12. PRELIMINARY NEPA PROCESS INTEGRATION

12.1 Overview of the NEPA Process

The National Environmental Policy Act (NEPA), signed into law on January 1, 1970, establishes environmental policies and goals for federal agencies to incorporate in their decision-making process. The law applies to any federal action that may have an effect on the environment, including both physical improvements and policies/programs. Although the jurisdiction of the Route 440/Routes 1&9T project falls under local entities, Jersey City and the New Jersey Department of Transportation (NJDOT), Route 440 is part of the National Highway System (NHS). NJDOT's maintenance of Route 440 is funded with federal dollars, and as such, any action taken in regard to Route 440 requires NEPA review.

There are three levels of environmental analysis under the NEPA process: Categorical Exclusion, Environmental Assessment, and Environmental Impact Statement. A Categorical Exclusion (CE) applies only to projects which do not "individually or cumulatively have a significant effect on the human environment" (40 CFR 1508.4). These are projects that experience has shown to have little to no environmental impact, and as a result, extensive environmental analysis is not warranted. Each federal agency maintains a list of project types that are considered CE projects. These typically include the routine maintenance of structures and temporary installations of scientific equipment in sensitive habitats for the purposes of environmental study.

Projects that are not included on the list of CE projects and that are likely to have some environmental effects are analyzed under either the Environmental Assessment (EA) or Environmental Impact Statement (EIS) process. Technically, federal agencies first prepare an EA for a project. If the project is found to have no significant adverse impacts on the environment, a Finding of No Significant Impact (FONSI) is prepared. However, if the project is found to have significant impacts, the next step is to prepare an EIS, which requires more extensive documentation and public outreach, including hearings.

In practice, most federal agencies determine at the outset of environmental review process whether it is likely that the project will have significant impacts. If the lead agency decides that significant impacts are likely or if the project is controversial enough to warrant public hearings, an EIS may be prepared without first preparing an EA.

The NEPA process ensures that environmental information is available to public officials and citizens before decisions are made and actions are taken. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

In accordance with NEPA, this study was conducted to identify and evaluate a number of potential alternatives to address the project purpose and need and to support the goals and objectives of the Circulation Element of the Jersey City Master Plan. The outcome is the identification of a locally preferred alternative (LPA) for the corridor, and a preliminary locally preferred alternative for through truck diversions. This study also identifies some of the potential environmental impacts of the LPAs.

Evaluation of alternatives should present the proposed action and all the alternatives in comparative form, to define the issues and provide a clear basis for choice among the options. NEPA regulations require agencies that seek to advance a project to:

- Rigorously explore and objectively evaluate all reasonable alternatives, and, for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated
- Devote substantial treatment to each alternative considered in detail, including the proposed action so that reviewers may evaluate their comparative merits
- Include reasonable alternatives not within the jurisdiction of the lead agency
- Include the alternative of no action
- Identify the agency's preferred alternative or alternatives, if one or more exists, in the draft statement and identify such alternative in the final statement unless another law prohibits the expression of such a preference
- Include appropriate mitigation measures not already included in the proposed action or alternatives.

This concept development study is an initiation of the NEPA process. It provides an evaluation of a range of alternatives and identifies potential environmental issues and concerns to be addressed in detail in the preparation of the Categorical Exclusion Document (CED), Environmental Assessment Statement (EAS) or Environmental Impact Statement (EIS). Determination of the specific environmental documentation to be completed will be made in consultation with the NJDOT during a subsequent phase of project development. The following sections summarize the primary environmental issues that will be addressed in detail during the preliminary engineering phase of project advancement.

12.2 Preliminary Environmental Analyses Constraints

The following sections summarize the findings of the preliminary environmental analyses performed by this study (detailed in Section 4). The results of these survey-level analyses provide insight into the best route of environmental review under NEPA.

12.2.1 Hazardous Materials

The study area contains 71 known contaminated sites. Seven of these sites are monitored under NJDEP's Classification Exception Areas (CEA)/ Well Restriction Area program. These are sites where New Jersey Ground Water Quality Standards (NJGWQS) have been exceeded for specific pollutants. The pollutants identified in CEAs have the potential to migrate with groundwater flows. The most significant of the CEA sites is the PJP Landfill, which is included in the known contaminated sites list. The groundwater at this location is contaminated with volatile organic compounds and metals.

Field testing (Phase II environment site assessment) will be required during the preliminary engineering phase of project development to determine the extent of contamination in areas that will be disturbed by the anticipated redevelopment of the Route 440/Routes 1&9T corridor.

12.2.2 Flood Zones

Several areas designated as 100-year flood zones, designated Zone AE and AH, are found between the Hackensack River waterfront and the Route 440/Routes 1&9T alignment (Figure 4.1). Zone AE covers portions of the study area west of Routes 1&9T from NJ Route 7 to Lincoln Highway, encompassing sections of the Route 1&9T right-of-way. Zone AE extends east across the corridor and encompasses the majority of Lincoln Park between Duncan Avenue and Communipaw Avenue as well. Zone AH extends southward from Lincoln Highway/Communipaw Avenue to the NJ Turnpike Newark Bay extension, covering a number of areas west of Route 440. Affected properties within Zone AH also include portions of the Route 440 right-of-way, primarily north of Culver Avenue and south of Kellogg Street. The flood zones in the study area have an established 100-year base flood elevation of nine feet. Any proposed construction work located in the identified flood zones would require special consideration if the improvements are proposed to be constructed at an elevation lower than nine feet.

The LPA incorporates an increase in the elevation of the existing roadway in the central section from Danforth Avenue to Communipaw Avenue. The roadway surface is to be raised to an elevation of approximately 14 feet. Minor increases in surface elevations of one to two feet will be required to raise the roadway surface above the existing flood elevation in the section north of Communipaw Avenue.

12.2.3 Stormwater Management

Construction of a new or reconstructed roadway holds the potential to increase impervious cover, affecting stormwater runoff, recharge and water quality. The area that will be affected by construction of the LPA currently consists primarily of pervious surfaces including the existing roadway, sidewalks and parking lots. The LPA incorporates extensive landscaping and pervious surfaces as described in Section 8 and in the Urban Design Guidelines (Appendix 10.1), which minimizes the amount of impervious cover within the study area. Future redevelopment of the surface parking lots may include incorporation of green roofs to reduce stormwater runoff. During the preliminary engineering phase of project development, a detailed assessment of the effects of constructing the LPA on stormwater runoff will be required. This will likely require quantification of the potential future stormwater runoff quantities from the LPA, as well as the development of the adjacent neighborhoods, in determining the appropriate design solutions for providing adequate facilities for the management of stormwater along the corridor. Strategies to eliminate existing flooding on nearby local streets should also be examined.

12.2.4 Wetlands

NJDEP mapping indicates 20 areas of mapped wetlands within the primary study area. The most significant widening of the corridor will occur within the central section between Danforth Avenue and Communipaw Avenue. Existing wetlands were not identified in this area. Two areas of wetlands were identified within the Hackensack River Edge growth area between Duncan Avenue and Sip Avenue. These wetlands come within 20 feet of the existing Routes 1&9T. Typically, a 50-foot buffer is assumed to be required when work is to be conducted in the vicinity of mapped wetlands. Widening of the corridor is expected in this area. Disturbance of wetlands requires wetlands take permits and mitigation at a ratio ranging from 2:1 to 4:1, based on the quality of the resource. However, ongoing redevelopment of the site may already provide for wetlands mitigation, and additional investigation is required.

Field reconnaissance during the preliminary engineering phase of project development will be required to confirm the presence and quality of these wetland areas and identify other wetland resources not included in the NJDEP's generalized mapping. A threatened and endangered species survey is usually required when habitat areas, including wetlands, are identified within an area proposed for development. This survey may be conducted concurrently with the wetland field assessment.

12.2.5 Green Acres/Sensitive Land Uses

Lincoln Park, a Green Acres facility located in the northern section of the study area corridor bisected by Routes 1&9T represents a notable regulatory constraint. Lincoln Park was created by the former Hudson County Parks Commission and is covered by the NJ Green Acres program. The Parks Commission was established under New Jersey Revised Statutes 40:37-96 to 40:37 174. Within this enabling legislation, RS 40:37-133 addresses the obligation of the Parks Commission to "keep and maintain its parks system perpetually for the public benefit without extraneous diversions". The entire park property was purchased in fee to remain as a recreational facility. Consequently, any taking of parkland for non-recreational uses, including road widening projects, is subject to the Green Acres vacation process. The vacation process can take up to a year, involves public hearings, and is focused on the replacement of recreational land with undeveloped land of equal recreational value (as opposed to financial compensation), which is scarce in Hudson County.

While the Parks Commission has been abandoned, the park properties created by the Commission are still bound by the conditions of the enabling legislation. Accordingly, simple acquisition of property within Lincoln Park for non-park use is prohibited. For these reasons, impacts to Lincoln Park related to the construction of the LPA are to be avoided.

Holy Name cemetery, operated by the Roman Catholic Archdiocese, is located north of Lincoln Park on the east side of the Routes 1&9T right-of-way. The cemetery abuts the existing highway right of way. Impacts to this civic resource are best avoided.

12.2.6 Cultural Resources

Within the Route 440/Routes 1&9T corridor primary study area 33 resources of potential concern were identified including historic architectural resources, potential archaeological resources, landscape resources, and linear transportation features. Ten of the 33 cultural

resources identified as being of potential concern have been previously evaluated and have received historic designations or formal opinions concerning their eligibility for inclusion in the New Jersey and National Registers of Historic Places. Listing on either the New Jersey or National Register of Historic places confers specific protections to resources that have met the criteria established by either the State Historic Preservation Officer (for the New Jersey Register) or the Secretary of the Interior (for the National Register). These resources are as follows:

1. ***Morris Canal*** – listed in the New Jersey and National Registers of Historic Places (NJ/NRHP)
2. ***Lehigh Valley Railroad Historic District*** – SHPO opinion of eligibility
3. ***Lincoln Park*** – SHPO opinion of eligibility
4. ***Pulaski Skyway/U.S. Route 1 & 9 Corridor Historic District*** – SHPO opinion of eligibility
5. ***New Jersey Railroad Bergen Cut Historic District*** – SHPO opinion of eligibility
6. ***Jersey City Waterworks Pipeline*** – SHPO opinion of eligibility
7. ***Pennsylvania Railroad (PATH) Bridge*** – SHPO opinion of eligibility (individual; also contributing resource within Hackensack River Lift Bridge Historic District and New Jersey Railroad Bergen Cut Historic District)
8. ***Pennsylvania Railroad (Conrail/CSX) Harsimus Branch Bridge*** – SHPO opinion of eligibility (individual; also contributing resource within Hackensack River Lift Bridge Historic District and New Jersey Railroad Bergen Cut Historic District)
9. ***Wittpenn Bridge*** – SHPO opinion of eligibility (individual; also contributing resource within Hackensack River Lift Bridge Historic District and New Jersey Railroad Bergen Cut Historic District)
10. ***Hackensack River Lift Bridge Historic District*** – SHPO opinion of eligibility

While the LPA avoids these resources, the potential for impact to these resources as a result of the proximity of the proposed construction activity and long-term use of the proposed Route 440/Routes 1&9T improvements requires more detailed analysis in the preliminary engineering phase of project development.

12.2.7 Preliminary Geotechnical Evaluation

The surficial soils throughout the Route 440/Routes 1&9T study area are typically Fill, comprised of a wide range of materials. The thickness of the Fill can vary significantly, and is generally underlain by soft silt intermixed with organics, quite often with a high percentage of organics. Some of this Fill may be contaminated with hazardous materials.

A majority of the soil boring data available for review is from the 1960s, and modifications to the land may have occurred since the original soil survey report and boring tests. Modification to the land are currently being made as part of the environmental remediation efforts associated with the Bayfront and the NJCU West Campus redevelopments. Accordingly, detailed pavement and foundation designs to be developed as part of the preliminary engineering phase of project development will require new soil borings along and within the area of proposed reconstruction.

12.2.8 Local Plans and Policy Compliance

The Route 440/Routes 1&9T corridor is the site of several on-going public and private redevelopment efforts. Additionally, the proposed redevelopment of the corridor as an urban boulevard with improved circulation and economic development potential is consistent with the Jersey City Master Plan Circulation Element, adopted in April 2009. In terms of these efforts, the Route 440/Routes 1&9T project is consistent with local plans and initiatives.

Prohibiting through truck traffic on the corridor or reconfiguring the corridor in a manner that constrains or diverts heavy through truck traffic would be inconsistent with state and federal policies regarding the movement of interstate commerce shipments. If through truck traffic along the corridor were to be prohibited or otherwise restricted, continued compliance with state and federal policies would require removal of the highway from the National Network. Section 685.11(d) of Title 23 of the US Code requires that any deletion of any specific segment of the approved National Network be approved by the Federal Highway Administration (FWHA). This action can be initiated by the FWHA or by request from the governor or an authorized representative of the state. Justification for the request is to be based on the following:

- Analysis of safety problems.
- Economic analysis on interstate commerce.
- Analysis and recommendation of alternate routes.

- Evidence of consultation with local governments.

As part of the process for removal of the corridor from the National Network, a viable alternate route for use by heavy trucks must be identified. While the study developed a range of alternatives to attract heavy trucks to alternate routes, these alternatives are not considered truly equivalent in terms of travel time and cost.

It is important to note that, although through truck diversion preliminary and potential locally preferred alternatives were developed as part of this study, the Locally Preferred Alternative for the corridor has been designed to accommodate the movement of heavy trucks along and across the corridor, inclusive of through trucks if necessary. Therefore, the reconfiguration of the corridor as envisioned does not represent a constraint to or a required diversion of truck traffic.

12.2.9 Utilities

The Route 440/Routes 1&9T corridor is crossed by a number of utilities, and others are found within and adjacent to the right-of-way parallel to the existing alignment of the cartway. Construction of the LPA will necessitate relocation of existing subsurface utilities running along and within the corridor, and incorporation of measures to protect the integrity of existing utility infrastructure crossing the corridor. The determination of the extent of potential impact to utilities will be determined in the preliminary engineering phase of project development.

12.3 Environmental Justice

As detailed in section 2.8, five locations with high minority and/or low income populations were identified in the Environmental Justice study area. No Environmental Justice communities were identified in the portions of Bayonne, Kearny, and Newark that were included in the analysis. As part of the evaluation of alternatives and selection of the LPA (section 7) it was determined that the LPA would have some minimal negative traffic impacts to Environmental Justice communities. At the same time, increases in economic opportunity and enhancement in multi modal accessibility between Environmental Justice communities, the project area and other parts of Jersey City provide positive impacts to residents of Environmental Justice communities.

12.4 Noise

A traffic noise impact analysis was conducted to measure potential long-term noise impacts resulting from the redevelopment of Routes 1&9T/Route 440 from its current urban highway into the LPA, a multi-modal urban boulevard. The proposed improvements would alter mobility patterns and land uses presently in the study corridor, in turn affecting the traffic noise exposure to existing and proposed land uses adjacent to the corridor. To quantitatively measure the significance of these changes, a traffic noise monitoring program was conducted to provide a basis for comparison to predicted future traffic conditions. A model was then developed to compare existing conditions to the Build 2050 conditions to determine if the project would cause a significant increase in noise levels.

12.4.1 Noise Background

Environmental noise is defined as the sound in a community emanating from man-made sources such as automobiles, trucks, buses, aircraft, trains, and fixed industrial sources, or from natural sources such as animals and wind. Sound levels are measured in logarithmic units called decibels (dB). An overall measurement of sound results in a single decibel value that describes the sound environment, taking all frequencies (pitches) into account. The human ear, however, does not sense all frequencies in the same manner. The "A"-weighted scale (expressed in dBA units) was developed to closely approximate the human sensory response from highway-related noise.

Since an instantaneous noise measurement (measured in dBA) describes noise levels at just one moment of time, and since very few noises in a community area are constant, other descriptors are used to represent varying sound levels over extended periods of time. The noise level descriptor used for this project is the hourly equivalent sound level (L_{Aeq1h}). L_{Aeq1h} is the steady-state, A-weighted sound level, which contains the same amount of acoustic energy as the actual time-varying, A-weighted sound level over a one-hour period.

Usually, public reaction to noise levels is a function of location (urban, suburban, rural), time of day, fluctuation of noise levels, duration, and individual judgment of the listener. Under normal conditions, a change in noise level of 3 dBA is required for the average person to perceive a difference. Examples of the magnitude of individual change in traffic volume, travel speed, or distance from the noise source to the receptor, necessary to result in a 3 dBA increase are:

- A 100 percent increase in hourly auto traffic volumes with no decrease in speed;
- An increase in vehicular speeds of 15 miles per hour; or
- Reducing the distance by half between the receptor and the highway (assuming pavement is located between the receptor and highway).

12.4.2 Noise Abatement Criteria

The Federal Highway Administration (FHWA) has established Noise Abatement Criteria (NAC) to identify noise impacts from highway projects (Table 12.1). Developed from research data, the criteria represent acceptable maximum desirable noise levels for various land uses and associated human activities.

Federal regulation 23 CFR 772 states that: "Noise impacts occur when the predicted traffic noise levels approach or exceed the noise abatement criteria levels, or when the predicted traffic noise levels substantially exceed the existing noise levels". The New Jersey Department of Transportation (NJDOT) defines noise levels 1 dBA below FHWA's NAC as approaching impact (66 dBA for residential uses, 71 dBA for commercial uses) and 10 dBA above existing noise levels as a substantial increase. The residential criteria apply to all residential uses, even if they are in a mixed use building. For example, ground floor retail criteria would be 71 dBA, and second floor residential criteria would be 66 dBA.

Table 12.1: FHWA Noise Abatement Criteria [L_{Aeq1h} in dBA]

Activity Category	FHWA NAC (dBA)	Description of Activity
A	57 (exterior)	Tracts of land where serenity and quiet are of extraordinary significance and serve an important public need where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, and parks which are not included in Category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72 (exterior)	Developed lands, properties or activities not included in Categories A or B above, including commercial, office and retail uses.
D	--	For requirements on undeveloped land see paragraphs 11a and c of FHPM 7-7-3.
E	52 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

Source: U.S. Department of Transportation, Federal Highway Administration, Federal-Aid Highway Program Manual, Volume 7, Chapter 7, Section 3, August 4, 1982

12.4.3 Ambient Noise Monitoring

Ambient noise monitoring was conducted at three locations to document the existing conditions of the project corridor and to validate the accuracy of the noise model in predicting

traffic sound levels within the study area. Three noise monitoring locations were chosen based on existing and proposed development adjacent to the project corridor and are representative of nearby land uses. These sites (Figures 12.1 through 12.4) were selected to represent distinct sections of the Route 440/Routes 1&9T corridor.

- Lincoln Park Recreation Area – The monitoring location was established on the west side of Routes 1&9T approximately 50 feet from the edge of roadway, representing an area with frequent exterior human activity. The site is ideally placed away from traffic queuing at Communipaw Ave which skews ambient noise readings of vehicle passbys.

- Culver Avenue Commercial/Industrial Area – The monitoring location was established at 317 Route 440 approximately 50 feet from the edge of roadway near Culver Avenue. The primary concern in this section of the study corridor is the redevelopment of industrial parcels into a mixed-use, pedestrian-friendly development pattern that includes outdoor gathering places, such as sidewalk cafes. Located away from vehicles turning into and accelerating from high traffic retail driveways, this monitoring site is ideal for capturing the ambient traffic noise environment in this area since it minimizes wheel and acceleration noise from turning vehicles.

- Country Village Residential Area – This monitoring location was established 25 feet from Route 440 between Suburbia Terrace and Suburbia Court. This site represents an existing residential area. The monitoring site itself is located away from residential entry streets and best minimizes wheel and acceleration noise from turning vehicles.

Monitoring was performed on Tuesday, May 25, 2010 during the evening peak period to document worst-case conditions with the highest vehicle volumes. Traffic volume data recorded during the traffic count program revealed that traffic volumes along the corridor are higher in the PM peak period that in the AM peak period. One twenty-minute aggregate measurement was taken at each site. Traffic volume, speed, and composition data were collected simultaneously with noise monitoring to populate and validate the noise model. A Bruel and Kjaer Model 2236 sound analyzer was used to measure existing sound levels. The analyzer was calibrated then tripod-mounted and equipped with a wind screen to eliminate noise associated with wind blowing across the microphone.

Figure 12.1: Noise Monitoring Sites Along Study Corridor

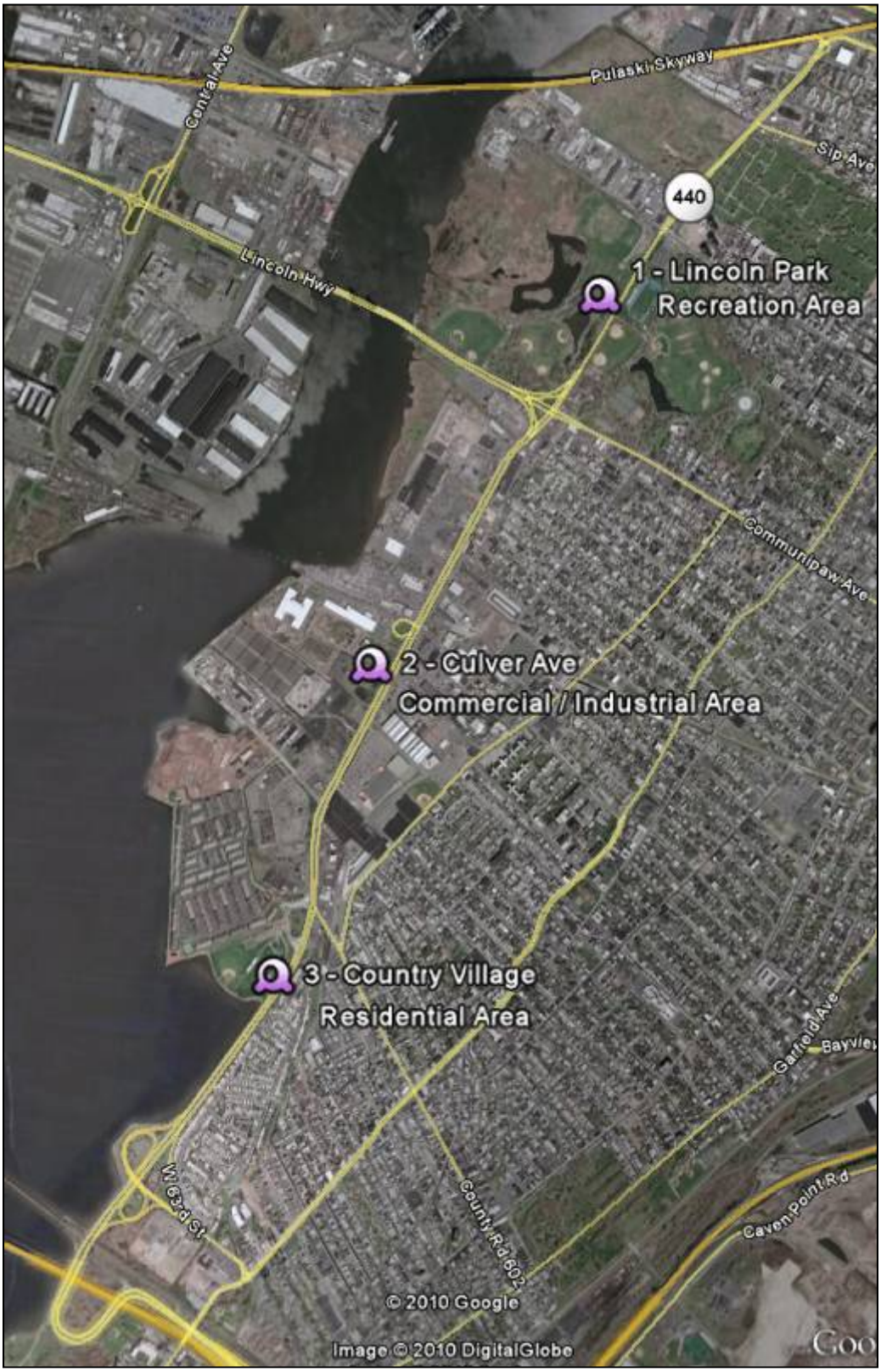

Figure 12.2: Monitoring Site #1, Lincoln Park Recreational Area

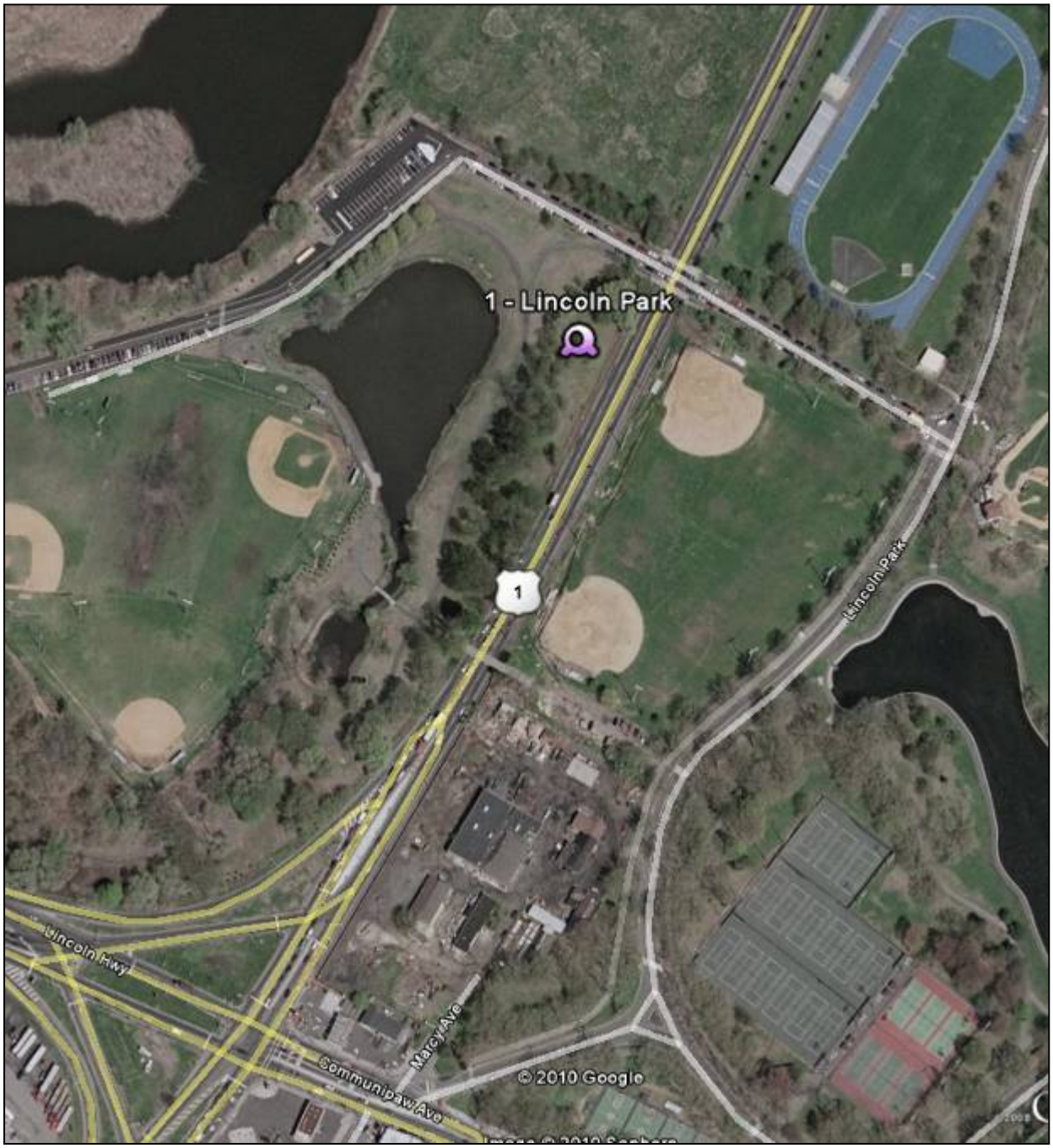

Figure 12.3: Monitoring Site #2, Culver Avenue Commercial / Industrial Area

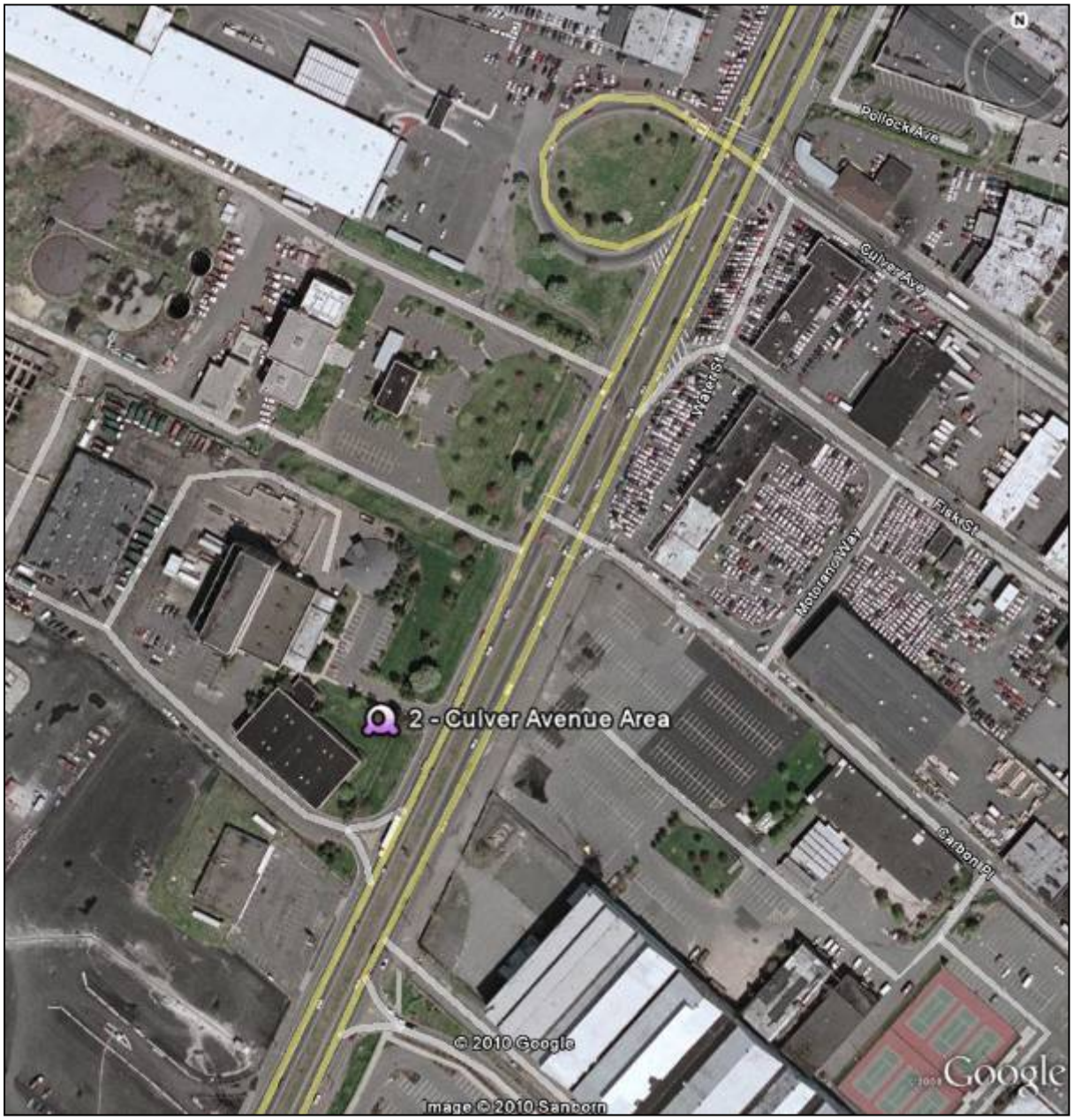

Figure 12.4: Monitoring Site #3, Country Village Residential Area

12.4.4 Calibration of Traffic Noise Model

The Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5 was used to model the study area and predict noise levels that would be associated with the project alternatives. The model takes into account the design and elevation of the roadway, locations of noise sensitive receptors, roadway volumes and classifications, speeds, and shielding from local terrain.

To validate the project's noise model, data regarding traffic and field conditions collected during noise monitoring were entered into the model. Roadway geometry was digitized using CAD software with high resolution aerial imagery. Peak hour vehicle speeds as observed were estimated to be between 30 and 40 mph on average. Observing the predominance of concrete and asphalt in the study corridor, all intervening ground between roadway and sound receptors in the noise model was set to hard pavement, a ground type with low acoustic impedance. An exception was made for the Lincoln Park area, where vast grassy areas provide higher potential for traffic noise attenuation.

The sound levels at all of the monitored sites are slightly above NAC impact threshold of 66 dBA (Table 12.2). A comparison was made between the monitored sound levels and the TNM modeled sound levels, ensuring that changes between future and existing conditions are due solely to changes in build conditions, not discrepancies stemming from modeling or monitoring technique. According to common industry practice, the difference between the monitored and modeled sound levels should be within 3 dBA. For each monitoring site, sound levels predicted by the noise model were within 1 dBA of the monitored sound levels, an indication that the model may be used accurately to calculate and predict future noise levels within the study area.

Table 12.2: Monitored Sound Levels and Validation of the TNM Model [L_{Aeq1h}, dBA]

Site Number	Location	Monitored Sound Level	TNM Modeled Sound Level	Difference
1	Lincoln Park	67	67	0
2	Culver Avenue	67	67	0
3	Country Village	68	69	1

12.4.5 2050 Projected Noise Levels

The future roadway corridor geometric conditions and traffic volumes (Table 12.3) for the year 2050, also known as the Build scenario, were entered into the noise model to yield predicted future traffic noise levels. These noise levels were compared with the existing noise levels to determine if there would be a significant increase in sound levels (Table 12.4).

Table 12.3: 2050 Build Traffic Used to Predict Future Sound Levels

Location	Direction	Cars	Trucks	Posted Speed Limit
Lincoln Park	SB	1610	228	30
	NB	1134	191	30
Culver Avenue	SB Mainline	1113	47	30
	NB Mainline	1044	138	30
	SB local	0	11	30
	NB local	15	1	30
Country Village	SB	1549	89	30
	NB	1616	456	30

Table 12.4: Monitored Sound Levels and Validation of the TNM Model [L_{Aeq1h}, dBA]

Site Number	Location	Existing Modeled Sound Level	Future Modeled Sound Level (Build)	Difference	Future Sound Level with Landscape and Fencing
1	Lincoln Park	67	69	2	65
2	Culver Avenue	67	66	-1	n/a*
3	Country Village	69	70	1	66
* Since the future sound level was below existing sound level, analysis with fencing was not included for Site number 2.					

The Build sound levels (Table 12.4) would be similar to the existing sound levels, with a difference ranging between -1 and 2 dBA. This reduction is primarily the result of the lowering of the speed limit along the corridor to 30 mph, widening of the overall traveled way and changes in the local traffic patterns. While the 20-inch high planted medians along the central section primarily serve an aesthetic and a safety purpose, these walled planters will also serve to mitigate tire noise along the roadway. Along the northern and southern sections of the corridor, creation of elevated planted buffers along the outer edge of the roadway would have a greater effect on noise levels, with a reduction of noise at adjacent properties by anywhere from 2 to 4 dBA. This reduction would bring the future 2050 sound levels to below existing levels.

Since additional development is planned along the central section of the corridor, additional receptors were input into the model to estimate sound levels at 25 feet, 50 feet, and 100 feet the outer edge of the travel lanes and at both ground level and second floor level adjacent to site number 2. Projected sound levels were found to be similar at ground level and at the second floor of the future buildings (Table 12.5). As the distance from the roadway travel lanes to the adjacent property lines along the corridor will be significantly increased (approximately doubled) from existing conditions, future 2050 sound levels will be reduced by approximately 2 dBA.

Table 12.5: Future Sound Levels at Varying Distances from the Roadway [L_{Aeq1h}, dBA]

Distance to Route 440	First Floor	Second Floor
25 feet	66	66
50 feet	64	64
100 feet	62	62

An additional factor that may affect traffic noise is the choice of pavement materials. The future noise projections assumed the use of traditional pavement materials. Rutgers Center for Advanced Infrastructure and Transportation is working with NJDOT on their Quiet Pavement Pilot Program to study the effects different types of pavement have on traffic noise[1]. These are ongoing studies, with no clear recommendations made at this time. Use of Quiet Pavement

[1] http://cait.rutgers.edu/system/files/u5/Pvmt_Design_and_Materials_072710.pdf

materials in the construction of the corridor would serve to further reduce noise levels. Selection of the most appropriate pavement materials will be made as part of the preliminary engineering phase of project development.

The LPA was designed assuming that no through truck diversion alternative is constructed. Should one or more of the through truck diversion alternatives be constructed, heavy truck traffic volumes along the boulevard and complete street would be reduced contributing to reduced noise levels from the future modeled sound levels (Tables 12.4 and 12.5). Planned development along the corridor is expected to occur in stages. As such, sound levels under the 2020 and 2035 interim conditions are expected to be lower than the future modeled sound levels in the year 2050.

12.5 Air Quality

Existing ambient air quality data was compiled for the Route 440/Routes 1&9T study area. The study area is presently in non-attainment of the National Ambient Air Quality Standards (NAAQS) for ozone, but in attainment for other pollutants of concern, although in many locations the existing concentrations of these pollutants approaches the NAAQS maximum concentrations for attainment.

A key component of the Tier I and Tier II alternative evaluation process (section 7) was a screening of the potential for each alternative to result in negative air quality impacts. While the screening level assessment was not definitive in all cases, it did result in the elimination of a number of alternatives from further consideration due to the likelihood that they would result in adverse air quality impacts. A more detailed analysis was conducted on the LPA to determine the potential effect on area air quality.

A mesoscale analysis was conducted to assess the net effects of the Locally Preferred Alternative on the emissions of pollutants. This analysis assessed the change in regional air quality based on the reduction in vehicle-related emissions, as a function of the reduction in VMT, and the corresponding pollutant emission rates. VMT and emission reduction was calculated separately for general traffic (automobiles and other light vehicles) and heavy trucks (tractor trailers). The emission rates for vehicles were determined for the future 2050 condition using EPA's model MOBILE6.2. This version of the air quality assessment model

includes the effects of the new vehicle emission standards, and covers model years 1952 to 2051. These calculations included the effect of the Inspection/Maintenance (I/M) and anti-tampering programs. Two pollutants were analyzed – Carbon monoxide (CO) and Particulate Matter (PM), with PM being broken down into two categories PM_{10} and $PM_{2.5}$.

Carbon monoxide is a colorless and odorless gas that is associated with the incomplete combustion of vehicle fuel. CO concentrations are limited to short distances near crowded intersections and along slow-moving, heavily traveled roadways. Under the Clean Air Act of 1990, each state is committed to offset any CO emissions resulting from Vehicle Miles Traveled (VMT) growth in a nonattainment area. This pollutant was selected for analysis because relatively high concentrations of CO are typically found near congested intersections and along heavily used roadways carrying slow-moving traffic.

Particulate matter (PM) is emitted into the atmosphere from a variety of sources including industrial facilities, power plants and construction activity. Diesel-powered vehicles, especially heavy trucks, marine vessels, and buses, emit particulates. Inhalable particulate concentrations may, therefore, be locally elevated near roadways with high volumes of heavy diesel-powered vehicles. Inhalable particulates are broken down into coarse particulate matter (particulates that are less than 10 microns in diameter - PM_{10}) and fine particulate matter (particulates that are less than 2.5 microns in diameter - $PM_{2.5}$). Scientific developments have indicated a connection between respiratory problems such as asthma and bronchitis with fine particulate particles that have an aerodynamic diameter of 2.5 microns or smaller ($PM_{2.5}$).

Due to a combination of stricter vehicle emission standards built into the model and the projected reduction in VMT anticipated to occur with the construction of the LPA, the emissions of CO, PM10 and PM2.5 would all be reduced approximately 5% (Table 12.6) from what would have been expected in the year 2050 if full development were to occur without construction of the corridor improvements (No-Build condition).

Improvements to the Route 440/Routes 1&9T corridor under the LPA will result in decreased dependence on single occupant vehicles, mobility improvements, reduced congestion and vehicle delay, and reduction in total vehicle miles traveled (VMT) in the study area. The reduction in idling vehicles (result of improved mobility) and the diversion of travelers from private automobile to less polluting modes of travel (transit, bicycle, walking) will result in air quality improvements in the study area.

Table 12.6: Predicted Air Quality Emissions in the Route 440 Corridor in 2050

	No Build (2050)			Build (2050)			Difference		
	Cars	Trucks	Total	Cars	Trucks	Total	Cars	Trucks	Total
VMT	13,621	1,842	15,463	12,981	1,755	14,736	-640	-87	-727
CO (grams)	113,870	7,708	121,578	108,519	7,345	115,864	-5,351	-363	-5,714
PM10 (grams)	99	316	415	95	301	396	-5	-15	-20
PM2.5 (grams)	99	101	200	95	96	191	-5	-5	-9

12.6 Preliminary Definition of NEPA Project Categorization

The preliminary environmental analysis indicates the potential for significant environmental impacts in the categories of hazardous materials and wetlands. It is important to note that additional significant impacts may be identified during the preliminary engineering phase of project development.

The NEPA environmental review will be conducted concurrent with NJDOT's preliminary engineering phase of project development. At the preliminary engineering phase, sufficient detail will exist to address the potential for environmental effects based on limits of disturbance and potential impacts to existing systems. Determination of the appropriate environmental documentation to be prepared in compliance with the NEPA process will be made during the preliminary engineering phase.