Chapter 11: Air Quality

A. INTRODUCTION

Air quality is defined as the concentration of specific pollutants of concern in ambient air. The standards for these pollutants are set by the United States Environmental Protection Agency (EPA) pursuant to the Clean Air Act to protect the health and welfare of the general public.

Air quality can be affected by air pollutants produced by mobile sources, such as vehicular traffic or diesel locomotives, and fixed or immobile facilities, referred to as "stationary sources." Stationary sources can include power plants, industrial stacks, and ventilation exhaust systems. Construction and/or operation of the Proposed Project could potentially affect air quality in the study area.

In this chapter, the effect of the Proposed Project's operation on air quality is analyzed and includes a description of the regulatory context, analysis methodology, existing air quality, and the future air quality with the Proposed Project. Air quality effects during construction are analyzed in Chapter 13, "Construction Impacts." Since the Proposed Project would not increase overall regional traffic volumes, nor the number of diesel locomotives along the Project Corridor, the analysis focuses on changes in traffic patterns around localized intersections (i.e., microscale) that may affect air quality at nearby residential locations and other land uses. As an improvement to a regional transportation system, the Proposed Project contributes to an overall reduction in vehicular emissions throughout the region. In addition, the Proposed Project would not introduce any new permanent stationary sources.

This chapter also evaluates the potential air quality impacts of: grade separation of all seven grade crossings (Alternative 1); and grade separation of five grade crossings and permanent closure of two: South 12th Street and Main Street (Alternative 2).

B. PRINCIPAL CONCLUSIONS AND IMPACTS

Future air quality conditions with or without the Proposed Project would be improved in the Study Area, as compared to existing conditions, primarily due to continuing federal and statewide continuing efforts to reduce pollution from both mobile and stationary sources. Compared to the Future Without the Proposed Project, the Proposed Project would result in improvements to air quality in the neighborhoods along the corridor due to reduction in idling time at grade crossings. At some local intersections, air quality could be slightly affected due to changes in traffic patterns. Overall, based on the air quality analysis described in this section, air quality in the Study area would be improved with the Proposed Project and thus no significant adverse air quality impacts would occur as a direct result of the Proposed Project.

C. METHODOLOGY

REGULATORY CONTEXT

CRITERIA POLLUTANTS, NATIONAL AMBIENT AIR QUALITY STANDARDS, AND CLEAN AIR ACT CONFORMITY

The USEPA, under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR 50). These are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter with diameters up to 10 µm (PM_{10}), particulate matter with diameters up to 2.5 µm ($PM_{2.5}$), lead (Pb), and sulfur dioxide (SO_2). The NAAQS include primary and secondary standards.

The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air, such as damage to plants and ecosystems. The primary and secondary standards are presented in **Table 11-1** below. These standards have also been adopted as the ambient air quality standards for New York.

Table 11-1
National and New York State Ambient Air Quality Standards

Pollutant		Primary/Secondary	Averaging Time	Level	Form
Carbon Monoxide		primary	8-hour	9 ppm	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead		primary and secondary	Rolling 3-month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide		primary	1-hour	100 ppb	98th percentile, averaged over 3 years
		primary and secondary	Annual	53 ppb	Annual mean
Ozone		primary and secondary	8-hour	0.070 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particle Pollution	$PM_{2.5}$	primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
		secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
		primary and secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide		primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: http://www.epa.gov/air/criteria.html

NAAQS ATTAINMENT STATUS

Areas that meet the NAAQS for a criteria pollutant are designated as being "in attainment" or "attainment areas." Areas where criteria pollutant levels exceed the NAAQS are designated as "nonattainment areas." O_3 nonattainment areas are further classified, based on the severity of the pollution problem, as marginal, moderate, serious, severe, or extreme. CO and PM_{10} nonattainment areas are classified as either moderate or serious.

A maintenance area is an area that had previously been designated as a nonattainment area, but is currently designated as an attainment area, indicating an improvement in air quality over the past, but still in need of efforts to maintain the improved conditions in the future. Most of the CAA rules for a nonattainment area are still applicable to a maintenance area. The current designations for Nassau County, within which the Study Area lies, are:

- Moderate nonattainment area for the O_3 standard
- Maintenance area for $PM_{2.5}$ and CO standards
- Attainment area for all other criteria pollutant standards

If an area is designated as nonattainment for a criteria pollutant under the NAAQS, states must develop and implement control plans to reduce the emissions of that pollutant. The New York State Department of Environmental Conservation (NYSDEC) is responsible for developing a State Implementation Plan (SIP) that achieves attainment or maintains attainment of the NAAQS for each emission type to improve air quality conditions within nonattainment and maintenance areas.

CLEAN AIR ACT CONFORMITY

The CAA requires transportation agencies to ensure that their actions conform to the SIP in a nonattainment area. Conformity to a SIP, as defined in the CAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of these standards.

The USEPA developed two sections of the conformity regulations in the CAA that are potentially applicable. These regulations differentiate actions into:

- Transportation projects funded or approved by FHWA or FTA, or regionally significant transportation or highway projects[1] undertaken by state agencies that otherwise receive FHWA or FTA funding, which are governed by the Transportation Conformity Rule (TCR).

[1] "Regionally significant project means a transportation project (other than projects that may be grouped in the TIP and/or STIP or exempt projects as defined in EPA's transportation conformity regulations (40 CFR part 93, subpart A)) that is on a facility that serves regional transportation needs (such as access to and from the area outside the region; major activity centers in the region; major planned developments such as new retail malls, sports complexes, or employment centers; or transportation terminals) and would normally be included in the modeling of the metropolitan area's transportation network. At a minimum, this includes all principal arterial highways and all fixed guideway transit facilities that offer an alternative to regional highway travel." 23 CFR 450.104

- Non-transportation-related projects or non-transportation components of a transportation project requiring actions by non-transportation agencies, which are governed by the General Conformity Rule (GCR).

The TCR (40 CFR 51.390 and Part 93) is applicable to transportation projects in nonattainment and maintenance areas for the transportation-related criteria pollutants O_3, $PM_{2.5}$, PM_{10}, NO_2, and CO. The TCR requires the analysis of project-related air emissions to show that a project would not cause or contribute to any new violations of the NAAQS and is in conformance with the corresponding SIP. A SIP establishes a motor vehicles emissions budget (MVEB) which identifies the allowable on-road emissions level to attain the air quality standards.

Transportation conformity is the process by which Metropolitan Planning Organizations (MPOs) or Departments of Transportation (DOTs) demonstrate that transportation projects included in a region's Long-Range Plan (LRP) and/or Transportation Improvement Programs (TIPs) do not cause new air quality violations, worsen existing violations, or delay timely attainment of the NAAQS. Transportation conformity is a requirement of the CAA in areas that do not meet the NAAQS or have previously been in violation of the NAAQS. Once a previously designated nonattainment area meets the NAAQS and submits plans to demonstrate how the area will continue to meet federal air quality standards, the USEPA can redesignate that area as either an attainment area or a maintenance area. The transportation conformity requirements are still applicable for up to 20 years after a nonattainment area is redesignated to ensure that the region continues to meet the NAAQS.

There are two levels of transportation conformity:

- Regional conformity: This is applicable to regional transportation plans and the TIP. For the Nassau County area where the Proposed Project is located, the most recent transportation plan includes the *Federal Fiscal Years 2014-2018 Transportation Improvement Program* adopted by New York Metropolitan Transportation Council (NYMTC) on September 4, 2013 that covers the transportation projects within a 5-year duration and the long range plan, *Plan 2040: NYMTC Regional Transportation Plan (RTP),* in which is listed a range of short-, medium-, and long-term projects, proposals and studies that, when completed, will affect the regional transportation system through 2040.

  The regional conformity determination must show that the total emissions from on-road travel on the region's transportation system are within the Motor Vehicle Emissions Budget (MVEB) established in the SIP and are consistent with the goals for air quality found in the SIP. The regional emissions analysis must include all federally-funded projects, non-federally-funded projects considered regionally-significant, and non-federally-funded and/or non-regionally significant projects which will affect vehicle travel in the area.

- Project-level conformity: For specific transportation projects, including those projects that have not been included in a TIP or STIP, the conformity determination must show that the individual project is consistent with the regional conformity determination and that potential localized emission impacts are addressed and are consistent with goals for air quality found in the SIP. The state or local transportation agency is responsible for the project-level conformity determination.

The Proposed Project is a regionally significant transportation project covered by the TCR; the GCR is not applicable to the Proposed Project per 40 CFR Parts 6, 51, and 93.

AIR TOXICS

In addition to the criteria pollutants, the CAA also lists 187 air toxics, known as hazardous air pollutants (HAPs). Toxic air pollutants include a number of substances known or suspected to cause cancer or other health effects in humans when exposed to certain levels of the pollutants. The CAA authorizes USEPA to characterize and control emissions of these pollutants. However, unlike the criteria pollutants, ambient air quality standards have not been established by USEPA for the majority of the air toxics.

- Most air toxics originate from human-made (anthropogenic) sources, including on-road mobile sources (e.g., cars, trucks), non-road mobile sources (e.g., airplanes), and stationary sources (e.g., dry cleaners, factories, refineries). The CAA identifies 187 HAPs, 93 of which have been identified by the USEPA as mobile source air toxics (MSATs), and nine of which are priority MSATs:
  - Acetaldehyde
  - Acrolein
  - Benzene
  - 1,3-butadiene
  - Diesel particulate matter, plus diesel exhaust organic gases (diesel PM)
  - Ethylbenzene
  - Formaldehyde
  - Naphthalene
  - Polycyclic organic matter (POM)

MSATs are compounds emitted by highway-traveling vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted when the fuel evaporates or passes through the engine unburned. Other toxics are generated by the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

On February 3, 2006, the FHWA and USEPA issued joint guidance for the assessment of MSATs for highway projects. The FHWA subsequently released updated guidance on air toxic analysis on September 30, 2009, December 6, 2012, and October 18, 2016. The guidance requires analysis of MSATs as part of the environmental analysis for a transportation project. The 2016 update reflects recent regulatory changes, addresses stakeholder requests to broaden the horizon years of emission trends performed with USEPA Motor Vehicle Emissions Simulator (MOVES) model, and updates stakeholders on the status of scientific research on air toxics. This guidance is being considered in connection with the proposed grade crossing elimination component of the Proposed Project.

GREENHOUSE GASES

Greenhouse gas (GHG) emissions may be associated with the construction and operation of the Proposed Project. See Chapter 17, "Climate Change," for more information on potential GHG emissions from the Proposed Project.

POLLUTANTS OF CONCERN

Mobile sources potentially relevant to the Proposed Project are primarily motor vehicles. Primary vehicle-related air pollutants are CO and O_3 precursors (nitrogen oxides (NO_x) and volatile organic compounds (VOCs). Particulate matter (PM_{10} and $PM_{2.5}$) can also be of concern

from mobile sources, especially from heavy-duty diesel trucks and buses. Lead emissions from gasoline-fueled vehicles have been virtually eliminated through the use of unleaded gasoline, and are no longer of concern. Potential emissions of SO_2 from mobile sources are insignificant in comparison with non-mobile emission sources, especially after the implementation of the USEPA's Clean Diesel Truck and Bus Rule (December 21, 2000) and Clean Air Nonroad Diesel Rule (May 11, 2004) that cut 99 percent of sulfur in diesel fuel. Therefore, potential air quality impacts of vehicular emissions of CO, PM (PM_{10} and $PM_{2.5}$), and NO_x and VOCs (as O_3 precursors) are of possible concern and are considered in the EIS. Additionally, the emissions impacts from MSATs and GHGs are also considered in the EIS.

METHODOLOGY

Since the Proposed Project would not result in a significant increase in the Study Area-wide traffic volumes and has no adverse air quality impact on a regional (i.e., mesoscale) scale, a mesoscale emissions analysis for each pollutant of concern including GHGs is not warranted.[2] The air quality impacts from the Proposed Project were assessed on a local level (i.e., microscale), due to potential changes in local traffic patterns around intersections as a result of the Proposed Project. Since high concentrations of CO, PM, and MSATs are generally limited to within a relatively short distance of heavily traveled roadways, it is appropriate to assess their impacts on a localized basis.

The localized air quality impact assessment follows the procedures and guidance from:

- NYSDOT's *The Environmental Manual (TEM),* for CO microscale impact analysis, including the analysis on a screening level (NYSDOT, 2001 and 2010).
- USEPA PM microscale analysis guidance established in *Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* (USEPA, November 2015).
- FHWA guidance on project level MSATs analysis provided in *Updated Interim Guidance on Mobile Source Air Toxics Analysis in NEPA Documents (FHWA, October 18, 2016)* and *Frequently Asked Questions Conducting Quantitative MSAT Analysis for FHWA NEPA Documents* (FHWA, September 8, 2015).

CO SCREENING ANALYSIS

According to the NYSDOT TEM screening procedures, CO microscale (hot spot) analysis would be required if the Build traffic condition would not pass a 3-step process:

1) Step 1: selecting all intersections with Level of Service (LOS) D, E, or F and proceeding to Step 2.
2) Step 2: identifying "Capture Criteria" applicable to each intersection. These capture criteria include showing that the Proposed Project would result in a 10 percent or more reduction in the distance between source and receptor (locations where potential air quality is analyzed, such as residential or open space locations) or a 10 percent or more increase in approaching traffic volume. If applicable, move to Step 3.

[2] As an improvement to a regional transit system, the Proposed Project would contribute to regional air quality improvements.

3) Step 3: predicting MOVES2014a free flow and queue emission factors and correlating these emission factors with the TEM-provided volume threshold for approaching volume. If any approach volume at an intersection exceeds the applicable volume threshold, further microscale dispersion modeling at this intersection would be warranted.

As shown in this section, a CO screening analysis has sufficiently demonstrated that no further microscale dispersion modeling analysis is warranted, since the Proposed Project would only result in a slight change in local traffic patterns around stations and grade crossings. In general, the Proposed Project would reduce queuing and idling times at the grade crossings and would reduce localized CO emissions.

According to the TEM, CO impact analyses are required for the Estimated Time of Completion (ETC) and the year with the highest corridor emission levels of ETC+10 and ETC+20. The ETC for the Proposed Project is 2020. Since CO emission factors are essentially flat between ETC+10 and ETC+20, ETC and ETC+20 were considered as the analysis years in the screening analysis.

PM ($PM_{2.5}$ AND PM_{10}) IMPACT ANALYSIS

To meet statutory requirements, the TCR requires PM hot-spot analyses to be performed for projects of air quality concern located in $PM_{2.5}$ or PM_{10} nonattainment or maintenance areas. Nassau County is in a maintenance area for $PM_{2.5}$. Consistent with the USEPA guideline, forecasted traffic conditions in the Study Area were evaluated to determine whether the Proposed Project is a project with air quality concern that requires a hot-spot analysis for $PM_{2.5}$ and PM_{10}. The guideline identifies five categories of such projects (40 CFR 93.123[b][1]):

- New or expanded highway projects which have a significant number of or significant increase in diesel vehicles.
- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those which would change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.
- New bus and rail terminals and transfer points which have a significant number of diesel vehicles congregating at a single location.
- Expanded bus and rail terminals and transfer points which significantly increase the number of diesel vehicles congregating at a single location.
- Projects in or affecting locations, areas, or categories of sites identified in the applicable PM2.5 and PM10 implementation plan or implementation plan submission, as appropriate, as the sites of violation or possible violation.

Furthermore, typical sample projects of air quality concern defined by 40 CFR 93.123(b)(1)(i), (iii) and (iv) include:

- A project on a new highway or expressway which serves a significant volume of diesel truck traffic, such as facilities with greater than a 125,000 annual average daily traffic (AADT) and eight percent or more of such AADT is diesel truck traffic.
- New exit ramps and other highway facility improvements to connect a highway or expressway to a major freight, bus, or intermodal terminal.
- Expansion of an existing highway or other facility which affects a congested intersection (operated at LOS D, E, or F) which has a significant increase in the number of diesel trucks.

- Similar highway projects which involve a significant increase in the number of diesel transit busses and/or diesel trucks.
- A major new bus or intermodal terminal considered to be a "regionally significant project" under 40 CFR 93.1019.
- An existing bus or intermodal terminal which has a large vehicle fleet where the number of diesel buses increases by 50% or more, as measured by bus arrivals.

The Proposed Project does not include any increases in use of diesel locomotives and not cause an overall increase in diesel vehicular traffic in the Study Area. Moreover, the Proposed Project does not fall into any of the above project categories with potential for air quality concern. Therefore, it can be concluded that the Proposed Project would not cause or contribute to a $PM_{2.5}$ or PM_{10} NAAQS violation that would worsen the current maintenance status of the area. Consequently, no further hot-spot analysis for $PM_{2.5}$ or PM_{10} is warranted.

MSAT ANALYSIS

FHWA's Interim Guidance (the Guidance) establishes a three-tiered approach to determine the level of MSAT analysis required by a project-level study. According to the Guidance, the category of exempt projects or projects with no meaningful potential MSAT effects includes:

- Projects qualifying as a categorical exclusions;
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

Additionally, the Guidance indicates that for projects with negligible traffic impacts no MSAT analysis is recommended. It is further noted in the Guidance that "the types of projects categorically excluded under 23 CFR 771.117(d) or exempt from conformity rule under 40 CFR 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact." Projects in this category do not require either a qualitative or a quantitative analysis for MSATs, although documentation of the project category is required.

The primary purpose of the LIRR Expansion Project is to improve rail service, reliability, and public safety along the LIRR Main Line segment between Floral Park and Hicksville. This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the Proposed Project.

Moreover, USEPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with USEPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from the Proposed Project.

Since the Proposed Project falls into the category of those resulting in no meaningful impacts on traffic volumes or vehicle mix, it would not be of air quality concern and, therefore, does not warrant either a qualitative or a quantitative analysis for MSATs.

D. EXISTING CONDITIONS

Existing air quality conditions in the Study Area can be reflected through the current status of NAAQS attainment and recent ambient air monitoring data.

NAAQS ATTAINMENT AND TIP INCLUSION STATUS

Nassau County, within which the Study Area lies, has been designated as:

- Moderate nonattainment area for the O_3 standard.
- Maintenance area for $PM_{2.5}$ and CO standards.
- Attainment area for all other criteria pollutant standards.

The Proposed Project has not been listed in the most recent 2014-2018 TIP developed for purposes of demonstrating SIP conformance. However, if the Proposed Project is approved, once the preferred alternative is determined through the SEQRA process, the Proposed Project would be included in the TIP. The Proposed Project is considered a part of MTA LIRR Mainline Corridor Planning study (#NSMC800V) listed in the long range plan, *Plan 2040*.

REVIEW OF AMBIENT MONITORING DATA

The CAA requires every state to establish a network of air-monitoring stations for criteria pollutants, using specified methods and procedures for their location and operation as set by the USEPA. The ambient air quality monitoring network was established to monitor potential statewide air quality problems based on a variety of considerations, such as SIP conformance requirements, hot spots (localized locations with potential high pollutant concentrations) for a specific critical pollutant, potential downwind high concentrations near major emitting sources, high population densities with high levels of community activities, and the state's geography. Therefore, the state network was installed by focusing on potential worst-case areas for a specific pollutant, while also considering the need to achieve statewide coverage.

The published data for the most recent three years (2013, 2014, and 2015) for the monitoring stations nearest to the Study Area are used to describe existing ambient air quality in the Study Area (**Table 11-2**). The measured ambient air concentrations closest to the Study Area were all well below the corresponding NAAQS, except for exceedances of the 8-hour ozone standard. These data are consistent with the attainment and nonattainment area designations of the Nassau County area as discussed previously.

Table 11-2
Ambient Monitored Air Concentrations

Pollutants	Average Time	Station	2015	2014	2013	3-yr Average	NAAQS	Unit
CO	1-hr	Queens College, Queens	2.1	1.9	2.0	--*	35	ppm
	8-hr	Queens College, Queens	1.2	1.1	1.4	--	9	ppm
NO_2	1-hr	Queens College, Queens	63.4	58.5	58.6	60.2	100	ppb
	Annual	Queens College, Queens	17.2	16.8	17.5	17.1	53	ppb
SO_2	1-hr	Eisenhower Park, Nassau	6.0	9.6	6.0	7.2	75	ppb
$PM_{2.5}$	24-hr	Eisenhower Park, Nassau	17.8	19.2	23.9	20.3	35	ug/m^3
	Annual	Eisenhower Park, Nassau	7.3	7.4	8.7	7.8	12	ug/m^3
O_3	8-hr	Babylon, Suffolk	0.072	0.066	0.078	0.072	0.070	ppm

Source: NYSDEC Ambient Air Quality Report.
Note: 3-year average is not relevant for CO. CO NAAQS level may only be exceeded once per year.

On a more local or microscale level, the extensive traffic queues documented in Chapter 10, "Transportation," at the seven grade crossings, result in an increase in emissions of motor vehicle-related pollutants at these locations. These emissions can adversely impact ambient concentrations of CO, NO_2, and respirable particulate matter at nearby sidewalks, public open spaces, schools, residences and other sensitive locations.

E. FUTURE WITHOUT THE PROPOSED PROJECT

Under the future condition without the Proposed Project, the air quality conditions within the Study Area would essentially remain the same as the existing condition described previously, with some improvements expected to occur over the years resulting from federal and statewide efforts to reduce pollution and improved combustion technology as older vehicles are replaced with vehicles with newer and cleaner engines. However, in areas surrounding the grade crossings, these reductions in pollutant emissions due to vehicular turnover (i.e., newer, more efficient, lower pollutant-emitting vehicles replacing older, higher-emitting ones) would be, in part, offset by increased emissions from additional queued vehicles and delay at these locations. As shown in Chapter 10, "Transportation," in 2040 Without the Proposed Project, the queue lengths at some locations would increase to over 40 vehicles in the peak hour. Without the Proposed Project, these emissions would continue to be generated by vehicles delayed at the crossings.

The LIRR's Green Locomotive Project to replace the aging freight locomotive fleet with remanufactured or new cleaner models would also reduce freight operational emissions and contribute to the future improvement of air quality conditions in the region.

F. POTENTIAL IMPACTS OF THE PROPOSED PROJECT

Based on the forecasts of 2020 and 2040 traffic conditions within the areas of New Hyde Park, Mineola, and Westbury, as described in Chapter 10, "Transportation," a 3-step CO screening analysis was conducted, per the TEM, to determine whether a microscale dispersion modeling analysis is required on the roadways in the Study Area and/or any other roadways affected by the Proposed Project.

Compared to the Future Without the Proposed Project, the Proposed Project would result in improvements to air quality in the neighborhoods along the corridor due to reduction in idling time at grade crossings. At some local intersections, air quality could be slightly affected due to changes in traffic patterns. Overall, based on the air quality analysis described in this section, air quality in the Study area would be improved with the Proposed Project and thus no significant adverse air quality impacts would occur as a direct result of the Proposed Project.

LEVEL OF SERVICE (LOS) SCREENING

The results of LOS screening are presented in **Tables 11-3** through **11-5**. Intersections with LOS of A, B, or C are excluded from further microscale air quality analysis. Alternative 1 results represent conditions with all seven grade crossings grade separated. Alternative 2 results represent conditions with South 12th Street and Main Street permanently closed and traffic diverted to other crossings.

Table 11-3
LOS Screening within Mineola Area

Number	Intersection	Signalized	Alternative1 ETC	Alternative1 ETC+20	Alternative 2 ETC	Alternative 2 ETC+20
1	Mineola Boulevard / Franklin Avenue at Old Country Road	Yes	Fail	Fail	Fail	Fail
2	Mineola Boulevard at Second Street	Yes	Fail	Fail	Fail	Fail
3	Mineola Boulevard at First Street	Yes	Pass	Fail	Fail	Fail
4	Willis Avenue at Old Country Road	Yes	Pass	Pass	Pass	Pass
5	Willis Avenue at Third Street	Yes	Fail	Fail	Pass	Pass
6	Willis Avenue at Second Street	Yes	Fail	Fail	Fail	Fail
7	Roslyn Road / Washington Avenue at Old Country Road	Yes	Fail	Fail	Fail	Fail
8	Roslyn Road at Second Street	Yes	Fail	Fail	Fail	Fail
9	Main Street at Old Country Road	No	Pass	Pass	Pass	Pass
10	Main Street at First Street	No	Pass	Pass	Pass	Pass
11	Main Street at Second Street	No	Pass	Fail	Fail	Fail
12	Main Street at Front Street (North side of LIRR Tracks)	No	Pass	Pass	Pass	Pass
13	Main Street at Front Street (South side of LIRR Tracks)	No	Pass	Pass	n/a	n/a
14	Main Street at Third Street	No	Pass	Fail	Fail	Fail
15	Willis Avenue at First Street	No	Pass	Fail	Pass	Fail
16	Willis Avenue at Front Street	No	Pass	Pass	Pass	Pass

Table 11-4
LOS Screening within New Hyde Park Area

Number	Intersections	Signalized	Alternative 1 ETC	Alternative 1 ETC+20	Alternative 2 ETC	Alternative 2 ETC+20
1	Covert Avenue at Jericho Turnpike (Rt. 25)	Yes	Fail	Fail	Fail	Fail
2	Covert Avenue at Stewart Avenue	Yes	Pass	Pass	Pass	Pass
3	South 12th Street at Jericho Turnpike (Rt. 25)	Yes	Pass	Pass	Pass	Pass
4	New Hyde Park Road at Jericho Turnpike (Rt. 25)	Yes	Fail	Fail	Fail	Fail
5	New Hyde Park Road at Clinch Avenue	Yes	Pass	Pass	Pass	Pass
6	New Hyde Park Road at Stewart Avenue	Yes	Fail	Fail	Fail	Fail
7	Covert Avenue at Second Avenue	No	Pass	Pass	Pass	Pass
8	Covert Avenue at Second Avenue	No	Pass	Pass	Pass	Pass
9	South 12th Street at Second Avenue	No	Pass	Pass	Pass	Pass
10	South 12th Street at Third Avenue	No	Pass	Pass	Pass	Pass
11	South 12th Street/Jefferson Street at Stewart Avenue	No	Pass	Pass	Pass	Pass

Table 11-5
LOS Screening within Westbury Area

Number	Intersections	Signalized	ETC	ETC+20
1	School Street at Union Avenue	Yes	Fail	Fail
2	School Street at Old Country Road	Yes	Fail	Fail
3	Urban Avenue at Prospect Avenue	Yes	Pass	Pass
4	Urban Avenue at Old Country Road	Yes	Fail	Fail
5	Old Country Road at Belmont Place / Merillon Avenue	Yes	Pass	Pass
6	School Street at Railroad Avenue	No	Pass	Fail
7	Urban Avenue at Broadway	No	Fail	Fail
8	Urban Avenue at Main Street	No	Fail	Fail

CAPTURE CRITERIA SCREENING

Intersections affected by the Proposed Project and exhibiting ETC and ETC+20 LOS D, E, or F were further screened using the following criteria:

- a 10% or more reduction in the source-receptor distance.
- a 10% or more increase in traffic volume on affected roadways.
- any increase in the number of queued lanes.
- a 20% reduction in speed, when build estimated average speed is at 30 mph or less.

The Proposed Project would only have the potential to change traffic patterns around stations or grade crossings, potentially causing localized increases in volumes around certain intersections. **Tables 11-6** through **11-8** provide a list of intersections that fail the capture criterion of a 10 percent or more increase in traffic volume on affected roadways and require further screening.

Table 11-6
Capture Criteria Screening within Mineola Area

Number	Intersections	Signalized	Alternative 1 ETC	Alternative 1 ETC+20	Alternative 2 ETC	Alternative 2 ETC+20
1	Mineola Boulevard / Franklin Avenue at Old Country Road	Yes	Pass	Pass	Pass	Pass
2	Mineola Boulevard at Second Street	Yes	Pass	Pass	Pass	Pass
3	Mineola Boulevard at First Street	Yes	N/A	Pass	Pass	Pass
5	Willis Avenue at Third Street	Yes	Fail	Fail	N/A	N/A
6	Willis Avenue at Second Street	Yes	Fail	Fail	Pass	Pass
7	Roslyn Road / Washington Avenue at Old Country Road	Yes	Pass	Pass	Pass	Pass
8	Roslyn Road at Second Street	Yes	Pass	Pass	Pass	Pass
11	Main Street at Second Street	No	N/A	Pass	Fail	Fail
14	Main Street at Third Street	No	N/A	Fail	Fail	Fail
15	Willis Avenue at First Street	No	N/A	Fail	N/A	Pass

Note: "N/A" indicates an intersection that passes the first level LOS screening.

Table 11-7
Capture Criteria Screening within New Hyde Park Area

Number	Intersections	Signalized	Alternative 1 ETC	Alternative 1 ETC+20	Alternative 2 ETC	Alternative 2 ETC+20
1	Covert Avenue at Jericho Turnpike (Rt. 25)	Yes	Pass	Pass	Pass	Pass
4	New Hyde Park Road at Jericho Turnpike (Rt. 25)	Yes	Pass	Pass	Pass	Pass
6	New Hyde Park Road at Stewart Avenue	Yes	Pass	Pass	Pass	Pass

Table 11-8
Capture Criteria Screening within Westbury Area

Number	Intersections	Signalized	ETC	ETC+20
1	School Street at Union Avenue	Yes	Fail	Fail
2	School Street at Old Country Road	Yes	Pass	Pass
4	Urban Avenue at Old Country Road	Yes	Pass	Pass
6	School Street at Railroad Avenue	No	N/A	Fail
7	Urban Avenue at Broadway	No	Fail	Fail
8	Urban Avenue at Main Street	No	Fail	Fail

Note: "N/A" indicates an intersection that passes the first level LOS screening.

VOLUME THRESHOLD SCREENING

For those intersections that fail capture criteria screening, a comparison of approach traffic volume with the volume threshold was made to determine the need for a microscale air quality analysis. Based on the MOVES predicted CO emission factors for both signalized and stop-and-go intersections, as summarized in **Table 11-9** and **Table 11-10**, the TEM-established volume threshold of 8,000 and 4,000 vehicles per hour are predicted to be applicable for free flow sites and signalized intersections, respectively. The projected highest volumes at all screened sites would be 1,670 for the free flow site of School Street at Railroad Avenue and 749 for the signalized intersection of Willis Avenue at Third Street (see **Table 11-11** and **Table 11-12**). These projected highest volumes are well below the respective screening volume thresholds, therefore no further microscale air quality analysis is warranted.

Table 11-9
Volume Screening Thresholds for Signalized Intersections

Analysis year	Speed (mph)	Free Flow Emission Factor (g/mi)	Queue Emission Factor (g/hr)	Threshold (Vehicles/hr)
ETC	30	1.926	17.13	4,000
ETC+20	30	0.668	5.63	4,000

Table 11-10
Volume Screening Threshold for Two-way Free Flow Sites

Analysis Year	Speed (mph)	Emission Factor (g/mi)	Threshold (Vehicles/hr)
ETC	30	1.926	8,000
ETC+20	30	0.668	8,000

Table 11-11
Volume Screening Thresholds for Signalized Intersections

Alternative	Intersections	Signalized	Volume Threshold	Projected Highest Volume
1	Willis Avenue at Third Street	Yes	4,000	749
	Willis Avenue at Second Street	Yes		722
	School Street at Union Avenue	Yes		695
2	Main Street at Second Street	Yes		481

Table 11-12
Volume Screening for Two-way Free Flow Sites

Alternative	Intersections	Signalized	Volume Threshold	Projected Highest Volume
1	Main Street at Third Street	No	8,000	906
	Willis Avenue at First Street	No		1567
	School Street at Railroad Avenue	No		1670
	Urban Avenue at Broadway	No		1281
	Urban Avenue at Main Street	No		1256
2	Main Street at Third Street	No		927

Consequently, there would be no significant adverse impacts due to CO emissions from the Proposed Project.

CONFORMITY DETERMINATION

As a regionally significant transportation project, the Proposed Project is subject to TCR. Since the Proposed Project is located in an ozone nonattainment and $PM_{2.5}$ and CO maintenance area, according to the TCR, the Proposed Project must originate from a conforming TIP or the Proposed Project must demonstrate its compliance of the NAAQS on a project level.

The Proposed Project is not listed in the most recent 2014-2018 TIP. However as part of MTA LIRR corridor planning study, it is listed in the regional long range transportation plan (i.e., *Plan 2040*). Therefore, after the preferred alternative is established, the preferred alternative would be included in the future TIP designed to ensure the implementation of the goals and objectives identified in the long range transportation plan on a regional level.

Moreover, the East Side Access Final EIS service plan is contained within the NYMTC Regional Transportation Plan and that service plan's higher level of peak period, peak direction service is consistent with service levels projected for the Proposed Project. NYMTC adopted on September 7, 2016, the Transportation Conformity Determination for the FFYs 2017-2021 TIP and the FFYs 2014-2040 Regional Transportation Plan, as amended, in order to demonstrate conformity with the mobile source emissions milestones set forth in the New York State Implementation Plan for Air Quality. Accordingly, although not expressly included in the Regional Plan or TIP, the most recent conformity model results demonstrate the Proposed Project's consistentency with the plan's purpose to eliminate or reduce the severity and number of violations of the NAAQS.

The Proposed Project's CO screening analysis indicates that potential project level CO impacts would not be significant. According to USEPA PM guidance, the Proposed Project is not of air quality concern for $PM_{2.5}$. As such, the Proposed Project is not expected to cause or contribute to violations of the $PM_{2.5}$ NAAQS. Therefore, the Proposed Project would comply with the conformity requirements on both regional and local levels for ozone, CO and $PM_{2.5}$.

G. MITIGATION FOR THE PROPOSED PROJECT

Since no exceedances of applicable CO screening criteria or thresholds were projected to result from the Proposed Project, mitigation is not required. ✷