

New Jersey Turnpike Authority
Newark Bay–Hudson County Extension
Interchange 14 to Interchange 14A/ Newark Bay Bridge Replacement and
Associated Improvements

FINAL ENVIRONMENTAL ASSESSMENT APPENDIX C: AIR QUALITY ANALYSIS

Submitted to:



UNITED STATES COAST GUARD
U.S. DEPARTMENT OF HOMELAND SECURITY

Submitted by:



New Jersey Turnpike Authority

April 18, 2025

Appendix C-1

Intersection Volumes and Peak Construction Year (2034) Level of Service Table

Peak Construction Year (2034) Project-Affected Intersection Volumes

					2034 Peak Hour Traffic	2034 Construction Traffic	Within 1,000 feet of Staging Area	Within 1,000 feet of Residence, Park or School	Selected for Hot-Spot Analysis
Port St./ Brewster St.			Newark		3,017	212	Yes	No	No
Port St./Doremus Ave.			Newark		4,268	212	Yes	No	Highest traffic volume near a staging area (2nd highest traffic of screened intersections)
Doremus Ave./Wilson Ave.			Newark		2,949	212	No	No	No
Doremus Ave./Roanoke Ave.			Newark		1,994	212	No	No	No
Doremus Ave./U.S. 1&9T Ramps			Newark		1,909	212	No	No	No
Port Jersey Blvd./Chosin Few Way			Jersey City		1,841	119	No	No	No
Chosin Few Way/Pulaski St.			Bayonne		916	119	No	No	No
Route 440/Pulaski St.			Bayonne		4,784	159	No	No	No (highest traffic volume of screened intersections but not near staging area, residence, park or school)
Route 440/Route 185			Jersey City		1,495	198	Yes	No	No
63rd St./Sycamore Rd.			Bayonne		1,050	40	No	Residences & Park	No
JFK Blvd./63rd St.			Jersey City		3,386	40	Yes	Residences & Park	3rd highest traffic of screened intersections and near staging area, residences & school
JFK Blvd./57rd St.			Bayonne		2,418	40	Yes	Residences, Park & School	Closest intersection to a staging area and near residences and school
Ave. C/Route 440 NB Ramps			Jersey City		1,643	40	No	Residences & School	No
Ave. C/Route 440 SB Ramps			Jersey City		2,612	40	No	Residences & School	No
Linden Ave./Caven Point Rd.			Jersey City		0	120	Yes	No	No

2034 Construction-Related Intersection Level of Service (LOS) and Delays

Intersection	Traffic Period	LOS Rating	Delay (sec)	Analysis Hour
Port Street & Doremus Avenue	AM	D	37.9	6:30 pm-7:30 pm
	Midday	C	27.1	12:00 pm-1:00 pm
	PM	C	28.9	3:30 pm-4:30 pm
	Overnight	B	10.3	9:00 pm-10:00 pm
JFK Boulevard & 63rd Street	AM	C	26.4	6:30 pm-7:30 pm
	Midday	C	25.7	12:00 pm-1:00 pm
	PM	C	29.8	2:45 pm-3:45 pm
	Overnight	C	21.2	9:00 pm-10:00 pm
JFK Boulevard & 57th Street	AM	B	10.7	6:30 pm-7:30 pm
	Midday	A	9.6	12:00 pm-1:00 pm
	PM	B	15.3	3:30 pm-4:30 pm
	Overnight	A	8.8	9:00 pm-10:00 pm

Appendix C-2

2050 No Action and 2050 Proposed Action Regional MSAT/GHG VMT/Speed Data Table

2050 VMT/SPEED DATA BY COUNTY

			2050 No Build	2050 Build	2050 No Build	2050 Build
County	Roadway Type	Hour	VMT	VMT	Speed (mph)	Speed (mph)
Bergen	4	AM	734,435	734,435	41.4	41.4
Bergen	4		255,971	255,971	41.9	42.6
Bergen	5		209,398	209,398	22.2	22.2
Bergen	5		322,257	322,257	19.0	19.1
Bergen	4	Midday	891,297	891,020	45.8	45.8
Bergen	4		297,036	297,107	52.8	52.8
Bergen	5		256,026	256,036	23.3	23.3
Bergen	5		402,274	402,171	20.4	20.4
Bergen	4	PM	845,836	853,686	38.8	38.4
Bergen	4		280,024	281,007	37.2	37.8
Bergen	5		257,762	262,306	21.4	21.3
Bergen	5		402,081	402,777	18.0	17.9
Bergen	4	ON	652,130	652,129	47.3	47.3
Bergen	4		196,020	196,021	54.0	54.0
Bergen	5		176,663	176,656	23.8	23.8
Bergen	5		254,551	254,557	21.0	21.0
Essex	4	AM	36,347	44,841	36.2	51.7
Essex	4		583,726	584,261	44.4	44.6
Essex	5		141,783	141,780	24.0	24.0
Essex	5		516,550	516,575	18.2	18.2
Essex	4	Midday	35,588	38,586	50.5	53.5
Essex	4		711,972	713,201	48.5	48.5
Essex	5		179,990	179,173	24.7	24.8
Essex	5		624,724	625,121	19.2	19.2
Essex	4	PM	36,795	48,867	37.6	52.0
Essex	4		686,272	678,329	42.1	42.6
Essex	5		184,745	192,196	22.9	22.8
Essex	5		629,094	645,717	17.2	17.1
Essex	4	ON	20,549	23,314	50.5	53.5
Essex	4		527,652	528,203	49.2	49.2
Essex	5		132,570	131,908	24.9	24.9
Essex	5		427,267	427,528	19.6	19.6
Hudson	4	AM	87,408	107,113	46.4	49.3
Hudson	4		318,808	310,157	40.9	41.2
Hudson	4		18,418	16,605	52.0	52.0
Hudson	5		183,491	183,334	20.2	20.2
Hudson	5		384,007	381,906	17.0	17.0
Hudson	4	Midday	89,574	98,483	50.1	51.1
Hudson	4		419,211	413,843	47.1	47.2
Hudson	4		10,898	10,888	52.0	52.0

2050 VMT/SPEED DATA BY COUNTY

			2050 No Build	2050 Build	2050 No Build	2050 Build
County	Roadway Type	Hour	VMT	VMT	Speed (mph)	Speed (mph)
Hudson	5		232,363	232,270	21.2	21.2
Hudson	5		423,447	422,495	17.8	17.8
Hudson	4	PM	104,963	129,151	44.9	46.6
Hudson	4		419,144	413,434	36.5	36.7
Hudson	4		42,238	41,580	38.4	39.8
Hudson	5		217,633	214,616	19.7	19.9
Hudson	5		474,664	462,854	16.3	16.4
Hudson	4	ON	43,904	51,615	50.1	51.1
Hudson	4		302,545	297,426	48.6	48.6
Hudson	4		3,943	3,943	52.0	52.0
Hudson	5		154,180	153,929	21.6	21.6
Hudson	5		271,904	270,955	18.0	18.0
Middlesex	4	AM	178,787	178,363	40.5	40.6
Middlesex	5		208,657	207,999	27.2	27.2
Middlesex	5		271,112	271,036	22.1	22.1
Middlesex	4	Midday	182,182	182,232	46.5	46.5
Middlesex	5		228,971	228,935	28.3	28.3
Middlesex	5		322,259	322,297	23.2	23.2
Middlesex	4	PM	194,885	194,469	37.9	37.9
Middlesex	5		224,646	227,869	26.9	26.8
Middlesex	5		334,681	339,417	21.4	21.3
Middlesex	4	ON	120,586	120,539	47.3	47.3
Middlesex	5		142,866	142,814	28.5	28.5
Middlesex	5		236,929	237,014	23.6	23.6
Morris	4	AM	34,011	33,877	46.9	46.8
Morris	5		22,371	22,319	22.3	22.2
Morris	5		21,204	21,516	21.3	21.3
Morris	4	Midday	34,505	34,506	50.5	50.5
Morris	5		28,023	28,018	22.9	22.9
Morris	5		30,775	30,771	22.0	22.0
Morris	4	PM	32,715	32,242	47.4	47.6
Morris	5		26,812	27,146	21.8	21.9
Morris	5		26,092	26,707	21.2	21.2
Morris	4	ON	24,074	24,074	50.9	50.9
Morris	5		17,895	17,896	23.6	23.6
Morris	5		20,483	20,483	22.3	22.3
Passaic	4	AM	605,691	606,540	45.6	45.5
Passaic	5		97,757	98,056	23.3	23.3
Passaic	5		131,699	131,893	17.6	17.6
Passaic	4		678,808	678,790	49.5	49.5

2050 VMT/SPEED DATA BY COUNTY

			2050 No Build	2050 Build	2050 No Build	2050 Build
County	Roadway Type	Hour	VMT	VMT	Speed (mph)	Speed (mph)
Passaic	5	Midday	117,100	117,062	24.2	24.2
Passaic	5		171,537	171,508	18.6	18.6
Passaic	4	PM	701,654	699,254	43.7	43.7
Passaic	5		117,498	120,038	22.6	22.4
Passaic	5		166,756	168,889	16.7	16.5
Passaic	4	ON	468,495	468,492	50.1	50.1
Passaic	5		78,112	78,111	24.4	24.4
Passaic	5		113,677	113,677	19.0	19.0
Somerset	4	AM	75,164	74,482	49.2	49.5
Somerset	5		79,205	79,226	30.8	30.8
Somerset	5		26,349	26,777	16.2	16.0
Somerset	4	Midday	62,227	62,202	52.4	52.4
Somerset	5		71,211	71,213	32.1	32.1
Somerset	5		33,149	33,160	18.8	18.7
Somerset	4	PM	80,178	80,641	47.1	46.4
Somerset	5		85,937	86,396	30.0	30.0
Somerset	5		30,957	31,678	13.6	13.5
Somerset	4	ON	45,140	45,143	52.4	52.4
Somerset	5		45,742	45,746	32.5	32.5
Somerset	5		22,616	22,607	20.8	20.8
Union	4	AM	356,411	356,809	42.1	42.1
Union	4		10,490	10,417	45.3	45.7
Union	5		324,338	321,422	22.2	22.3
Union	5		342,067	343,864	17.7	17.7
Union	4	Midday	400,885	401,216	47.1	47.1
Union	4		10,749	10,828	50.5	50.5
Union	5		374,530	374,211	24.0	24.0
Union	5		405,029	405,192	19.4	19.4
Union	4	PM	442,113	444,905	41.3	41.4
Union	4		12,116	12,269	34.8	33.2
Union	5		375,402	379,413	21.1	21.2
Union	5		409,418	417,335	16.8	16.7
Union	4	ON	303,281	303,360	48.4	48.4
Union	4		9,284	9,351	50.5	50.5
Union	5		244,431	244,267	24.4	24.5
Union	5		257,502	257,538	20.1	20.1

Legend:

Road Type 4 - Urban Restricted

Road Type 5 - Urban Unrestricted

Appendix C-3

2033, 2034 and 2035 Construction Equipment Tables

NB-HCE Program 2033 Construction Equipment Assumptions				
Crew Equipment				
Crew	Equipment Type	Equipment Notes	Original Quantity	HP
DS2 Crane Crew	Crawler Crane	Manitowoc MLC 300	1	450
DS2 Crane Crew	Mobile Crane/Rough Terrain Crane	GROVE RT765E-2 60T	1	240
DS2 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	3	1
DS1/DS3 Crane Crew	Crawler Crane	Manitowoc MLC 300	1	450
DS1/DS3 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	2	1
Demolition Crew	Diesel Hammer	Delmag D46-32 Diesel Hammer	2	250
Demolition Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Demolition Crew	Dump truck	Dump Truck	2	-
Demolition Crew	Compressor	375 CFM Air Compressor	4	140
Demolition Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Demolition Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Excavation Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Excavation Crew	Excavator	CAT 345C L Excavator	2	345
Excavation Crew	Dump truck	Dump Truck	2	-
Excavation Crew	Compressor	375 CFM Air Compressor	4	140
Excavation Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Excavation Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Pile Driving Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	450
Pile Driving Crew	Diesel Hammer	Pile Vibratory Hammer and Pile Driving Hammer (Generator Sets)	1	250
Pile Driving Crew	Generator Sets	Welding Machine/Generator	2	125
Pile Driving Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Pile Driving Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Trestle Construction Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	400
Trestle Construction Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Cofferdam Sheet Piling Crew	Vibratory Hammer	Excavator-Mounted Vibratory Hammer	1	284
Cofferdam Sheet Piling Crew	Rough Terrain Crane	Grove RT700E 50MT RT Crane	1	240
Cofferdam Sheet Piling Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Drilled Shaft Crew	Drill Rig	Bauer BG 36 Rig	1	480
Drilled Shaft Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Concrete Pour Crew	Concrete Truck	Schwing 252 Truck Mounted	2	250
Concrete Pour Crew	Tower Crane	MR608 Tower Crane	1	180
Concrete Pour Crew	Concrete Pump	Concrete Pump	1	250
Concrete Pour Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Concrete Pour Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Concrete Pour Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Asphalt Crew	Dump truck	Dump Truck	3	-
Asphalt Crew	Asphalt Paver	CAT AP1055	2	255
Asphalt Crew	Roller/Compactor	CCS9 Combination Asphalt Compactor	2	131
Asphalt Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Asphalt Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Asphalt Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Steel Erection Crew	Other Construction Equipment	Manlifts/Bucket Trucks	4	60
Steel Erection Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Steel Erection Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Steel Erection Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Carpenter Crew	Generator Sets	Welding Machine/Generator	2	125
Carpenter Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Carpenter Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Lather Crew	Welding Machine/Generator	Welding Machine/Generator	4	125
Lather Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Lather Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Delivery Trucks	Delivery Trucks Onsite	Steel Delivery Trucks	1	1
Delivery Trucks	Delivery Trucks Offsite	Steel Delivery Trucks	1	1
Dump Trucks	Dump Trucks Onsite	Dump Trucks	1	1
Dump Trucks	Dump Trucks Offsite	Dump Trucks	1	1
Concrete Trucks	Concrete Trucks Nonroad	Schwing 252 Truck Mounted	1	250
Concrete Trucks	Concrete Trucks Onsite	Concrete Trucks	1	1
Concrete Trucks	Concrete Trucks Offsite	Concrete Trucks	1	1

EquipTypes_NR		
Non-Road Equipment Types	Assignment	Load Factor
Air Compressors	7-cycle average	0.43
Bore/Drill Rigs	7-cycle average	0.43
Cement & Mortar Mixers	7-cycle average	0.43
Concrete/Industrial Saws	Hi LF	0.59
Cranes	7-cycle average	0.43
Crawler Tractor/Dozers	Hi LF	0.59
Crushing/Proc. Equipment	7-cycle average	0.43
Dumpers/Tenders	Lo LF	0.21
Excavators	Hi LF	0.59
Generator Sets	7-cycle average	0.43
Graders	Hi LF	0.59
Hydro Power Units	7-cycle average	0.43
Off-Highway Tractors	Hi LF	0.59
Off-highway Trucks	Hi LF	0.59
Other Construction Equipment	Lo LF	0.21
Pavers	Hi LF	0.59
Paving Equipment	Hi LF	0.59
Plate Compactors	7-cycle average	0.43
Pressure Washers	7-cycle average	0.43
Pumps	7-cycle average	0.43
Rollers	Hi LF	0.59
Rough Terrain Forklifts	Hi LF	0.59
Rubber Tire Loaders	Hi LF	0.59
Scrapers	Hi LF	0.59
Signal Boards/Light Plants	7-cycle average	0.43
Skid Steer Loaders	Lo LF	0.21
Surfacing Equipment	Hi LF	0.59
Tampers/Rammers	7-cycle average	0.43
Tractors/Loaders/Backhoes	Lo LF	0.21
Trenchers	Hi LF	0.59
Welders	7-cycle average	0.43

*Concrete Trucks assumed to be operating onsite (Nonroad emissions) for 1 hour per day

NB-HCE Program 2024 Construction Equipment Assumptions				
Crew Equipment				
Crew	Equipment Type	Equipment Notes	Original Quantity	HP
DS2 Crane Crew	Crawler Crane	Manitowoc MLC 300	1	450
DS2 Crane Crew	Mobile Crane/Rough Terrain Crane	GROVE RT765E-2 60T	1	240
DS2 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	3	1
DS1/DS3 Crane Crew	Crawler Crane	Manitowoc MLC 300	1	450
DS1/DS3 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	2	1
Demolition Crew	Diesel Hammer	Delmag D46-32 Diesel Hammer	2	250
Demolition Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Demolition Crew	Dump truck	Dump Truck	2	-
Demolition Crew	Compressor	375 CFM Air Compressor	4	140
Demolition Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Demolition Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Excavation Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Excavation Crew	Excavator	CAT 345C L Excavator	2	345
Excavation Crew	Dump truck	Dump Truck	2	-
Excavation Crew	Compressor	375 CFM Air Compressor	4	140
Excavation Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Excavation Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Pile Driving Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	450
Pile Driving Crew	Diesel Hammer	Pile Vibratory Hammer and Pile Driving Hammer (Generator Sets)	1	250
Pile Driving Crew	Generator Sets	Welding Machine/Generator	2	125
Pile Driving Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Pile Driving Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Trestle Construction Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	400
Trestle Construction Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Cofferdam Sheet piling Crew	Vibratory Hammer	Excavator-Mounted Vibratory Hammer	1	284
Cofferdam Sheet piling Crew	Rough Terrain Crane	Grove RT700E 50MT RT Crane	1	240
Cofferdam Sheet piling Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Drilled Shaft Crew	Drill Rig	Bauer BG 36 Rig	1	480
Drilled Shaft Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Concrete Pour Crew	Concrete Truck	Schwing 252 Truck Mounted	2	250
Concrete Pour Crew	Tower Crane	MR608 Tower Crane	1	180
Concrete Pour Crew	Concrete Pump	Concrete Pump	1	250
Concrete Pour Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Concrete Pour Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Concrete Pour Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Asphalt Crew	Dump truck	Dump Truck	3	-
Asphalt Crew	Asphalt Paver	CAT AP1055	2	255
Asphalt Crew	Roller/Compactor	CCS9 Combination Asphalt Compactor	2	131
Asphalt Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Asphalt Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Asphalt Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Steel Erection Crew	Other Construction Equipment	Manlifts/Bucket Trucks	4	60
Steel Erection Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Steel Erection Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Steel Erection Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Carpenter Crew	Generator Sets	Welding Machine/Generator	2	125
Carpenter Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Carpenter Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Lather Crew	Welding Machine/Generator	Welding Machine/Generator	4	125
Lather Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Lather Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Delivery Trucks	Delivery Trucks Onsite	Steel Delivery Trucks	1	1
Delivery Trucks	Delivery Trucks Offsite	Steel Delivery Trucks	1	1
Dump Trucks	Dump Trucks Onsite	Dump Trucks	1	1
Dump Trucks	Dump Trucks Offsite	Dump Trucks	1	1
Concrete Trucks	Concrete Trucks Nonroad	Schwing 252 Truck Mounted	1	250
Concrete Trucks	Concrete Trucks Onsite	Concrete Trucks	1	1
Concrete Trucks	Concrete Trucks Offsite	Concrete Trucks	1	1

EquipTypes_NR		
Non-Road Equipment Types	Assignment	Load Factor
Air Compressors	7-cycle average	0.43
Bore/Drill Rigs	7-cycle average	0.43
Cement & Mortar Mixers	7-cycle average	0.43
Concrete/Industrial Saws	Hi LF	0.59
Cranes	7-cycle average	0.43
Crawler Tractor/Dozers	Hi LF	0.59
Crushing/Proc. Equipment	7-cycle average	0.43
Dumpers/Tenders	Lo LF	0.21
Excavators	Hi LF	0.59
Generator Sets	7-cycle average	0.43
Graders	Hi LF	0.59
Hydro Power Units	7-cycle average	0.43
Off-Highway Tractors	Hi LF	0.59
Off-highway Trucks	Hi LF	0.59
Other Construction Equipment	Lo LF	0.21
Pavers	Hi LF	0.59
Paving Equipment	Hi LF	0.59
Plate Compactors	7-cycle average	0.43
Pressure Washers	7-cycle average	0.43
Pumps	7-cycle average	0.43
Rollers	Hi LF	0.59
Rough Terrain Forklifts	Hi LF	0.59
Rubber Tire Loaders	Hi LF	0.59
Scrapers	Hi LF	0.59
Signal Boards/Light Plants	7-cycle average	0.43
Skid Steer Loaders	Lo LF	0.21
Surfacing Equipment	Hi LF	0.59
Tampers/Rammers	7-cycle average	0.43
Tractors/Loaders/Backhoes	Lo LF	0.21
Trenchers	Hi LF	0.59
Welders	7-cycle average	0.43

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NB-HCE Program 2035 Construction Equipment Assumptions				
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Crew	Equipment Type	Equipment Notes	Original Quantity	HP
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DS2 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	3	1
DS1/DS3 Crane Crew	Crawler Crane	Manitowoc MLC 300	1	450
DS1/DS3 Crane Crew	Worker Vehicles	MOVES4 Source Type ID 31	2	1
Demolition Crew	Diesel Hammer	Delmag D46-32 Diesel Hammer	2	250
Demolition Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Demolition Crew	Dump truck	Dump Truck	2	-
Demolition Crew	Compressor	375 CFM Air Compressor	4	140
Demolition Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Demolition Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Excavation Crew	Backhoe	JD 710G 4WD Backhoe	2	122
Excavation Crew	Excavator	CAT 345C L Excavator	2	345
Excavation Crew	Dump truck	Dump Truck	2	-
Excavation Crew	Compressor	375 CFM Air Compressor	4	140
Excavation Crew	Delivery Trucks	MOVES4 Source Type ID 52	2	-
Excavation Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Pile Driving Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	450
Pile Driving Crew	Diesel Hammer	Pile Vibratory Hammer and Pile Driving Hammer (Generator Sets)	1	250
Pile Driving Crew	Generator Sets	Welding Machine/Generator	2	125
Pile Driving Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Pile Driving Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Trestle Construction Crew	Lattice-boom Crawler Crane	Manitowoc 999 Series 3, 150' Main Boom	1	400
Trestle Construction Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Cofferdam Sheet Piling Crew	Vibratory Hammer	Excavator-Mounted Vibratory Hammer	1	284
Cofferdam Sheet Piling Crew	Rough Terrain Crane	Grove RT700E 50MT RT Crane	1	240
Cofferdam Sheet Piling Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Drilled Shaft Crew	Drill Rig	Bauer BG 36 Rig	1	480
Drilled Shaft Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Concrete Pour Crew	Concrete Truck	Schwing 252 Truck Mounted	2	250
Concrete Pour Crew	Tower Crane	MR608 Tower Crane	1	180
Concrete Pour Crew	Concrete Pump	Concrete Pump	1	250
Concrete Pour Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Concrete Pour Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Concrete Pour Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Asphalt Crew	Dump truck	Dump Truck	3	-
Asphalt Crew	Asphalt Paver	CAT AP1055	2	255
Asphalt Crew	Roller/Compactor	CCS9 Combination Asphalt Compactor	2	131
Asphalt Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Asphalt Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Asphalt Crew	Worker Vehicles	MOVES4 Source Type ID 31	7	1
Steel Erection Crew	Other Construction Equipment	Manlifts/Bucket Trucks	4	60
Steel Erection Crew	Generator Sets	Compressors/Welding Machines/Generators	2	125
Steel Erection Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Steel Erection Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Carpenter Crew	Generator Sets	Welding Machine/Generator	2	125
Carpenter Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Carpenter Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Lather Crew	Welding Machine/Generator	Welding Machine/Generator	4	125
Lather Crew	Delivery Trucks	MOVES4 Source Type ID 52	1	-
Lather Crew	Worker Vehicles	MOVES4 Source Type ID 31	5	1
Delivery Trucks	Delivery Trucks Onsite	Steel Delivery Trucks	1	1
Delivery Trucks	Delivery Trucks Offsite	Steel Delivery Trucks	1	1
Dump Trucks	Dump Trucks Onsite	Dump Trucks	1	1
Dump Trucks	Dump Trucks Offsite	Dump Trucks	1	1
Concrete Trucks	Concrete Trucks Nonroad	Schwing 252 Truck Mounted	1	250
Concrete Trucks	Concrete Trucks Onsite	Concrete Trucks	1	1
Concrete Trucks	Concrete Trucks Offsite	Concrete Trucks	1	1

EquipTypes_NR		
Non-Road Equipment Types	Assignment	Load Factor
Air Compressors	7-cycle average	0.43
Bore/Drill Rigs	7-cycle average	0.43
Cement & Mortar Mixers	7-cycle average	0.43
Concrete/Industrial Saws	Hi LF	0.59
Cranes	7-cycle average	0.43
Crawler Tractor/Dozers	Hi LF	0.59
Crushing/Proc. Equipment	7-cycle average	0.43
Dumpers/Tenders	Lo LF	0.21
Excavators	Hi LF	0.59
Generator Sets	7-cycle average	0.43
Graders	Hi LF	0.59
Hydro Power Units	7-cycle average	0.43
Off-Highway Tractors	Hi LF	0.59
Off-highway Trucks	Hi LF	0.59
Other Construction Equipment	Lo LF	0.21
Pavers	Hi LF	0.59
Paving Equipment	Hi LF	0.59
Plate Compactors	7-cycle average	0.43
Pressure Washers	7-cycle average	0.43
Pumps	7-cycle average	0.43
Rollers	Hi LF	0.59
Rough Terrain Forklifts	Hi LF	0.59
Rubber Tire Loaders	Hi LF	0.59
Scrapers	Hi LF	0.59
Signal Boards/Light Plants	7-cycle average	0.43
Skid Steer Loaders	Lo LF	0.21
Surfacing Equipment	Hi LF	0.59
Tampers/Rammers	7-cycle average	0.43
Tractors/Loaders/Backhoes	Lo LF	0.21
Trenchers	Hi LF	0.59
Welders	7-cycle average	0.43

*Concrete Trucks assumed to be operating onsite (Nonroad emissions) for 1 hour per day

Appendix C-4

20-Year Newark Liberty International Airport Wind Rose

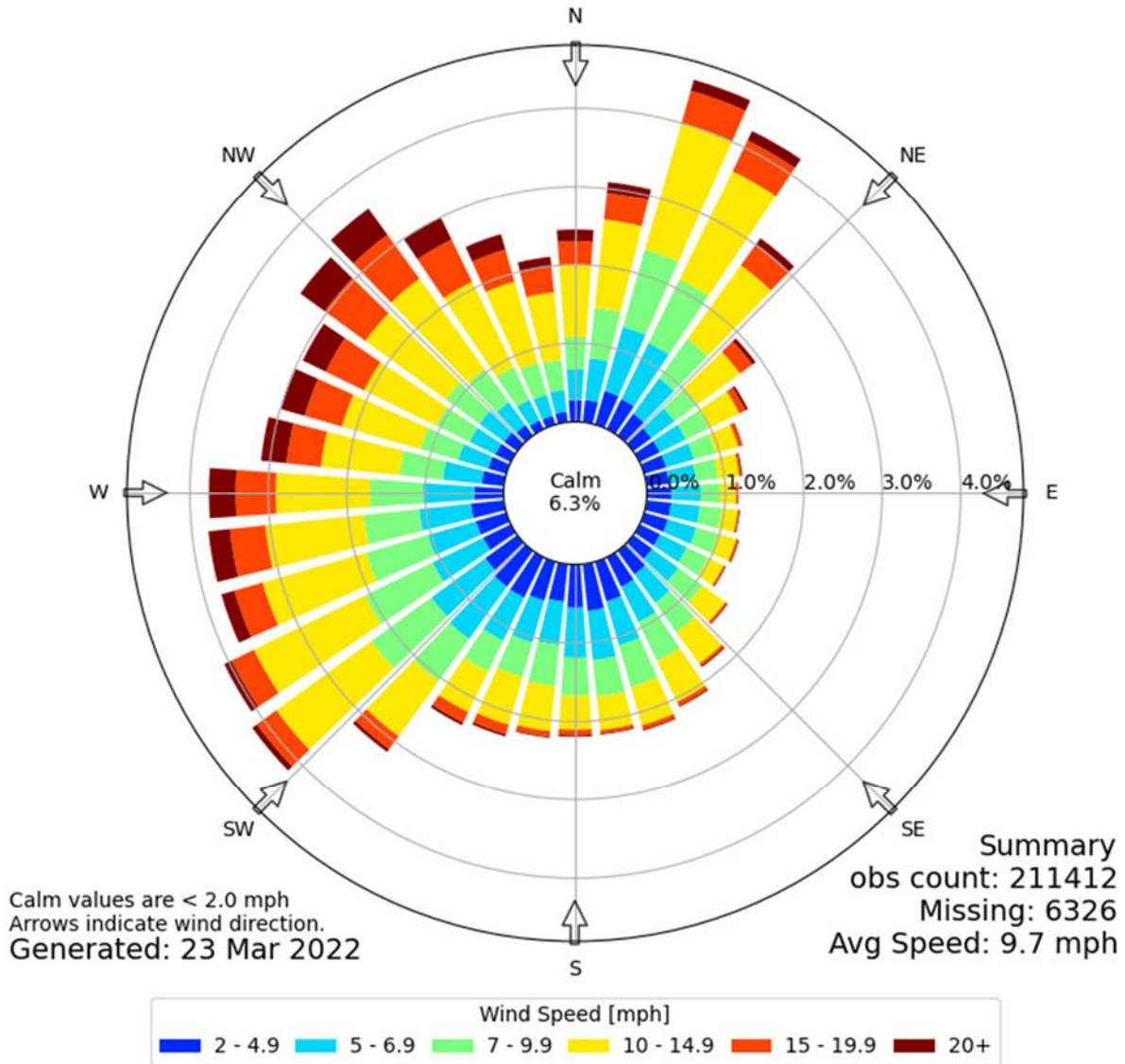
20 Year Wind Rose



[EWB] NEWARK INTL AIRPORT

Windrose Plot

Time Bounds: 01 Jan 2001 01:51 AM - 31 Dec 2021 11:51 PM America/New_York



Appendix C-5

2050 No Action and 2050 Proposed Action Hot-Spot Assessment Results (Project Corridor)

2050 Project Corridor Hot-Spot Volumes/Speeds by Link

	Link	Location	Sub Link Name	Peak Hour Volume				Congested Speeds			
				Vol AM	Vol MD	Vol PM	Vol NT	Speed AM	Speed MD	Speed PM	Speed NT
I-78/SR 139 Split to Columbus Ave On-Ramp		North of 14A	-78/SR 139 Split to Columbus Ave On-Ramp(1)	1123	1703	1810	780	50.5	50.5	44.1	50.5
			-78/SR 139 Split to Columbus Ave On-Ramp(2)	1123	1703	1810	780	50.5	50.5	44.1	50.5
			-78/SR 139 Split to Columbus Ave On-Ramp(3)	1123	1703	1810	780	50.5	50.5	44.1	50.5
			-78/SR 139 Split to Columbus Ave On-Ramp(4)	1123	1703	1810	780	50.5	50.5	44.1	50.5
			-78/SR 139 Split to Columbus Ave On-Ramp(5)	1123	1703	1810	780	50.5	50.5	44.1	50.5
Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp		North of 14A	Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp(1)	1860	2227	2739	1167	50.5	50.5	19.0	50.5
14C - Jersey City Blvd On-Ramp to Jersey City Toll Plaza		North of 14A	Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp(2)	1860	2227	2739	1167	50.5	50.5	19.0	50.5
Jersey City Toll Plaza to 14B - Bay View Ave Off-Ramp		North of 14A	14C - Jersey City Blvd On-Ramp to Jersey City Toll Plaza(1)	2024	2331	3002	1259	50.5	50.5	22.4	50.5
14B - Bay View Ave Off-Ramp to 14B - Bay View On-Ramp		North of 14A	Jersey City Toll Plaza to 14B - Bay View Ave Off-Ramp(1)	2024	2331	3002	1259	50.5	50.5	22.4	50.5
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp		North of 14A	14B - Bay View Ave Off-Ramp to 14B - Bay View On-Ramp(1)	1823	2208	2709	1171	50.5	50.5	34.9	50.5
			14B - Bay View Ave Off-Ramp to 14B - Bay View On-Ramp(2)	1823	2208	2709	1171	50.5	50.5	34.9	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(2)	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(3)	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-A	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-B	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-C	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-D	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-E	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-F	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-G	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-H	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-I	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-J	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-A	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-B	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-C	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-D	2187	2506	3087	1292	50.5	50.5	36.5	50.5
			14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-E	2187	2506	3087	1292	50.5	50.5	36.5	50.5
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-F	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-G	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-H	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-I	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-J	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-K	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-L	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-M	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-N	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-O	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-P	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-Q	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-R	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-S	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-T	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-U	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-V	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-W	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-X	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-Y	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-Z	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AA	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AB	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AC	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AD	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AE	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AF	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AG	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AH	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AI	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AJ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AK	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AL	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AM	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AN	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AO	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AP	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AQ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AR	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AS	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AT	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AU	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AV	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AW	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AX	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AY	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-AZ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BA	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BB	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BC	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BD	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BE	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BF	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BG	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BH	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BI	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BJ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BK	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BL	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BM	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BN	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BO	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BP	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BQ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BR	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BS	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BT	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BU	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BV	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BW	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BX	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BY	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-BZ	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CA	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CB	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CC	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CD	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CE	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CF	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CG	2187	2506	3087	1292	50.5	50.5	36.5	50.5			
14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-CH											

Interchange ge 14 Segments	HCE EB to Turnpike SB (TS)	14 to 14A	HCE EB to Turnpike SB (TS)(1)-B	787	677	1187	255	26.4	27.8	26.8	27.9
			HCE EB to Turnpike SB (TS)(1)-C	787	677	1187	255	26.4	27.8	26.8	27.9
			HCE EB to Turnpike SB (TS)(1)-D	787	677	1187	255	26.4	27.8	26.8	27.9
			HCE EB to Turnpike SB (TS)(1)-E	787	677	1187	255	26.4	27.8	26.8	27.9
			HCE EB to Turnpike SB (TS)(1)-F	787	677	1187	255	26.4	27.8	26.8	27.9
			HCE EB to Turnpike NB (TN)(1)-A	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(1)-B	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(1)-C	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(1)-D	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(1)-E	2966	1880	2355	1411	25.3	27.3	25.4	27.3
Interchange ge 14A Segments	HCE EB to Turnpike NB (TN)	14 to 14A	HCE EB to Turnpike NB (TN)(2)-A	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(2)-B	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(2)-C	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(3)-A	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			HCE EB to Turnpike NB (TN)(3)-B	2966	1880	2355	1411	25.3	27.3	25.4	27.3
			Turnpike NB outer lanes to HCE from exit to split (SIT)(1)	1800	1026	1593	583	27.1	34.8	33.6	34.9
			Turnpike NB inner lanes to HCE from exit to split (SIT)(1)-A	1236	365	1238	672	27.1	34.8	33.6	34.9
			Turnpike NB inner lanes to HCE from exit to split (SIT)(1)-B	1236	365	1238	672	27.1	34.8	33.6	34.9
			Turnpike NB inner lanes to HCE from exit to split (SIT)(2)	1236	365	1238	672	27.1	34.8	33.6	34.9
			Turnpike NB Inner Lanes to HCE EB from split to merge (SIH)(1)	811	178	668	422	27.1	34.8	33.6	34.9
Interchange ge 14A Segments	Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)	14 to 14A	Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(1)-A	1190	599	812	361	25.4	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(1)-B	1190	599	812	361	25.4	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(2)	1190	599	812	361	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(1)-A	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(1)-B	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(1)-C	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(2)-A	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(2)-B	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB to HCE EB from Merge (SH)(2)-C	2001	777	1480	782	25.4	28.0	27.9	28.0
			Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(1)	426	187	570	250	27.8	28.0	27.9	28.0
Interchange ge 14A Segments	Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)	14 to 14A	Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-A	426	187	570	250	27.8	28.0	27.9	28.0
			Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-B	426	187	570	250	27.8	28.0	27.9	28.0
			Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-C	426	187	570	250	27.8	28.0	27.9	28.0
			Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-D	426	187	570	250	27.8	28.0	27.9	28.0
			Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-E	426	187	570	250	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(1)-A	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(1)-B	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(2)	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-A	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-B	610	427	780	223	27.8	28.0	27.9	28.0
Interchange ge 14A Segments	Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)	14 to 14A	Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-C	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(4)-A	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(4)-B	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(5)-A	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(5)-B	610	427	780	223	27.8	28.0	27.9	28.0
			Turnpike NB to HCE WB from Merge (ST)(1)-A	1035	613	1350	473	27.8	28.0	27.9	28.0
			Turnpike NB to HCE WB from Merge (ST)(1)-B	1035	613	1350	473	27.8	28.0	27.9	28.0
			Turnpike NB to HCE WB from Merge (ST)(2)-A	1035	613	1350	473	27.8	28.0	27.9	28.0
			Turnpike NB to HCE WB from Merge (ST)(2)-B	1035	613	1350	473	27.8	28.0	27.9	28.0
			Turnpike NB to HCE WB from Merge (ST)(2)-C	1035	613	1350	473	27.8	28.0	27.9	28.0
Interchange ge 14A Segments	Turnpike SB to HCE to split (from end of viaduct)	14 to 14A	Turnpike SB to HCE to split (from end of viaduct)(1)-A	3483	2336	3579	1491	35.0	35.0	35.0	35.0
			Turnpike SB to HCE to split (from end of viaduct)(1)-B	3483	2336	3579	1491	35.0	35.0	35.0	35.0
			Turnpike SB to HCE WB from split (NT)(1)-A	2773	1902	2850	1280	28.0	28.0	27.9	28.0
			Turnpike SB to HCE WB from split (NT)(1)-B	2773	1902	2850	1280	28.0	28.0	27.9	28.0
			Turnpike SB to HCE WB from split (NT)(1)-C	2773	1902	2850	1280	28.0	28.0	27.9	28.0
			Turnpike SB to HCE WB from split (NT)(1)-D	2773	1902	2850	1280	28.0	28.0	27.9	28.0
			Turnpike SB to HCE EB from split (NH)(1)-A	710	434	729	210	28.0	28.0	28.0	28.0
			Turnpike SB to HCE EB from split (NH)(1)-B	710	434	729	210	28.0	28.0	28.0	28.0
			Turnpike SB to HCE EB from split (NH)(1)-C	710	434	729	210	28.0	28.0	28.0	28.0
			Turnpike SB to HCE EB from split (NH)(2)-A	710	434	729	210	28.0	28.0	28.0	28.0
Interchange ge 14A, 14B, and 14C Ramps	Columbus Ave On-Ramp 14C - Jersey City Blvd On-Ramp (CT) 14B - Bay View Ave Off-Ramp (ET) 14B - Bay View Ave On-Ramp (TW)	North of 14A	Columbus Ave On-Ramp(1)	137	524	929	387	28.0	27.9	27.9	28.0
			14C - Jersey City Blvd On-Ramp (CT)(1)	163	103	263	93	28.0	28.0	27.9	28.0
			14B - Bay View Ave Off-Ramp (ET)(1)	201	122	293	88	28.0	28.0	28.0	28.0
			14B - Bay View Ave Off-Ramp (ET)(2)	201	122	293	88	28.0	28.0	28.0	28.0
			14B - Bay View Ave On-Ramp (TW)(1)	366	299	378	120	28.0	28.0	26.8	28.0
			14B - Bay View Ave On-Ramp (TW)(2)	366	299	378	120	28.0	28.0	26.8	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-A	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-B	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-C	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-D	400	390	735	215	27.2	27.9	27.1	28.0
Interchange ge 14A, 14B, and 14C Ramps	14A - SR 440/Bayone Off-Ramp (ET) 14A - SR 440/Bayone On-Ramp (TW)	North of 14A	14A - SR 440/Bayone Off-Ramp (ET)(1)-E	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-F	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-G	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-H	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-I	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-J	400	390	735	215	27.2	27.9	27.1	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-A	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-B	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-C	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-D	2154	1182	1514	712	28.0	28.0	25.6	28.0
Interchange ge 14A, 14B, and 14C Ramps	14A - SR 440/Bayone On-Ramp (TW) 14A - SR 440/Bayone Off-Ramp (WT)	14 to 14A	14A - SR 440/Bayone On-Ramp (TW)(1)-E	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-F	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(1)-G	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-A	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-B	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-C	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-D	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-E	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone On-Ramp (TW)(2)-F	2154	1182	1514	712	28.0	28.0	25.6	28.0
			14A - SR 440/Bayone Off-Ramp (WT)(1)-A	1837	1091	1684	501	26.7	28.0	27.8	28.0
Interchange ge 14A, 14B, and 14C Ramps	14A - SR 440/Bayone Off-Ramp (WT) 14A - SR 440/Bayone On-Ramp (TE)	North of 14A	14A - SR 440/Bayone Off-Ramp (WT)(1)-B	1837	1091	1684	501	26.7	28.0	27.8	28.0
			14A - SR 440/Bayone Off-Ramp (WT)(1)-C	1837	1091	1684	501	26.7	28.0	27.8	28.0
			14A - SR 440/Bayone Off-Ramp (WT)(1)-D	1837	1091	1684	501	26.7	28.0	27.8	28.0
			14A - SR 440/Bayone Off-Ramp (WT)(1)-E	1837	1091	1684	501	26.7	28.0	27.8	28.0
			14A - SR 440/Bayone Off-Ramp (WT)(1)-F	1837	1091	1684	501	26.7	28.0	27.8	28.0
			14A - SR 440/Bayone On-Ramp (TE)(1)-A	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-B	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-C	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-D	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-E	942	252	571	351	21.5	27.1	25.6	27.6
Interchange ge 14A, 14B, and 14C Ramps	14A - SR 440/Bayone On-Ramp (TE) 14A - SR 440/Bayone Off-Ramp (TE)	North of 14A	14A - SR 440/Bayone On-Ramp (TE)(1)-F	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-G	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(1)-H	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6
			14A - SR 440/Bayone On-Ramp (TE)(2)	942	252	571	351	21.5	27.1	25.6	27.6

**2050 No Action Alternative
Microscale Air Quality Assessment Modeling Results**

Pollutant	Averaging Period	Units	Background Concentration ³	Max Modeled Concentration	Total Concentration	NAAQS	Exceedance YES/NO
CO	1-hour	ppm	3.7	0.42	4.12	35	NO
	8-hour		2.4	0.19	2.59	9	NO
PM _{2.5}	24-hour	µg/m ³	21.0	2.07	23.07	35	NO
	Annual ¹		7.8	0.83	8.63	12	NO
	Annual ²		7.8	0.83	8.63	9	NO

Notes:

¹2012 annual PM_{2.5} standard

²2024 annual PM_{2.5} standard

³Background concentrations represent USEPA Design Values from the 2023 Design Values Reports.

	1-hr			8-hr		
	Max Conc.	X	Y	Max Conc.	X	Y
CO_AM_2016_East1.8	0.403070	575450	4504900	0.168329	575575	4504850
CO_AM_2017_East1.8	0.374003	575450	4504900	0.168862	575670	4504808
CO_AM_2018_East1.8	0.398775	575450	4504900	0.187983	575450	4504900
CO_AM_2019_East1.8	0.394803	575450	4504900	0.159923	575709	4504872
CO_AM_2020_East1.8	0.407597	575450	4504900	0.179817	575450	4504900
CO_PM_2016_East1.8	0.327210	575450	4504900	0.138843	575670	4504808
CO_PM_2017_East1.8	0.309346	575450	4504900	0.138791	575670	4504808
CO_PM_2018_East1.8	0.310803	575450	4504900	0.138617	575450	4504900
CO_PM_2019_East1.8	0.305208	575709	4504872	0.134341	575709	4504872
CO_PM_2020_East1.8	0.335398	575450	4504900	0.153320	575450	4504900
CO_AM_2016_East2nd	0.410083	575450	4504900	0.166700	575691	4504885
CO_AM_2017_East2nd	0.380257	575450	4504900	0.161524	575670	4504808
CO_AM_2018_East2nd	0.406045	575450	4504900	0.177399	575450	4504900
CO_AM_2019_East2nd	0.400714	575450	4504900	0.161033	575691	4504885
CO_AM_2020_East2nd	0.415001	575450	4504900	0.176549	575575	4504850
CO_PM_2016_East2nd	0.331649	575450	4504900	0.127973	575670	4504808
CO_PM_2017_East2nd	0.316668	575450	4504900	0.134901	575691	4504885
CO_PM_2018_East2nd	0.316205	575450	4504900	0.135781	575691	4504885
CO_PM_2019_East2nd	0.311030	575709	4504872	0.136390	575691	4504885
CO_PM_2020_East2nd	0.340504	575450	4504900	0.152939	575575	4504850

	Annual			24-hr		
	Max Conc.	X	Y	Max Conc.	X	Y
PM2.5_East1.8	0.829640	575670	4504808	2.072210	575670	4504808
PM2.5_East2nd	0.731870	575691	4504885	1.860380	575875	4504625



2050 Project Corridor Hot-Spot Volumes/Speeds by Link

			Peak Hour Volume				Congested Speeds					
Link	Location	Sub Link Name	Vol AM	Vol MD	Vol PM	Vol NT	Speed AM	Speed MD	Speed PM	Speed NT		
I-78/SR 139 Split to Columbus Ave On-Ramp	North of 14A	I-78/SR 139 Split to Columbus Ave On-Ramp(1)	1369	1820	2207	824	50.5	50.5	31.6	50.5		
		I-78/SR 139 Split to Columbus Ave On-Ramp(2)	1369	1820	2207	824	50.5	50.5	31.6	50.5		
		I-78/SR 139 Split to Columbus Ave On-Ramp(3)	1369	1820	2207	824	50.5	50.5	31.6	50.5		
		I-78/SR 139 Split to Columbus Ave On-Ramp(4)	1369	1820	2207	824	50.5	50.5	31.6	50.5		
		I-78/SR 139 Split to Columbus Ave On-Ramp(5)	1369	1820	2207	824	50.5	50.5	31.6	50.5		
Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp	North of 14A	Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp(1)	2268	2380	3340	1233	52.0	52.0	46.9	52.0		
		Columbus Ave On-Ramp to 14C - Jersey City Blvd On-Ramp(2)	2268	2380	3340	1233	52.0	52.0	46.9	52.0		
14C - Jersey City Blvd On-Ramp to Jersey City Toll Plaza	North of 14A	14C - Jersey City Blvd On-Ramp to Jersey City Toll Plaza(1)	2467	2490	3660	1331	52.0	52.0	40.2	52.0		
Jersey City Toll Plaza to 14B - Bay View Ave Off-Ramp	North of 14A	Jersey City Toll Plaza to 14B - Bay View Ave Off-Ramp(1)	2467	2490	3660	1331	52.0	52.0	40.2	52.0		
14B - Bay View Ave Off-Ramp to 14B - Bay View Ave Off-Ramp	North of 14A	14B - Bay View Ave Off-Ramp to 14B - Bay View Ave Off-Ramp(1)	2223	2360	3302	1238	52.0	52.0	49.2	52.0		
		14B - Bay View Ave Off-Ramp to 14B - Bay View Ave Off-Ramp(2)	2223	2360	3302	1238	52.0	52.0	49.2	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(2)	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(3)	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-A	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-B	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-C	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-D	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-E	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-A	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-B	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-C	2667	2678	3763	1365	52.0	52.0	45.3	52.0		
		I-78 WB	14 to 14A	14B - Bay View Ave On-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-D	2667	2678	3763	1365	52.0	52.0	45.3	52.0
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone Off-Ramp(5)-E	2667			2678	3763	1365	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(1)-A	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(1)-B	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(1)-C	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(1)-D	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(2)-A	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp (78 WB)(2)-B	2179			2261	2867	1138	52.0	52.0	45.3	52.0		
14A - SR 440/Bayone Off-Ramp to 14 - Turnpike NB Off-Ramp(1)-A	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(1)-B	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(1)-C	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(1)-D	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(2)	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(3)	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(4)	4806			3525	4713	1890	53.5	53.5	50.6	53.5		
14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp	14 to 14A	14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(4)-A	4806	3525	4713	1890	53.5	53.5	50.6	53.5		
		14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(4)-B	4806	3525	4713	1890	53.5	53.5	50.6	53.5		
		14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(4)-C	4806	3525	4713	1890	53.5	53.5	50.6	53.5		
		14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(5)	4806	3525	4713	1890	53.5	53.5	50.6	53.5		
		14A - SR 440/Bayone On-Ramp to 14 - Turnpike NB Off-Ramp(5)	4806	3525	4713	1890	53.5	53.5	50.6	53.5		
		14 - Turnpike NB Off-Ramp to 14 - Turnpike SB Off-Ramp(1)-A	3527	2866	3665	1575	50.5	50.5	18.2	50.5		
		14 - Turnpike NB Off-Ramp to 14 - Turnpike SB Off-Ramp(1)-B	3527	2866	3665	1575	50.5	50.5	18.2	50.5		
		14 - Turnpike NB Off-Ramp to 14 - Turnpike SB Off-Ramp(1)-C	3527	2866	3665	1575	50.5	50.5	18.2	50.5		
		14 - Turnpike NB Off-Ramp to 14 - Turnpike SB Off-Ramp(1)-D	3527	2866	3665	1575	50.5	50.5	18.2	50.5		
		14 - Turnpike NB Off-Ramp to 14 - Turnpike SB Off-Ramp(2)	3527	2866	3665	1575	50.5	50.5	18.2	50.5		
		14 - Turnpike SB Off-Ramp to Newark Toll Plaza(1)-A	2171	1326	1694	882	53.5	53.5	52.1	53.5		
		14 - Turnpike SB Off-Ramp to Newark Toll Plaza(1)-B	2171	1326	1694	882	53.5	53.5	52.1	53.5		
		14 - Turnpike SB Off-Ramp to Newark Toll Plaza(1)-C	2171	1326	1694	882	53.5	53.5	52.1	53.5		
		Newark Toll Plaza to 14 - Turnpike Off-Ramp	14 to 14A	Newark Toll Plaza to 14 - Turnpike Off-Ramp(1)	7256	3752	6712	2473	54.3	55.0	54.9	55.0
		14 - Turnpike SB Off-Ramp to 14 - Turnpike SB On-Ramp	14 to 14A	14 - Turnpike Off-Ramp to 14 - Turnpike SB On-Ramp(1)	2681	1020	2394	712	48.1	50.5	50.5	50.5
14 - Turnpike SB On-Ramp to HCE - Turnpike NB To HCE On-Ramp(1)	3546			1484	3283	934	46.1	50.5	50.4	50.5		
14 - Turnpike SB On-Ramp to HCE - Turnpike NB To HCE On-Ramp(2)-A	3546			1484	3283	934	46.1	50.5	50.4	50.5		
14 - Turnpike SB On-Ramp to HCE - Turnpike NB To HCE On-Ramp(2)-B	3546			1484	3283	934	46.1	50.5	50.4	50.5		
14 - Turnpike SB On-Ramp to HCE - Turnpike NB To HCE On-Ramp(2)-C	3546			1484	3283	934	46.1	50.5	50.4	50.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)-A	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)-B	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)-C	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(1)-D	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(2)	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(3)	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-A	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-B	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-C	5985			2314	5088	1761	49.8	53.5	53.5	53.5		
I-78 EB	14 to 14A			14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-D	5985	2314	5088	1761	49.8	53.5	53.5	53.5
		14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-E	5985	2314	5088	1761	49.8	53.5	53.5	53.5		
		14 - Turnpike NB On-Ramp to 14A - SR 440 Bayone Off-Ramp(4)-F	5985	2314	5088	1761	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(1)-A	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(1)-B	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-A	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-B	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-C	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-D	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-E	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-F	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(2)-G	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone Off-Ramp to 14A - SR 440 Bayone On-Ramp(3)	3745	1149	3035	1231	49.8	53.5	53.5	53.5		
		14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(1)-A	4894	1419	3729	1602	43.5	52.0	52.0	52.0		
		14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp	North of 14A	14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(1)-B	4894	1419	3729	1602	43.5	52.0	52.0	52.0
14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(1)-C	4894			1419	3729	1602	43.5	52.0	52.0	52.0		
14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(1)-D	4894			1419	3729	1602	43.5	52.0	52.0	52.0		
14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(2)	4894			1419	3729	1602	43.5	52.0	52.0	52.0		
14A - SR 440/Bayone On-Ramp to 14B - Bay View Ave Off-Ramp(3)	4894			1419	3729	1602	43.5	52.0	52.0	52.0		
14B - Bay View Ave Off-Ramp to 14B - Bay View Ave On-Ramp	North of 14A	14B - Bay View Ave Off-Ramp to 14B - Bay View Ave On-Ramp(1)	4314	1216	3337	1465	48.1	52.0	52.0	52.0		
		14B - Bay View Ave Off-Ramp to 14B - Bay View Ave On-Ramp(2)	4314	1216	3337	1465	48.1	52.0	52.0	52.0		
14B - Bay View Ave On-Ramp to Jersey City Toll Plaza	North of 14A	14B - Bay View Ave On-Ramp to Jersey City Toll Plaza(1)	4483	1401	3581	1675	46.8	52.0	52.0	52.0		
Jersey City Toll Plaza to Jersey City Blvd Off-Ramp	North of 14A	Jersey City Toll Plaza to Jersey City Blvd Off-Ramp(1)	4483	1401	3581	1675	46.8	52.0	52.0	52.0		
		Jersey City Blvd Off-Ramp to Columbus Ave Off-Ramp(1)	4121	1338	3323	1580	49.6	52.0	52.0	52.0		
		Jersey City Blvd Off-Ramp to Columbus Ave Off-Ramp(2)	4121	1338	3323	1580	49.6	52.0	52.0	52.0		
		Columbus Ave Off-Ramp to Jersey Ave/SR 139 Merge(1)	2368	786	2488	1304	47.9	50.5	50.5	50.5		
		Columbus Ave Off-Ramp to Jersey Ave/SR 139 Merge(2)	2368	786	2488	1304	47.9	50.5	50.5	50.5		
Columbus Ave Off-Ramp to Jersey Ave/SR 139 Merge	North of 14A	Columbus Ave Off-Ramp to Jersey Ave/SR 139 Merge(3)	2368	786	2488	1304	47.9	50.5	50.5	50.5		
		HCE WB to Turnpike NB - before the split(1)-A	1279	659	1049	314	28.0	28.0	26.8	28.0		
		HCE WB to Turnpike NB - before the split(1)-B	1279	659	1049	314	28.0	28.0	26.8	28.0		
		HCE WB to Turnpike NB - from split to Outer Lanes (HN)(1)-A	976	512	799	253	27.9	28.0	27.8	28.0		
		HCE WB to Turnpike NB - from split to Outer Lanes (HN)(1)-B	976	512	799	253	27.9	28.0	27.8	28.0		
HCE WB to Turnpike NB - from split to Outer Lanes (HN)	14 to 14A	HCE WB to Turnpike NB - from split to Outer Lanes (HN)(1)-C	976	512	799	253	27.9	28.0	27.8	28.0		
		HCE WB to Turnpike NB - from split to Outer Lanes (HN)(2)-A	976	512	799	253	27.9	28.0	27.8	28.0		
		HCE WB to Turnpike NB - from split to Outer Lanes (HN)(2)-B	976	512	799	253	27.9	28.0	27.8	28.0		
		HCE WB to Turnpike NB - from split to Outer Lanes (HN)(2)-C	976	512	799	253	27.9	28.0	27.8	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(1)	303	147	250	61	28.0	28.0	24.0	28.0		
HCE WB to HCE WB - outer part of Toll plaza (HLT)	14 to 14A	HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-A	303	147	250	61	28.0	28.0	24.0	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-B	303	147	250	61	28.0	28.0	24.0	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-C	303	147	250	61	28.0	28.0	24.0	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-D	303	147	250	61	28.0	28.0	24.0	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-E	303	147	250	61	28.0	28.0	24.0	28.0		
		HCE WB to HCE WB - outer part of Toll plaza (HLT)(2)-F	303	147	250	61	28.0	28.0	24.0	2		

			HCE WB to HCE WB - outer part of Toll plaza (HLT)(3)-B	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to HCE WB - outer part of Toll plaza (HLT)(3)-C	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to HCE WB - outer part of Toll plaza (HLT)(3)-D	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to HCE WB - outer part of Toll plaza (HLT)(4)-A	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to HCE WB - outer part of Toll plaza (HLT)(4)-B	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to HCE WB - outer part of Toll plaza (HLT)(4)-C	303	147	250	61	28.0	28.0	24.0	28.0
			HCE WB to Turnpike SB (HS)(1)-A	1356	1540	1971	693	27.7	26.7	14.5	27.8
			HCE WB to Turnpike SB (HS)(1)-B	1356	1540	1971	693	27.7	26.7	14.5	27.8
			HCE WB to Turnpike SB (HS)(1)-C	1356	1540	1971	693	27.7	26.7	14.5	27.8
			HCE WB to Turnpike SB (HS)(1)-D	1356	1540	1971	693	27.7	26.7	14.5	27.8
HCE WB to Turnpike SB (HS)	14 to 14A	HCE WB to Turnpike SB (HS)(1)-E	1356	1540	1971	693	27.7	26.7	14.5	27.8	
		HCE WB to Turnpike SB (HS)(1)-F	1356	1540	1971	693	27.7	26.7	14.5	27.8	
		HCE WB to Turnpike SB (HS)(1)-G	1356	1540	1971	693	27.7	26.7	14.5	27.8	
		HCE WB to Turnpike SB (HS)(1)-H	1356	1540	1971	693	27.7	26.7	14.5	27.8	
		HCE EB to Turnpike SB (TS)(1)-A	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike SB (TS)(1)-B	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike SB (TS)(1)-C	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike SB (TS)(1)-D	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike SB (TS)(1)-E	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike SB (TS)(1)-F	959	724	1447	270	26.6	27.8	27.8	27.9	
HCE EB to Turnpike SB (TS)	14 to 14A	HCE EB to Turnpike SB (TS)(1)-G	959	724	1447	270	26.6	27.8	27.8	27.9	
		HCE EB to Turnpike NB (TN)(1)-A	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(1)-B	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(1)-C	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(1)-D	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(1)-E	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(2)-A	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(2)-B	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(2)-C	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		HCE EB to Turnpike NB (TN)(3)-A	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
HCE EB to Turnpike NB (TN)	14 to 14A	HCE EB to Turnpike NB (TN)(3)-B	3616	2009	2871	1491	25.7	27.3	25.3	27.3	
		Turnpike NB outer lanes to HCE from exit to split (1)	2194	1096	1942	617	23.1	34.8	33.8	34.9	
		Turnpike NB inner lanes to HCE from exit to split (SIT)(1)-A	1507	390	1509	710	23.1	34.8	33.8	34.9	
		Turnpike NB inner lanes to HCE from exit to split (SIT)(1)-B	1507	390	1509	710	23.1	34.8	33.8	34.9	
		Turnpike NB inner lanes to HCE from exit to split (SIT)(2)	1507	390	1509	710	23.1	34.8	33.8	34.9	
		Turnpike NB Inner Lanes to HCE EB from split to merge (SIH)	988	190	814	446	23.1	34.8	33.8	34.9	
		Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(1)-A	1451	640	990	381	24.4	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(1)-B	1451	640	990	381	24.4	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE EB from split to merge (SOH)(2)	1451	640	990	381	24.4	28.0	27.9	28.0	
		Turnpike NB to HCE EB from Merge (SH)(1)-A	2440	831	1805	827	24.4	28.0	27.9	28.0	
Turnpike NB to HCE EB from Merge (SH)	14 to 14A	Turnpike NB to HCE EB from Merge (SH)(1)-B	2440	831	1805	827	24.4	28.0	27.9	28.0	
		Turnpike NB to HCE EB from Merge (SH)(1)-C	2440	831	1805	827	24.4	28.0	27.9	28.0	
		Turnpike NB to HCE EB from Merge (SH)(2)-A	2440	831	1805	827	24.4	28.0	27.9	28.0	
		Turnpike NB to HCE EB from Merge (SH)(2)-B	2440	831	1805	827	24.4	28.0	27.9	28.0	
		Turnpike NB to HCE EB from Merge (SH)(2)-C	2440	831	1805	827	24.4	28.0	27.9	28.0	
		Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(1)	519	200	695	264	27.9	28.0	27.9	28.0	
		Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-A	519	200	695	264	27.9	28.0	27.9	28.0	
		Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-B	519	200	695	264	27.9	28.0	27.9	28.0	
		Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-C	519	200	695	264	27.9	28.0	27.9	28.0	
		Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-D	519	200	695	264	27.9	28.0	27.9	28.0	
Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)	14 to 14A	Turnpike NB Inner Lanes to HCE WB from Split to Merge (SIT)(2)-E	519	200	695	264	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(1)-A	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(1)-B	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(2)	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-A	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-B	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(3)-C	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(4)-A	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(4)-B	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(5)-A	743	456	951	236	27.9	28.0	27.9	28.0	
Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)	14 to 14A	Turnpike NB Outer Lanes to HCE WB from Split to Merge (SOT)(5)-B	743	456	951	236	27.9	28.0	27.9	28.0	
		Turnpike NB to HCE WB from Merge (ST)(1)-A	1262	655	1646	500	27.9	28.0	27.9	28.0	
		Turnpike NB to HCE WB from Merge (ST)(1)-B	1262	655	1646	500	27.9	28.0	27.9	28.0	
		Turnpike NB to HCE WB from Merge (ST)(2)-A	1262	655	1646	500	27.9	28.0	27.9	28.0	
		Turnpike NB to HCE WB from Merge (ST)(2)-B	1262	655	1646	500	27.9	28.0	27.9	28.0	
		Turnpike NB to HCE WB from Merge (ST)(2)-C	1262	655	1646	500	27.9	28.0	27.9	28.0	
		Turnpike SB to HCE to split (from end of viaduct)(1)-A	4246	2496	4363	1575	35.0	35.0	35.0	35.0	
		Turnpike SB to HCE to split (from end of viaduct)(1)-B	4246	2496	4363	1575	35.0	35.0	35.0	35.0	
		Turnpike SB to HCE WB from split (NT)(1)-A	3381	2032	3474	1353	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE WB from split (NT)(1)-B	3381	2032	3474	1353	28.0	28.0	28.0	28.0	
Turnpike SB to HCE WB from split (NT)	14 to 14A	Turnpike SB to HCE WB from split (NT)(1)-C	3381	2032	3474	1353	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE WB from split (NT)(1)-D	3381	2032	3474	1353	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(1)-A	865	464	889	222	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(1)-B	865	464	889	222	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(1)-C	865	464	889	222	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(2)-A	865	464	889	222	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(2)-B	865	464	889	222	28.0	28.0	28.0	28.0	
		Turnpike SB to HCE EB from split (NH)(2)-C	865	464	889	222	28.0	28.0	28.0	28.0	
		Columbus Ave On-Ramp(1)	898	560	1133	409	28.0	27.9	25.6	28.0	
		14C - Jersey City Blvd On-Ramp (CT)	199	110	320	98	28.0	28.0	27.8	28.0	
Interchange 14A, 14B, and 14C Ramps			14B - Bay View Ave Off-Ramp (ET)	245	130	358	93	28.0	28.0	27.9	28.0
			14B - Bay View Ave Off-Ramp (ET)	245	130	358	93	28.0	28.0	27.9	28.0
			14B - Bay View Ave On-Ramp (TW)(1)	446	320	461	127	28.0	28.0	27.0	28.0
			14B - Bay View Ave On-Ramp (TW)(2)	446	320	461	127	28.0	28.0	27.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-A	487	417	896	228	27.1	27.9	26.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-B	487	417	896	228	27.1	27.9	26.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-C	487	417	896	228	27.1	27.9	26.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-D	487	417	896	228	27.1	27.9	26.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-E	487	417	896	228	27.1	27.9	26.0	28.0
			14A - SR 440/Bayone Off-Ramp (ET)(1)-F	487	417	896	228	27.1	27.9	26.0	28.0
14A - SR 440/Bayone Off-Ramp (ET)	North of 14A	14A - SR 440/Bayone Off-Ramp (ET)(1)-G	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-H	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-I	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-J	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-K	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-L	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-M	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-N	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-O	487	417	896	228	27.1	27.9	26.0	28.0	
		14A - SR 440/Bayone Off-Ramp (ET)(1)-P	487	417	896	228	27.1	27.9	26.0	28.0	
14A - SR 440/Bayone On-Ramp (TW)	14 to 14A	14A - SR 440/Bayone On-Ramp (TW)(1)-A	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-B	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-C	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-D	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-E	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-F	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(1)-G	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(2)-A	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(2)-B	2626	1263	1846	752	28.0	28.0	27.1	28.0	
		14A - SR 440/Bayone On-Ramp (TW)(2)-C	2626	1263	1846	752	28.0	28.0	27.1	28.0	
Columbus Ave Off-Ramp	North of 14A	14B - Bay View Ave On-Ramp (TE)	170	187	244	210	27.8	28.0	28.0	28.0	
		14B - Bay View Ave On-Ramp (TE)	170	187	244	210	27.8	28.0	28.0	28.0	
		14B - Bay View Ave On-Ramp (TE)	170	187	244	210	27.8	28.0	28.0	28.0	
		14A - SR 440/Bayone Off-Ramp (WT)(1)-A	2240	1165	2053	530	27.1	28.0	27.9	28.0	
		14A - SR 440/Bayone Off-Ramp (WT)(1)-B	2240	1165	2053	530	27.1	28.0	27.9	28.0	
		14A - SR 440/Bayone Off-Ramp (WT)(1)-C	2240	1165	2053	530	27.1	28.0	27.9	28.0	
		14A - SR 440/Bayone Off-Ramp (WT)(1)-D	2240	1165	2053	530	27.1	28.0	27.9	28.0	
		14A - SR 440/Bayone Off-Ramp (WT)(1)-E	2240	1165	2053	530	27.1	28.0	27.9	28.0	
		Columbus Ave Off-Ramp(1)	1753	552	835	276	27.5	28.0	28.0	28.0	
		14C - Jersey City Blvd Off-Ramp (TC)	362	63	259	96	27.9	28.0	28.0	28.0	
14B - Bay View Ave Off-Ramp (WT)	North of 14A	14B - Bay View Ave Off-Ramp (WT)(1)	580	203	393	137	28.0	28.0	28.0	28.0	
		14B - Bay View Ave Off-Ramp (WT)(2)	580	203	393	137	28.0	28.0	28.0	28.0	
		14B - Bay View Ave Off-Ramp (WT)(3)	580	203	393	137	28.0	28.0	28.0	28.0	
		14B - Bay View Ave On-Ramp (TE)	170	187							

			14A - SR 440/Bayone Off-Ramp (WTJ1)-F	2240	1165	2053	530	27.1	28.0	27.9	28.0
			14A - SR 440/Bayone On-Ramp (TE1)-A	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-B	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-C	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-D	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-E	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-F	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-G	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-H	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-I	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-J	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-K	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-L	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-M	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-N	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-O	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-P	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-Q	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-R	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-S	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-T	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-U	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-V	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-W	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-X	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-Y	1149	269	696	371	20.4	27.0	25.3	27.5
			14A - SR 440/Bayone On-Ramp (TE1)-Z	1149	269	696	371	20.4	27.0	25.3	27.5

**2050 Proposed Action Alternative
Microscale Air Quality Assessment Modeling Results**

Pollutant	Averaging Period	Units	Background Concentration ³	Max Modeled Concentration	Total Concentration	NAAQS	Exceedance YES/NO
CO	1-hour	ppm	3.7	0.45	4.15	35	NO
	8-hour		2.4	0.20	2.60	9	NO
PM _{2.5}	24-hour	µg/m ³	21.0	2.37	23.37	35	NO
	Annual ¹		7.8	0.93	8.73	12	NO
	Annual ²		7.8	0.93	8.73	9	NO

Notes:

¹2012 annual PM_{2.5} standard

²2024 annual PM_{2.5} standard

³Background concentrations represent USEPA Design Values from the 2021 Design Values Reports.

	1-hr			8-hr		
	Max Conc.	X	Y	Max Conc.	X	Y
CO_AM_2016_East1.8	0.406276	575670	4504808	0.183763	575670	4504808
CO_AM_2017_East1.8	0.387469	575670	4504808	0.185053	575670	4504808
CO_AM_2018_East1.8	0.373078	575670	4504808	0.197477	575670	4504808
CO_AM_2019_East1.8	0.399439	575709	4504872	0.169651	575950	4504550
CO_AM_2020_East1.8	0.428762	575709	4504872	0.189174	575670	4504808
CO_PM_2016_East1.8	0.393549	575670	4504808	0.170923	575670	4504808
CO_PM_2017_East1.8	0.370821	575670	4504808	0.169166	575670	4504808
CO_PM_2018_East1.8	0.356860	575691	4504885	0.168215	575691	4504885
CO_PM_2019_East1.8	0.399260	575691	4504885	0.166956	575691	4504885
CO_PM_2020_East1.8	0.439392	575709	4504872	0.180415	575670	4504808
CO_AM_2016_East2nd	0.398612	575670	4504808	0.178874	575691	4504885
CO_AM_2017_East2nd	0.387600	575950	4504550	0.173701	575875	4504625
CO_AM_2018_East2nd	0.375855	575670	4504808	0.179958	575875	4504625
CO_AM_2019_East2nd	0.407050	575709	4504872	0.168412	575691	4504885
CO_AM_2020_East2nd	0.436648	575709	4504872	0.173058	575670	4504808
CO_PM_2016_East2nd	0.387521	575670	4504808	0.161691	575691	4504885
CO_PM_2017_East2nd	0.375001	575950	4504550	0.161575	575775	4504725
CO_PM_2018_East2nd	0.366088	575691	4504885	0.167906	575691	4504885
CO_PM_2019_East2nd	0.407563	575691	4504885	0.167283	575691	4504885
CO_PM_2020_East2nd	0.447576	575709	4504872	0.170271	575670	4504808

	Annual			24-hr		
	Max Conc.	X	Y	Max Conc.	X	Y
PM2.5_East1.8	0.928900	575670	4504808	2.374910	575950	4504550
PM2.5_East2nd	0.846100	575875	4504625	2.317450	575875	4504625

AERMOD Receptor Network and Peak Concentration Locations - Build Condition



Appendix C-6

Peak Construction Year (2034) Results Tables

**2034 Construction Hot Spot Analysis
Port Street & Doremus Avenue
Newark, NJ**

Pollutant	Averaging Period	Units	Background Concentration ³	Max Modeled Concentration	Total Concentration	NAAQS	Exceedance YES/NO
CO	1-hour	ppm	3.7	0.82	4.52	35	NO
	8-hour		2.4	0.50	2.90	9	NO
NO2	Annual	ppb	19.0	1.14	20.14	53	NO
PM _{2.5}	24-hour	µg/m ³	21.0	1.69	22.69	35	NO
	Annual ¹		7.8	0.52	8.32	12	NO
	Annual ²		7.8	0.52	8.32	9	NO

Notes:

¹2012 annual PM_{2.5} standard

²2024 annual PM_{2.5} standard

³Background concentrations represent USEPA Design Values from the 2023 Design Values Reports.

1-hr				
	Max Conc.	X	Y	Flagpole
CO_AM_2016	0.763353	572873	4505907	1.800
CO_AM_2017	0.721138	572873	4505907	1.800
CO_AM_2018	0.655280	572873	4505907	1.800
CO_AM_2019	0.616219	572848	4505913	1.800
CO_AM_2020	0.760019	572873	4505907	1.800
CO_PM_2016	0.821132	572873	4505907	1.800
CO_PM_2017	0.795723	572873	4505907	1.800
CO_PM_2018	0.722816	572904	4505976	1.800
CO_PM_2019	0.709995	572848	4505913	1.800
CO_PM_2020	0.819766	572873	4505907	1.800

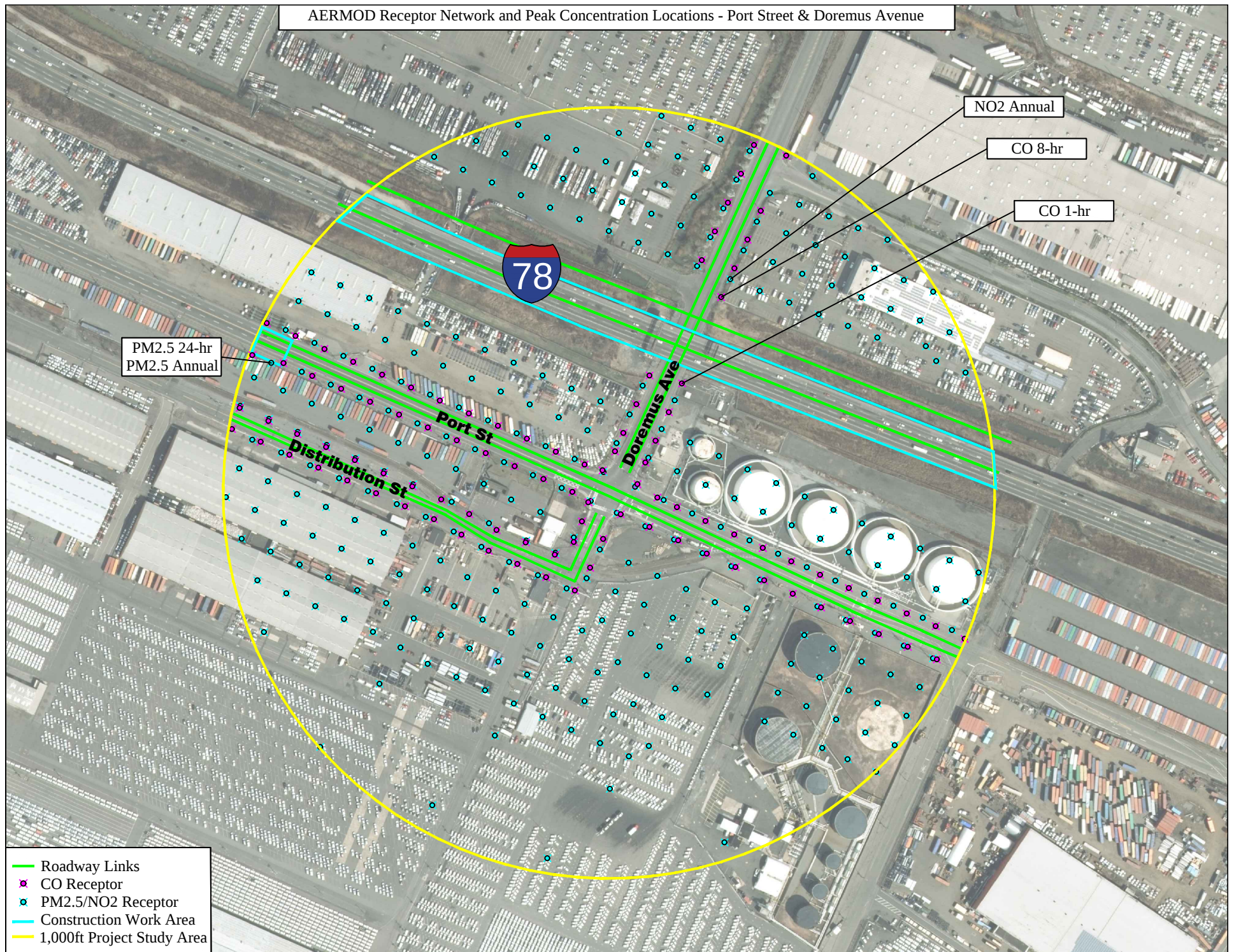
Annual				
	Max Conc.	X	Y	Flagpole
NO2_2016	1.112382	572868	4505894	1.800
NO2_2017	1.075051	572868	4505894	1.800
NO2_2018	1.068594	572868	4505894	1.800
NO2_2019	1.075444	572868	4505894	1.800
NO2_2020	1.135945	572911	4505990	1.800

24-hr				
	Max Conc.	X	Y	Flagpole
PM2.5	1.689980	572549	4505922	1.800

8-hr				
	Max Conc.	X	Y	Flagpole
	0.385814	572904	4505976	1.800
	0.392926	572904	4505976	1.800
	0.442400	572904	4505976	1.800
	0.364448	572904	4505976	1.800
	0.364465	572904	4505976	1.800
	0.391155	572904	4505976	1.800
	0.407333	572904	4505976	1.800
	0.503532	572904	4505976	1.800
	0.390625	572904	4505976	1.800
	0.409551	572904	4505976	1.800

Annual				
	Max Conc.	X	Y	Flagpole
	0.518340	572549	4505922	1.800

AERMOD Receptor Network and Peak Concentration Locations - Port Street & Doremus Avenue



**2034 Construction Hot Spot Analysis
JFK Boulevard & 63rd Street
Jersey City and Bayonne, NJ**

Pollutant	Averaging Period	Units	Background Concentration ³	Max Modeled Concentration	Total Concentration	NAAQS	Exceedance YES/NO
CO	1-hour	ppm	3.7	0.58	4.28	35	NO
	8-hour		2.4	0.31	2.71	9	NO
NO2	Annual	ppb	19.0	0.69	19.69	53	NO
PM _{2.5}	24-hour	µg/m ³	21.0	0.53	21.53	35	NO
	Annual ¹		7.8	0.27	8.07	12	NO
	Annual ²		7.8	0.27	8.07	9	NO

Notes:

¹2012 annual PM_{2.5} standard

²2024 annual PM_{2.5} standard

³Background concentrations represent USEPA Design Values from the 2023 Design Values Reports.

1-hr				
	Max Conc.	X	Y	Flagpole
CO_AM_2016	0.322405	575688	4504889	1.800
CO_AM_2017	0.318837	575688	4504889	1.800
CO_AM_2018	0.305639	575892	4505125	1.800
CO_AM_2019	0.291279	575688	4504889	1.800
CO_AM_2020	0.313629	575688	4504889	1.800
CO_PM_2016	0.523221	575688	4504889	1.800
CO_PM_2017	0.544982	575902	4505104	1.800
CO_PM_2018	0.575413	575892	4505125	1.800
CO_PM_2019	0.527623	575902	4505104	1.800
CO_PM_2020	0.584853	575892	4505125	1.800

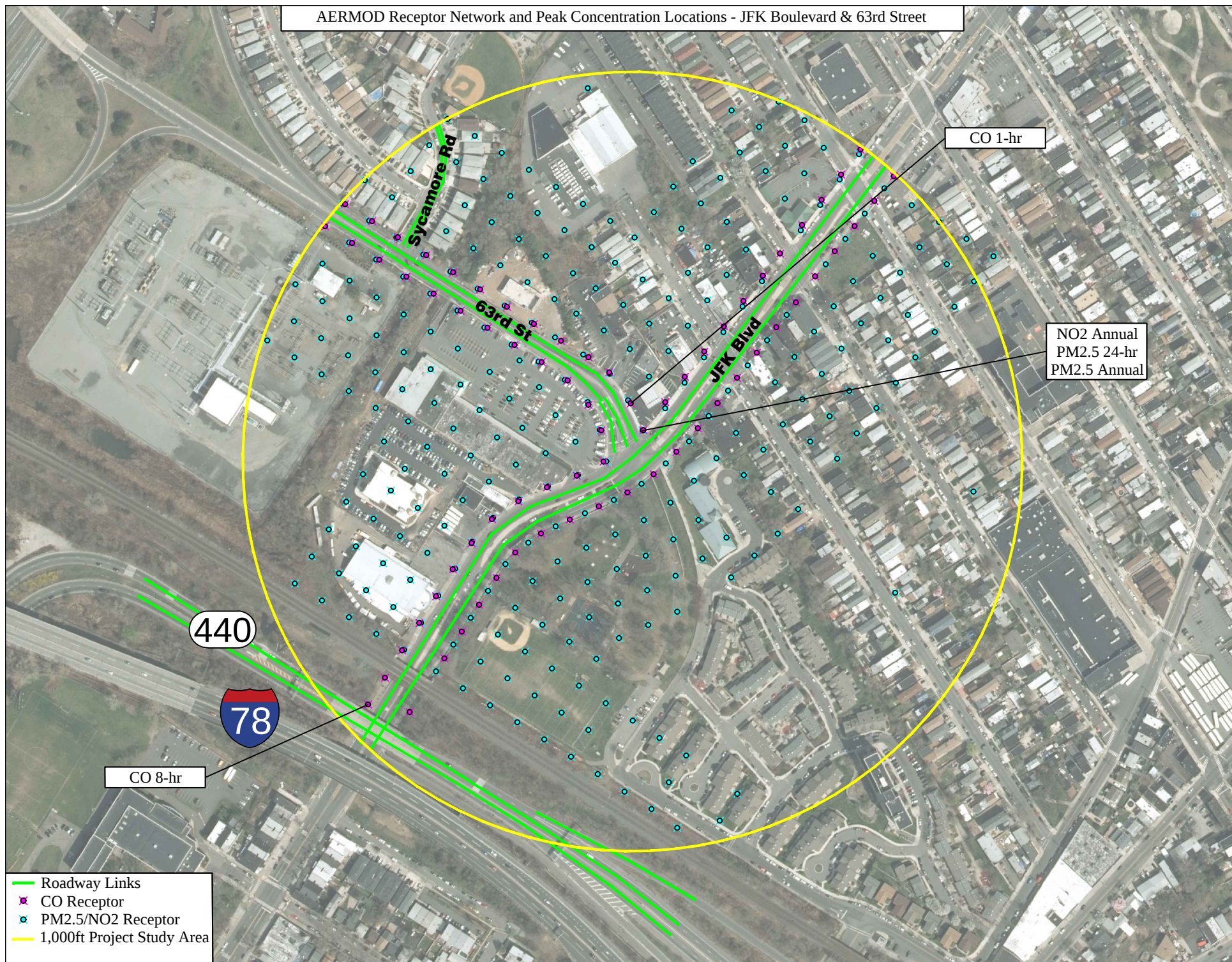
Annual				
	Max Conc.	X	Y	Flagpole
NO2_2016	0.655128	575901	4505104	1.800
NO2_2017	0.630460	575901	4505104	1.800
NO2_2018	0.668116	575901	4505104	1.800
NO2_2019	0.615448	575901	4505104	1.800
NO2_2020	0.694351	575901	4505104	1.800

24-hr				
	Max Conc.	X	Y	Flagpole
PM2.5	0.528930	575901	4505104	1.800

8-hr				
	Max Conc.	X	Y	Flagpole
	0.177516	575892	4505125	1.800
	0.169611	575688	4504889	1.800
	0.170080	575902	4505104	1.800
	0.182404	575688	4504889	1.800
	0.162992	575688	4504889	1.800
	0.284787	575892	4505125	1.800
	0.275731	575875	4505149	1.800
	0.286906	575902	4505104	1.800
	0.311249	575688	4504889	1.800
	0.285494	575875	4505149	1.800

Annual				
	Max Conc.	X	Y	Flagpole
	0.265590	575901	4505104	1.800

AERMOD Receptor Network and Peak Concentration Locations - JFK Boulevard & 63rd Street



**2034 Construction Hot Spot Analysis
JFK Boulevard & 57th Street
Bayonne, NJ**

Pollutant	Averaging Period	Units	Background Concentration ³	Max Modeled Concentration	Total Concentration	NAAQS	Exceedance YES/NO
CO	1-hour	ppm	3.7	0.93	4.63	35	NO
	8-hour		2.4	0.46	2.86	9	NO
NO2	Annual	ppb	19.0	1.21	20.21	53	NO
PM _{2.5}	24-hour	µg/m ³	21.0	1.20	22.20	35	NO
	Annual ¹		7.8	0.39	8.19	12	NO
	Annual ²		7.8	0.39	8.19	9	NO

Notes:

¹2012 annual PM_{2.5} standard

²2024 annual PM_{2.5} standard

³Background concentrations represent USEPA Design Values from the 2023 Design Values Reports.

1-hr				
	Max Conc.	X	Y	Flagpole
CO_AM_2016	0.899617	575673	4504808	1.800
CO_AM_2017	0.924410	575673	4504808	1.800
CO_AM_2018	0.823198	575673	4504808	1.800
CO_AM_2019	0.708053	575673	4504808	1.800
CO_AM_2020	0.920421	575673	4504808	1.800
CO_PM_2016	0.880814	575673	4504808	1.800
CO_PM_2017	0.927317	575673	4504808	1.800
CO_PM_2018	0.735778	575673	4504808	1.800
CO_PM_2019	0.796903	575647	4504820	1.800
CO_PM_2020	0.916128	575673	4504808	1.800

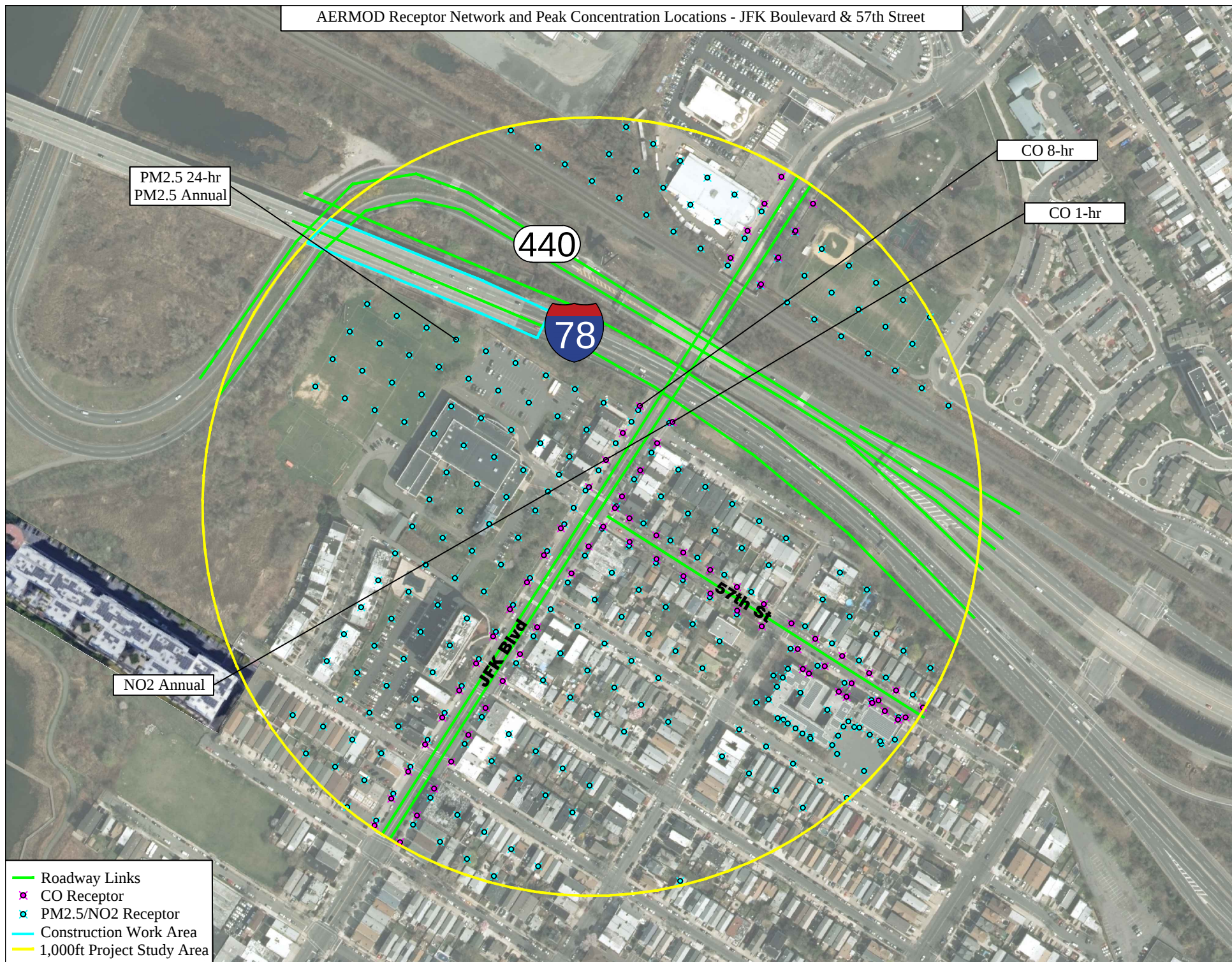
Annual				
	Max Conc.	X	Y	Flagpole
NO2_2016	1.212106	575670	4504807	1.800
NO2_2017	1.179828	575670	4504807	1.800
NO2_2018	1.179817	575670	4504807	1.800
NO2_2019	1.185652	575670	4504807	1.800
NO2_2020	1.172022	575670	4504807	1.800

24-hr				
	Max Conc.	X	Y	Flagpole
PM2.5	1.195520	575503	4504871	1.800

8-hr				
	Max Conc.	X	Y	Flagpole
	0.398982	575673	4504808	1.800
	0.422205	575673	4504808	1.800
	0.455150	575647	4504820	1.800
	0.346540	575673	4504808	1.800
	0.427840	575673	4504808	1.800
	0.379232	575673	4504808	1.800
	0.412546	575673	4504808	1.800
	0.457562	575647	4504820	1.800
	0.385470	575647	4504820	1.800
	0.418403	575673	4504808	1.800

Annual				
	Max Conc.	X	Y	Flagpole
	0.386110	575503	4504871	1.800

AERMOD Receptor Network and Peak Concentration Locations - JFK Boulevard & 57th Street



Appendix C-7

2050 No Action & 2050 Proposed Action Regional MSAT/GHG Emission Results Table

MSATs

Pollutant	Total Emissions (kilograms)		
	2050 No Action	2050 Proposed Action	% Change
Benzene	720.81	721.67	0.12%
Naphthalene Particle + Naphthalene Gas	33.85	33.88	0.11%
1,3 Butadiene	0.00	0.00	0.00%
Formaldehyde	539.09	539.21	0.02%
Acetaldehyde	397.80	397.74	-0.01%
Acrolein	20.91	20.92	0.04%
Ethyl Benzene	288.76	289.06	0.10%
POM	14.28	14.30	0.12%
DPM	698.28	690.48	-1.12%

CO2e

Pollutant	Total Emissions (metric tons)		
	2050 No Action	2050 Proposed Action	% Change
CO2e	504,006.20	504,883.02	0.17%

Appendix C-8

2033, 2034 & 2035 General Conformity Applicability Analysis Tables

NBHCE Construction Emissions	
Annual Emissions (tons/year)	
Pollutant	2033
CO	8,248
NOx	15,497
VOC	0,842
PM10	89,439
PM2.5	9,550
CO2e	37,497
Total Emissions	37,620

De Minimis Threshold	Exceeds?
100	NO
25	NO
25	NO
100	NO
100	NO

	2033	2033	2033	2033
	Winter	Spring	Summer	Fall
Crews Working Per Quarter				
DS2 Crane Crew	4	4	4	4
DS1/DS3 Crane Crew	7	7	7	7
Demolition Crew	9	9	5	5
Excavation Crew	14	17	15	15
Pile Driving Crew	0	0	0	0
Trestle Construction Crew	0	0	0	0
Cofferdam Sheeting Crew	2	2	2	2
Drilled Shaft Crew	6	9	11	11
Concrete Pour Crew	4	6	12	14
Asphalt Crew	4	4	4	4
Steel Erection Crew	0	0	0	0
Carpenter Crew	4	6	12	14
Lather Crew	4	6	12	14
Delivery Trucks	1	2	3	3
Dump Trucks	15	17	15	15
Concrete Trucks	6	8	13	14

Crew Working Hours Per Quarter (Assuming 8 Hours of Work per Day)				
Working Hours	592	616	616	608

Watercraft Working Hours Per Quarter (Assuming 2 Hours of Work per Day)				
Watercraft Working Hours	148	154	154	152

CO Emissions Per Crew Per Quarter (US Tons)				
DS2 Crane Crew	0.045026	0.046255	0.063825	0.045662
DS1/DS3 Crane Crew	0.043383	0.044591	0.059975	0.043999
Demolition Crew	0.242914	0.249405	0.182645	0.137100
Excavation Crew	0.412019	0.514320	0.585889	0.448766
Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Cofferdam Sheeting Crew	0.028221	0.028935	0.042068	0.028555
Drilled Shaft Crew	0.083277	0.127922	0.228632	0.154544
Concrete Pour Crew	0.082780	0.127671	0.359953	0.293489
Asphalt Crew	0.108225	0.111498	0.146397	0.110183
Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
Carpenter Crew	0.058552	0.090288	0.258860	0.207348
Lather Crew	0.071783	0.110775	0.300161	0.254907
Delivery Trucks	0.007049	0.014670	0.022005	0.021719
Dump Trucks	0.074953	0.087494	0.077553	0.076198
Concrete Trucks	0.030963	0.042536	0.069436	0.073470

NOx Emissions Per Crew Per Quarter (US Tons)				
DS2 Crane Crew	0.087347	0.090877	0.091086	0.089548
DS1/DS3 Crane Crew	0.100329	0.103925	0.103510	0.102314
Demolition Crew	0.432350	0.456164	0.250087	0.246373
Excavation Crew	0.863609	1.106349	0.960334	0.949478
Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Cofferdam Sheeting Crew	0.033592	0.034791	0.035284	0.034596
Drilled Shaft Crew	0.095159	0.147562	0.179876	0.175870
Concrete Pour Crew	0.103039	0.161402	0.323019	0.370695
Asphalt Crew	0.204294	0.211909	0.212766	0.209437
Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
Carpenter Crew	0.048633	0.076056	0.151615	0.174484
Lather Crew	0.096944	0.150135	0.302425	0.348143
Delivery Trucks	0.012586	0.024961	0.032784	0.035893
Dump Trucks	0.052982	0.059700	0.045976	0.050486
Concrete Trucks	0.027186	0.036422	0.053436	0.061431

		2033	2033	2033	2033
		Winter	Spring	Summer	Fall
SO2 Emissions Per Crew Per Quarter (US Tons)					
SO2	DS2 Crane Crew	0.001119	0.001165	0.001162	0.001150
SO2	DS1/DS3 Crane Crew	0.001268	0.001319	0.001317	0.001302
SO2	Demolition Crew	0.004403	0.004582	0.002539	0.002512
SO2	Excavation Crew	0.009360	0.011827	0.010415	0.010300
SO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
SO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
SO2	Cofferdam Sheeting Crew	0.000438	0.000456	0.000454	0.000450
SO2	Drilled Shaft Crew	0.001212	0.001892	0.002301	0.002282
SO2	Concrete Pour Crew	0.001140	0.001779	0.003543	0.004098
SO2	Asphalt Crew	0.002146	0.002233	0.002227	0.002204
SO2	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
SO2	Carpenter Crew	0.000447	0.000698	0.001383	0.001607
SO2	Lather Crew	0.000980	0.001530	0.003049	0.003524
SO2	Delivery Trucks	0.000015	0.000030	0.000045	0.000045
SO2	Dump Trucks	0.000135	0.000159	0.000131	0.000138
SO2	Concrete Trucks	0.000127	0.000177	0.000279	0.000305
VOC Emissions Per Crew Per Quarter (US Tons)					
VOC	DS2 Crane Crew	0.007555	0.007875	0.007959	0.007771
VOC	DS1/DS3 Crane Crew	0.008555	0.008918	0.008991	0.008799
VOC	Demolition Crew	0.026907	0.028102	0.015799	0.015381
VOC	Excavation Crew	0.058627	0.074249	0.066125	0.064625
VOC	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
VOC	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
VOC	Cofferdam Sheeting Crew	0.002946	0.003073	0.003137	0.003034
VOC	Drilled Shaft Crew	0.008109	0.012685	0.015859	0.015300
VOC	Concrete Pour Crew	0.007308	0.011399	0.023396	0.026353
VOC	Asphalt Crew	0.013486	0.014040	0.014245	0.013883
VOC	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
VOC	Carpenter Crew	0.002643	0.004121	0.008688	0.009563
VOC	Lather Crew	0.004918	0.007660	0.015792	0.017744
VOC	Delivery Trucks	0.000506	0.001052	0.001579	0.001558
VOC	Dump Trucks	0.004834	0.005806	0.005529	0.005057
VOC	Concrete Trucks	0.002427	0.003416	0.005903	0.005900
Total Area Disturbed (sf)		4285043.1	4285043.1	4285043.1	4285043.1
Total Area Disturbed (acre)		98.4	98.4	98.4	98.4
Emission Factor (tons per acre per month)		1.2	1.2	1.2	1.2
Percent of Project Area Disturbed per Month		25%	25%	25%	25%
Dust Control Efficiency		75%	75%	75%	75%
# Months Per Quarter		3	3	3	3
Fugitive Dust PM10 Emissions Per Quarter (US Tons)					
PM10 Fugitive Dust		22.133487	22.133487	22.133487	22.133487
PM10 Emissions Per Crew Per Quarter (US Tons)					
PM10	DS2 Crane Crew	0.006174	0.006498	0.006490	0.006335
PM10	DS1/DS3 Crane Crew	0.006703	0.007032	0.006958	0.006856
PM10	Demolition Crew	0.031557	0.032259	0.018242	0.018012
PM10	Excavation Crew	0.060758	0.076388	0.068261	0.066950
PM10	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM10	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM10	Cofferdam Sheeting Crew	0.002771	0.002902	0.002923	0.002852
PM10	Drilled Shaft Crew	0.007682	0.012160	0.014910	0.014652
PM10	Concrete Pour Crew	0.008336	0.013163	0.026216	0.030000
PM10	Asphalt Crew	0.014635	0.015174	0.015340	0.015204
PM10	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
PM10	Carpenter Crew	0.004815	0.007541	0.015055	0.017316
PM10	Lather Crew	0.007395	0.011743	0.023107	0.026588
PM10	Delivery Trucks	0.001245	0.002591	0.003886	0.003836
PM10	Dump Trucks	0.006902	0.008146	0.007205	0.007095
PM10	Concrete Trucks	0.003047	0.004247	0.006914	0.007326
PM2.5 to PM10 Ratio		10%	10%	10%	10%

		2033	2033	2033	2033
		Winter	Spring	Summer	Fall
Fugitive Dust PM2.5 Emissions Per Quarter (US Tons)					
PM2.5 Fugitive Dust		2.213349	2.213349	2.213349	2.213349
PM2.5 Emissions Per Crew Per Quarter (US Tons)					
PM2.5	DS2 Crane Crew	0.004883	0.005078	0.005130	0.004982
PM2.5	DS1/DS3 Crane Crew	0.005560	0.005754	0.005784	0.005597
PM2.5	Demolition Crew	0.025324	0.025902	0.014664	0.014464
PM2.5	Excavation Crew	0.051452	0.064889	0.057041	0.056619
PM2.5	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Cofferdam Sheeting Crew	0.001805	0.001891	0.001905	0.001870
PM2.5	Drilled Shaft Crew	0.004908	0.007574	0.009451	0.009238
PM2.5	Concrete Pour Crew	0.005799	0.009208	0.018237	0.020935
PM2.5	Asphalt Crew	0.011860	0.012465	0.012486	0.012342
PM2.5	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Carpenter Crew	0.002942	0.004673	0.009203	0.010580
PM2.5	Lather Crew	0.005542	0.008692	0.017321	0.019927
PM2.5	Delivery Trucks	0.000460	0.000957	0.001436	0.001417
PM2.5	Dump Trucks	0.002103	0.002486	0.002209	0.002165
PM2.5	Concrete Trucks	0.001124	0.001568	0.002550	0.002694
CH4 Emissions Per Crew Per Quarter (N/A)					
CH4	DS2 Crane Crew	244.989125	254.689863	254.447514	249.856181
CH4	DS1/DS3 Crane Crew	284.849666	290.422757	292.794744	286.208196
CH4	Demolition Crew	1395.013710	1446.239498	805.860548	796.466192
CH4	Excavation Crew	2594.989689	3247.023869	2909.034317	2846.076214
CH4	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CH4	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CH4	Cofferdam Sheeting Crew	100.998709	107.464353	105.885844	104.662727
CH4	Drilled Shaft Crew	268.731877	421.651303	507.216505	489.718091
CH4	Concrete Pour Crew	320.455602	502.998954	1003.907805	1156.813173
CH4	Asphalt Crew	600.850073	622.909190	625.768091	616.133479
CH4	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
CH4	Carpenter Crew	150.540046	237.976482	469.929061	541.130434
CH4	Lather Crew	298.458463	468.607419	931.674391	1072.837178
CH4	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Concrete Trucks	17.633449	24.506080	39.511932	41.176327
CO2 Emissions Per Crew Per Quarter (N/A)					
CO2	DS2 Crane Crew	373072588.383669	388197186.294731	388197169.853260	383155633.890423
CO2	DS1/DS3 Crane Crew	425784198.973193	443045334.018150	443045086.631728	437291677.040216
CO2	Demolition Crew	1460406015.167290	1519609779.447880	844228609.424800	833264714.642757
CO2	Excavation Crew	3136960415.601360	3963580496.887410	3497286301.781140	3451862346.783170
CO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2	Cofferdam Sheeting Crew	141642412.795872	147384850.718232	147384862.432329	145470645.399500
CO2	Drilled Shaft Crew	389227773.149693	607510869.018394	742512990.482080	732870868.625068
CO2	Concrete Pour Crew	367598155.736207	573751810.660927	1147503204.476480	1321366654.837620
CO2	Asphalt Crew	714116675.073175	743068128.582508	743067964.036040	733417019.982142
CO2	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
CO2	Carpenter Crew	135134073.869830	210919419.139168	421837446.809876	485752211.478039
CO2	Lather Crew	318778632.060259	497553420.473188	995106270.350269	1145879947.676070
CO2	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Concrete Trucks	25338850.874237	35154835.409329	57126578.624647	60721998.867333
10210	CO2 to Fuel = Diesel fuel consumption calculated from CO2 emissions (10.21 kg CO2/gal x 1000 g/kg = 10210 g CO2/gal)				

		2033	2033	2033	2033
		Winter	Spring	Summer	Fall
Fuel Emissions Per Crew Per Quarter					
Fuel	DS2 Crane Crew	36539.920508	38021.271919	38021.270309	37527.486179
Fuel	DS1/DS3 Crane Crew	41702.663954	43393.274634	43393.250405	42829.743099
Fuel	Demolition Crew	143036.828126	148835.433834	82686.445585	81612.606723
Fuel	Excavation Crew	307243.919256	388205.729372	342535.387050	338086.419861
Fuel	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Cofferdam Sheeting Crew	13872.910166	14435.342872	14435.344019	14247.859491
Fuel	Drilled Shaft Crew	38122.210886	59501.554262	72724.093093	71779.712892
Fuel	Concrete Pour Crew	36003.737095	56195.084296	112390.127765	129418.869230
Fuel	Asphalt Crew	69942.867294	72778.465091	72778.448975	71833.204700
Fuel	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Carpenter Crew	13235.462671	20658.121365	41316.106446	47576.122574
Fuel	Lather Crew	31222.197068	48731.970663	97463.885441	112231.140811
Fuel	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Dump Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Concrete Trucks	2481.767960	3443.176828	5595.159513	5947.306451

0.26 Fuel to N2O = N2O emissions calculated from diesel fuel consumption (Diesel construction equipment = 0.26 g N2O/gal)

N2O Emissions Per Crew Per Quarter					
N2O	DS2 Crane Crew	9500.379332	9885.530699	9885.530280	9757.146407
N2O	DS1/DS3 Crane Crew	10842.692628	11282.251405	11282.245105	11135.733206
N2O	Demolition Crew	37189.575313	38697.212797	21498.475852	21219.277748
N2O	Excavation Crew	79883.419006	100933.489637	89059.200633	87902.469164
N2O	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
N2O	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
N2O	Cofferdam Sheeting Crew	3606.956643	3753.189147	3753.189445	3704.443468
N2O	Drilled Shaft Crew	9911.774830	15470.404108	18908.264204	18662.725352
N2O	Concrete Pour Crew	9360.971645	14610.721917	29221.433219	33648.906000
N2O	Asphalt Crew	18185.145496	18922.400924	18922.396734	18676.633222
N2O	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
N2O	Carpenter Crew	3441.220294	5371.111555	10742.187676	12369.791869
N2O	Lather Crew	8117.771238	12670.312372	25340.610215	29180.096611
N2O	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Dump Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Concrete Trucks	645.259670	895.225975	1454.741473	1546.299677

GWP	Pollutant
25	CH4
1	CO2
298	N2O

CO2e Nonroad emissions calculated from CH4 (GWP = 25), CO2 (GWP = 1), and N2O (GWP = 298)

CO2e Nonroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	375.909826	391.149442	391.149419	386.069510
CO2e	DS1/DS3 Crane Crew	429.022443	446.414706	446.414516	440.617281
CO2e	Demolition Crew	1471.523384	1531.177705	850.655302	839.607971
CO2e	Excavation Crew	3160.830549	3993.739852	3523.898669	3478.128434
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	142.719811	148.505988	148.505960	146.577186
CO2e	Drilled Shaft Crew	392.188200	612.131591	748.160334	738.444604
CO2e	Concrete Pour Crew	370.395737	578.118381	1156.236289	1331.422949
CO2e	Asphalt Crew	719.550870	748.722577	748.722482	738.998060
CO2e	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Carpenter Crew	136.163321	212.525960	425.050367	489.451938
CO2e	Lather Crew	321.205189	501.340889	1002.681064	1154.602437
CO2e	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Concrete Trucks	25.531579	35.422225	57.561079	61.183826

CO2e Onroad emissions calculated normally below

		2033	2033	2033	2033
		Winter	Spring	Summer	Fall
CO2e Onroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	5.867229	6.105219	6.679430	6.025931
CO2e	DS1/DS3 Crane Crew	5.133825	5.342067	5.844501	5.272689
CO2e	Demolition Crew	26.402531	27.473486	16.698574	15.064826
CO2e	Excavation Crew	41.070604	51.894363	50.095723	45.194479
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	4.400422	4.578914	5.009572	4.519448
CO2e	Drilled Shaft Crew	13.201266	20.605115	27.552647	24.856964
CO2e	Concrete Pour Crew	11.734458	18.315657	40.076578	42.181514
CO2e	Asphalt Crew	11.734458	12.210438	13.358859	12.051861
CO2e	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Carpenter Crew	8.800844	13.736743	30.057434	31.636135
CO2e	Lather Crew	8.800844	13.736743	30.057434	31.636135
CO2e	Delivery Trucks	4.051270	8.431021	12.646532	12.482291
CO2e	Dump Trucks	30.684547	36.185970	31.930347	31.514137
CO2e	Concrete Trucks	12.273819	17.028692	27.672967	29.413195

CO2e Nonroad emissions and CO2e Onroad emissions added together below

CO2e Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	381.777055	397.254661	397.828849	392.095440
CO2e	DS1/DS3 Crane Crew	434.156268	451.756772	452.259017	445.889970
CO2e	Demolition Crew	1497.925915	1558.651191	867.353876	854.672797
CO2e	Excavation Crew	3201.901153	4045.634215	3573.994392	3523.322914
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	147.120233	153.084902	153.515532	151.096634
CO2e	Drilled Shaft Crew	405.389466	632.736705	775.712981	763.301567
CO2e	Concrete Pour Crew	382.130195	596.434038	1196.312867	1373.604463
CO2e	Asphalt Crew	731.285328	760.933015	762.081342	751.049921
CO2e	Steel Erection Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Carpenter Crew	144.964165	226.262703	455.107801	521.088073
CO2e	Lather Crew	330.006033	515.077632	1032.738498	1186.238573
CO2e	Delivery Trucks	4.051270	8.431021	12.646532	12.482291
CO2e	Dump Trucks	30.684547	36.185970	31.930347	31.514137
CO2e	Concrete Trucks	37.805398	52.450917	85.234047	90.597020

Watercraft Equipment Used Per Quarter

Tugboat	1	1	1	1
Barge w Aux Eng.	1	1	1	1

Watercraft Average Installed Propulsion Power (Kilowatts)

Tugboat	1,559	1,559	1,559	1,559
Barge w Aux Eng.	622	622	622	622

Watercraft CO Emission Rates

Tugboat	0.8275	0.8275	0.8275	0.8275
Barge w Aux Eng.	0.4916	0.4916	0.4916	0.4916

Watercraft CO Emissios (Grams)

Tugboat	190,935	198,676	198,676	196,096
Barge w Aux Eng.	45,252	47,086	47,086	46,475

Watercraft CO Emissios (US Tons)

Tugboat	0.210470	0.219002	0.219002	0.216158
Barge w Aux Eng.	0.049881	0.051903	0.051903	0.051229
Total	0.260351	0.270906	0.270906	0.267388

	2033	2033	2033	2033
	Winter	Spring	Summer	Fall
Watercraft NOx Emission Rates				
Tugboat	3.6938	3.6938	3.6938	3.6938
Barge w Aux Eng.	2.9470	2.9470	2.9470	2.9470
Watercraft NOx Emissios (Grams)				
Tugboat	852,282	886,834	886,834	875,317
Barge w Aux Eng.	271,291	282,289	282,289	278,623
Watercraft NOx Emissios (US Tons)				
Tugboat	0.939479	0.977566	0.977566	0.964871
Barge w Aux Eng.	0.299047	0.311170	0.311170	0.307129
Total	1.238526	1.288737	1.288737	1.272000
Watercraft VOC Emission Rates				
Tugboat	0.0825	0.0825	0.0825	0.0825
Barge w Aux Eng.	0.0889	0.0889	0.0889	0.0889
Watercraft VOC Emissios (Grams)				
Tugboat	19,033	19,804	19,804	19,547
Barge w Aux Eng.	8,188	8,520	8,520	8,409
Watercraft VOC Emissios (US Tons)				
Tugboat	0.020980	0.021830	0.021830	0.021547
Barge w Aux Eng.	0.009026	0.009392	0.009392	0.009270
Total	0.030006	0.031222	0.031222	0.030817
Watercraft PM10 Emission Rates				
Tugboat	0.0758	0.0758	0.0758	0.0758
Barge w Aux Eng.	0.0608	0.0608	0.0608	0.0608
Watercraft PM10 Emissios (Grams)				
Tugboat	17,485	18,194	18,194	17,957
Barge w Aux Eng.	5,592	5,819	5,819	5,744
Watercraft PM10 Emissios (US Tons)				
Tugboat	0.019274	0.020055	0.020055	0.019795
Barge w Aux Eng.	0.006165	0.006414	0.006414	0.006331
Total	0.025438	0.026470	0.026470	0.026126
Watercraft PM2.5 Emission Rates				
Tugboat	0.0735	0.0735	0.0735	0.0735
Barge w Aux Eng.	0.0589	0.0589	0.0589	0.0589
Watercraft PM2.5 Emissios (Grams)				
Tugboat	16,960	17,648	17,648	17,419
Barge w Aux Eng.	5,425	5,645	5,645	5,571

	2033	2033	2033	2033
	Winter	Spring	Summer	Fall
Watercraft PM2.5 Emissios (US Tons)				
Tugboat	0.018696	0.019453	0.019453	0.019201
Barge w Aux Eng.	0.005980	0.006222	0.006222	0.006141
Total	0.024675	0.025676	0.025676	0.025342

CO2e Watercraft Calculations

Watercraft Load Factors	
Tugboat	0.5
Barge w Aux Eng.	0.43

Watercraft CH4 Emission Rates				
Tugboat	0.0031	0.0031	0.0031	0.0031
Barge w Aux Eng.	0.0039	0.0039	0.0039	0.0039

Watercraft CH4 Emissios (Grams)				
Tugboat	361	375	375	370
Barge w Aux Eng.	156	162	162	160

3.19 Carbon Content Factor (g CO2/g fuel) for diesel

Watercraft CO2 Emission Rates				
Tugboat	679.4700	679.4700	679.4700	679.4700
Barge w Aux Eng.	679.4700	679.4700	679.4700	679.4700

Watercraft CO2 Emissios (Grams)				
Tugboat	78,387,736	81,565,617	81,565,617	80,506,323
Barge w Aux Eng.	26,896,195	27,986,581	27,986,581	27,623,119

0.000156 N2O Conversion Factor (g N2O/g fuel) for C1 and C2 engines

Watercraft N2O Emission Rates				
Tugboat	0.0332	0.0332	0.0332	0.0332
Barge w Aux Eng.	0.0332	0.0332	0.0332	0.0332

Watercraft N2O Emissios (Grams)				
Tugboat	3,833	3,989	3,989	3,937
Barge w Aux Eng.	1,315	1,369	1,369	1,351

Watercraft CO2e Emissios (Grams)				
Tugboat	79,539,096.6603	82,763,654.6330	82,763,654.6330	81,688,801.9754
Barge w Aux Eng.	27,292,043.3169	28,398,477.5054	28,398,477.5054	28,029,666.1093

Watercraft CO2e Emissios (Metric Tons)				
Tugboat	79.539097	82.763655	82.763655	81.688802
Barge w Aux Eng.	27.292043	28.398478	28.398478	28.029666
Total	106.831140	111.162132	111.162132	109.718468

NBHCE Construction Emissions	
Annual Emissions (tons/year)	
Pollutant	2034
CO	11.233
NOx	20.767
VOC	1.054
PM10	89.724
PM2.5	9.724
CO2e	46.757
Total Emissions	46.889

De Minimis Threshold	Exceeds?
100	NO
25	NO
25	NO
100	NO
100	NO

	2034	2034	2034	2034
	Winter	Spring	Summer	Fall
Crews Working Per Quarter				
DS2 Crane Crew	4	4	4	4
DS1/DS3 Crane Crew	7	7	7	7
Demolition Crew	5	5	5	2
Excavation Crew	15	15	15	13
Pile Driving Crew	0	0	0	0
Trestle Construction Crew	0	0	0	0
Cofferdam Sheeting Crew	0	0	0	0
Drilled Shaft Crew	11	11	11	11
Concrete Pour Crew	16	18	20	20
Asphalt Crew	4	4	4	4
Steel Erection Crew	4	7	9	9
Carpenter Crew	20	22	24	24
Lather Crew	20	22	24	24
Delivery Trucks	5	6	7	7
Dump Trucks	15	15	15	12
Concrete Trucks	20	23	25	25

Crew Working Hours Per Quarter (Assuming 8 Hours of Work per Day)				
Working Hours	600	608	616	592

Watercraft Working Hours Per Quarter (Assuming 2 Hours of Work per Day)				
Watercraft Working Hours	150	152	154	148

CO Emissions Per Crew Per Quarter (US Tons)				
DS2 Crane Crew	0.043906	0.043961	0.061064	0.042762
DS1/DS3 Crane Crew	0.042383	0.042483	0.057469	0.041353
Demolition Crew	0.132688	0.132827	0.176143	0.051816
Excavation Crew	0.435100	0.436106	0.566310	0.368427
Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
Drilled Shaft Crew	0.147777	0.147474	0.217820	0.143784
Concrete Pour Crew	0.322296	0.362991	0.573535	0.391949
Asphalt Crew	0.106473	0.106848	0.141221	0.103831
Steel Erection Crew	0.086871	0.152644	0.254623	0.191007
Carpenter Crew	0.284216	0.312381	0.494021	0.331585
Lather Crew	0.349730	0.385482	0.574733	0.409153
Delivery Trucks	0.035350	0.042986	0.050810	0.048830
Dump Trucks	0.070913	0.071140	0.072401	0.055414
Concrete Trucks	0.097879	0.112963	0.124942	0.119559

NOx Emissions Per Crew Per Quarter (US Tons)				
DS2 Crane Crew	0.088347	0.089820	0.090840	0.087365
DS1/DS3 Crane Crew	0.100631	0.102440	0.103210	0.099799
Demolition Crew	0.244527	0.247534	0.251159	0.096498
Excavation Crew	0.943673	0.953955	0.964282	0.804611
Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
Drilled Shaft Crew	0.173470	0.175600	0.177367	0.172270
Concrete Pour Crew	0.415571	0.479389	0.533752	0.511743
Asphalt Crew	0.207305	0.210202	0.210528	0.204135
Steel Erection Crew	0.390181	0.693004	0.901193	0.866020
Carpenter Crew	0.243016	0.274282	0.299063	0.287249
Lather Crew	0.484662	0.536812	0.596771	0.573359
Delivery Trucks	0.060850	0.070363	0.072591	0.077603
Dump Trucks	0.048412	0.046811	0.041355	0.035398
Concrete Trucks	0.084802	0.095377	0.094912	0.098690

		2034	2034	2034	2034
		Winter	Spring	Summer	Fall
SO2 Emissions Per Crew Per Quarter (US Tons)					
SO2	DS2 Crane Crew	0.001133	0.001149	0.001161	0.001118
SO2	DS1/DS3 Crane Crew	0.001284	0.001301	0.001316	0.001267
SO2	Demolition Crew	0.002477	0.002510	0.002536	0.000978
SO2	Excavation Crew	0.010157	0.010292	0.010408	0.008685
SO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
SO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
SO2	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
SO2	Drilled Shaft Crew	0.002248	0.002278	0.002297	0.002218
SO2	Concrete Pour Crew	0.004613	0.005259	0.005895	0.005690
SO2	Asphalt Crew	0.002173	0.002202	0.002225	0.002144
SO2	Steel Erection Crew	0.000662	0.001175	0.001521	0.001470
SO2	Carpenter Crew	0.002257	0.002516	0.002758	0.002673
SO2	Lather Crew	0.004961	0.005530	0.006088	0.005874
SO2	Delivery Trucks	0.000073	0.000089	0.000105	0.000101
SO2	Dump Trucks	0.000134	0.000136	0.000128	0.000106
SO2	Concrete Trucks	0.000427	0.000498	0.000533	0.000527
VOC Emissions Per Crew Per Quarter (US Tons)					
VOC	DS2 Crane Crew	0.007639	0.007751	0.007933	0.007552
VOC	DS1/DS3 Crane Crew	0.008659	0.008782	0.008966	0.008556
VOC	Demolition Crew	0.015118	0.015376	0.015753	0.005978
VOC	Excavation Crew	0.063565	0.064573	0.065940	0.054402
VOC	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
VOC	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
VOC	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
VOC	Drilled Shaft Crew	0.015014	0.015256	0.015779	0.014839
VOC	Concrete Pour Crew	0.029440	0.033679	0.038714	0.036433
VOC	Asphalt Crew	0.013637	0.013844	0.014191	0.013483
VOC	Steel Erection Crew	0.009974	0.017718	0.023355	0.022182
VOC	Carpenter Crew	0.013241	0.014854	0.017150	0.015781
VOC	Lather Crew	0.024763	0.027715	0.031346	0.029423
VOC	Delivery Trucks	0.002348	0.002855	0.003375	0.003244
VOC	Dump Trucks	0.004205	0.004346	0.004776	0.003385
VOC	Concrete Trucks	0.007273	0.008605	0.010098	0.009106
Total Area Disturbed (sf)		4285043.1	4285043.1	4285043.1	4285043.1
Total Area Disturbed (acre)		98.4	98.4	98.4	98.4
Emission Factor (tons per acre per month)		1.2	1.2	1.2	1.2
Percent of Project Area Disturbed per Month		25%	25%	25%	25%
Dust Control Efficiency		75%	75%	75%	75%
# Months Per Quarter		3	3	3	3
Fugitive Dust PM10 Emissions Per Quarter (US Tons)					
PM10 Fugitive Dust		22.133487	22.133487	22.133487	22.133487
PM10 Emissions Per Crew Per Quarter (US Tons)					
PM10	DS2 Crane Crew	0.006179	0.006382	0.006434	0.006165
PM10	DS1/DS3 Crane Crew	0.006633	0.006907	0.006918	0.006666
PM10	Demolition Crew	0.017752	0.017942	0.018238	0.007012
PM10	Excavation Crew	0.066329	0.066800	0.067277	0.056082
PM10	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM10	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM10	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
PM10	Drilled Shaft Crew	0.014454	0.014746	0.015017	0.014354
PM10	Concrete Pour Crew	0.033791	0.038834	0.043513	0.041679
PM10	Asphalt Crew	0.014903	0.015107	0.015275	0.014563
PM10	Steel Erection Crew	0.007725	0.013729	0.017861	0.017153
PM10	Carpenter Crew	0.024164	0.027030	0.029815	0.028621
PM10	Lather Crew	0.038070	0.041967	0.046947	0.045085
PM10	Delivery Trucks	0.006118	0.007439	0.008793	0.008450
PM10	Dump Trucks	0.006654	0.006748	0.006852	0.005256
PM10	Concrete Trucks	0.009864	0.011504	0.012701	0.012159
PM2.5 to PM10 Ratio		10%	10%	10%	10%

		2034	2034	2034	2034
		Winter	Spring	Summer	Fall
Fugitive Dust PM2.5 Emissions Per Quarter (US Tons)					
PM2.5 Fugitive Dust		2.213349	2.213349	2.213349	2.213349
PM2.5 Emissions Per Crew Per Quarter (US Tons)					
PM2.5	DS2 Crane Crew	0.004843	0.004960	0.005020	0.004849
PM2.5	DS1/DS3 Crane Crew	0.005449	0.005545	0.005641	0.005481
PM2.5	Demolition Crew	0.014294	0.014303	0.014671	0.005642
PM2.5	Excavation Crew	0.055289	0.054934	0.056740	0.047741
PM2.5	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Drilled Shaft Crew	0.009012	0.009346	0.009540	0.009232
PM2.5	Concrete Pour Crew	0.023451	0.027269	0.030209	0.028971
PM2.5	Asphalt Crew	0.012071	0.012238	0.012473	0.011823
PM2.5	Steel Erection Crew	0.005746	0.010261	0.013289	0.012761
PM2.5	Carpenter Crew	0.014707	0.016616	0.018158	0.017422
PM2.5	Lather Crew	0.028010	0.030450	0.034548	0.033173
PM2.5	Delivery Trucks	0.002157	0.002623	0.003101	0.002980
PM2.5	Dump Trucks	0.001838	0.001867	0.001905	0.001455
PM2.5	Concrete Trucks	0.003420	0.003970	0.004416	0.004205
CH4 Emissions Per Crew Per Quarter (N/A)					
CH4	DS2 Crane Crew	249.539895	255.110733	253.850293	244.182152
CH4	DS1/DS3 Crane Crew	287.555403	291.727681	289.519386	278.984325
CH4	Demolition Crew	779.969185	797.105073	800.657025	307.707132
CH4	Excavation Crew	2794.726771	2860.417395	2873.032270	2394.679038
CH4	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CH4	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CH4	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CH4	Drilled Shaft Crew	496.321455	505.187805	518.393548	496.974856
CH4	Concrete Pour Crew	1300.525252	1493.581327	1672.440612	1606.517328
CH4	Asphalt Crew	612.410612	613.659468	630.411828	593.963848
CH4	Steel Erection Crew	1269.338611	2250.126990	2932.175168	2817.926999
CH4	Carpenter Crew	763.644892	848.584239	940.810507	904.155552
CH4	Lather Crew	1519.217946	1693.336951	1871.676509	1798.754048
CH4	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Concrete Trucks	58.982314	68.274864	75.243833	72.843525
CO2 Emissions Per Crew Per Quarter (N/A)					
CO2	DS2 Crane Crew	378116706.867249	383158056.198057	388199648.193529	373075550.913432
CO2	DS1/DS3 Crane Crew	431541828.867149	437295790.040377	443049867.470481	425788435.433940
CO2	Demolition Crew	822319704.143560	833285171.407977	844248225.757359	324542210.287443
CO2	Excavation Crew	3406467791.929010	3451885926.922480	3497307302.157600	2912910113.475190
CO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2	Drilled Shaft Crew	723240349.917052	732884147.256620	742527425.098823	713598606.264173
CO2	Concrete Pour Crew	1490312203.282330	1698954163.896610	1912566137.189170	1838052151.573040
CO2	Asphalt Crew	723773009.938158	733424461.772686	743075396.186941	714123567.896265
CO2	Steel Erection Crew	209057283.206148	370728271.075621	482922692.548918	464107094.808002
CO2	Carpenter Crew	684833708.576749	763360346.014406	843715128.966555	810843110.954871
CO2	Lather Crew	1615581063.282680	1800833615.433950	1990395869.964260	1912847978.926690
CO2	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Concrete Trucks	85606221.632426	99759896.200434	109861592.254078	105581067.183097
10210	CO2 to Fuel = Diesel fuel consumption calculated from CO2 emissions (10.21 kg CO2/gal x 1000 g/kg = 10210 g CO2/gal)				

		2034	2034	2034	2034
		Winter	Spring	Summer	Fall
Fuel Emissions Per Crew Per Quarter					
Fuel	DS2 Crane Crew	37033.957578	37527.723428	38021.513045	36540.210667
Fuel	DS1/DS3 Crane Crew	42266.584610	42830.145939	43393.718655	41703.078887
Fuel	Demolition Crew	80540.617448	81614.610324	82688.366871	31786.700322
Fuel	Excavation Crew	333640.332216	338088.729375	342537.443894	285299.717285
Fuel	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Drilled Shaft Crew	70836.469140	71781.013443	72725.506866	69892.125981
Fuel	Concrete Pour Crew	145965.935679	166400.995484	187322.834201	180024.696530
Fuel	Asphalt Crew	70888.639563	71833.933572	72779.176904	69943.542399
Fuel	Steel Erection Crew	20475.737826	36310.310585	47298.990455	45456.130735
Fuel	Carpenter Crew	67074.800056	74765.949659	82636.153670	79416.563267
Fuel	Lather Crew	158235.167804	176379.394264	194945.726735	187350.438680
Fuel	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Dump Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Concrete Trucks	8384.546683	9770.802762	10760.195128	10340.946835

0.26 Fuel to N2O = N2O emissions calculated from diesel fuel consumption (Diesel construction equipment = 0.26 g N2O/gal)

N2O Emissions Per Crew Per Quarter					
N2O	DS2 Crane Crew	9628.828970	9757.208091	9885.593392	9500.454774
N2O	DS1/DS3 Crane Crew	10989.311999	11135.837944	11282.366850	10842.800511
N2O	Demolition Crew	20940.560536	21219.798684	21498.975387	8264.542084
N2O	Excavation Crew	86746.486376	87903.069638	89059.735412	74177.926494
N2O	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
N2O	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
N2O	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
N2O	Drilled Shaft Crew	18417.481976	18663.063495	18908.631785	18171.952755
N2O	Concrete Pour Crew	37951.143277	43264.258826	48703.936892	46806.421098
N2O	Asphalt Crew	18431.046286	18676.822729	18922.585995	18185.321024
N2O	Steel Erection Crew	5323.691835	9440.680752	12297.737518	11818.593991
N2O	Carpenter Crew	17439.448015	19439.146911	21485.399954	20648.306449
N2O	Lather Crew	41141.143629	45858.642509	50685.888951	48711.114057
N2O	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Dump Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Concrete Trucks	2179.982138	2540.408718	2797.650733	2688.646177

GWP	Pollutant
25	CH4
1	CO2
298	N2O

CO2e Nonroad emissions calculated from CH4 (GWP = 25), CO2 (GWP = 1), and N2O (GWP = 298)

CO2e Nonroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	380.992336	386.072082	391.151901	375.912791
CO2e	DS1/DS3 Crane Crew	434.823833	440.621563	446.419251	429.026565
CO2e	Demolition Crew	828.579490	839.628599	850.674937	327.012737
CO2e	Excavation Crew	3432.388113	3478.152552	3523.918929	2935.075003
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	728.741168	738.458370	748.175157	719.026273
CO2e	Concrete Pour Crew	1501.654157	1711.884253	1927.121721	1852.040628
CO2e	Asphalt Crew	729.280772	739.005496	748.730087	719.557643
CO2e	Steel Erection Crew	210.675477	373.597847	486.660723	467.699484
CO2e	Carpenter Crew	690.049755	769.174426	850.141298	817.018910
CO2e	Lather Crew	1627.879105	1814.541824	2005.547057	1927.408860
CO2e	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Concrete Trucks	86.257331	100.518645	110.697173	106.384105

CO2e Onroad emissions calculated normally below

		2034	2034	2034	2034
		Winter	Spring	Summer	Fall
CO2e Onroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	5.778378	5.855551	6.490601	5.701457
CO2e	DS1/DS3 Crane Crew	5.056081	5.123607	5.679276	4.988775
CO2e	Demolition Crew	14.445945	14.638877	16.226503	5.701457
CO2e	Excavation Crew	43.337835	43.916630	48.679508	37.059472
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	23.835809	24.154147	26.773729	23.518511
CO2e	Concrete Pour Crew	46.227024	52.699956	64.906010	57.014573
CO2e	Asphalt Crew	11.556756	11.711101	12.981202	11.402915
CO2e	Steel Erection Crew	8.667567	15.370821	21.905779	19.242418
CO2e	Carpenter Crew	43.337835	48.308293	58.415409	51.313116
CO2e	Lather Crew	43.337835	48.308293	58.415409	51.313116
CO2e	Delivery Trucks	20.333359	24.725364	29.225814	28.087146
CO2e	Dump Trucks	30.436148	30.842242	31.249470	24.024483
CO2e	Concrete Trucks	40.581531	47.291437	52.082450	50.051006

CO2e Nonroad emissions and CO2e Onroad emissions added together below

CO2e Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	386.770714	391.927633	397.642502	381.614248
CO2e	DS1/DS3 Crane Crew	439.879913	445.745170	452.098527	434.015340
CO2e	Demolition Crew	843.025435	854.267476	866.901439	332.714194
CO2e	Excavation Crew	3475.725948	3522.069183	3572.598437	2972.134475
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	752.576977	762.612517	774.948886	742.544784
CO2e	Concrete Pour Crew	1547.881181	1764.584209	1992.027732	1909.055201
CO2e	Asphalt Crew	740.837528	750.716598	761.711289	730.960557
CO2e	Steel Erection Crew	219.343044	388.968668	508.566501	486.941902
CO2e	Carpenter Crew	733.387590	817.482720	908.556708	868.332026
CO2e	Lather Crew	1671.216940	1862.850118	2063.962466	1978.721975
CO2e	Delivery Trucks	20.333359	24.725364	29.225814	28.087146
CO2e	Dump Trucks	30.436148	30.842242	31.249470	24.024483
CO2e	Concrete Trucks	126.838862	147.810082	162.779623	156.435111

Watercraft Equipment Used Per Quarter

Tugboat	1	1	1	1
Barge w Aux Eng.	1	1	1	1

Watercraft Average Installed Propulsion Power (Kilowatts)

Tugboat	1,559	1,559	1,559	1,559
Barge w Aux Eng.	622	622	622	622

Watercraft CO Emission Rates

Tugboat	0.8275	0.8275	0.8275	0.8275
Barge w Aux Eng.	0.4916	0.4916	0.4916	0.4916

Watercraft CO Emissions (Grams)

Tugboat	193,515	196,096	198,676	190,935
Barge w Aux Eng.	45,863	46,475	47,086	45,252

Watercraft CO Emissions (US Tons)

Tugboat	0.213314	0.216158	0.219002	0.210470
Barge w Aux Eng.	0.050555	0.051229	0.051903	0.049881
Total	0.263869	0.267388	0.270906	0.260351

	2034	2034	2034	2034
	Winter	Spring	Summer	Fall
Watercraft NOx Emission Rates				
Tugboat	3.6938	3.6938	3.6938	3.6938
Barge w Aux Eng.	2.9470	2.9470	2.9470	2.9470
Watercraft NOx Emissios (Grams)				
Tugboat	863,800	875,317	886,834	852,282
Barge w Aux Eng.	274,957	278,623	282,289	271,291
Watercraft NOx Emissios (US Tons)				
Tugboat	0.952175	0.964871	0.977566	0.939479
Barge w Aux Eng.	0.303088	0.307129	0.311170	0.299047
Total	1.255263	1.272000	1.288737	1.238526
Watercraft VOC Emission Rates				
Tugboat	0.0825	0.0825	0.0825	0.0825
Barge w Aux Eng.	0.0889	0.0889	0.0889	0.0889
Watercraft VOC Emissios (Grams)				
Tugboat	19,290	19,547	19,804	19,033
Barge w Aux Eng.	8,299	8,409	8,520	8,188
Watercraft VOC Emissios (US Tons)				
Tugboat	0.021263	0.021547	0.021830	0.020980
Barge w Aux Eng.	0.009148	0.009270	0.009392	0.009026
Total	0.030411	0.030817	0.031222	0.030006
Watercraft PM10 Emission Rates				
Tugboat	0.0758	0.0758	0.0758	0.0758
Barge w Aux Eng.	0.0608	0.0608	0.0608	0.0608
Watercraft PM10 Emissios (Grams)				
Tugboat	17,721	17,957	18,194	17,485
Barge w Aux Eng.	5,668	5,744	5,819	5,592
Watercraft PM10 Emissios (US Tons)				
Tugboat	0.019534	0.019795	0.020055	0.019274
Barge w Aux Eng.	0.006248	0.006331	0.006414	0.006165
Total	0.025782	0.026126	0.026470	0.025438
Watercraft PM2.5 Emission Rates				
Tugboat	0.0735	0.0735	0.0735	0.0735
Barge w Aux Eng.	0.0589	0.0589	0.0589	0.0589
Watercraft PM2.5 Emissios (Grams)				
Tugboat	17,190	17,419	17,648	16,960
Barge w Aux Eng.	5,498	5,571	5,645	5,425

	2034	2034	2034	2034
	Winter	Spring	Summer	Fall
Watercraft PM2.5 Emissios (US Tons)				
Tugboat	0.018948	0.019201	0.019453	0.018696
Barge w Aux Eng.	0.006060	0.006141	0.006222	0.005980
Total	0.025009	0.025342	0.025676	0.024675

CO2e Watercraft Calculations

Watercraft Load Factors	
Tugboat	0.5
Barge w Aux Eng.	0.43

Watercraft CH4 Emission Rates				
Tugboat	0.0031	0.0031	0.0031	0.0031
Barge w Aux Eng.	0.0039	0.0039	0.0039	0.0039

Watercraft CH4 Emissios (Grams)				
Tugboat	365	370	375	361
Barge w Aux Eng.	158	160	162	156

3.19 Carbon Content Factor (g CO2/g fuel) for diesel

Watercraft CO2 Emission Rates				
Tugboat	679.4700	679.4700	679.4700	679.4700
Barge w Aux Eng.	679.4700	679.4700	679.4700	679.4700

Watercraft CO2 Emissios (Grams)				
Tugboat	79,447,030	80,506,323	81,565,617	78,387,736
Barge w Aux Eng.	27,259,657	27,623,119	27,986,581	26,896,195

0.000156 N2O Conversion Factor (g N2O/g fuel) for C1 and C2 engines

Watercraft N2O Emission Rates				
Tugboat	0.0332	0.0332	0.0332	0.0332
Barge w Aux Eng.	0.0332	0.0332	0.0332	0.0332

Watercraft N2O Emissios (Grams)				
Tugboat	3,885	3,937	3,989	3,833
Barge w Aux Eng.	1,333	1,351	1,369	1,315

Watercraft CO2e Emissios (Grams)				
Tugboat	80,613,949.3178	81,688,801.9754	82,763,654.6330	79,539,096.6603
Barge w Aux Eng.	27,660,854.7131	28,029,666.1093	28,398,477.5054	27,292,043.3169

Watercraft CO2e Emissios (Metric Tons)				
Tugboat	80.613949	81.688802	82.763655	79.539097
Barge w Aux Eng.	27.660855	28.029666	28.398478	27.292043
Total	108.274804	109.718468	111.162132	106.831140

NBHCE Construction Emissions	
Annual Emissions (tons/year)	
Pollutant	2035
CO	7.695
NOx	16.762
VOC	0.749
PM10	89.372
PM2.5	9.464
CO2e	30,728
Total Emissions	30,852

De Minimis Threshold	Exceeds?
100	NO
25	NO
25	NO
100	NO
100	NO

	2035	2035	2035	2035
	Winter	Spring	Summer	Fall
Crews Working Per Quarter				
DS2 Crane Crew	4	4	4	4
DS1/DS3 Crane Crew	7	7	7	7
Demolition Crew	0	0	0	0
Excavation Crew	11	8	4	4
Pile Driving Crew	0	0	0	0
Trestle Construction Crew	0	0	0	0
Cofferdam Sheeting Crew	0	0	0	0
Drilled Shaft Crew	11	8	0	0
Concrete Pour Crew	17	15	13	11
Asphalt Crew	4	4	4	4
Steel Erection Crew	9	9	9	9
Carpenter Crew	20	18	16	14
Lather Crew	20	18	16	14
Delivery Trucks	7	6	5	4
Dump Trucks	9	7	3	3
Concrete Trucks	25	23	16	15
Crew Working Hours Per Quarter (Assuming 8 Hours of Work per Day)				
Working Hours	600	608	608	608

Watercraft Working Hours Per Quarter (Assuming 2 Hours of Work per Day)				
Watercraft Working Hours	150	152	152	152

CO Emissions Per Crew Per Quarter (US Tons)				
DS2 Crane Crew	0.041771	0.041801	0.056968	0.041763
DS1/DS3 Crane Crew	0.040526	0.040585	0.053894	0.040548
Demolition Crew	0.000000	0.000000	0.000000	0.000000
Excavation Crew	0.306287	0.223696	0.142083	0.111895
Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
Drilled Shaft Crew	0.139237	0.101013	0.000000	0.000000
Concrete Pour Crew	0.324757	0.286451	0.346694	0.210056
Asphalt Crew	0.102191	0.102551	0.132845	0.102639
Steel Erection Crew	0.185437	0.186277	0.237258	0.186150
Carpenter Crew	0.268469	0.241578	0.305369	0.187697
Lather Crew	0.334604	0.301946	0.358983	0.234609
Delivery Trucks	0.048872	0.042448	0.035374	0.028299
Dump Trucks	0.039292	0.030663	0.013200	0.013141
Concrete Trucks	0.113311	0.104626	0.073087	0.068232

	NOx Emissions Per Crew Per Quarter (US Tons)				
NOx	DS2 Crane Crew	0.087961	0.089365	0.089341	0.089035
NOx	DS1/DS3 Crane Crew	0.100148	0.102097	0.102039	0.101569
NOx	Demolition Crew	0.000000	0.000000	0.000000	0.000000
NOx	Excavation Crew	0.687107	0.507098	0.254494	0.253331
NOx	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
NOx	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
NOx	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
NOx	Drilled Shaft Crew	0.173375	0.128049	0.000000	0.000000
NOx	Concrete Pour Crew	0.441271	0.395339	0.341512	0.288820
NOx	Asphalt Crew	0.205666	0.208734	0.208725	0.208402
NOx	Steel Erection Crew	0.875835	0.888193	0.887409	0.887355
NOx	Carpenter Crew	0.241610	0.221709	0.195682	0.171135
NOx	Lather Crew	0.486271	0.441405	0.394020	0.344681
NOx	Delivery Trucks	0.080349	0.066193	0.047959	0.042824
NOx	Dump Trucks	0.025723	0.019322	0.007204	0.008038
NOx	Concrete Trucks	0.096769	0.087106	0.054844	0.055579

		2035	2035	2035	2035
		Winter	Spring	Summer	Fall
SO2 Emissions Per Crew Per Quarter (US Tons)					
SO2	DS2 Crane Crew	0.001132	0.001148	0.001145	0.001148
SO2	DS1/DS3 Crane Crew	0.001283	0.001300	0.001298	0.001300
SO2	Demolition Crew	0.000000	0.000000	0.000000	0.000000
SO2	Excavation Crew	0.007443	0.005485	0.002738	0.002743
SO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
SO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
SO2	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
SO2	Drilled Shaft Crew	0.002244	0.001653	0.000000	0.000000
SO2	Concrete Pour Crew	0.004894	0.004375	0.003776	0.003209
SO2	Asphalt Crew	0.002171	0.002200	0.002195	0.002200
SO2	Steel Erection Crew	0.001486	0.001506	0.001497	0.001506
SO2	Carpenter Crew	0.002250	0.002052	0.001809	0.001596
SO2	Lather Crew	0.004954	0.004518	0.004001	0.003514
SO2	Delivery Trucks	0.000101	0.000087	0.000073	0.000058
SO2	Dump Trucks	0.000079	0.000062	0.000025	0.000027
SO2	Concrete Trucks	0.000529	0.000493	0.000334	0.000322
VOC Emissions Per Crew Per Quarter (US Tons)					
VOC	DS2 Crane Crew	0.007620	0.007735	0.007800	0.007734
VOC	DS1/DS3 Crane Crew	0.008639	0.008771	0.008821	0.008766
VOC	Demolition Crew	0.000000	0.000000	0.000000	0.000000
VOC	Excavation Crew	0.046533	0.034273	0.017321	0.017178
VOC	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
VOC	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
VOC	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
VOC	Drilled Shaft Crew	0.014928	0.011024	0.000000	0.000000
VOC	Concrete Pour Crew	0.031152	0.027936	0.024685	0.020487
VOC	Asphalt Crew	0.013596	0.013797	0.013946	0.013788
VOC	Steel Erection Crew	0.022006	0.022338	0.022584	0.022336
VOC	Carpenter Crew	0.013088	0.012015	0.011116	0.009340
VOC	Lather Crew	0.024583	0.022487	0.020435	0.017495
VOC	Delivery Trucks	0.002877	0.002499	0.002082	0.001666
VOC	Dump Trucks	0.002060	0.001659	0.000778	0.000711
VOC	Concrete Trucks	0.007802	0.007393	0.005499	0.004821
Total Area Disturbed (sf)		4285043.1	4285043.1	4285043.1	4285043.1
Total Area Disturbed (acre)		98.4	98.4	98.4	98.4
Emission Factor (tons per acre per month)		1.2	1.2	1.2	1.2
Percent of Project Area Disturbed per Month		25%	25%	25%	25%
Dust Control Efficiency		75%	75%	75%	75%
# Months Per Quarter		3	3	3	3
Fugitive Dust PM10 Emissions Per Quarter (US Tons)					
PM10 Fugitive Dust		22.133487	22.133487	22.133487	22.133487
PM10 Emissions Per Crew Per Quarter (US Tons)					
PM10	DS2 Crane Crew	0.006290	0.006317	0.006356	0.006298
PM10	DS1/DS3 Crane Crew	0.006789	0.006814	0.006836	0.006747
PM10	Demolition Crew	0.000000	0.000000	0.000000	0.000000
PM10	Excavation Crew	0.048273	0.035754	0.017911	0.017716
PM10	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM10	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM10	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
PM10	Drilled Shaft Crew	0.014534	0.010715	0.000000	0.000000
PM10	Concrete Pour Crew	0.036475	0.032400	0.028304	0.023920
PM10	Asphalt Crew	0.014915	0.015134	0.015065	0.015171
PM10	Steel Erection Crew	0.017191	0.017408	0.017436	0.017424
PM10	Carpenter Crew	0.024612	0.022423	0.019981	0.017465
PM10	Lather Crew	0.037299	0.034442	0.030265	0.026463
PM10	Delivery Trucks	0.008151	0.007080	0.005900	0.004720
PM10	Dump Trucks	0.003766	0.002970	0.001276	0.001273
PM10	Concrete Trucks	0.011686	0.010909	0.007623	0.007117
PM2.5 to PM10 Ratio		10%	10%	10%	10%

		2035	2035	2035	2035
		Winter	Spring	Summer	Fall
Fugitive Dust PM2.5 Emissions Per Quarter (US Tons)					
PM2.5 Fugitive Dust		2.213349	2.213349	2.213349	2.213349
PM2.5 Emissions Per Crew Per Quarter (US Tons)					
PM2.5	DS2 Crane Crew	0.004915	0.004917	0.004909	0.004897
PM2.5	DS1/DS3 Crane Crew	0.005524	0.005508	0.005553	0.005426
PM2.5	Demolition Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Excavation Crew	0.040706	0.030340	0.015069	0.014996
PM2.5	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
PM2.5	Drilled Shaft Crew	0.009049	0.006875	0.000000	0.000000
PM2.5	Concrete Pour Crew	0.024934	0.022573	0.019234	0.016385
PM2.5	Asphalt Crew	0.012058	0.012335	0.012162	0.012257
PM2.5	Steel Erection Crew	0.012578	0.012943	0.012759	0.012749
PM2.5	Carpenter Crew	0.014769	0.013864	0.011998	0.010482
PM2.5	Lather Crew	0.027490	0.025372	0.022310	0.019505
PM2.5	Delivery Trucks	0.002650	0.002302	0.001918	0.001534
PM2.5	Dump Trucks	0.000909	0.000719	0.000310	0.000308
PM2.5	Concrete Trucks	0.003735	0.003487	0.002439	0.002278
CH4 Emissions Per Crew Per Quarter (N/A)					
CH4	DS2 Crane Crew	251.145375	250.202312	252.388974	250.665592
CH4	DS1/DS3 Crane Crew	287.899540	285.721948	290.716089	287.293686
CH4	Demolition Crew	0.000000	0.000000	0.000000	0.000000
CH4	Excavation Crew	2062.945070	1522.287143	751.087631	757.179060
CH4	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CH4	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CH4	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CH4	Drilled Shaft Crew	487.091795	369.779784	0.000000	0.000000
CH4	Concrete Pour Crew	1396.101174	1230.725618	1078.134238	912.746505
CH4	Asphalt Crew	608.548870	612.598465	619.345082	624.012212
CH4	Steel Erection Crew	2832.580386	2869.916894	2870.348841	2870.352513
CH4	Carpenter Crew	764.033852	695.939162	619.376776	541.954679
CH4	Lather Crew	1505.341396	1390.848881	1220.330092	1067.788830
CH4	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CH4	Concrete Trucks	73.226240	67.784521	47.651098	43.955191
CO2 Emissions Per Crew Per Quarter (N/A)					
CO2	DS2 Crane Crew	378118289.331540	383159725.416984	383160248.520860	383159955.042051
CO2	DS1/DS3 Crane Crew	431544679.473861	437298723.461414	437298882.762443	437298498.090693
CO2	Demolition Crew	0.000000	0.000000	0.000000	0.000000
CO2	Excavation Crew	2498082745.954590	1841014191.964520	920505627.443110	920506072.232423
CO2	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2	Drilled Shaft Crew	723255146.270029	533017804.913595	0.000000	0.000000
CO2	Concrete Pour Crew	1583493982.505930	1415829836.313220	1227053141.092970	1038275582.834070
CO2	Asphalt Crew	723779125.869619	733429468.802232	733428697.031357	733428991.456911
CO2	Steel Erection Crew	470389953.816275	476662399.612489	476661830.918486	476662211.358196
CO2	Carpenter Crew	684856490.868262	624590182.615024	555190328.597204	485791537.522554
CO2	Lather Crew	1615687342.302430	1473509284.474230	1309783872.159830	1146060888.139860
CO2	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2	Concrete Trucks	107010599.001696	99762636.376094	69399954.135173	65062372.539202
10210	CO2 to Fuel = Diesel fuel consumption calculated from CO2 emissions (10.21 kg CO2/gal x 1000 g/kg = 10210 g CO2/gal)				

		2035	2035	2035	2035
		Winter	Spring	Summer	Fall
Fuel Emissions Per Crew Per Quarter					
Fuel	DS2 Crane Crew	37034.112569	37527.886916	37527.938151	37527.909407
Fuel	DS1/DS3 Crane Crew	42266.863807	42830.433248	42830.448850	42830.411174
Fuel	Demolition Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Excavation Crew	244670.200387	180314.808224	90157.260278	90157.303843
Fuel	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
Fuel	Drilled Shaft Crew	70837.918342	52205.465711	0.000000	0.000000
Fuel	Concrete Pour Crew	155092.456661	138670.894840	120181.502556	101692.025743
Fuel	Asphalt Crew	70889.238577	71834.423977	71834.348387	71834.377224
Fuel	Steel Erection Crew	46071.494007	46685.837376	46685.781677	46685.818938
Fuel	Carpenter Crew	67077.031427	61174.356769	54377.113477	47579.974292
Fuel	Lather Crew	158245.577111	144320.204160	128284.414511	112248.862697
Fuel	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Dump Trucks	0.000000	0.000000	0.000000	0.000000
Fuel	Concrete Trucks	10480.959746	9771.071144	6797.253098	6372.416507

0.26

Fuel to N2O = N2O emissions calculated from diesel fuel consumption (Diesel construction equipment = 0.26 g N2O/gal)

N2O Emissions Per Crew Per Quarter					
N2O	DS2 Crane Crew	9628.869268	9757.250598	9757.263919	9757.256446
N2O	DS1/DS3 Crane Crew	10989.384590	11135.912644	11135.916701	11135.906905
N2O	Demolition Crew	0.000000	0.000000	0.000000	0.000000
N2O	Excavation Crew	63614.252101	46881.850138	23440.887672	23440.898999
N2O	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
N2O	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
N2O	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
N2O	Drilled Shaft Crew	18417.858769	13573.421085	0.000000	0.000000
N2O	Concrete Pour Crew	40324.038732	36054.432658	31247.190664	26439.926693
N2O	Asphalt Crew	18431.202030	18676.950234	18676.930581	18676.938078
N2O	Steel Erection Crew	11978.588442	12138.317718	12138.303236	12138.312924
N2O	Carpenter Crew	17440.028171	15905.332760	14138.049504	12370.793316
N2O	Lather Crew	41143.850049	37523.253082	33353.947773	29184.704301
N2O	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Dump Trucks	0.000000	0.000000	0.000000	0.000000
N2O	Concrete Trucks	2725.049534	2540.478497	1767.285806	1656.828292

GWP	Pollutant	
25	CH4	CO2e Nonroad emissions calculated from CH4 (GWP = 25), CO2 (GWP = 1), and N2O (GWP = 298)
1	CO2	
298	N2O	

CO2e Nonroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	380.993971	386.073641	386.074223	386.073884
CO2e	DS1/DS3 Crane Crew	434.826714	440.624368	440.624654	440.624181
CO2e	Demolition Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Excavation Crew	2517.091367	1855.023040	927.509789	927.510390
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	728.755845	537.071929	0.000000	0.000000
CO2e	Concrete Pour Crew	1595.545449	1426.604825	1236.391757	1046.177500
CO2e	Asphalt Crew	729.286838	739.010515	739.009906	739.010319
CO2e	Steel Erection Crew	474.030388	480.351366	480.350804	480.351187
CO2e	Carpenter Crew	690.072720	629.347370	559.418952	489.491583
CO2e	Lather Crew	1627.985843	1484.725985	1319.753857	1154.784625
CO2e	Delivery Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Dump Trucks	0.000000	0.000000	0.000000	0.000000
CO2e	Concrete Trucks	107.824494	100.521394	69.927797	65.557206

CO2e Onroad emissions calculated normally below

		2035	2035	2035	2035
		Winter	Spring	Summer	Fall
CO2e Onroad Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	5.621976	5.697045	6.232809	5.697045
CO2e	DS1/DS3 Crane Crew	4.919229	4.984914	5.453708	4.984914
CO2e	Demolition Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Excavation Crew	30.920868	22.788180	12.465617	11.394090
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	23.190651	17.091135	0.000000	0.000000
CO2e	Concrete Pour Crew	47.786796	42.727838	40.513256	31.333748
CO2e	Asphalt Crew	11.243952	11.394090	12.465617	11.394090
CO2e	Steel Erection Crew	18.974169	19.227527	21.035729	19.227527
CO2e	Carpenter Crew	42.164820	38.455055	37.396852	29.909487
CO2e	Lather Crew	42.164820	38.455055	37.396852	29.909487
CO2e	Delivery Trucks	28.138606	24.440389	20.366991	16.293593
CO2e	Dump Trucks	17.841128	14.061581	6.026642	6.026392
CO2e	Concrete Trucks	49.558688	46.202339	32.142093	30.131960

CO2e Nonroad emissions and CO2e Onroad emissions added together below

CO2e Emissions Per Crew Per Quarter (Metric Tons)					
CO2e	DS2 Crane Crew	386.615947	391.770686	392.307032	391.770929
CO2e	DS1/DS3 Crane Crew	439.745943	445.609283	446.078361	445.609095
CO2e	Demolition Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Excavation Crew	2548.012235	1877.811221	939.975406	938.904480
CO2e	Pile Driving Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Trestle Construction Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Cofferdam Sheeting Crew	0.000000	0.000000	0.000000	0.000000
CO2e	Drilled Shaft Crew	751.946496	554.163064	0.000000	0.000000
CO2e	Concrete Pour Crew	1643.332245	1469.332664	1276.905013	1077.511248
CO2e	Asphalt Crew	740.530790	750.404605	751.475523	750.404410
CO2e	Steel Erection Crew	493.004557	499.578893	501.386533	499.578715
CO2e	Carpenter Crew	732.237540	667.802425	596.815804	519.401070
CO2e	Lather Crew	1670.150663	1523.181040	1357.150709	1184.694112
CO2e	Delivery Trucks	28.138606	24.440389	20.366991	16.293593
CO2e	Dump Trucks	17.841128	14.061581	6.026642	6.026392
CO2e	Concrete Trucks	157.383182	146.723732	102.069889	95.689166

Watercraft Equipment Used Per Quarter

Tugboat	1	1	1	1
Barge w Aux Eng.	1	1	1	1

Watercraft Average Installed Propulsion Power (Kilowatts)

Tugboat	1,559	1,559	1,559	1,559
Barge w Aux Eng.	622	622	622	622

Watercraft CO Emission Rates

Tugboat	0.8275	0.8275	0.8275	0.8275
Barge w Aux Eng.	0.4916	0.4916	0.4916	0.4916

Watercraft CO Emissios (Grams)

Tugboat	193,515	196,096	196,096	196,096
Barge w Aux Eng.	45,863	46,475	46,475	46,475

Watercraft CO Emissios (US Tons)

Tugboat	0.213314	0.216158	0.216158	0.216158
Barge w Aux Eng.	0.050555	0.051229	0.051229	0.051229
Total	0.263869	0.267388	0.267388	0.267388

	2035	2035	2035	2035
	Winter	Spring	Summer	Fall
Watercraft NOx Emission Rates				
Tugboat	3.6938	3.6938	3.6938	3.6938
Barge w Aux Eng.	2.9470	2.9470	2.9470	2.9470
Watercraft NOx Emissios (Grams)				
Tugboat	863,800	875,317	875,317	875,317
Barge w Aux Eng.	274,957	278,623	278,623	278,623
Watercraft NOx Emissios (US Tons)				
Tugboat	0.952175	0.964871	0.964871	0.964871
Barge w Aux Eng.	0.303088	0.307129	0.307129	0.307129
Total	1.255263	1.272000	1.272000	1.272000
Watercraft VOC Emission Rates				
Tugboat	0.0825	0.0825	0.0825	0.0825
Barge w Aux Eng.	0.0889	0.0889	0.0889	0.0889
Watercraft VOC Emissios (Grams)				
Tugboat	19,290	19,547	19,547	19,547
Barge w Aux Eng.	8,299	8,409	8,409	8,409
Watercraft VOC Emissios (US Tons)				
Tugboat	0.021263	0.021547	0.021547	0.021547
Barge w Aux Eng.	0.009148	0.009270	0.009270	0.009270
Total	0.030411	0.030817	0.030817	0.030817
Watercraft PM10 Emission Rates				
Tugboat	0.0758	0.0758	0.0758	0.0758
Barge w Aux Eng.	0.0608	0.0608	0.0608	0.0608
Watercraft PM10 Emissios (Grams)				
Tugboat	17,721	17,957	17,957	17,957
Barge w Aux Eng.	5,668	5,744	5,744	5,744
Watercraft PM10 Emissios (US Tons)				
Tugboat	0.019534	0.019795	0.019795	0.019795
Barge w Aux Eng.	0.006248	0.006331	0.006331	0.006331
Total	0.025782	0.026126	0.026126	0.026126
Watercraft PM2.5 Emission Rates				
Tugboat	0.0735	0.0735	0.0735	0.0735
Barge w Aux Eng.	0.0589	0.0589	0.0589	0.0589
Watercraft PM2.5 Emissios (Grams)				
Tugboat	17,190	17,419	17,419	17,419
Barge w Aux Eng.	5,498	5,571	5,571	5,571

	2035	2035	2035	2035
	Winter	Spring	Summer	Fall
Watercraft PM2.5 Emissios (US Tons)				
Tugboat	0.018948	0.019201	0.019201	0.019201
Barge w Aux Eng.	0.006060	0.006141	0.006141	0.006141
Total	0.025009	0.025342	0.025342	0.025342

CO2e Watercraft Calculations

Watercraft Load Factors	
Tugboat	0.5
Barge w Aux Eng.	0.43

Watercraft CH4 Emission Rates				
Tugboat	0.0031	0.0031	0.0031	0.0031
Barge w Aux Eng.	0.0039	0.0039	0.0039	0.0039

Watercraft CH4 Emissios (Grams)				
Tugboat	365	370	370	370
Barge w Aux Eng.	158	160	160	160

3.19 Carbon Content Factor (g CO2/g fuel) for diesel

Watercraft CO2 Emission Rates				
Tugboat	679.4700	679.4700	679.4700	679.4700
Barge w Aux Eng.	679.4700	679.4700	679.4700	679.4700

Watercraft CO2 Emissios (Grams)				
Tugboat	79,447,030	80,506,323	80,506,323	80,506,323
Barge w Aux Eng.	27,259,657	27,623,119	27,623,119	27,623,119

0.000156 N2O Conversion Factor (g N2O/g fuel) for C1 and C2 engines

Watercraft N2O Emission Rates				
Tugboat	0.0332	0.0332	0.0332	0.0332
Barge w Aux Eng.	0.0332	0.0332	0.0332	0.0332

Watercraft N2O Emissios (Grams)				
Tugboat	3,885	3,937	3,937	3,937
Barge w Aux Eng.	1,333	1,351	1,351	1,351

Watercraft CO2e Emissios (Grams)				
Tugboat	80,613,949.3178	81,688,801.9754	81,688,801.9754	81,688,801.9754
Barge w Aux Eng.	27,660,854.7131	28,029,666.1093	28,029,666.1093	28,029,666.1093

Watercraft CO2e Emissios (Metric Tons)				
Tugboat	80.613949	81.688802	81.688802	81.688802
Barge w Aux Eng.	27.660855	28.029666	28.029666	28.029666
Total	108.274804	109.718468	109.718468	109.718468

Appendix C-9

FY 2024-2027 Transportation Improvement Program Project Listing

Non-Federally Funded Transportation Authority Projects in the NJTPA Region

New Jersey Turnpike Authority

DBNUM: GSP1406

GSP Interchange 145

The purpose of this project is to improve the safety and operations of Interchange 145 within the City of East Orange, Essex County to accommodate the high travel volume at this interchange between I-280, the Garden State Parkway and the local road network. The proposed improvements will include the replacement of the Central Avenue bridge over the Garden State Parkway including relocation of the bridge abutments to allow the widening of the Parkway. The widening will allow for two standard width deceleration lanes to the Interchange 145 toll plaza in the northbound direction and two standard width acceleration lanes from the Interchange 145 toll plaza to the southbound Garden State Parkway to be constructed. . The proposed improvements will also include the demolition of the northbound exit toll plaza to I-280 and conversion to one-way tolling (southbound entrance to the Garden State Parkway to remain).

Regionally Significant: Yes

DBNUM: GSP22100

GSP Interchange 80 Completion and Widening between MP 80 - 83

Proposed improvements include completing the missing moves at Interchange 80. This interchange consists of a southbound exit ramp and northbound entrance ramp at US Route 9 and County Route 530, as well as increase capacity and eliminate unsafe weaving conditions by implementing collector-distributor roads (between Interchanges 81-82/82A; in each direction to accommodate future traffic demands. Auxiliary lanes will be lengthened, and full left and right shoulders will be provided for safety and operational enhancement. These improvements will require reconstruction and or replacement of several structures, including bridges over Toms River and Lakehurst Road (County Route 527).

Regionally Significant: Yes

DBNUM: GSP24006

Interchange 69 Improvements

This project will improve operational safety at the Route 80 and Route 95 interchange utilizing minor widening and revised striping in order to maintain route continuity as well as extending auxiliary lanes within merges, diverges, and weaves to the greatest extent feasible.

DBNUM: TPK24001

TPK Newark Bay - Hudson County Extension Improvements Program

The New Jersey Turnpike Authority is proposing to reconstruct and widen the 8.1 mile Newark Bay-Hudson County Extension (NB-HCE) from New Jersey Turnpike Interchange 14 in Newark to Jersey Avenue in Jersey City. - Project 1: From Interchange 14 to Interchange 14A, replacing bridges and widening the roadway from two lanes to four lanes in each direction plus full shoulders (12-foot right shoulder, 12-foot left shoulder), including the Newark Bay Bridge over the Newark Bay;- Project 2: From Interchange 14A to Columbus Drive, replacing bridges and widening the roadway from two lanes to three lanes in each direction plus full shoulders (12-foot right shoulder, 10-foot left shoulder);- Project 3: From Interchange 14A to Columbus Drive, replacing bridges and widening the roadway from two lanes to three lanes in each direction plus full shoulders (12-foot right shoulder, 10-foot left shoulder); - Project 4: From Columbus Drive to Jersey Avenue, replacing the viaduct structure and providing full shoulders (12-foot right shoulder, 5-foot minimum left shoulder).

Regionally Significant: Yes

DBNUM: TPK22108

TPK Tremley Point Connector at Interchange 12

This project will provide access from Interchange 12 through Carteret, NJ, over the Rahway River, and into Tremley Point in Linden, NJ. The project consists of a new roadway and bridges featuring two lanes in each direction with full shoulders. The total length of the project is approximately 1.1 miles.