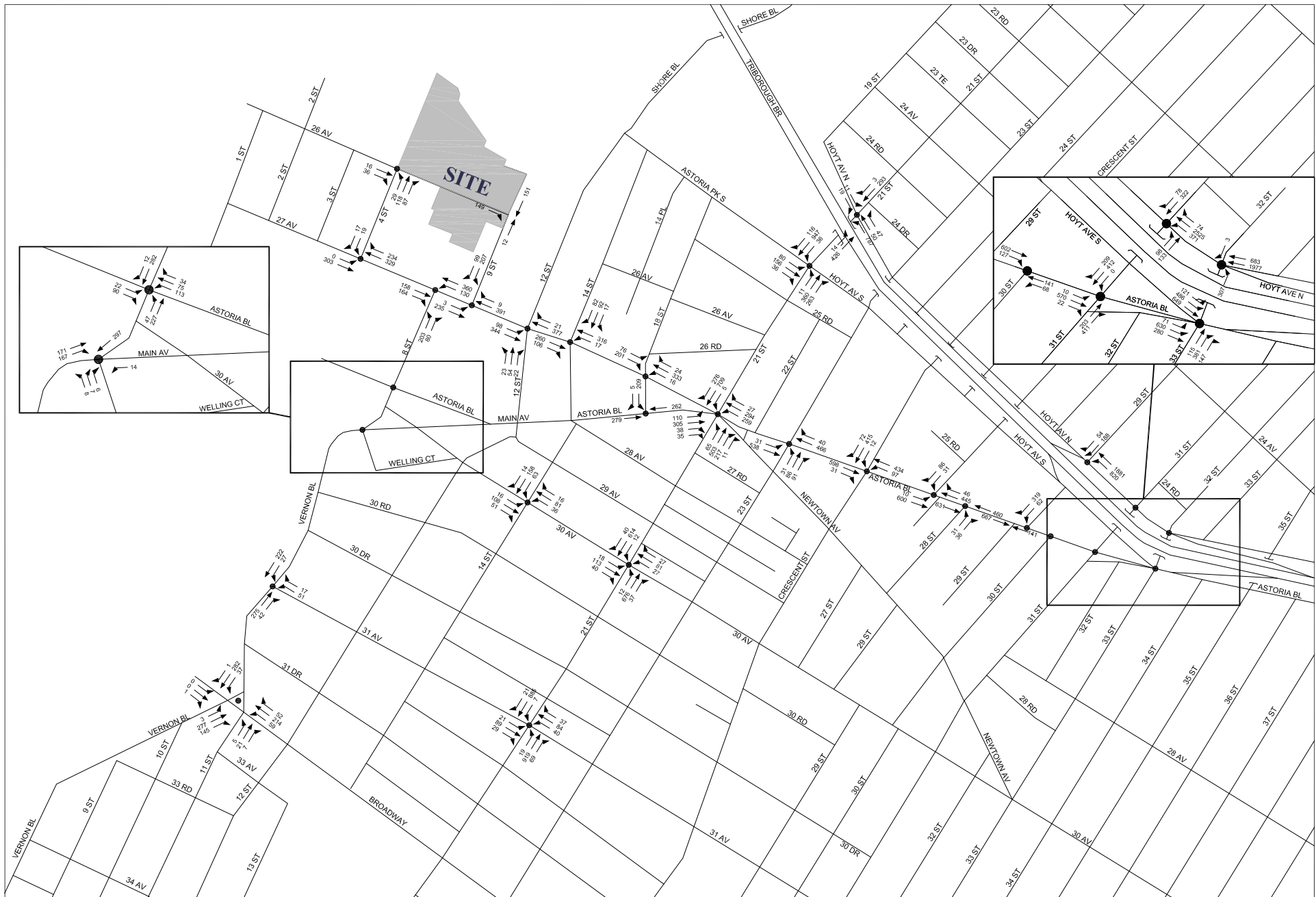


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Increment Volumes - Midday Peak Hour

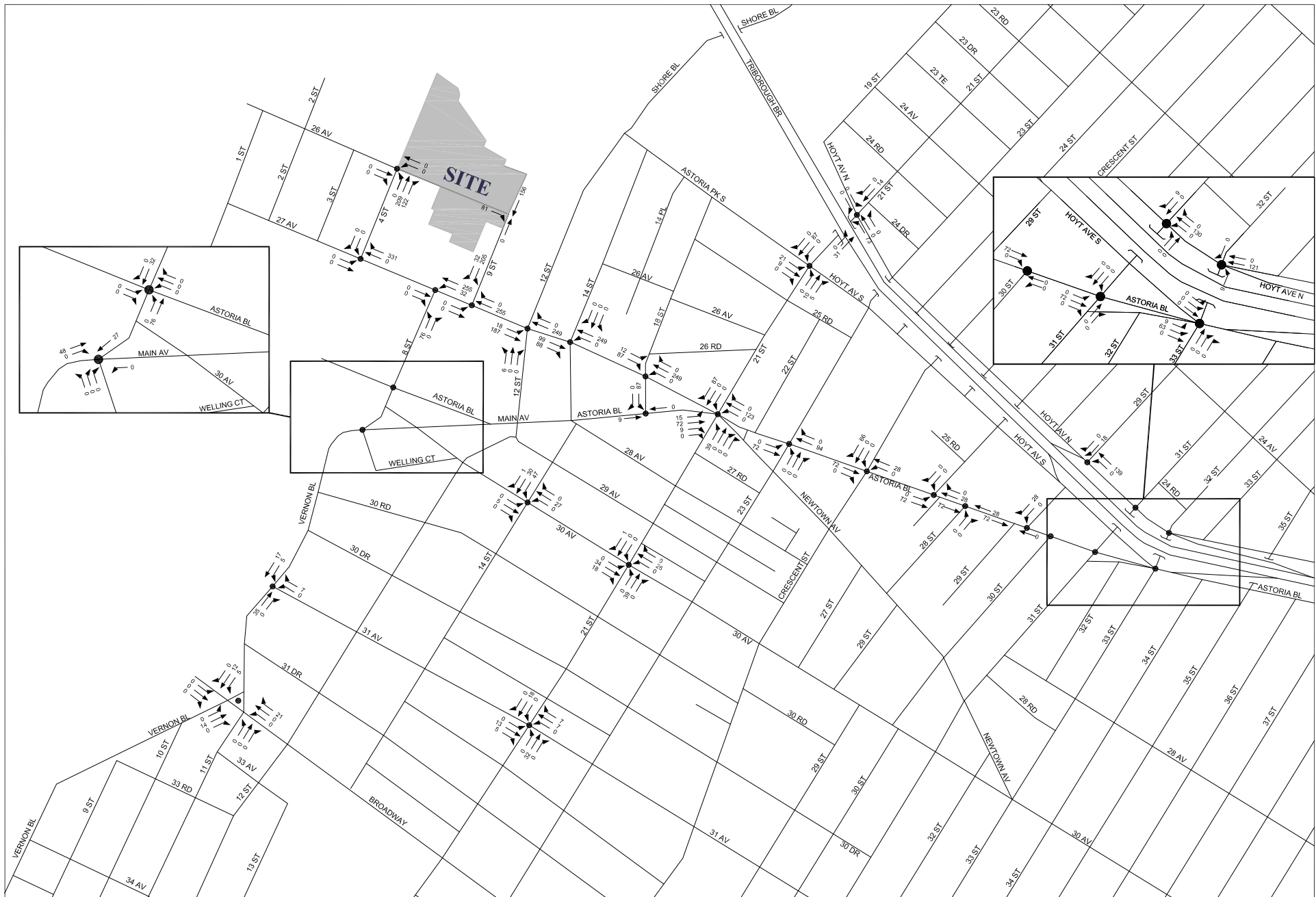


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Volumes - Midday Peak Hour

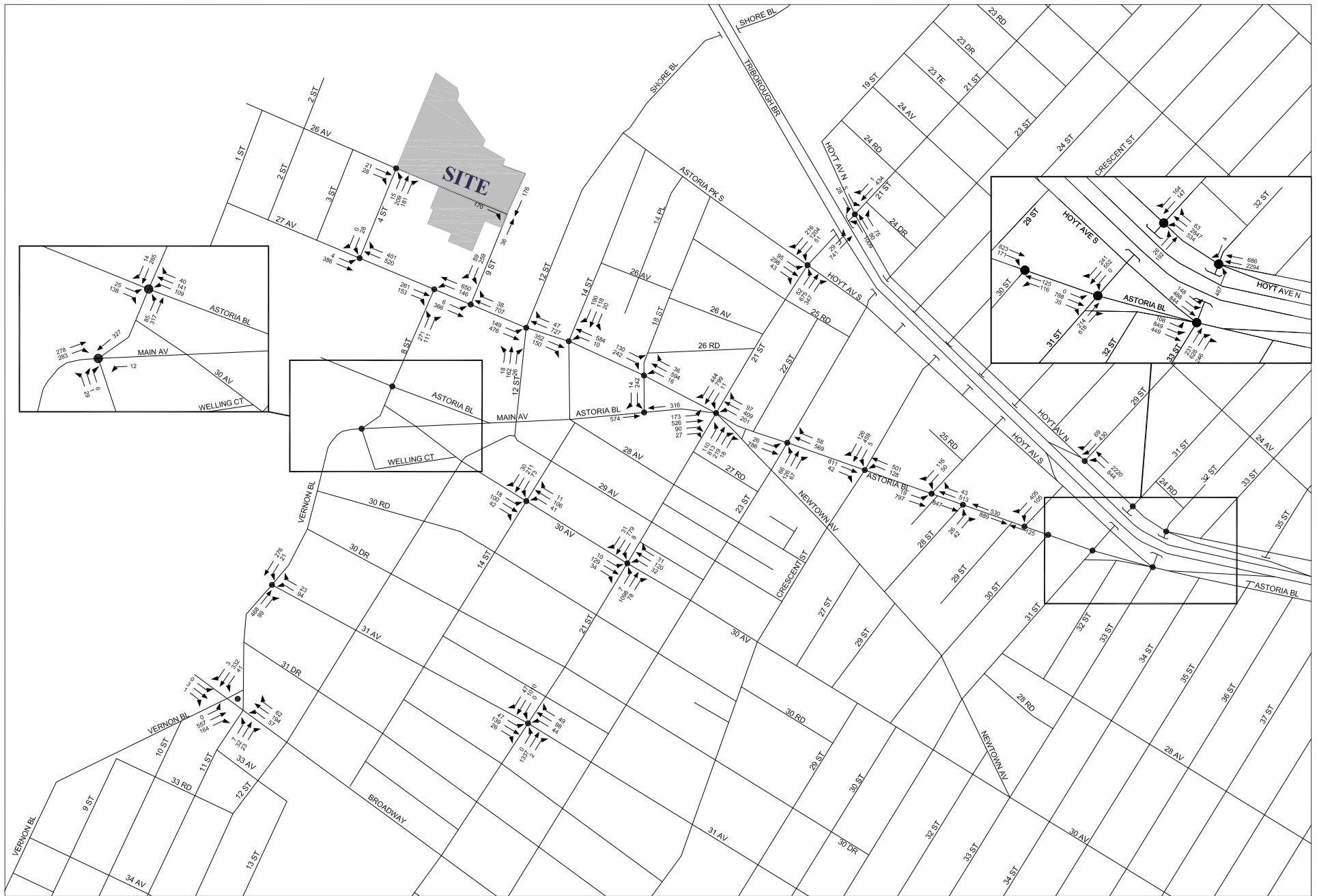


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Increment Volumes - PM Peak Hour

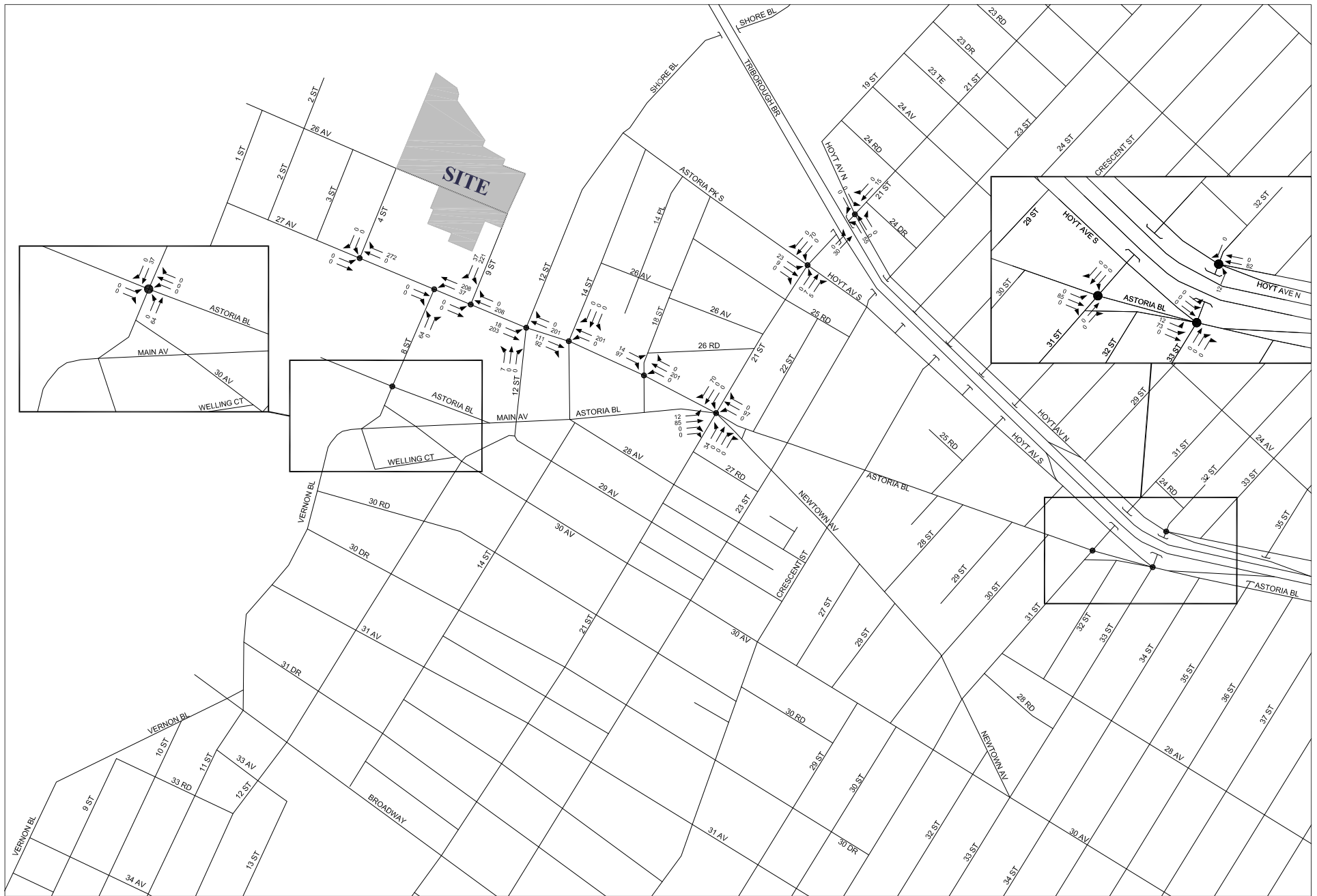


● Analyzed Locations

Astoria Cove

This figure has been revised for the FEIS

Lower Density Alternative Volumes - PM Peak Hour

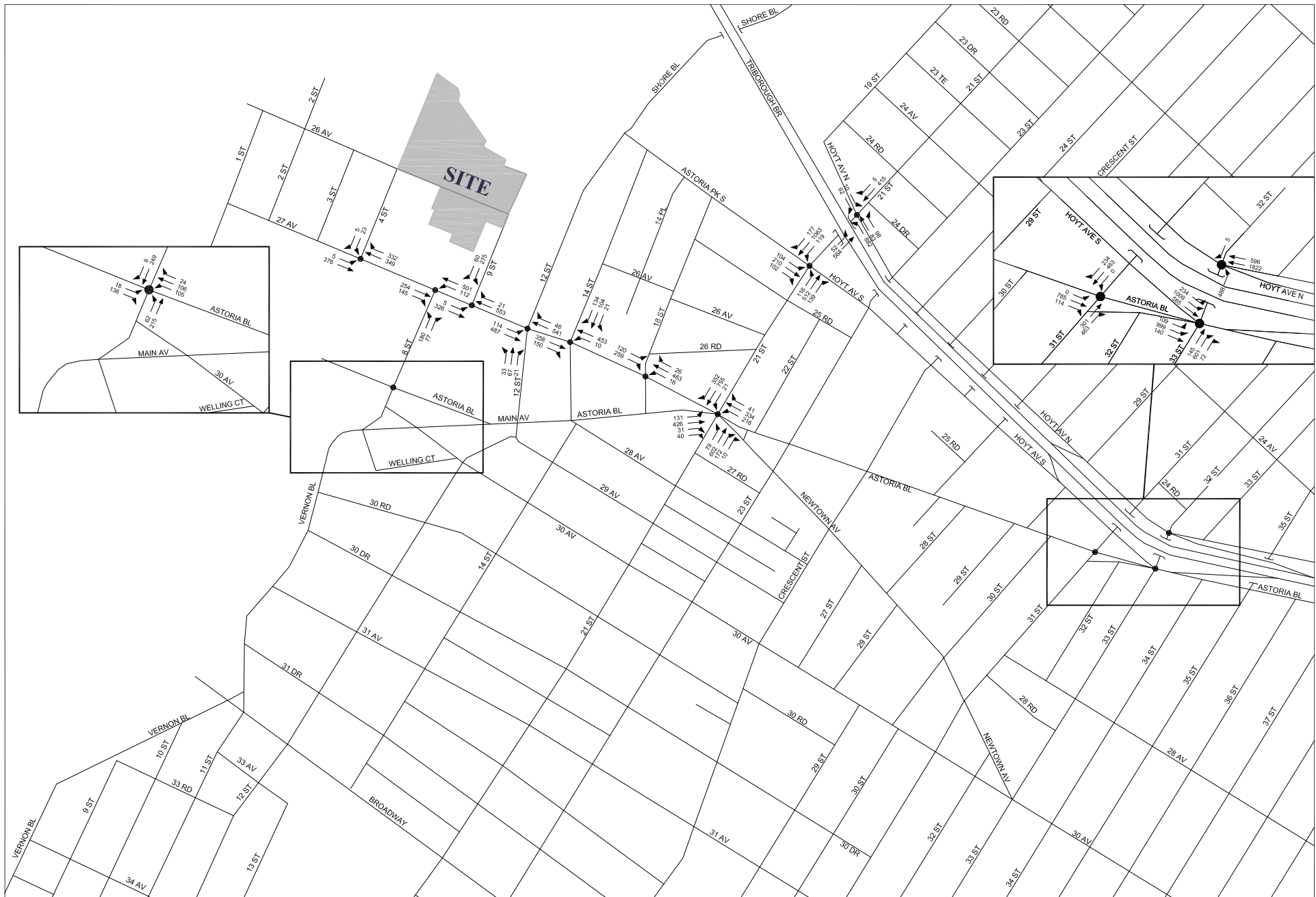


● Analyzed Locations

Astoria Cove

This figure is new to the FEIS

Lower Density Alternative Increment Volumes - Saturday Midday Peak Hour



● Analyzed Locations

Astoria Cove

This figure is new to the FEIS

Lower Density Volumes - Saturday Midday Peak Hour

2023 Lower Density Alternative - Traffic Levels of Service

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
1. 26th Avenue & 4th Street (Unsignalized-Two Way Stop)	EB-LTR NB-LR	- 0.11	- 9.7	- A	NA NA	7.8 9.2	A A	- 0.08	- 9.4	- A	NA NA	7.6 8.9	A A	- 0.09	- 9.3	- A	NA NA	8.0 10.9	A B
A. 26th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-R	0.09	8.9	A	0.32	12.3	B	0.13	8.9	A	0.22	10.4	B	0.10	8.8	A	0.26	11.0	B
2. 27th Avenue & 4th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-LT WB-T WB-R SB-LR	0.78 0.44 0.25 0.10	22.4 13.7 12.2 20.4	C B B C	0.78 0.44 0.64 0.10	22.4 13.7 20.6 20.4	C B C C	0.45 0.43 0.27 0.09	14.1 13.1 12.5 20.3	B B B C	0.45 0.43 0.83 0.09	14.1 13.1 32.3 20.3	B B C C	0.56 0.65 0.29 0.08	15.0 15.6 11.8 21.6	B B B C	0.56 0.65 1.28 0.08	15.0 15.6 159.8 21.6	B B F C
3. 27th Avenue & 8th Street	EB-T EB-R WB-LT NB-L NB-R	0.53 0.66 1.32 0.52 0.57	14.9 21.2 179.6 28.4 34.6	B C F C C	0.53 0.66 1.80 0.70 0.57	14.9 21.2 387.4 34.6 34.6	B C F C C	0.24 0.61 1.25 0.36 0.73	11.9 22.5 151.3 23.3 47.7	B C F C D	0.24 0.61 1.68 0.45 0.73	11.9 22.5 336.1 25.0 47.7	B C F C D	0.36 0.42 1.22 0.48 0.75	13.2 15.9 138.6 25.8 47.4	B B F C D	0.36 0.42 1.83 0.66 0.75	13.2 15.9 400.4 31.2 47.4	B B F C D
4. 27th Avenue & 12th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized)	EB-LT WB-TR NB-LTR	0.64 0.47 0.57	9.9 6.2 43.1	A A D	1.04 0.58 0.59	50.4 7.3 44.1	D A D	0.47 0.41 0.28	11.2 10.4 27.3	B B C	0.74 0.59 0.30	18.0 13.4 27.7	B B C	0.54 0.66 0.86	8.2 8.8 65.8	A A E	0.94 0.96 0.90	30.0 25.3 70.6	C C E
5. 27th Avenue & 14th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-TR WB-LT SB-LTR	0.61 0.66 0.89	19.4 22.9 41.0	B C D	1.08 1.18 0.89	64.7 117.7 41.0	E F D	0.33 0.29 0.52	11.5 11.0 28.5	B B C	0.52 0.45 0.52	13.9 12.8 28.5	B B C	0.45 0.57 0.79	15.7 16.6 36.0	B B D	0.75 0.97 0.79	20.5 28.1 36.0	C C D
6. 27th Avenue & 18th Street (Unsignalized-Two Way Stop)	EB-L WB-L	0.14 0.02	9.7 7.8	A A	0.16 0.02	9.8 8.3	A A	0.10 0.01	8.4 7.7	A A	0.13 0.01	9.1 7.9	A A	0.15 0.01	9.3 7.9	A A	0.22 0.02	11.3 8.2	B A
7. Astoria Boulevard & 21st Street	EB-L EB-TR WB-L WB-TR NB-LT NB-R SB-LT SB-R	1.20 1.70 1.01 0.82 0.72 0.37 0.87 0.59	156.4 365.9 69.0 45.2 31.8 24.7 31.3 26.9	F F E D C C C C	1.21 2.00 1.01 0.89 0.79 0.37 0.87 0.66	160.0 503.3 69.0 47.7 35.0 24.7 31.2 28.2	F F E D C C C C	0.33 0.61 0.86 0.46 0.80 0.65 0.78 0.75	36.9 41.5 53.2 36.4 38.4 36.1 38.5 39.7	D D D D D D D D	0.36 0.68 0.86 0.54 0.95 0.65 0.78 0.90	37.5 43.6 53.2 37.9 44.7 36.1 38.5 46.6	D D D D D D D D	0.61 1.13 0.92 0.99 1.11 0.44 0.78 0.80	46.8 118.0 68.3 73.3 85.3 22.9 30.0 33.1	D F E E F C C C	0.67 1.27 0.91 1.22 1.28 0.44 0.78 0.99	48.8 174.5 66.7 156.2 158.3 22.9 30.0 54.5	D F E F F C C D
8. Astoria Boulevard & 23rd Street	EB-LT WB-TR NB-LTR	1.21 0.91 0.50	127.5 29.7 33.5	F C C	1.43 0.94 0.50	224.3 33.4 33.5	F C C	0.81 0.77 0.56	23.1 17.4 28.5	C B C	0.88 0.83 0.56	27.8 18.8 28.5	C B C	0.95 0.84 0.61	35.5 22.7 37.4	D C D	1.04 0.98 0.61	58.0 32.7 37.4	E C D

2023 Lower Density Alternative - Traffic Levels of Service

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
9. Astoria Boulevard & Crescent Street	EB-TR	1.28	159.6	F	1.49	252.6	F *	0.83	25.1	C	0.90	30.8	C	1.11	88.2	F	1.21	128.8	F *
	WB-LT	1.24	139.4	F	1.38	201.4	F *	1.27	143.1	F	1.34	175.3	F *	1.53	267.6	F	1.71	347.5	F *
	SB-LTR	1.20	130.1	F	1.27	161.4	F *	1.17	110.1	F	1.26	148.5	F *	1.13	99.3	F	1.35	197.4	F *
10. Astoria Boulevard & 27th Street	EB-LT	0.96	38.2	D	1.12	87.3	F *	0.59	16.2	B	0.64	17.3	B	0.79	22.1	C	0.86	26.4	C
	WB-TR	0.84	23.0	C	0.85	23.6	C	0.71	18.3	B	0.72	18.7	B	0.65	16.8	B	0.68	17.6	B
	SB-LR	0.83	41.1	D	0.83	41.1	D	0.53	34.9	C	0.53	34.9	C	0.88	42.7	D	0.88	42.7	D
11. Astoria Boulevard & 28th Street (Unsignalized-Two Way Stop)	NB-LR	0.70	68.0	F	0.91	126.0	F	0.42	28.3	D	0.47	32.9	D	0.41	30.1	D	0.48	38.0	E
12. Astoria Boulevard & 29th Street	EB-T	1.63	328.2	F	1.89	439.8	F *	0.97	48.8	D	1.05	69.0	E *	1.30	179.5	F	1.42	229.4	F *
	WB-T	0.44	27.5	C	0.44	27.5	C	0.23	13.5	B	0.23	13.5	B	0.22	20.3	C	0.22	20.3	C
	SB-L	0.18	17.0	B	0.18	17.0	B	0.12	18.1	B	0.12	18.1	B	0.16	19.5	B	0.16	19.5	B
	SB-R	0.75	31.3	C	0.77	32.2	C	0.70	30.5	C	0.72	31.4	C	0.66	30.4	C	0.70	32.5	C
13. Astoria Boulevard & 30th Street (Unsignalized-Two Way Stop)	WB-LT	0.00	12.9	B	0.00	14.6	B	0.10	10.1	B	0.11	10.5	B	0.23	12.6	B	0.25	13.5	B
14. Astoria Boulevard & 31st Street	EB-LTR	0.83	37.5	D	0.97	47.4	D *	0.57	22.4	C	0.62	23.1	C	0.75	34.8	C	0.82	36.5	D
	NB-T	0.52	41.8	D	0.52	41.8	D	0.54	33.7	C	0.54	33.7	C	0.52	41.6	D	0.52	41.6	D
	NB-R	0.67	16.5	B	0.67	16.5	B	0.53	8.9	A	0.53	8.9	A	0.84	24.2	C	0.84	24.2	C
	SB-T	0.99	51.0	D	0.99	51.0	D	0.55	17.7	B	0.55	17.7	B	0.63	20.8	C	0.63	20.8	C
	SB-R	0.30	14.9	B	0.30	14.9	B	0.31	14.3	B	0.31	14.3	B	0.31	15.1	B	0.31	15.1	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.32	192.2	F	1.46	256.5	F *	1.02	62.4	E	1.08	80.7	F *	1.17	121.1	F	1.23	149.1	F *
	NB-TR	1.09	91.5	F	1.09	91.5	F	0.76	36.6	D	0.76	36.6	D	1.07	77.7	E	1.07	77.7	E
	NB-R	1.09	97.7	F	1.09	97.7	F	0.87	49.3	D	0.87	49.3	D	1.13	108.5	F	1.13	108.5	F
	Hoyt Ave (EB-LT)	0.63	27.1	C	0.63	27.1	C	0.78	30.4	C	0.78	30.4	C	0.87	41.3	D	0.87	41.3	D
16. Hoyt Ave N. & 29th Street	WB-L	0.80	14.6	B	0.80	14.6	B	0.57	12.0	B	0.57	12.0	B	0.45	12.7	B	0.45	12.7	B
	WB-LT	0.94	19.4	B	0.96	20.9	C	0.68	13.2	B	0.71	13.6	B	0.86	21.6	C	0.92	25.1	C
	SB-R	1.03	98.5	F	1.11	125.2	F *	0.53	35.5	D	0.55	35.9	D	0.85	54.2	D	0.88	57.0	E
17. Hoyt Ave N. & 31st Street	WB-L	0.81	37.5	D	0.81	37.5	D	0.71	36.5	D	0.71	36.5	D	0.34	15.0	B	0.34	15.0	B
	WB-T	1.15	91.2	F	1.16	97.2	F *	0.93	26.6	C	0.95	29.0	C	0.99	40.1	D	1.04	53.4	D *
	WB-R	0.02	7.5	A	0.02	7.5	A	0.18	11.6	B	0.18	11.6	B	0.15	13.3	B	0.15	13.3	B
	NB-Defl	-	-	-	-	-	-	0.66	40.3	D	0.66	40.3	D	-	-	-	-	-	-
	NB-T	-	-	-	-	-	-	0.23	21.2	C	0.23	21.2	C	-	-	-	-	-	-
	NB-LT	0.32	36.4	D	0.32	36.4	D		30.4	C		30.4	C	0.29	28.3	C	0.29	28.3	C
	SB-T	0.62	44.5	D	0.62	44.5	D	0.59	27.2	C	0.59	27.2	C	0.25	28.1	C	0.25	28.1	C
	SB-R	0.74	57.8	E	0.77	60.1	E	0.26	22.2	C	0.29	22.7	C	0.49	34.6	C	0.52	35.5	D

2023 Lower Density Alternative - Traffic Levels of Service

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.74	13.3	B	0.74	13.3	B	0.51	9.7	A	0.51	9.7	A	0.46	10.9	B	0.46	10.9	B
	WB(Ramp)-T	1.17	127.2	F	1.19	134.9	F *	1.03	45.5	D	1.06	53.3	D *	1.13	84.7	F	1.19	111.0	F *
	NB-L	0.65	45.2	D	0.66	45.3	D	0.32	28.4	C	0.33	28.5	C	0.52	38.6	D	0.53	38.7	D
	SB-R	0.03	38.0	D	0.03	38.0	D	0.02	25.9	C	0.02	25.9	C	0.02	33.3	C	0.02	33.3	C
19. Astoria Boulevard & 8th Street	EB-L	0.16	24.6	C	0.16	24.6	C	0.09	26.1	C	0.09	26.1	C	0.17	29.0	C	0.17	29.0	C
	EB-R	0.77	44.4	D	0.77	44.4	D	0.27	29.0	C	0.27	29.0	C	0.66	40.6	D	0.66	40.6	D
	WB-L	0.32	26.9	C	0.32	26.9	C	0.36	30.6	C	0.36	30.6	C	0.31	31.0	C	0.31	31.0	C
	WB-TR	0.34	27.3	C	0.34	27.3	C	0.34	30.3	C	0.34	30.3	C	0.50	35.3	D	0.50	35.3	D
	NB-LT	0.52	20.2	C	0.65	23.3	C	0.46	17.2	B	0.52	18.5	B	0.87	27.7	C	1.03	53.8	D *
	SB-TR	0.74	27.0	C	0.83	31.7	C	0.40	16.3	B	0.43	16.8	B	0.39	15.1	B	0.43	15.8	B
20. 30th Avenue & 14th Street (Unsignalized-All Way Stop)	EB-LTR	NA	13.0	B	NA	15.1	C	NA	9.1	A	NA	9.6	A	NA	9.6	A	NA	10.4	B
	WB-LTR	NA	13.4	B	NA	16.1	C	NA	9.1	A	NA	9.7	A	NA	9.5	A	NA	10.6	B
	SB-LTR	NA	28.5	D	NA	56.0	F *	NA	9.5	A	NA	10.9	B	NA	11.4	B	NA	15.2	C
21. 30th Avenue & 21st Street	EB-LTR	0.52	39.0	D	0.73	48.8	D *	0.35	34.5	C	0.47	37.6	D	0.37	35.1	D	0.53	39.4	D
	WB-LTR	0.48	38.0	D	0.55	40.1	D	0.39	35.6	D	0.42	36.5	D	0.50	38.8	D	0.58	41.3	D
	NB-LTR	0.53	15.0	B	0.55	15.2	B	0.53	14.9	B	0.54	15.2	B	0.78	21.7	C	0.81	22.9	C
	SB-LTR	0.76	20.3	B	0.77	20.5	C	0.43	13.1	B	0.43	13.1	B	0.49	14.0	B	0.49	14.0	B
22. Vernon Boulevard & Welling Court/ 8th Street	EB-LT	1.18	116.5	F	1.25	149.0	F *	0.91	45.7	D	0.98	57.7	E *	1.43	229.6	F	1.57	292.1	F *
	WB-TR	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.04	21.1	C	0.06	21.3	C	0.06	21.3	C
	NB-LTR	0.33	36.1	D	0.33	36.1	D	0.17	31.0	C	0.17	31.0	C	0.18	29.5	C	0.18	29.5	C
	SB-R	1.01	68.7	E	1.10	95.3	F *	0.71	35.1	D	0.76	37.6	D	0.72	37.9	D	0.79	41.8	D
23. Astoria Boulevard & 18th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized)	EB-T	0.91	39.6	D	0.92	41.0	D	0.41	23.1	C	0.41	23.1	C	0.76	31.5	C	0.77	32.0	C
	WB-T	0.66	27.1	C	0.66	27.1	C	0.41	22.9	C	0.41	22.9	C	0.44	22.2	C	0.44	22.2	C
	SB-LR	0.46	25.0	C	0.78	37.2	D	0.32	22.1	C	0.43	24.3	C	0.32	22.0	C	0.48	25.2	C
24. Hoyt Avenue N. & 21st Street	EB-L	0.02	40.4	D	0.02	40.4	D	0.12	44.0	D	0.12	44.0	D	0.11	43.9	D	0.11	43.9	D
	EB-R	0.37	47.5	D	0.37	47.5	D	0.15	44.5	D	0.15	44.5	D	0.19	45.3	D	0.19	45.3	D
	WB-L	1.09	88.0	F	1.12	99.5	F *	0.83	42.3	D	0.87	44.5	D	0.98	62.2	E	1.06	83.6	F *
	WB-TR	0.25	14.8	B	0.25	14.8	B	0.17	14.2	B	0.17	14.2	B	0.30	16.9	B	0.30	16.9	B
	NB-L	0.31	32.3	C	0.32	32.9	C	0.12	25.4	C	0.12	25.5	C	0.17	24.7	C	0.17	24.8	C
	NB-T	1.20	143.8	F	1.29	180.0	F *	0.81	46.3	D	0.86	50.7	D	1.12	99.0	F	1.16	118.8	F *
	SB-TR	1.04	65.0	E	1.06	73.1	E *	0.60	34.1	C	0.61	34.7	C	0.77	37.9	D	0.80	39.2	D

2023 Lower Density Alternative - Traffic Levels of Service

Intersection	Lane Group	AM PEAK HOUR						MIDDAY PEAK HOUR						PM PEAK HOUR					
		NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY			NO-ACTION			LOWER DENSITY		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.84	41.9	D	0.92	44.3	D	0.36	32.0	C	0.40	32.6	C	0.58	37.9	D	0.63	39.0	D
	NB-LT	-	-	-	-	-	-	-	-	-	-	-	-	0.72	16.9	B	0.75	17.7	B
	NB-R	-	-	-	-	-	-	-	-	-	-	-	-	0.51	13.3	B	0.52	13.4	B
	NB-LTR	0.61	14.3	B	0.63	14.8	B	0.48	15.0	B	0.49	15.1	B		15.7	B		16.3	B
	SB-LTR	1.12	81.1	F	1.16	95.4	F *	0.74	20.2	C	0.77	21.0	C	1.00	40.4	D	1.05	56.6	E *
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.02	8.5	A	0.01	8.9	A	0.01	8.1	A	0.00	8.6	A	0.01	8.8	A	0.01	9.8	A
	SB-LR	0.56	29.6	D	2.06	521.3	F *	0.43	15.9	C	0.93	61.6	F *	0.60	31.2	D	2.23	606.7	F *
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.66	38.2	E	0.72	45.7	E *	0.25	17.7	C	0.28	18.5	C	0.51	29.2	D	0.58	35.1	E *
	SB-LT	0.02	8.3	A	0.02	8.3	A	0.03	8.1	A	0.03	8.2	A	0.02	8.9	A	0.03	9.0	A
28. Vernon Boulevard & Broadway/11th Street	EB-LTR	0.01	28.2	C	0.01	28.2	C	0.02	25.4	C	0.02	25.4	C	0.03	33.2	C	0.03	33.2	C
	WB-LT	0.87	38.9	D	0.87	38.9	D	-	-	-	-	-	-	0.77	47.0	D	0.77	47.0	D
	WB-R	0.21	29.9	C	0.25	30.3	C	-	-	-	-	-	-	0.24	35.8	D	0.36	37.8	D
	WB-LTR	0.00	37.7	D		37.6	D	0.96	55.5	E	1.01	66.3	E *	0.00	45.1	D		44.9	D
	NB (Vernon Blvd)-LT	0.28	8.2	A	0.29	8.2	A	0.29	9.0	A	0.30	9.1	A	0.52	10.1	B	0.54	10.3	B
	NB (Vernon Blvd)-R	0.11	6.8	A	0.11	6.8	A	0.21	8.3	A	0.21	8.3	A	0.18	6.7	A	0.18	6.7	A
	NB (11th Street)-LTR	0.38	41.1	D	0.38	41.1	D	0.22	32.8	C	0.22	32.8	C	0.33	38.2	D	0.33	38.2	D
	SB-LTR	1.36	195.9	F	1.45	234.1	F *	0.67	31.5	C	0.71	33.2	C	0.88	45.4	D	0.99	65.6	E *
29. 31st Avenue & 21st Street	EB-LTR	0.67	45.6	D	0.70	47.3	D	0.34	34.5	C	0.38	35.4	D	0.50	35.0	D	0.54	36.3	D
	WB-LTR	0.58	41.1	D	0.61	42.0	D	0.42	35.9	D	0.45	36.7	D	0.42	32.4	C	0.45	33.2	C
	NB-TR	0.50	14.2	B	0.51	14.3	B	0.64	17.0	B	0.65	17.3	B	0.79	24.2	C	0.81	25.0	C
	SB-TR	0.90	27.9	C	0.92	30.1	C	0.58	15.7	B	0.60	16.0	B	0.67	20.3	C	0.68	20.6	C

Note:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, Dfl-Analysis considers a Defacto Left Lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

* - Denotes an impacted movement

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

2023 Lower Density Alternative - Mitigation

Intersection	Lane Group	No-Action			Lower Density			LDA Mitigation			Proposed Mitigation
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
AM PEAK HOUR											
3. 27th Avenue & 8th Street	EB-T	0.53	14.9	B	0.53	14.9	B	0.53	14.9	B	Install "No Standing Anytime" regulations to daylight the WB approach along 27th Avenue between 8th and 9th Streets. Install "No Standing Anytime regulations" along the WB receiving lane for 100 feet to allow vehicles to realign with the receiving end. Shift the WB approach centerline 1-foot to the south and restripe the WB approach from one 11-foot wide travel lane with parking and one 11-foot wide receiving lane to one 10-foot wide through-only lane, one 10-foot wide left-turn only lane, and one 10-foot wide receiving lane.
	EB-R	0.66	21.2	C	0.66	21.2	C	0.66	21.2	C	
	WB-LT	1.32	179.6	F	1.80	387.4	F	-	-	-	
	WB-L	-	-	-	-	-	-	0.86	41.7	D	
	WB-T	-	-	-	-	-	-	0.68	18.3	B	
	NB-L	0.52	28.4	C	0.70	34.6	C	0.74	36.6	D	
	NB-R	0.57	34.6	C	0.57	34.6	C	0.51	31.7	C	
4. 27th Avenue & 12th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized)	EB-LT	0.64	9.9	A	1.04	50.4	D	1.01	42.2	D	Modify signal timing: Shift 1s of green from the NB phase to the EB/WB phase [NB phase green shifts from 16s to 15s; EB/WB phase green shifts from 64s to 65s].
	WB-TR	0.47	6.2	A	0.58	7.3	A	0.58	6.7	A	
	NB-LTR	0.57	43.1	D	0.59	44.1	D	0.63	47.5	D	
5. 27th Avenue & 14th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-TR	0.61	19.4	B	1.08	64.7	F	1.06	53.1	D	Partially Mitigated. Modify signal timing: Shift 1s of green from the SB phase to the EB/WB phase [SB phase green shifts from 40s to 39s; EB/WB phase green shifts from 40s to 41s].
	WB-LT	0.66	22.9	C	1.18	117.7	F	1.10	87.9	F	
	SB-LTR	0.89	41.0	D	0.89	41.0	D	0.91	45.1	D	
7. Astoria Boulevard & 21st Street	EB-L	1.20	156.4	F	1.21	160.0	F	1.07	106.2	F	Partially Mitigated.
	EB-TR	1.70	365.9	F	2.00	503.3	F	1.78	401.1	F	
	WB-L	1.01	69.0	E	1.01	69.0	E	1.01	69.0	E	
	WB-TR	0.82	45.2	D	0.89	47.7	D	0.89	47.7	D	
	NB-LT	0.72	31.8	C	0.79	35.0	C	0.87	41.8	D	
	NB-R	0.37	24.7	C	0.37	24.7	C	0.40	27.1	C	
	SB-LT	0.87	31.3	C	0.87	31.2	C	0.92	34.7	C	
	SB-R	0.59	26.9	C	0.66	28.2	C	0.71	31.0	C	
8. Astoria Boulevard & 23rd Street	EB-LT	1.21	127.5	F	1.43	224.3	F	1.18	112.1	F	Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for approximately 100 feet to bus stop to daylight the approach. Modify signal timing: Shift 2s of green from the NB phase to the EB/WB phase [NB phase green shifts from 43s to 41s; EB/WB phase green shifts from 67s to 69s].
	WB-TR	0.91	29.7	C	0.94	33.4	C	0.91	29.2	C	
	NB-LTR	0.50	33.5	C	0.50	33.5	C	0.52	35.6	D	
9. Astoria Boulevard & Crescent Street	EB-TR	1.28	159.6	F	1.49	252.6	F	1.21	127.6	F	Partially Mitigated. Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet. Modify signal timing: Shift 1s of green from the SB phase to the EB/WB phase [SB phase green shifts from 43s to 42s; EB/WB phase green shifts from 67s to 68s].
	WB-LT	1.24	139.4	F	1.38	201.4	F	1.24	172.7	F	
	SB-LTR	1.20	130.1	F	1.27	161.4	F	-	-	-	
	SB-LT	-	-	-	-	-	-	1.19	125.7	F	
	SB-R	-	-	-	-	-	-	0.19	27.3	C	
10. Astoria Boulevard & 27th Street	EB-LT	0.96	38.2	D	1.12	87.3	F	1.09	74.4	E	Partially Mitigated. Modify signal timing: Shift 2s of green from the SB phase to the EB/WB phase [SB phase green shifts from 37s to 35s; EB/WB phase green shifts from 73s to 75s].
	WB-TR	0.84	23.0	C	0.85	23.6	C	0.83	21.3	C	
	SB-LR	0.83	41.1	D	0.83	41.1	D	0.89	44.5	D	
12. Astoria Boulevard & 29th Street	EB-T	1.63	328.2	F	1.89	439.8	F	1.49	263.0	F	Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the EB approach downstream receiving segment to provide two receiving lanes. Restripe EB approach downstream receiving segment from one 17-foot wide receiving lane with a 10-foot wide channel zone to one 14-foot wide receiving lane and one 13-foot wide receiving lane. Modify signal timing: Shift 2s of green from the SB phase to the EB/WB phase [SB phase green shifts from 60s to 58s; EB/WB phase green shifts from 50s to 52s].
	WB-T	0.44	27.5	C	0.44	27.5	C	0.43	25.8	C	
	SB-L	0.18	17.0	B	0.18	17.0	B	0.19	18.2	B	
	SB-R	0.75	31.3	C	0.77	32.2	C	0.80	35.5	D	
14. Astoria Boulevard & 31st Street	EB-LTR	0.83	37.5	D	0.97	47.4	D	0.95	43.9	D	Modify signal timing: Shift 1s of green from the SB phase to the EB phase [SB phase green shifts from 36s to 35s; EB phase green shifts from 43s to 44s; SB/NB phase green time remains the same].
	NB-T	0.52	41.8	D	0.52	41.8	D	0.52	41.8	D	
	NB-R	0.67	16.5	B	0.67	16.5	B	0.67	15.7	B	
	SB-T	0.99	51.0	D	0.99	51.0	D	1.01	55.5	E	
	SB-R	0.30	14.9	B	0.30	14.9	B	0.31	15.5	B	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.32	192.2	F	1.46	256.5	F	1.34	197.4	F	Partially Mitigated. Modify signal timing: Shift 3s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 52s to 49s; EB Astoria Boulevard phase green time shifts from 31s to 34s; NB phase green time remains the same].
	NB-TR	1.09	91.5	F	1.09	91.5	F	1.09	91.5	F	
	NB-R	1.09	97.7	F	1.09	97.7	F	1.09	97.7	F	
	Hoyt Ave (EB-LT)	0.63	27.1	C	0.63	27.1	C	0.67	29.6	C	
16. Hoyt Ave N. & 29th Street	WB-L	0.80	14.6	B	0.80	14.6	B	0.82	16.2	B	Modify signal timing: Shift 2s of green time from the WB phase to the SB phase [WB phase green time shifts from 82s to 80s; SB phase green time shifts from 21s to 23s; the bus queue jump phase green time remains the same].
	WB-LT	0.94	19.4	B	0.96	20.9	C	0.98	25.0	C	
	SB-R	1.03	98.5	F	1.11	125.2	F	1.02	91.8	F	
17. Hoyt Ave N. & 31st Street	WB-L	0.81	37.5	D	0.81	37.5	D	0.79	35.9	D	Install "No Standing 7AM-10AM Mon-Fri" regulations along the SB approach for 250 feet to daylight the approach. Modify signal timing: Shift 1s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 32s to 31s; WB phase green time shifts from 78s to 79s].
	WB-T	1.15	91.2	F	1.16	97.2	F	1.15	90.3	F	
	WB-R	0.02	7.5	A	0.02	7.5	A	0.02	7.1	A	
	NB-LT	0.32	36.4	D	0.32	36.4	D	0.3	37.4	D	
	SB-T	0.62	44.5	D	0.62	44.5	D	0.6	46.1	D	
	SB-R	0.74	57.8	E	0.77	60.1	E	0.7	54.1	D	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.74	13.3	B	0.74	13.3	B	0.73	12.5	B	Modify signal timing: Shift 1s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 25s to 24s; WB phase green time shifts from 85s to 86s].
	WB(Ramp)-T	1.17	127.2	F	1.19	134.9	F	1.17	128.2	F	
	NB-L	0.65	45.2	D	0.66	45.3	D	0.69	46.5	D	
	SB-R	0.03	38.0	D	0.03	38.0	D	0.03	38.8	D	

Notes: Text in **red** indicated new mitigation measures proposed for the Lower Dentistry Alternative.

Movements highlighted in **orange** indicate movements that are fully mitigated under the Lower Density Alternative that are partially mitigated under the Proposed Action.

2023 Lower Density Alternative - Mitigation

Intersection	Lane Group	No-Action			Lower Density			LDA Mitigation			Proposed Mitigation
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
20. 30th Avenue & 14th Street (Unsignalized-All Way Stop)	EB-LTR WB-LTR SB-LTR	NA NA NA	13.0 13.4 28.5	B B D	NA NA NA	15.1 16.1 56.0	C C F				Unmitigatable.
21. 30th Avenue & 21st Street	EB-LTR WB-LTR NB-LTR SB-LTR	0.52 0.48 0.53 0.76	39.0 38.0 15.0 20.3	D D B B	0.73 0.55 0.55 0.77	48.8 40.1 15.2 20.5	D D B C	0.68 0.50 0.57 0.80	43.0 36.3 17.3 23.6	D D B C	Modify signal timing: Shift 3s of green time from the NB/SB phase to the EB/WB phase [NB/SB phase green time shifts from 73s to 70s; EB/WB phase green time shifts from 37s to 40s].
22. Vernon Boulevard & Welling Court/ 8th Street	EB-LTR WB-TR NB-LTR SB-R	1.18 0.04 0.33 1.01	116.5 21.1 36.1 68.7	F C D E	1.25 0.04 0.33 1.10	149.0 21.1 36.1 95.3	F C D F	1.21 0.04 0.33 1.06	130.0 21.8 36.1 82.0	F C D F	Partially Mitigated. Modify signal timing: Shift 1s of green time from the WB phase to the EB/SB phase [WB phase green time shifts from 29s to 28s; EB/SB phase green time shifts from 29s to 30s; NB phase green time remains the same].
24. Hoyt Avenue N. & 21st Street	EB-L EB-R WB-L WB-TR NB-L NB-T SB-TR	0.02 0.37 1.09 0.25 0.31 1.20 1.04	40.4 47.5 88.0 14.8 32.3 143.8 65.0	D D F B C F E	0.02 0.37 1.12 0.25 0.32 1.29 1.06	40.4 47.5 99.5 14.8 32.9 180.0 73.1	D D F B C F E	0.02 0.37 1.08 0.25 0.32 1.29 0.93	40.4 47.5 84.4 14.8 32.9 180.0 41.3	D D F B C F D	Partially Mitigated. Install "No Standing 7AM-10AM Mon-Fri" regulations along the SB approach for 250 feet to daylight the approach. Restripe WB approach from one 5-foot wide bike lane, one 11-foot wide through-right lane and two 11-foot wide left-turn lanes to one 5-foot wide bike lane, one 11-foot wide through-right lane and two 12-foot wide left-turn lanes.
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR NB-LTR SB-LTR	0.84 0.61 1.12	41.9 14.3 81.1	D B F	0.92 0.63 1.16	44.3 14.8 95.4	D B F	0.95 0.62 1.14	46.5 14.0 86.4	D B F	Partially Mitigated. Modify signal timing: Shift 1s of green time from the EB phase to the NB/SB phase [EB phase green time shifts from 33s to 32s; NB/SB phase green time shifts from 77s to 78s].
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT EB-T WB-TR WB-T SB-LR SB-L SB-R	0.02 - - - 0.56 - -	8.5 - - - 29.6 - -	A - - - D - -	0.01 - - - 2.06 - -	8.9 - - - 521.3 - -	A - - - F - -	- 0.66 - 0.85 - 0.77 0.26	- 22.3 - 33.1 - 33.0 18.7	- C - C - B B	Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 43s; SB phase green time is 37s; all phases have 3s of amber and 2s of all red time. Install "No Standing 4PM - 7PM Mon - Fri" regulation along the WB approach for 250 feet. Install "No Standing Anytime" regulations along the east curb of 9th Street for 150 feet to allow for a left-turn lane. Install "No Standing 4PM-7PM Mon-Fri" regulation along the east curb of 9th Street to daylight the approach for 250 feet. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5-foot wide NB receiving lane with parking to one 20-foot wide right-turn lane with parking and one 12-foot wide left-turn lane for 100 feet. Shift the EB approach centerline 1-foot to the south and restripe the EB approach from one 11-foot wide travel lane and one 19-foot wide receiving lane with parking to one 10-foot wide through-only lane and two 10-foot wide receiving lanes. [Two-way (NB/SB) 9th Street would be converted to a one-way SB roadway between 26th and 27th Avenues as a result of the proposed mitigation measures.]
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR SB-LT	0.66 0.02	38.2 8.3	E A	0.72 0.02	45.7 8.3	E A				Unmitigatable.
28. Vernon Boulevard & Broadway/11th Street	EB-LTR WB-LT WB-R NB (Vernon Blvd)-LT NB (Vernon Blvd)-R NB (11th Street)-LTR SB-LTR	0.01 0.87 0.21 0.28 0.11 0.38 1.36	28.2 38.9 29.9 8.2 6.8 41.1 195.9	C D C A A D F	0.01 0.87 0.25 0.29 0.11 0.38 1.45	28.2 38.9 30.3 8.2 6.8 41.1 234.1	C D C A A D F	0.01 0.91 0.27 0.28 0.11 0.38 1.40	29.0 41.3 31.1 7.8 6.4 41.1 214.8	C D C A A D F	Partially Mitigated. Modify signal timing: Shift 1s of green time from the EB/WB phase to the NB/SB Vernon Boulevard phase [EB/WB phase green time shifts from 25s to 24s; NB/SB Vernon Boulevard phase green time shifts from 43s to 44s; NB 11th Street phase green time remains the same].
MIDDAY PEAK HOUR											
3. 27th Avenue & 8th Street	EB-T EB-R WB-LT WB-L WB-T NB-L NB-R	0.24 0.61 1.25 - - 0.36 0.73	11.9 22.5 151.3 - - 23.3 47.7	B C F - - C D	0.24 0.61 1.68 - - 0.45 0.73	11.9 22.5 336.1 - - 25.0 47.7	B C F - - C D	0.24 0.61 - 0.92 0.65 0.45 0.70	11.9 22.5 - 55.1 19.2 25.1 45.0	B C - E B C D	Install "No Standing Anytime" regulations to daylight the WB approach along 27th Avenue between 8th and 9th Streets. Install "No Standing Anytime regulations" along the WB receiving lane for 100 feet to allow vehicles to realign with the receiving end. Shift the WB approach centerline 1-foot to the south and restripe the WB approach from one 11-foot wide travel lane with parking and one 11-foot wide receiving lane to one 10-foot wide through-only lane, one 10-foot wide left-turn only lane, and one 10-foot wide receiving lane.
7. Astoria Boulevard & 21st Street	EB-L EB-TR WB-L WB-TR NB-LT NB-R SB-LT SB-R	0.33 0.61 0.86 0.46 0.80 0.65 0.78 0.75	36.9 41.5 53.2 36.4 38.4 36.1 38.5 39.7	D D D D D D D D	0.36 0.68 0.86 0.54 0.95 0.65 0.78 0.90	37.5 43.6 53.2 37.9 44.7 36.1 38.5 46.6	D D D D D D D D	0.36 0.68 0.88 0.56 0.92 0.63 0.76 0.87	37.5 43.6 56.6 38.9 41.7 35.1 37.4 44.0	D D E D D D D D	Modify signal timing: shift 1s of green from the WB phase to the NB/SB phase [WB phase green shifts from 34s to 33s; NB/SB phase green shifts from 38s to 39s; EB phase green time remains the same].
9. Astoria Boulevard & Crescent Street	EB-TR WB-LT SB-LTR SB-LT SB-R	0.83 1.27 1.17 - -	25.1 143.1 110.1 - -	C F F - -	0.90 1.34 1.26 - -	30.8 175.3 148.5 - -	C F F - -	0.86 1.24 - 1.20 0.25	25.0 128.2 - 124.2 22.7	C F - F C	Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet. Modify signal timing: Shift 2s of green time from the SB phase to the EB/WB phase [SB phase green time shifts from 31s to 29s; EB/WB phase green time shifts from 49s to 51s].
12. Astoria Boulevard & 29th Street	EB-T WB-T SB-L SB-R	0.97 0.23 0.12 0.70	48.8 13.5 18.1 30.5	D B B C	1.05 0.23 0.12 0.72	69.0 13.5 18.1 31.4	E B B C	0.98 0.22 0.13 0.78	48.7 11.7 20.1 38.0	D B B D	Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the EB approach downstream receiving segment to provide two receiving lanes. Restripe EB approach downstream receiving segment from one 17-foot wide receiving lane with a 10-foot wide channel zone to one 14-foot wide receiving lane and one 13-foot wide receiving lane. Modify signal timing: Shift 3s of green from the SB phase to the EB/WB phase [SB phase green shifts from 35s to 32s; EB/WB phase green shifts from 45s to 48s].

Notes: Text in **red** indicated new mitigation measures proposed for the Lower Dentisty Alternative.

Movements highlighted in **orange** indicate movements that are fully mitigated under the Lower Density Alternative that are partially mitigated under the Proposed Action.

2023 Lower Density Alternative - Mitigation

Intersection	Lane Group	No-Action			Lower Density			LDA Mitigation			Proposed Mitigation
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.02	62.4	E	1.08	80.7	F	1.00	53.0	D	Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue S. phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 29s to 27s; EB Astoria Boulevard phase green time shifts from 24s to 26s; NB phase green time remains the same].
	NB-TR	0.76	36.6	D	0.76	36.6	D	0.76	36.6	D	
	NB-R	0.87	49.3	D	0.87	49.3	D	0.87	49.3	D	
	Hoyt Ave (EB-LT)	0.78	30.4	C	0.78	30.4	C	0.84	33.6	C	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.51	9.7	A	0.51	9.7	A	0.50	8.6	A	Modify signal timing: Shift 2s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 22s to 20s; WB phase green time shifts from 58s to 60s].
	WB(Ramp)-T	1.03	45.5	D	1.06	53.3	D	1.02	40.7	D	
	NB-L	0.32	28.4	C	0.33	28.5	C	0.37	30.3	C	
	SB-R	0.02	25.9	C	0.02	25.9	C	0.02	27.5	C	
22. Vernon Boulevard & Welling Court/ 8th Street	EB-LT	0.91	45.7	D	0.98	57.7	E	0.95	50.1	D	Modify signal timing: Shift 1s of green time from the WB phase to the EB/SB phase [WB phase green time shifts from 29s to 28s; EB/SB phase green time shifts from 28s to 29s; NB phase green time remains the same].
	WB-TR	0.04	21.1	C	0.04	21.1	C	0.05	21.8	C	
	NB-L-TR	0.17	31.0	C	0.17	31.0	C	0.17	31.0	C	
	SB-R	0.71	35.1	D	0.76	37.6	D	0.73	35.3	D	
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.1	A	0.00	8.6	C	-	-	-	Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 45s; SB phase green time is 35s; all phases have 3s of amber and 2s of all red time. Install "No Standing 4PM - 7PM Mon - Fri" regulation along the WB approach for 250 feet. Install "No Standing Anytime" regulations along the east curb of 9th Street for 150 feet to allow for a left-turn lane. Install "No Standing 4PM-7PM Mon-Fri" regulation along the east curb of 9th Street to daylight the approach for 250 feet. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5-foot wide NB receiving lane with parking to one 20-foot wide right-turn lane with parking and one 12-foot wide left-turn lane for 100 feet. Shift the EB approach centerline 1-foot to the south and restripe the EB approach from one 11-foot wide travel lane and one 19-foot wide receiving lane with parking to one 10-foot wide through-only lane and two 10-foot wide receiving lanes. [Two-way (NB/SB) 9th Street would be converted to a one-way SB roadway between 26th and 27th Avenues as a result of the proposed mitigation measures.]
	EB-T	-	-	-	-	-	-	0.37	15.1	B	
	WB-TR	-	-	-	-	-	-	-	-	-	
	WB-T	-	-	-	-	-	-	0.68	22.2	C	
	SB-LR	0.43	15.9	C	0.93	61.6	F	-	-	-	
	SB-L	-	-	-	-	-	-	0.49	23.9	C	
	SB-R	-	-	-	-	-	-	0.27	20.3	C	
28. Vernon Boulevard & Broadway/11th Street	EB-L-TR	0.02	25.4	C	0.02	25.4	C	0.02	24.7	C	Modify signal timing: Shift 1s of green time from the NB 11th Street phase to the EB/WB phase [NB 11th Street phase green time shifts from 20s to 19s; EB/WB phase green time shifts from 26s to 27s; NB/SB Vernon Boulevard phase green time remains the same].
	WB-L-TR	0.96	55.5	E	1.01	66.3	E	0.97	56.3	E	
	NB (Vernon Blvd)-LT	0.29	9.0	A	0.30	9.1	A	0.30	9.6	A	
	NB (Vernon Blvd)-R	0.21	8.3	A	0.21	8.3	A	0.21	8.7	A	
	NB (11th Street)-LTR	0.22	32.8	C	0.22	32.8	C	0.23	33.9	C	
	SB-L-TR	0.67	31.5	C	0.71	33.2	C	0.71	33.2	C	
PM PEAK HOUR											
2. 27th Avenue & 4th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-LT	0.56	15.0	B	0.56	15.0	B	0.53	12.7	B	Partially Mitigated; Modify signal timing: Shift 3s of green time from the SB phase to the EB/WB phase [SB phase green time shifts from 29s to 26s; EB/WB phase green time shifts from 51s to 54s].
	WB-T	0.65	15.6	B	0.65	15.6	B	0.61	13.2	B	
	WB-R	0.29	11.8	B	1.28	159.8	F	1.30	164.7	F	
	SB-LR	0.08	21.6	C	0.08	21.6	C	0.09	23.8	C	
3. 27th Avenue & 8th Street	EB-T	0.36	13.2	B	0.36	13.2	B	0.36	13.2	B	Install "No Standing Anytime" regulations to daylight the WB approach along 27th Avenue between 8th and 9th Streets. Install "No Standing Anytime regulations" along the WB receiving lane for 100 feet to allow vehicles to realign with the receiving end. Shift the WB approach centerline 1-foot to the south and restripe the WB approach from one 11-foot wide travel lane with parking and one 11-foot wide receiving lane to one 10-foot wide through-only lane, one 10-foot wide left-turn only lane, and one 10-foot wide receiving lane.
	EB-R	0.42	15.9	B	0.42	15.9	B	0.42	15.9	B	
	WB-LT	1.22	138.6	F	1.83	400.4	F	-	-	-	
	WB-L	-	-	-	-	-	-	0.54	19.3	B	
	WB-T	-	-	-	-	-	-	0.99	51.2	D	
	NB-L	0.48	25.8	C	0.66	31.2	C	0.68	31.8	C	
	NB-R	0.75	47.4	D	0.75	47.4	D	0.71	43.6	D	
4. 27th Avenue & 12th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized)	EB-LT	0.54	8.2	A	0.94	30.0	C				Unmitigatable.
	WB-TR	0.66	8.8	A	0.96	25.3	C				
	NB-L-TR	0.86	65.8	E	0.90	70.6	E				
7. Astoria Boulevard & 21st Street	EB-L	0.61	46.8	D	0.67	48.8	D				Unmitigatable.
	EB-TR	1.13	118.0	F	1.22	174.5	F				
	WB-L	0.92	68.3	E	0.91	66.7	E				
	WB-TR	0.99	73.3	E	1.22	156.2	F				
	NB-LT	1.11	85.1	F	1.28	158.3	F				
	NB-R	0.44	22.9	C	0.44	22.9	C				
	SB-LT	0.78	30.0	C	0.78	30.0	C				
	SB-R	0.80	31.1	C	0.99	54.5	D				
8. Astoria Boulevard & 23rd Street	EB-LT	0.95	35.5	D	1.04	58.0	E	0.88	28.0	C	Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for approximately 100 feet to bus stop to daylight the approach.
	WB-TR	0.84	22.7	C	0.98	32.7	C	0.98	32.7	C	
	NB-L-TR	0.61	37.4	D	0.61	37.4	D	0.61	37.4	D	
9. Astoria Boulevard & Crescent Street	EB-TR	1.11	88.2	F	1.21	128.8	F	1.00	48.8	D	Install "No Standing 7AM - 10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing 4PM - 7PM Mon-Fri" regulations along the WB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the SB approach for 250 feet on the west side to allow for two moving lanes at the approach. Restripe the SB approach from one 30-foot wide travel lane with parking on both sides to one 11-foot wide right-turn lane, and one 19-foot wide left-through lane with parking for 250 feet.
	WB-LT	1.53	267.6	F	1.71	347.5	F	1.45	231.2	F	
	SB-L-TR	1.13	99.3	F	1.35	197.4	F	-	-	-	
	SB-LT	-	-	-	-	-	-	1.00	50.4	D	
	SB-R	-	-	-	-	-	-	0.42	29.3	C	
12. Astoria Boulevard & 29th Street	EB-T	1.30	179.5	F	1.42	229.4	F	1.17	121.4	F	Install "No Standing 7AM-10AM, 4PM - 7PM Mon-Fri" regulations along the EB approach for 250 feet to daylight the approach. Install "No Standing Anytime" regulations along the EB approach downstream receiving segment to provide two receiving lanes. Restripe EB approach downstream receiving segment from one 17-foot wide receiving lane with a 10-foot wide channel zone to one 14-foot wide receiving lane and one 13-foot wide receiving lane.
	WB-T	0.22	20.3	C	0.22	20.3	C	0.22	20.3	C	
	SB-L	0.16	19.5	B	0.16	19.5	B	0.16	19.5	B	
	SB-R	0.66	30.4	C	0.70	32.5	C	0.70	32.5	C	

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Movements highlighted in **orange** indicate movements that are fully mitigated under the Lower Density Alternative that are partially mitigated under the Proposed Action.

2023 Lower Density Alternative - Mitigation

Intersection	Lane Group	No-Action			Lower Density			LDA Mitigation			Proposed Mitigation
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.17	121.1	F	1.23	149.1	F	1.16	117.9	F	Modify signal timing: Shift 2s of green time from the EB Hoyt Avenue phase to the EB Astoria Boulevard phase [EB Hoyt Avenue phase green time shifts from 40s to 38s; EB Astoria Boulevard phase green time shifts from 34s to 36s; NB phase green time remains the same].
	NB-TR	1.07	77.7	E	1.07	77.7	E	1.07	77.7	E	
	NB-R	1.13	108.5	F	1.13	108.5	F	1.13	108.5	F	
	Hoyt Ave (EB-LT)	0.87	41.3	D	0.87	41.3	D	0.91	45.2	D	
17. Hoyt Ave N. & 31st Street	WB-L	0.34	15.0	B	0.34	15.0	B	0.33	13.4	B	Install "No Standing 7AM-10AM Mon-Fri" regulations along the SB approach for 250 feet to daylight the approach. Modify signal timing: Shift 3s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 43s to 40s; WB phase green time shifts from 67s to 70s].
	WB-T	0.99	40.1	D	1.04	53.4	D	0.99	38.8	D	
	WB-R	0.15	13.3	B	0.15	13.3	B	0.14	11.9	B	
	NB-LT	0.29	28.3	C	0.29	28.3	C	0.32	30.7	C	
	SB-T	0.25	28.1	C	0.25	28.1	C	0.27	30.4	C	
	SB-R	0.49	34.6	C	0.52	35.5	D	0.57	39.8	D	
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.46	10.9	B	0.46	10.9	B	0.44	9.4	A	Partially Mitigated. Modify signal timing: Shift 3s of green time from the NB/SB phase to the WB phase [NB/SB phase green time shifts from 31s to 28s; WB phase green time shifts from 79s to 82s].
	WB(Ramp)-T	1.13	84.7	F	1.19	111.0	F	1.13	90.8	F	
	NB-L	0.52	38.6	D	0.53	38.7	D	0.59	41.5	D	
	SB-R	0.02	33.3	C	0.02	33.3	C	0.02	35.6	D	
19. Astoria Boulevard & 8th Street	EB-L	0.17	29.0	C	0.17	29.0	C	0.18	30.7	C	Modify signal timing: Shift 2s of green time from the EB/WB phase to the NB/SB phase [EB/WB phase green time shifts from 41s to 39s; NB/SB phase green time shifts from 69s to 71s].
	EB-R	0.66	40.6	D	0.66	40.6	D	0.70	43.9	D	
	WB-L	0.31	31.0	C	0.31	31.0	C	0.32	32.7	C	
	WB-TR	0.50	35.3	D	0.50	35.3	D	0.53	37.5	D	
	NB-LT	0.87	27.7	C	1.03	53.8	D	0.98	41.3	D	
	SB-TR	0.39	15.1	B	0.43	15.8	B	0.42	14.6	B	
22. Vernon Boulevard & Welling Court/ 8th Street	EB-LT	1.43	229.6	F	1.37	292.1	F	1.46	241.9	F	Partially Mitigated. Modify signal timing: Shift 1s of green time from the WB phase to the EB/SB phase; Shift 1s of green time from the NB phase to the EB/SB phase [WB phase green time shifts from 29s to 28s; NB phase green time shifts from 20s to 19s; EB/SB phase green time shifts from 26s to 28s].
	WB-TR	0.06	21.3	C	0.06	21.3	C	0.07	22.0	C	
	NB-LTR	0.18	29.5	C	0.18	29.5	C	0.19	30.5	C	
	SB-R	0.72	37.9	D	0.79	41.8	D	0.73	36.5	D	
24. Hoyt Avenue N. & 21st Street	EB-L	0.11	43.9	D	0.11	43.9	D	0.11	43.9	D	Partially Mitigated. Install "No Standing 7AM-10AM Mon-Fri" regulations along the SB approach for 250 feet to daylight the approach. Restripe WB approach from one 5-foot wide bike lane, one 11-foot wide through-right lane and two 11-foot wide left-turn lanes to one 5-foot wide bike lane, one 11-foot wide through-right lane and two 12-foot wide left-turn lanes.
	EB-R	0.19	45.3	D	0.19	45.3	D	0.19	45.3	D	
	WB-L	0.98	62.2	E	1.08	83.6	F	1.02	72.1	E	
	WB-TR	0.30	16.9	B	0.30	16.9	B	0.30	16.9	B	
	NB-L	0.17	24.7	C	0.17	24.8	C	0.17	24.8	C	
	NB-T	1.12	99.0	F	1.16	118.8	F	1.16	118.8	F	
	SB-TR	0.77	37.9	D	0.80	39.2	D	0.80	39.2	D	
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-LTR	0.58	37.9	D	0.63	39.0	D	0.69	42.5	D	Modify signal timing: Shift 3s of green time from the EB phase to the NB/SB phase [EB phase green time shifts from 35s to 32s; NB/SB phase green time shifts from 75s to 78s].
	NB-LT	0.72	16.9	B	0.75	17.7	B	0.71	15.0	B	
	NB-R	0.51	13.3	B	0.52	13.4	B	0.50	11.7	B	
	NB-LTR		15.7	B		16.3	B		14.0	B	
	SB-LTR	1.00	40.4	D	1.05	56.6	E	1.00	39.5	D	
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.8	A	0.01	9.8	A	-	-	-	Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 52s; SB phase green time is 28s; all phases have 3s of amber and 2s of all red time. Install "No Standing 4PM - 7PM Mon - Fri" regulation along the WB approach for 250 feet. Install "No Standing Anytime" regulations along the east curb of 9th Street for 150 feet to allow for a left-turn lane. Install "No Standing 4PM-7PM Mon-Fri" regulation along the east curb of 9th Street to daylight the approach for 250 feet. Restripe the SB approach from one 16.5-foot wide travel lane with parking and one 15.5-foot wide NB receiving lane with parking to one 20-foot wide right-turn lane with parking and one 12-foot wide left-turn lane for 100 feet. Shift the EB approach centerline 1-foot to the south and restripe the EB approach from one 11-foot wide travel lane and one 19-foot wide receiving lane with parking to one 10-foot wide through-only lane and two 10-foot wide receiving lanes. [Two-way (NB/SB) 9th Street would be converted to a one-way SB roadway between 26th and 27th Avenues as a result of the proposed mitigation measures.]
	EB-T	-	-	-	-	-	-	0.47	12.7	B	
	WB-TR	-	-	-	-	-	-	-	-	-	
	WB-T	-	-	-	-	-	-	0.94	35.2	D	
	SB-LR	0.60	31.2	D	2.23	606.7	F	-	-	-	
	SB-L	-	-	-	-	-	-	0.72	36.8	D	
	SB-R	-	-	-	-	-	-	0.31	26.0	C	
27. Vernon Boulevard & 31st Avenue (Unsignalized-Two Way Stop)	WB-LR	0.51	29.2	D	0.58	35.1	E				Unmitigatable.
	SB-LT	0.02	8.9	A	0.03	9.0	A				
28. Vernon Boulevard & Broadway/11th Street	EB-LTR	0.03	33.2	C	0.03	33.2	C	0.04	35.6	D	Modify signal timing: Shift 3s of green time from the NB 11th Street phase to the NB/SB Vernon Boulevard phase [NB 11th Street phase green time shifts from 25s to 22s; NB/SB Vernon Boulevard phase green time shifts from 45s to 48s; EB/WB phase green time remains the same].
	WB-LT	0.77	47.0	D	0.77	47.0	D	0.88	58.0	E	
	WB-R	0.24	35.8	D	0.36	37.8	D	0.41	41.2	D	
	WB-LTR		45.1	D		44.9	D		54.1	D	
	NB (Vernon Blvd)-LT	0.52	10.1	B	0.54	10.3	B	0.52	8.7	A	
	NB (Vernon Blvd)-R	0.18	6.7	A	0.18	6.7	A	0.18	5.6	A	
	NB (11th Street)-LTR	0.33	38.2	D	0.33	38.2	D	0.33	38.2	D	
	SB-LTR	0.88	45.4	D	0.99	65.6	E	0.88	43.2	D	

Notes: Text in **red** indicated new mitigation measures proposed for the Lower Density Alternative.

Movements highlighted in **orange** indicate movements that are fully mitigated under the Lower Density Alternative that are partially mitigated under the Proposed Action.

2023 Lower Density Alternative - Traffic Levels of Service

Intersection	Lane Group	Saturday Midday Peak Hour					
		NO-ACTION			LOWER DENSITY		
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS
2. 27th Avenue & 4th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-LT	0.56	16.4	B	0.56	16.4	B
	WB-T	0.44	13.2	B	0.44	13.2	B
	WB-R	0.20	11.4	B	1.13	100.3	F *
	SB-LR	0.06	20.0	C	0.06	20.0	C
3. 27th Avenue & 8th Street	EB-T	0.34	13.1	B	0.34	13.1	B
	EB-R	0.26	12.3	B	0.26	12.3	B
	WB-LT	0.63	19.0	B	1.15	104.5	F *
	NB-L	0.22	21.1	C	0.35	22.9	C
	NB-R	0.19	20.9	C	0.19	20.9	C
4. 27th Avenue & 12th Street (Existing Unsignalized-Two Way Stop) (No-Action Signalized)	EB-LT	0.50	11.8	B	0.92	32.8	C
	WB-TR	0.48	11.2	B	0.73	16.5	B
	NB-LTR	0.37	28.8	C	0.39	29.2	C
5. 27th Avenue & 14th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-TR	0.36	11.8	B	0.61	15.5	B
	WB-LT	0.31	11.2	B	0.54	13.9	B
	SB-LTR	0.72	36.6	D	0.72	36.6	D
6. 27th Avenue & 18th Street (Unsignalized-Two Way Stop)	EB-L	0.13	9.6	A	0.15	9.7	A
	WB-L	0.01	7.7	A	0.01	8.0	A
7. Astoria Boulevard & 21st Street	EB-L	0.35	35.3	D	0.39	35.8	D
	EB-TR	0.66	39.9	D	0.79	43.6	D
	WB-L	0.67	40.2	D	0.67	40.2	D
	WB-TR	0.45	35.8	D	0.61	38.0	D
	NB-LT	1.08	90.5	F	1.36	211.4	F *
	NB-R	0.52	36.6	D	0.52	36.6	D
	SB-LT	0.91	40.4	D	0.93	41.3	D
	SB-R	0.74	38.2	D	0.92	44.0	D
14. Astoria Boulevard & 31st Street	EB-LTR	0.70	24.1	C	0.77	25.5	C
	NB-T	0.76	42.1	D	0.76	42.1	D
	NB-R	0.60	10.1	B	0.60	10.1	B
	SB-T	0.64	19.6	B	0.64	19.6	B
	SB-R	0.37	15.2	B	0.37	15.2	B
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.27	160.5	F	1.37	201.8	F *
	NB-TR	0.92	36.1	D	0.92	36.1	D
	NB-R	1.10	83.3	F	1.10	83.3	F
	Hoyt Ave (EB-LT)	1.00	43.4	D	1.00	43.4	D
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.38	8.1	A	0.38	8.1	A
	WB(Ramp)-T	1.05	50.8	D	1.10	69.0	E *
	NB-L	0.49	29.8	C	0.50	29.9	C
	SB-R	0.02	25.9	C	0.02	25.9	C
19. Astoria Boulevard & 8th Street	EB-L	0.06	25.7	C	0.06	25.7	C
	EB-R	0.39	31.6	C	0.39	31.6	C
	WB-L	0.26	28.4	C	0.26	28.4	C
	WB-TR	0.30	29.0	C	0.30	29.0	C
	NB-LT	0.34	15.0	B	0.42	16.2	B
	SB-TR	0.31	14.8	B	0.36	15.5	B
24. Hoyt Avenue N. & 21st Street	EB-L	0.05	40.9	D	0.05	40.9	D
	EB-R	0.27	44.6	D	0.27	44.6	D
	WB-L	0.89	43.9	D	0.95	48.9	D
	WB-TR	0.27	15.1	B	0.27	15.1	B
	NB-L	0.28	29.1	C	0.28	29.5	C
	NB-T	0.99	70.7	E	1.05	86.1	F *
	SB-TR	0.74	33.9	C	0.77	34.6	C
25. Hoyt Avenue S./Astoria Park S. & 21st Street	EB-L	0.18	30.5	C	0.24	31.1	C
	EB-TR	0.80	39.5	D	0.82	40.1	D
	NB-DfL	-	-	-	1.02	101.0	F
	NB-TR	-	-	-	0.80	23.9	C
	NB-LTR	0.87	28.2	C		35.5	D
	SB-LTR	0.98	32.9	C	0.95	28.4	C
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.4	A	0.01	9.2	A
	SB-LR	0.27	19.1	C	1.72	374.3	F *

Note:

EB-Eastbound, WB-Westbound, NB-Northbound, SB-Southbound

L-Left, T-Through, R-Right, DfL-Analysis considers a Defacto Left Lane on this approach

V/C Ratio - Volume to Capacity Ratio, sec. - Seconds

LOS - Level of Service

* - Denotes an impacted movement

Analysis is based on the 2000 Highway Capacity Manual methodology (HCS+, version 5.5)

2023 Lower Density Alternative - Mitigation

Intersection	Lane Group	No-Action			Lower Density			LDA Mitigation			Proposed Mitigation
		V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	V/C Ratio	Delay (sec.)	LOS	
SATURDAY MIDDAY PEAK HOUR											
2. 27th Avenue & 4th Street (Existing Unsignalized-All Way Stop) (No-Action Signalized)	EB-LT	0.56	16.4	B	0.56	16.4	B	0.53	14.0	B	Partially Mitigated. Modify signal timing: Shift 3 of green from the SB phase to the EB/WB phase [SB phase green shifts from 31s to 28s; EB/WB phase green shifts from 49s to 52s].
	WB-T	0.44	13.2	B	0.44	13.2	B	0.41	11.3	B	
	WB-R	0.20	11.4	B	1.13	100.3	F	1.10	84.3	F	
	SB-LR	0.06	20.0	C	0.06	20.0	C	0.07	22.1	C	
3. 27th Avenue & 8th Street	EB-T	0.34	13.1	B	0.34	13.1	B	0.34	13.1	B	Install "No Standing Anytime" regulations to daylight the WB approach along 27th Avenue between 8th and 9th Streets. Install "No Standing Anytime regulations" along the WB receiving lane for 100 feet to allow vehicles to realign with the receiving end. Shift the WB approach centerline 1-foot to the south and restripe the WB approach from one 11-foot wide travel lane with parking and one 11-foot wide receiving lane to one 10-foot wide through-only lane, one 10-foot wide left-turn only lane, and one 10-foot wide receiving lane.
	EB-R	0.26	12.3	B	0.26	12.3	B	0.26	12.3	B	
	WB-LT	0.63	19.0	B	1.15	104.5	F	-	-	-	
	WB-L	-	-	-	-	-	-	0.28	12.9	B	
	WB-T	-	-	-	-	-	-	0.69	19.6	B	
	NB-L	0.22	21.1	C	0.35	22.9	C	0.36	23.0	C	
	NB-R	0.19	20.9	C	0.19	20.9	C	0.18	20.8	C	
7. Astoria Boulevard & 21st Street	EB-L	0.35	35.3	D	0.39	35.8	D	0.39	35.8	D	Partially Mitigated. Modify signal timing: Shift 3s of green from the WB phase to the NB/SB phase [WB phase green shifts from 34s to 31s; NB/SB phase green shifts from 37s to 40s; EB phase green time remains the same].
	EB-TR	0.66	39.9	D	0.79	43.6	D	0.79	43.6	D	
	WB-L	0.67	40.2	D	0.67	40.2	D	0.73	43.9	D	
	WB-TR	0.45	35.8	D	0.61	38.0	D	0.67	41.0	D	
	NB-LT	1.08	90.5	F	1.36	211.4	F	1.21	143.1	F	
	NB-R	0.52	36.6	D	0.52	36.6	D	0.47	33.6	C	
	SB-LT	0.91	40.4	D	0.93	41.3	D	0.83	36.6	D	
	SB-R	0.74	38.2	D	0.92	44.0	D	0.84	39.0	D	
15. Hoyt Avenue S./Astoria Boulevard & 33rd Street	Astoria Blvd (EB-LT)	1.27	160.5	F	1.37	201.8	F	Unmitigatable.			
	NB-TR	0.92	36.1	D	0.92	36.1	D				
	NB-R	1.10	83.3	F	1.10	83.3	F				
	Hoyt Ave (EB-LT)	1.00	43.4	D	1.00	43.4	D				
18. Astoria Boulevard N. & 32nd Street	WB(Main)-T	0.38	8.1	A	0.38	8.1	A	0.36	6.7	A	Modify signal timing: Shift 3 of green from the NB phase to the WB phase [NB phase green shifts from 22s to 19s; WB phase green shifts from 58s to 61s].
	WB(Ramp)-T	1.05	50.8	D	1.10	69.0	E	1.05	47.5	D	
	NB-L	0.49	29.8	C	0.50	29.9	C	0.58	33.0	C	
	SB-R	0.02	25.9	C	0.02	25.9	C	0.02	28.2	C	
24. Hoyt Avenue N. & 21st Street	EB-L	0.05	40.9	D	0.05	40.9	D	0.05	40.9	D	Partially Mitigated. Restripe WB approach from one 5-foot wide bike lane, one 11-foot wide through-right lane and two 11-foot wide left-turn lanes to one 5-foot wide bike lane, one 11-foot wide through-right lane and two 12-foot wide left-turn lanesShift 1 of green from the WB lag phase to the NB/SB phase [WB lag phase green shifts from 38s to 37s; NB/SBWB phase green shifts from 45s to 46s; EB/WB phase green time remains the same].
	EB-R	0.27	44.6	D	0.27	44.6	D	0.27	44.6	D	
	WB-L	0.89	43.9	D	0.95	48.9	D	0.94	48.6	D	
	WB-TR	0.27	15.1	B	0.27	15.1	B	0.27	15.6	B	
	NB-L	0.28	29.1	C	0.28	29.5	C	0.27	28.3	C	
	NB-T	0.99	70.7	E	1.05	86.1	F	1.02	78.4	E	
	SB-TR	0.74	33.9	C	0.77	34.6	C	0.75	33.5	C	
26. 27th Avenue & 9th Street (Unsignalized-Two Way Stop)	EB-LT	0.01	8.4	A	0.01	9.2	A	-	-	-	Install a traffic signal with 90-second cycle length and two phases. [EB/WB phase green time is 50s; SB phase green time is 30s; all phases have 3s of amber and 2s of all red time. Install "No Standing 4PM - 7PM Mon - Fri" regulation along the WB approach for 250 feet. Install "No Standing Anytime" regulations along the east curb of 9th Street for 150 feet. Install "No Standing 4PM-7PM Mon-Fri" regulation along the east curb of 9th Street to daylight the approach for 250 feet. Restripe the SB approach from one 16.5-foot wide travel lane with parking on one 15.5-foot wide NB receiving lane with parking to one 20-foot wide right-turn lane with parking and one 12-foot wide left-turn lane for 100 feet. Shift the EB approach centerline 1-foot to the south and restripe the EB approach from one 11-foot wide travel lane and one 19-foot wide receiving lane with parking to one 10-foot wide through-only lane and two 10-foot wide receiving lanes. [Two-way (NB/SB) 9th Street would be converted to a one-way SB roadway between 26th and 27th Avenues as a result of the proposed mitigation measures.]
	EB-T	-	-	-	-	-	-	0.46	13.6	B	
	WB-TR	-	-	-	-	-	-	-	-	-	
	WB-T	-	-	-	-	-	-	0.80	26.2	C	
	SB-LR	0.27	19.1	C	1.72	374.3	F	-	-	-	
	SB-L	-	-	-	-	-	-	0.72	35.6	D	
	SB-R	-	-	-	-	-	-	0.19	22.4	C	

Notes: Text in **red** indicated new mitigation measures proposed for the Lower Dentistry Alternative.

Movements highlighted in **orange** indicate movements that are fully mitigated under the Lower Density Alternative that are partially mitigated under the Proposed Action.

TABLE XX-XX

2012 Existing Fare-Array Level Of Service

Station	Direction	Control Element	Quantity	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				In	Out	In	Out			
Weekday AM Peak Hour										
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	32	113	1.00	0.80	0.9	0.11	A
	Southbound	Two-way Turnstile	3	826	13	1.00	0.80	1.0	0.66	B
Weekday PM Peak Hour										
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	12	537	1.00	0.80	1.0	0.36	A
	Southbound	Two-way Turnstile	3	218	13	1.00	0.80	0.9	0.20	A

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012 and June 2013.

"In" refers to system entries.

"Out" refers to system exits.

TABLE XX-XX

2023 No-Action Fare-Array Analysis

Station	Direction	Control Element	Quantity	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				In	Out	In	Out			
Weekday AM Peak Hour										
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	52	173	1.00	0.80	0.9	0.17	A
	Southbound	Two-way Turnstile	3	1076	21	1.00	0.80	1.0	0.87	C
Weekday PM Peak Hour										
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	23	755	1.00	0.80	1.0	0.51	B
	Southbound	Two-way Turnstile	3	336	31	1.00	0.80	0.9	0.32	A

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012 and June 2013, annual background growth rates, and the Halletts Point FEIS.

"In" refers to system entries.

"Out" refers to system exits.

TABLE XX-XX

2023 With-Action Fare-Array Analysis

Station	Direction	Control Element	Quantity	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS	Result
				In	Out	In	Out				
Weekday AM Peak Hour											
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	61	203	0.95	0.80	0.9	0.20	A	No Impact
	Southbound	Two-way Turnstile	3	1182	24	0.95	0.80	1.0	1.00297	D	Impacted
Weekday AM Peak Hour											
30th Avenue Station (N,Q lines)	Northbound	Two-way Turnstile	3	29	857	0.95	0.80	1.0	0.58	B	No Impact
	Southbound	Two-way Turnstile	3	396	40	0.95	0.80	0.9	0.40	A	No Impact

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012 and June 2013, annual background growth rates, the Halletts Point FEIS, and project increments.

"In" refers to system entries.

"Out" refers to system exits.

Peak Hour Volumes	
Up	Down
Weekday AM Peak Hour	
102	361
2643	42
Weekday PM Peak Hour	
38	1718
697	41

NO-Action ASSIGNMENTS

Background Growth		Halletts Increment		Upland Site Increment		No-Action Increment	
Peak 15-Minute Volumes		Peak 15-Minute Volumes		Peak Hour Volumes		Peak 15-Minute Volumes	
In	Out	In	Out	In	Out	In	Out
Weekday AM Peak Hour							
1	5	18	52	4	11	1	3
34	1	202	6	44	1	14	1
Weekday PM Peak Hour							
0	22	10	184	2	39	1	12
9	1	102	16	22	3	7	1

Note:

Halletts and Upland Site peak 15-minute increment volumes were determined by applying a 31.25% peaking factor to Halletts hourly increment shown in the FEIS and projected No-Action Upland Site hourly increment (which was derived using the same TPA factors as the Astoria Cove's analysis).

With-Action Increment

Peak Hour Volumes		Peak 15-Minute Volumes	
In	Out	In	Out
Weekday AM Peak Hour			
30	97	9	30
340	8	106	3
Weekday PM Peak Hour			
16	325	6	102
193	28	60	9

TABLE XX-XX

2012 Existing Subway Stair Level Of Service

Station	Stairway	Total Width (feet)	Effective Width (feet)	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Up	Down	Up	Down			
Weekday AM Peak Hour										
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	196	60	1.00	0.8	0.9	0.50	B
	P5 (NW)	5.0	4.0	344	3	1.00	0.75	1.0	0.58	B
	P1 (SW)	5.0	4.0	482	10	1.00	0.75	1.0	0.83	C
Weekday PM Peak Hour										
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	53	143	1.00	0.8	0.9	0.43	A
	P7 (NE)	5.0	4.0	6	237	1.00	0.75	1.0	0.54	B
	P3 (SE)	5.0	4.0	6	300	1.00	0.75	1.0	0.68	B

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012, June 2013 and March 2014.

TABLE XX-XX

2023 No-Action Subway Stair Level Of Service

Station	Stairway	Total Width (feet)	Effective Width (feet)	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS
				Up	Down	Up	Down			
Weekday AM Peak Hour										
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	233	122	1.00	0.8	0.9	0.71	C
	P5 (NW)	5.0	4.0	466	6	1.00	0.75	1.0	0.79	C
	P1 (SW)	5.0	4.0	610	15	1.00	0.75	1.0	1.05	D
Weekday PM Peak Hour										
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	70	363	1.00	0.8	0.9	0.97	C
	P7 (NE)	5.0	4.0	11	345	1.00	0.75	1.0	0.79	C
	P3(SE)	5.0	4.0	12	410	1.00	0.75	1.0	0.93	C

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012, June 2013 and March 2014, annual background growth rates, the Halletts Point FEIS, and projected No-Action Upland Site increment.

TABLE XX-XX

2023 With-Action Subway Stair Level Of Service

Station	Stairway	Total Width (feet)	Effective Width (feet)	Peak 15-Minute Volumes		Surging Factor		Friction Factor	V/C Ratio	LOS	WIT	Result
				Up	Down	Up	Down					
Weekday AM Peak Hour												
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	345	155	0.90	0.8	0.9	1.07	D	3.30	No Impact
	P5 (NW)	5.0	4.0	519	7	0.95	0.75	1.0	0.93	C	N/A	N/A
	P1 (SW)	5.0	4.0	663	17	0.95	0.75	1.0	1.20	D	4.22	No Impact
Weekday PM Peak Hour												
30th Avenue (N,Q lines)	S3 (NW)	5.0	4.0	124	474	0.90	0.8	0.9	1.35	E	16.91	Impacted
	P7 (NE)	5.0	4.0	14	396	0.95	0.75	1.0	0.90	C	N/A	N/A
	P3(SE)	5.0	4.0	15	461	0.95	0.75	1.0	1.05	D	2.44	No Impact

Notes:

Methodology based on 2014 CEQR Technical Manual guidelines.

Volumes based on data collected in October 2012, June 2013 and March 2014, annual background growth rates, the Halletts Point FEIS, and projected No-With-Action Upland Site and project increments.

Peak Hour Volumes	
Up	Down
Weekday AM Peak	
627	193
1101	8
1542	34
Weekday PM Peak	
168	457
18	758
20	960

		Halletts Increment				Upland Site				No-Action Increment	
Peak 15-Minute Volumes		Peak Hour Volumes		Peak 15-Minute Volumes		Peak Hour Volumes		Peak 15-Minute Volumes		Peak 15-Minute Volumes	
Up	Down	Up	Down	Up	Down	Up	Down	Up	Down	Up	Down
Weekday AM Peak Hour											
8	2	93	180	29	56	0	12	0	4	37	62
14	0			101	3	0	7	0	0	122	3
20	1			101	3	22	1	7	1	128	5
Weekday PM Peak Hour											
2	6	48	642	15	201	0	42	0	13	17	220
0	10			5	92	1	19	0	6	5	108
0	12			5	92	1	20	1	6	6	110

Note:

Halletts and Upland Site peak 15-minute increment volumes were determined by applying a 31.25% peaking factor to Halletts hourly increment shown in the FEIS and projected No-Action Upland Site hourly increment (which was derived using the same TPA factors as the Astoria Cove's analysis).

Astoria Cove With-Action Increment			
Peak Hour Volumes		Peak 15-Minute Volumes	
Up	Down	Up	Down
Weekday AM Peak Hour			
360	105	112	33
170	4	53	1
170	4	53	2
Weekday PM Peak Hour			
171	353	54	111
8	163	3	51
8	163	3	51

Note: Total With-Action minus non-residential

Subway to Bus transfer trips not using S3 (see

WIT Calculator			
NA V/C < 1.0		NA V/C > 1.0	
WIT	Result	WIT	Result
Weekday AM Peak Hour			
3.30	No Impact	19.61	No Impact
N/A	N/A	5.49	No Impact
9.64	Impacted	4.22	No Impact
Weekday PM Peak Hour			
16.91	Impacted	18.29	No Impact
N/A	N/A	7.28	No Impact
2.44	No Impact	6.14	No Impact

Astoria Increment:**Non-residential Subway to Bus Transfer Stairway Assignment**

Stairway	Q102		Q18		Total Hourly		Peak 15	
	Up	Down	Up	Down	Up	Down	Up	Down
Weekday AM Peak Hour								
SW	5	0	0	0	5	0		
SE	0	0	5	0	5	0	3	0
Weekday PM Peak Hour								
SW	19	0	0	0	19	0		
SE	0	0	19	0	19	0	12	0

2012 Existing Subway Line-Haul

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity	Passengers per hour	V/C Ratio
Weekday AM Peak Hour							
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,001	0.82
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	10,260	0.91
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,168	0.92
Weekday PM Peak Hour							
F	Queens-bound	Lexington Av/63 St	15	150	21,750	16,964	0.78
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	6,496	0.61
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	5,499	0.57

Notes: Methodology based on 2014 CEQR Technical Manual guidelines.
Based on data provided by MTA Transit.

2023 No-Action Subway Line-Haul

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity	No-Action Passengers per Hour	V/C Ratio
Weekday AM Peak Hour							
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,959	0.87
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	11,022	0.97
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,926	0.99
Weekday PM Peak Hour							
F	Queens-bound	Lexington Av/63 St	15	150	21,750	17,862	0.82
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	7,076	0.66
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	6,037	0.63

Notes: Methodology based on 2014 CEQR Technical Manual guidelines.
Based on data provided by MTA Transit, annual background growth rates, the Halletts Point FEIS, and projected No-Action Upland Site increment.

Background Growth	Halletts Increment	Upland Site Increment
733	214	11
418	322	22
414	322	22
691	197	10
265	295	20
224	295	19

2023 With-Action Subway Line-Haul

Route	Peak Direction	Maximum Load Point (leaving station)	Average Trains per hour	Cars per hour	Peak Hour Capacity	No-Action		With-Action		
						Passengers per hour	V/C Ratio	Passengers per hour	V/C Ratio	Riders per car
Weekday AM Peak Hour										
F	Manhattan-bound	Roosevelt Island	15.1	151	21,895	18,959	0.87	19,045	0.87	0.57
N	Manhattan-bound	Queensboro Plaza	7.8	78	11,310	11,022	0.97	11,192	0.99	2.18
Q	Manhattan-bound	Queensboro Plaza	7.6	76	11,020	10,926	0.99	11,096	1.01	2.24
Weekday PM Peak Hour										
F	Queens-bound	Lexington Av/63 St	15	150	21,750	17,862	0.82	17,943	0.82	0.54
N	Queens-bound	Lexington Av/59 St	7.4	74	10,730	7,076	0.66	7,239	0.67	2.20
Q	Queens-bound	Lexington Av/59 St	6.6	66	9,570	6,037	0.63	6,199	0.65	2.45

Notes: Methodology based on 2014 CEQR Technical Manual guidelines.
Based on data provided by MTA Transit, annual background growth rates, the Halletts Point FEIS, and projected No-Action Upland Site and project increments.

Astoria Cove Increment
86
170
170
81
163
162

2012 Existing Conditions: Bus Line-Haul Analysis

Route	Direction	Peak Load Point	Hourly Volumes	Buses per Hour	Average passengers per bus
AM Peak Hour					
Q103	Northbound	40th Avenue & 12th Street	36	2	18
	Southbound	Vernon Boulevard & 31st Avenue	78	2	39
PM Peak Hour					
Q103	Northbound	40th Avenue & 12th Street	42	3	14
	Southbound	40th Avenue & 12th Street	33	3	11

Note: Existing data provided by MTA Bus Company.
Guideline Capacity = 54 passengers per bus.

2023 No-Build Conditions: Bus Line-Haul Analysis

Route	Direction	Peak Load Point	Hourly Volumes	Buses per Hour	Average passengers per bus	Bus Demand at Guideline Capacity	New Bus Capacity	Available Capacity
AM Peak Hour								
Q103	Northbound	40th Avenue & 12th Street	113	2	57	3	162	49
	Southbound	Vernon Boulevard & 31st Avenue	369	2	185	7	378	9
PM Peak Hour								
Q103	Northbound	40th Avenue & 12th Street	314	3	105	6	324	10
	Southbound	40th Avenue & 12th Street	190	3	64	4	216	26

Note: Existing data provided by MTA Bus Company.
Guideline Capacity = 54 passengers per bus.

2023 Lower Density Alternative Conditions: Bus Line-Haul Analysis

Route	Direction	Peak Load Point	Hourly Volumes	Buses per Hour	Average passengers per bus	Bus Demand at Guideline Capacity	New Bus Capacity	Available Capacity
AM Peak Hour								
Q103	Northbound	40th Avenue & 12th Street	150	3	50	3	162	12
	Southbound	Vernon Boulevard & 31st Avenue	475	7	68	9	486	11
PM Peak Hour								
Q103	Northbound	40th Avenue & 12th Street	425	6	71	8	432	7
	Southbound	40th Avenue & 12th Street	262	4	66	5	270	8

Note: Existing data provided by MTA Bus Company.
Guideline Capacity = 54 passengers per bus.

ASSUMPTIONS

Background Growth
AM
2
4
PM
2
2

Halletts Existing	Halletts Background growth	Halletts No-Build Total	Halletts No-Build Increment	Halletts Build Volumes	Halletts Build Increment	166 Dus Upland Site
AM Peak Hour						
35	2	72	35	144	72	3
38	2	162	122	436	274	13
PM Peak Hour						
41	2	168	125	426	258	12
11	1	89	77	237	148	7

Note: Bolded numbers are as shown in the FEIS

Astoria Cove

LDA Increment
AM
37
106
PM
111
72

LDA Weekday Parking Accumulation

	Neighbourhood Retail 84,470 gsf		Supermarket 25,000 gsf		Residential 1,422 du		School Staff 35 staff		Overnight Demand 806
	In	Out	In	Out	In	Out	In	Out	Accumulation
12-1 AM	0	0	0	0	6	6	0	0	806
1-2	0	0	0	0	6	6	0	0	806
2-3	0	0	0	0	6	6	0	0	806
3-4	0	0	0	0	6	6	0	0	806
4-5	0	0	0	0	6	6	0	0	806
5-6	0	0	13	9	12	35	0	0	787
6-7	0	0	27	9	29	101	0	0	733
7-8	0	0	36	22	35	104	0	0	678
8-9	2	2	51	39	67	268	17	0	506
9-10	2	1	67	36	60	91	0	0	507
10-11	5	3	72	54	60	105	0	0	482
11-12	5	5	72	72	64	88	0	0	458
12-1 PM	13	13	51	51	84	84	0	0	458
1-2	6	5	80	98	85	87	0	0	439
2-3	6	4	89	107	89	85	0	0	427
3-4	5	5	80	107	128	77	0	0	451
4-5	5	5	89	85	216	126	0	0	545
5-6	7	7	85	79	240	129	0	17	645
6-7	3	6	44	45	169	85	0	0	725
7-8	3	5	18	27	152	68	0	0	798
8-9	2	2	9	18	91	52	0	0	828
9-10	1	1	0	18	29	34	0	0	805
10-11	0	0	0	10	20	19	0	0	796
11-12	0	0	0	0	17	11	0	0	802

LDA No-Action Weekday Parking Utilization

	Capacity	Occupied Spaces	Available Spaces	Parking Utilization
1/4-Mile Radius	1005	932	73	92.7%
1/4 to 1/2- Mile Radius	2143	2044	99	95.4%
Total	3148	2976	172	94.5%

LDA With-Action Weekday Parking Utilization

	Capacity	Occupied Spaces	Available Spaces	Parking Utilization
On-Site Parking	733	733	0	100.0%
1/4-Mile Radius	1005	1005	0	100.0%
1/4 to 1/2- Mile Radius	2143	2066	77	96.4%
Total	3881	3804	77	98.0%

LDA Saturday Parking Accumulation

	Neighbourhood Retail		Supermarket		Residential		Overnight Demand
	84,470	gsf	25,000	gsf	1,422	du	806
	In	Out	In	Out	In	Out	Accumulation
12-1 AM	0	0	0	0	19	19	806
1-2	0	0	0	0	19	19	806
2-3	0	0	0	0	9	9	806
3-4	0	0	0	0	3	3	806
4-5	0	0	0	0	3	3	806
5-6	0	0	0	0	4	6	804
6-7	0	0	10	9	5	13	797
7-8	1	0	31	10	19	59	779
8-9	3	3	55	52	59	139	702
9-10	2	2	65	31	111	146	701
10-11	6	4	76	42	111	167	681
11-12	6	6	87	66	139	139	702
12-1 PM	8	8	104	96	159	159	710
1-2	8	7	102	94	159	159	719
2-3	8	5	94	120	143	143	696
3-4	6	6	98	124	152	114	708
4-5	7	7	98	131	200	85	790
5-6	8	8	112	107	177	108	864
6-7	5	7	86	98	139	139	850
7-8	4	7	65	53	119	119	859
8-9	3	5	20	31	79	79	846
9-10	2	2	10	20	59	59	836
10-11	0	0	0	20	59	59	816
11-12	0	0	0	9	49	48	808

LDA No-Action Saturday Parking Utilization

	Capacity	Occupied Spaces	Available Spaces	Parking Utilization
1/4-Mile Radius	1062	1005	57	94.6%
1/4 to 1/2- Mile Radius	3014	2769	245	91.9%
Total	4076	3774	302	92.6%

LDA With-Action Saturday Parking Utilization

	Capacity	Occupied Spaces	Available Spaces	Parking Utilization
On-Site Parking	733	733	0	100.0%
1/4-Mile Radius	1062	1062	0	100.0%
1/4 to 1/2- Mile Radius	3014	2843	171	94.3%
Total	4809	4638	171	96.4%