Chapter 18: Public Health

A. INTRODUCTION

This chapter assesses the potential for the Proposed Actions to affect public health. As defined by the 2021 *City Environmental Quality Review (CEQR) Technical Manual*, public health is the organized effort of society to protect and improve the health and well-being of the population through monitoring; assessment and surveillance; health promotion; prevention of disease, injury, disorder, disability, and premature death; and reducing inequalities in health status. The goal of CEQR with respect to public health is to determine whether adverse impacts on human health may occur as a result of a proposed project and, if so, to identify measures to mitigate such effects. The potential effects of the Proposed Actions were considered with regard to effects on the surrounding community.

The *CEQR Technical Manual* states that a public health assessment is warranted for a specific technical area if there is a significant adverse impact found in other CEQR analysis areas, such as air quality, water quality, hazardous materials, or noise. As described in Chapter 15, "Air Quality," the mobile source analysis determined that the maximum 1-hour and 8-hour average carbon monoxide (CO) and 24-hour ~~and annual incremental~~ particulate matter ($PM_{2.5}$) concentrations are predicted to potentially exceed the National Ambient Air Quality Standard (NAAQS) at one intersection location. In addition, ~~as well as~~ the CO 8-hour and $PM_{2.5}$ incremental 24-hour concentrations are predicted to exceed the CEQR *de minimis criteria* at ~~the same~~two intersection locations. Annual $PM_{2.5}$ concentrations are predicted to exceed the NAAQS at two intersection locations, while incremental concentrations are predicted to exceed the annual *de minimis* criterion at the ~~four~~ five analyzed intersection locations. Therefore, absent mitigation measures, the Proposed Actions have the potential to result in a significant adverse air quality impact. In addition, as identified in Chapter 20, "Construction," construction has the potential to result in construction noise levels that exceed the construction noise impact criteria at receptors near the projected development sites. In addition, as identified in Chapter 17, "Noise," the noise analysis determined that the Proposed Actions have the potential for significant adverse noise impacts ~~cannot be precluded~~. Therefore, this chapter provides a public health assessment of air quality, noise, and construction at these locations. As described in the relevant analyses of this Environmental Impact Statement (EIS), the Proposed Actions would not result in significant unmitigated adverse impacts in any of the other technical areas related to public health.

PRINCIPAL CONCLUSIONS

The analyses presented in this EIS conclude that the Proposed Actions would not result in unmitigated significant adverse impacts in the areas of water quality, or hazardous

materials. The analysis presented in Chapter 15, “Air Quality,” determined that the Proposed Actions would potentially exceed the NAAQS for the maximum CO concentrations at the intersection of Vernon Boulevard and 46th Avenue and the 8-hour CO maximum concentration is predicted to exceed the *de minimis* criterion at the intersection of Vernon Boulevard and 46th Avenue and Vernon Boulevard and 48th Avenue in the With Action condition. The maximum 24-hour $PM_{2.5}$ concentrations are predicted to exceed the NAAQS at the intersection of Vernon Boulevard and 46th Avenue and the *de minimis* criterion at the intersections of ~~Vernon Boulevard and 44th Drive and~~ Vernon Boulevard and 46th Avenue and Vernon Boulevard and 48th Avenue. At the intersections of Vernon Boulevard and 46th Avenue and Vernon Boulevard and 48th Avenue, the total annual $PM_{2.5}$ concentration is predicted to exceed the NAAQS. Furthermore, at each of the ~~four~~ five intersection sites analyzed, the maximum annual incremental $PM_{2.5}$ concentration is predicted to exceed the *de minimis* criterion. This would be considered a significant adverse air quality impact in the absence of traffic mitigation measures. Furthermore, exceedances of NAAQS under the with-action condition also indicates the potential for a public health impact.

Therefore, traffic mitigation measures were examined to avoid any potential significant air quality impacts caused by mobile sources at these intersection locations. Mitigation measures are discussed in Chapter 21, “Mitigation.” As discussed in the Mitigation chapter, CO concentrations would not exceed the *de minimis* criteria, and CO and $PM_{2.5}$ concentrations would not exceed the NAAQS. $PM_{2.5}$ incremental concentrations are predicted to exceed the annual *de minimis* criterion at four ~~each~~ of the ~~four~~ five analyzed sites. ~~Therefore, the air quality impacts identified would not be fully mitigated.~~

However, at each of the affected intersection locations, the Proposed Actions would not contribute to or exacerbate a violation of the $PM_{2.5}$ annual average NAAQS even with the very conservative assumptions relating to traffic and vehicle emissions used in the analysis. Therefore, with the mitigation measures in place, the exceedances of the $PM_{2.5}$ *de minimis* criterion on an annual basis would not constitute a significant adverse impact on public health.

Between the Draft and Final EIS, additional review and evaluation ~~will be~~was performed ~~which is expected~~ to determine ~~that~~ whether the identified impacts related to mobile source annual average $PM_{2.5}$ increments ~~will be~~were avoided. Additional modeling of $PM_{2.5}$ concentrations (Grid Analysis) ~~will be~~was performed using more ~~refined or~~ comprehensive analysis procedures to determine the magnitude and extent of neighborhood-scale $PM_{2.5}$ impacts from mobile sources. ~~It is anticipated that the grid analysis will show that the $PM_{2.5}$ concentrations are below the annual *de minimis* criterion threshold.~~ Other updates ~~may~~ included the use of newer vehicle emissions model data and projections. ~~It is anticipated that these additional measures will reduce $PM_{2.5}$ concentrations below the annual *de minimis* criteria threshold, and consequently the identified impacts related to mobile sources would be deemed to have been avoided.~~ The results of the grid analysis determined that the annual $PM_{2.5}$ *de minimis* criterion was exceeded at both analyzed grids. Therefore, for each of the analyzed intersections, the air quality impacts identified would remain unmitigated for annual average $PM_{2.5}$.

In terms of operational noise, Noise Passenger Car Equivalent (PCE) proportional analysis presented in Chapter 17, "Noise," resulted in significant noise increases (up to ~~3.6~~3.4 dBA) and potential significant adverse noise impacts at residences located at 9-

01 44th Drive ~~Monitoring Locations 5, 8, 13, and 16~~ due to the Proposed Actions. ~~Therefore, the Proposed Actions could result in significant adverse noise impacts at noise receptors other than the future projected and potential development sites. Between the Draft and Final EIS, further assessment and mitigation measures will be considered for these potential impacts.~~ With that said, the predicted overall changes in noise levels would not be large enough to significantly affect public health. Therefore, no significant adverse public health impacts related to operational noise are expected as a result of the Proposed Actions.

In terms of construction noise, the construction analysis presented in Chapter 20, "Construction," determined that there are areas surrounding each of the analyzed development sites where construction noise would result in a significant adverse impact. However. the predicted overall changes in noise levels would not be large enough to significantly affect public health. Therefore, no significant adverse public health impacts related to construction noise are expected as a result of the Proposed Actions.

B. METHODOLOGY

AIR QUALITY

A quantitative assessment of emissions from traffic generated by the Proposed Actions was performed to evaluate the potential for air quality impacts, as described in Chapter 15, "Air Quality." The *CEQR Technical Manual* thresholds for CO and particles with an aerodynamic diameter less than 2.5 microns in diameter ($PM_{2.5}$) include NAAQS. The NAAQS represent levels that are requisite to protect public health, allowing an adequate margin of safety. In addition, *de minimis* criteria, which are quantified based on the incremental change in concentrations, are used to determine the potential for significant adverse CO and $PM_{2.5}$ impacts under CEQR.

NOISE

The noise PCE analysis and interior noise level assessment presented in Chapter 17, "Noise," was used to identify the extent of the potential traffic noise exposure to the public as a result of the Proposed Actions. The *CEQR Technical Manual* thresholds for operational noise are based on quality-of-life considerations. In this chapter, the potential for the traffic noise exposure identified in Chapter 17, "Noise," to affect the health of the affected population is evaluated.

CONSTRUCTION NOISE

The construction noise analysis presented in Chapter 20, "Construction," was used to identify the extent of the potential construction-period noise exposure to the public as a result of the Proposed Actions. The thresholds for construction noise are based on quality-of-life considerations. In this chapter, the potential for the construction-period noise exposure identified in Chapter 20, "Construction," to affect the health of the affected population is evaluated.

C. PUBLIC HEALTH ASSESSMENT

AIR QUALITY

WITH ACTION CONDITION

As discussed in Chapter 15, "Air Quality," at ~~one of~~ the ~~four analyzed~~ intersection~~s~~ of Vernon Boulevard and 46th Avenue, the 1-hour and 8-hour CO maximum concentrations are predicted to be ~~57.8~~65.56 µg/m^3 and ~~20.4~~23.28 µg/m^3 respectively, which exceed the NAAQS. The maximum 24-hour and annual $PM_{2.5}$ concentrations are predicted to be ~~65.6~~78.51 µg/m^3 and ~~14.46~~ 14.92 µg/m^3 respectively, which exceed the NAAQS, as well. In addition, at the intersection of Vernon Boulevard and 48th Avenue, the maximum annual $PM_{2.5}$ concentration is predicted to be 10.55 µg/m^3, which exceeds the NAAQS. The analysis demonstrated no exceedances of the 1-hour and 8-hour CO NAAQS and $PM_{2.5}$ 24-hour and annual NAAQS at the other ~~three~~ intersections. In addition, an exceedance of the $PM_{2.5}$ 24-hour *de minimis* threshold was identified at the intersections of Vernon Boulevard and 46th Avenue and Vernon Boulevard and 48th Avenue, and an exceedance of the $PM_{2.5}$ annual *de minimis* threshold was identified at all ~~four~~ five intersections. Exceedance of 8-hour CO *de minimis* threshold was identified at ~~one~~ two intersections, at Vernon Boulevard and 46th Avenue and Vernon Boulevard and 48th Avenue. The exceedances summarized above would be considered a significant adverse air quality impact.

WITH ACTION WITH-MITIGATION CONDITION

As discussed in Chapter 21, "Mitigation," with the proposed mitigation measures in place, at all analyzed intersections, concentrations would not exceed the CO and $PM_{2.5}$ NAAQS. Concentrations would also not exceed the CO 8-hour and $PM_{2.5}$ 24-hour *de minimis* standards at all ~~four~~ five intersections. However, $PM_{2.5}$ incremental concentrations are predicted to exceed the annual $PM_{2.5}$ *de minimis* criterion at ~~each~~ four of the ~~four~~ five analyzed sites.

LIMITATIONS OF DISPERSION MODELS

Chapter 15, "Air Quality," and Chapter 21, "Mitigation," provide the results of microscale analyses that evaluated the potential effect of the Proposed Actions on air pollutant concentrations at critical intersections from the emission of pollutants from mobile sources and their dispersion in the surrounding areas. The emissions and dispersion models utilized available traffic data from different periods of the day; however, for certain periods of the day where traffic data was not available (e.g., overnights, weekend off-peak periods), traffic model outputs from the most representative periods were used in the air quality analysis, which resulted in some hours of the 24-hour weekday and weekend periods utilizing more conservative traffic conditions.

Furthermore, as described in that chapter, the air pollutant dispersion models used in the analysis mathematically simulate how vehicle characteristics, meteorology, and physical configuration combine to affect pollutant concentrations. The mathematical expressions and formulations contained in the various models attempt to predict an extremely complex physical phenomenon as closely as possible. However, because all models contain simplifications and approximations of actual conditions and interactions, and

since it is necessary to predict the reasonable worst-case condition for regulatory purposes, most dispersion analyses predict conservatively high concentrations of pollutants, particularly under adverse meteorological conditions.

POTENTIAL EFFECT ON PUBLIC HEALTH

As the traffic analysis and mobile source air quality impact analysis indicated, without the proposed traffic mitigation measures, the proposed actions would significantly increase traffic volumes and reduce vehicle travel speeds in portions of the study area, which would lead to CO and $PM_{2.5}$ concentrations exceeding the relevant NAAQS along some traffic corridors. This would indicate a potential public health impact related to air quality.

With the proposed traffic mitigation measures in place, the maximum incremental increase in $PM_{2.5}$ concentration was predicted to exceed the *CEQR Technical Manual de minimis* criterion on an annual basis. However, it should be noted that the *de minimis* criteria by itself is not a direct indicator of unhealthy air quality. When added to the current measured background concentration at the nearest representative DEC monitoring station (7.6 µg/m^3, measured at JHS 126 in Brooklyn), the maximum total concentration is 8.~~44~~ 23 µg/m^3, which is below the NAAQS of 9 µg/m^3 (see Table 15-~~18~~15). The NAAQS are established at a level that reduces risk sufficiently that is protective of public health with an adequate margin of safety. Future background concentrations are expected to be lower, continuing a long-term trend in improvements in ambient air quality, due to ongoing efforts at the state and local levels to improve air quality. These include DEC's implementation plans for regional haze, the New York City Climate Mobilization Act and the New York State Climate Leadership and Community Protection Act, which seek to reduce emissions from fossil fuels through the use of renewable energy sources and increased energy efficiency. In addition, on December 15, 2021, the New York City Council passed a bill that would effectively ban the installation of most new natural gas and other fossil fuel-fired systems in buildings in New York City prior to the Build Year for the Proposed Actions.

The prediction of future $PM_{2.5}$ concentrations from the Proposed Actions are based on very conservative assumptions of future traffic conditions and vehicle emissions (in particular, the analysis does not assume any significant change in current utilization of gasoline and diesel-powered vehicles versus electric vehicles). When accounting for the above-mentioned factors, the incremental $PM_{2.5}$ concentrations from mobile sources associated with the Proposed Actions mobile sources is anticipated to be lower in the 2035 analysis year as compared to current projected levels.

With the proposed mitigation measures in place, the Proposed Actions would not contribute to or exacerbate a violation of the $PM_{2.5}$ NAAQS even with the very conservative assumptions relating to traffic used in this analysis. Therefore, the exceedances of the $PM_{2.5}$ *de minimis* criterion on an annual basis would not constitute a significant adverse impact on public health.

NOISE

Prolonged exposure to high noise levels has the potential to decrease quality of life by disrupting sleep or interfering with conversations. Chronic noise exposure may raise blood pressure and has also been suggested to contribute to myocardial infarctions. Prolonged exposure to levels above 85 dBA will eventually harm hearing. Noise

assessment results from Chapter 17, “Noise,” inform whether there would potentially be exceedances of allowable noise levels that may result in public health impacts.

As detailed in Chapter 17, “Noise,” mobile sources that would be generated by individual developments under the Proposed Actions were assessed to evaluate the potential for mobile source noise impact on existing noise receptors. Chapter 17, "Noise," presents future increases in traffic with the Proposed Actions based on the Noise Passenger Car Equivalent (PCE) proportional analysis results. Based on noise PCE proportional analysis and interior noise level assessment, residences at 9-01 44th Drive~~, Monitoring Locations 5, 8, 13, and 16~~ resulted in significant noise increases (up to ~~3.4~~63.4 dBA) and interior L_{10} noise level up to 47.4 dBA, which is approximately 2.4 dBA higher than interior L_{10} noise level threshold for residential uses. ~~and~~ Therefore, potential significant adverse noise impacts would occur at 9-01 44th Drive as a result of ~~due to~~ the Proposed Actions. ~~Therefore, the Proposed Actions could result in significant adverse noise impacts at existing noise receptors. Between the Draft and Final EIS, further assessment and mitigation measures will be considered for these potential impacts.~~ In terms of public health, considering that the CEQR impact guideline is aimed at reducing noise nuisance and improving quality of life for City residents, a noise increment higher than the CEQR ~~target~~ threshold does not necessarily indicate public health concerns. The highest total L10 noise level generated by this increased traffic is well below 85 dBA. Therefore, it is not expected that potential noise impacts would be sufficiently large or widespread to raise the potential for significant adverse public health impacts and further analysis is not warranted.

CONSTRUCTION NOISE

The construction noise analysis in Chapter 20, “Construction,” characterizes construction duration into “short-term” and “long-term” and states that construction noise is not likely to require analysis unless it “affects a sensitive receptor over a long period of time.” Consequently, the construction noise analysis considers the potential for construction of a project to create high noise levels (the “intensity”), whether construction noise would occur for an extended period of time (the “duration”), and the locations where construction has the potential to increase noise (“receptors”) in evaluating potential construction noise effects.

Noise level increases that would be considered “objectionable” (i.e., equal to or greater than 15 dBA) lasting 12 consecutive months or more and noise level increases that would be considered “very objectionable” (i.e., equal to or greater than 20 dBA) lasting three consecutive months or more could also be considered significant impacts.

As discussed in Chapter 20, “Construction,” noise levels resulting from construction on representative Development Sites were calculated (including results from the *Jamaica Rezoning EIS* Projected Development Sites 29, 48, and 67 referred to as development sites J29, J48, and J67, respectively) in order to represent the potential construction noise effects from each of the projected development sites throughout the Project Area where construction would be at least 24 months long (i.e., not “short-term”). No significant adverse construction noise impacts are expected from construction of development sites whose construction duration would be considered short-term (less than 24 months). Based on the level of noise from construction at each projected development site and the

duration of construction at each site, the significance of construction noise effects from each projected development site was determined.

Specifically, construction at these development sites was predicted to produce noise levels up to approximately 100 dBA $L_{eq(1)}$ at locations up to 27 feet from the site boundaries. Noise levels from construction would be lower with increased distance from the work areas. Measured existing noise levels in the study area were between 57 and 81 dBA.

At locations predicted to experience an exceedance of the noise impact threshold criteria outlined above, the exceedances would be due principally to noise generated by on-site construction activities (rather than construction-related traffic). The noise analysis examined the reasonable worst-case peak hourly noise levels that would result from each major construction phase, and consequently is conservative in predicting significant increases in noise levels. Typically, the loudest hourly noise level during each phase of construction would not persist throughout the entire phase.

Construction associated with the Proposed Actions would be required to follow the requirements of the New York City Noise Control Code (Noise Code) for construction noise control measures. Specific noise control measures will be described in a noise mitigation plan required under the Noise Code. These measures could include a variety of source and path controls. Even with these measures, the analysis presented in Chapter 20, “Construction,” found that predicted noise levels due to construction-related activities would result in increases in noise levels that would exceed the impact criteria. The construction analysis determined that there are areas surrounding each of the analyzed development sites where construction noise would result in a significant adverse impact. Noise-sensitive uses (i.e., residences, open space, community facilities, and commercial office) within the impact zones (as shown in Figure 20-2 of Chapter 20) would have the potential to experience significant adverse construction noise impacts under the Proposed Actions. However, construction noise impact thresholds are based on quality-of-life considerations. These differ from public health considerations, which employ distinct criteria that are appropriate in the public health context. For example, chronic noise exposure may raise blood pressure and has been suggested to contribute to myocardial infarctions and to interfere with language development in children. Prolonged exposure to levels above 85 dBA will eventually harm hearing, or episodic and unpredictable exposure to short-term impacts of noise at high decibel levels may also affect health.

Although the thresholds for significant adverse impacts are predicted to be exceeded at certain locations during construction, the magnitude and duration of these exceedances would not constitute a significant adverse public health impact. Although maximum $L_{eq(1)}$ noise levels may reach or exceed 85 dBA during some phases of construction, because the buildings at nearby building receptors would provide at least 25 dBA window/wall attenuation, occupants of receptor buildings would experience interior noise levels much lower than exterior noise levels and below the 85 dBA. As such, construction as a result of the Proposed Actions would not have the potential to result in prolonged exposure to noise levels above 85 dBA at any of these receptor locations or others in the study area. Further, the analysis in this EIS is based on RWCDS conceptual site plans and construction schedules, with the possibility that the actual construction may be of less magnitude in which case construction noise would be less than the analysis predicts.

Therefore, given the potential for noise effects related to construction sources would be temporary, localized, and would not likely be short-term high decibel levels, no significant adverse public health impact related to construction noise is expected as a result of the Proposed Actions. ✷