A. INTRODUCTION

On February 11, 1994, President Clinton issued Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations." This Executive Order is designed to ensure that each federal agency "shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Executive Order 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process. To this end, the East Side Access Project has an extensive public participation and community outreach program, described in Chapter 23 of this EIS.

This chapter analyzes the project's potential impacts in terms of their effects on minority and low-income populations, to determine whether it has any disproportionately high and adverse impacts on those populations. It follows the U.S. Department of Transportation's *Final Order on Environmental Justice*, April 1997, as well as the U.S. Environmental Protection Agency's *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*, April 1998.

As set forth in the U.S. Department of Transportation's Final Order on Environmental Justice (at section 8.b.), "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be taken and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and relevant number of similar existing system elements in non-minority and non-low-income areas." The analysis below therefore focuses on any significant adverse impacts that cannot be mitigated, and considers the population affected by those impacts as well as the population benefitting from the project.

B. OVERVIEW OF PROJECT IMPACTS AND AFFECTED POPULATION

The project alternatives' potential significant adverse impacts are described in Chapters 3 through 17 of this document. As described in those chapters, the No Action Alternative and TSM Alternative would result in adverse effects on land use, social conditions, and economic conditions by not supporting the growth projected for the region or transit-oriented land use. The Preferred Alternative, by greatly improving transportation service in the Long Island Transportation Corridor (LITC), would result in significant positive effects for the region in those areas as well. It would have some localized adverse impacts close to the project alignment.

OVERVIEW OF LITC POPULATION CHARACTERISTICS

The population of the project area is detailed in Chapter 4, "Social Conditions," and summarized in Table 18-1. As shown in the table, the population of the LITC, with a population of 8.3 million people, is 64.5 percent white, 21.8 percent black, 6.2 percent Asian, and 16.3 percent Hispanic (an ethnic group that can include white, black, and Asian people). The median household income of the LITC is $36,300, with some 13.8 percent living below the poverty level. In New York City, which includes 88 percent of the LITC's population, the percentages of minority population and population living below the poverty level are higher, and the median income is lower, while on Long Island the reverse is true. The Bronx and Brooklyn are included on the table, even though they are not part of the LITC, because some of the regional impacts could affect residents in these areas. As shown on Table 18-1, both boroughs contain a high percentage of minority residents and those with incomes below poverty level.

Table 18-1

Study Area 1990 Population Characteristics

Area	Population	Race and Ethnicity (Percent)				Economic Profile	
		White	Black	Asian	Hispanic*	1989 Median Household Income**	Below Poverty Level*** (Percent)
Manhattan Study Area	637,599	72.6%	7.4%	13.4%	15.2%	$41,499	14.7%
Total Manhattan	1,487,536	58.3	22.0	7.4	26.0	$32,262	20.5
Long Island City/ Sunnyside Study Area	6,353	59.9	6.4	18.9	39.6	$27,075	14.3
Total Queens	1,951,598	57.9	21.7	12.2	19.5	$34,186	10.8
Total New York City	7,322,564	52.3	28.8	7.0	23.7	$29,823	18.9
Nassau County	1,287,348	86.6	8.6	3.1	6.0	$54,283	3.7
Suffolk County	1,321,864	90.0	6.3	1.7	6.6	$49,128	4.6
Total Nassau and Suffolk	2,609,212	88.4	7.4	2.4	6.3	$51,671	4.2
Total LITC	**8,349,010**	**64.5**	**21.8**	**6.2**	**16.3**	**$36,300**	**13.8**
The Bronx	1,203,789	35.8	37.5	2.8	42.3	$21,944	28.7
Brooklyn	2,300,664	46.9	38.0	4.8	19.5	$25,684	22.7

Notes:

* An ethnic group that can include members of all different racial categories.

** The median household incomes reported for the study areas are weighted averages of those reported for the census and/or block groups in the study areas. The median household income for the LITC is a weighted average of those reported for the counties in the LITC.

*** Percent of persons with incomes below the established poverty level; poverty level varies depending on household size.

Source: U.S. Department of Commerce, Bureau of Census, *U.S. Census of Population and Housing*, 1990.

NO ACTION ALTERNATIVE

The No Action Alternative would result in adverse impacts on land use, social conditions, and economic conditions throughout the LITC. It would also result in adverse impacts in terms of transportation service and regional air quality. With a potential for increasing demands on rail transit service under the No Action Alternative, access throughout the region would become

more difficult and the expected population and employment growth would likely be limited. On Long Island, where use of the Long Island Rail Road (LIRR) is greatest, the decrease in quality of LIRR service would be felt most strongly and would support a trend toward increased dependence on the automobile. In addition, without improvements to mass transit service, traffic congestion and regional air pollution would increase. These adverse impacts would affect the full range of people throughout the LITC.

TSM ALTERNATIVE

The TSM Alternative would also have adverse effects on land use, social conditions, and economic conditions, although these would be less severe than with the No Action Alternative. Again, the predicted increases in population and employment would likely be achieved under strain. In Manhattan, the existing disconnect between the location of jobs and commuter terminals would not be improved, and improvements would not be sufficient to avoid the overcrowding and delays that are likely to occur in the future. Similar to the No Action Alternative, these adverse impacts would affect the full range of people throughout the LITC.

PREFERRED ALTERNATIVE

Overall, the Preferred Alternative would greatly improve transportation service in the LITC, and would therefore support land use patterns, social conditions, and economic conditions. The population and employment predicted to occur throughout the region would be supported by this improvement, resulting in significant beneficial impacts to the region's economy. Regional vehicle miles traveled (VMT) would decrease overall, resulting in improvements to air quality as well.

At the same time, the Preferred Alternative would result in some localized adverse impacts, described in earlier chapters of this EIS. Most of those impacts could be mitigated, but several could not be fully mitigated. The Preferred Alternative's significant adverse impacts, mitigation measures, and impacts that cannot be fully mitigated are summarized in Table 18-2. The impacts that cannot be fully mitigated are discussed below.

SUMMARY OF UNMITIGATED IMPACTS

Social Conditions

As described in Chapter 17, "Construction and Construction Impacts," construction activities required for the Preferred Alternative would result in temporary but significant adverse impacts to neighborhood character in Manhattan, which would be more severe under Option 1 than under Option 2. These impacts would primarily be associated with the partial street closings required in the area between 44th and 55th Streets, from Lexington to Madison Avenue. Under Option 1, this would include closing a curb lane and sidewalk on 52nd Street for 2 years, 4 years on 53rd Street, and 3 years on 54th Street, as well as other disturbances of shorter duration (1 to 1½ years). Under Option 2, it would include closing a part of a curb lane and sidewalk on 55th Street for about 8 months as well as other disturbances of 1 to 1½ years. In addition, construction activities would result in increased truck activity related to materials delivery and the removal of excavated material (spoil). Since the vast majority of work in Manhattan would occur underground, disturbances from truck deliveries and spoil disposal would be limited—due primarily to the construction of ventilation facilities and off-street entrances. Up to 10 trucks in the peak hour would be traveling to and from the various access and ventilation facility locations in the GCT area. Since these trucks would be going to and coming from three locations—New

Jersey (to the west), Queens and Long Island (to the east), and the Bronx and points north—these truck trips would be divided among various major avenues and cross-streets of Manhattan, including 42nd and 57th Streets, and First, Second, and Third Avenues.

Construction activities in Queens would result in temporary but significant disruption to the Long Island City High School, near 41st Avenue and Northern Boulevard. The project would work with the high school to resolve problems as they arise. In Queens, in the vicinity of Northern Boulevard near Queens Plaza, disturbances related to cut-and-cover construction would also occur: Northern Boulevard would be partially closed during a portion of tunnel construction and delivery trucks and spoil disposal trucks would be entering and leaving Sunnyside Yard and the Manhattan access shaft site at 41st Avenue and Northern Boulevard. During the peak hour, up to 18 trucks would enter and leave the Long Island City/Sunnyside area. As detailed in Chapter 17, "Construction and Construction Impacts," these trucks would arrive and depart from the construction area via a number of routes, making their presence less noticeable to the surrounding communities. Since trucks would generally be arriving from and departing to the north, east, and west, it is estimated that no more than six trucks would consistently take any single route into or out of the study area in the peak hour of the day. All trucks would be restricted to designated truck routes for all trips.

Transportation

Although the Preferred Alternative overall would provide substantial transportation improvements, it would also result in certain generally localized adverse impacts related to transportation service. The impacts that could not be fully mitigated would be as follows:

- Parking shortfalls at some LIRR stations in eastern Queens and on Long Island.
- Impacts to some elements at the 42nd Street/Grand Central Terminal station on the Lexington Avenue (No. 4, 5, and 6) subway line and an increase in train crowding along the line.
- Temporary impact on Metro-North Railroad operations during construction of Option 1.
- Temporary impact to traffic and parking conditions associated with cut-and-cover construction activities required for Option 1.

Noise and Vibration

The Preferred Alternative would increase train service throughout the LIRR service area. The increase in trains would result in significant noise impacts under FTA criteria. However, an analysis of total noise levels with the Preferred Alternative compared to existing conditions found increases to be imperceptible (less than 3 dBA) to barely perceptible (up to 3.1 dBA). Mitigation for the predicted noise impacts would require extensive use of noise barriers along the rail right-of-way, which is not practicable.

AFFECTED POPULATION

Figures 18-1 and 18-2 depict the census block groups throughout the LITC with concentrations of minority residents and low-income residents. These graphics were created to help identify unmitigated adverse impacts that might disproportionately affect minority or low-income residents. Overlayed on the census information are the locations of project routes, including both the new alignment from Queens to Manhattan and the rest of the LIRR system, since the project would result in service changes systemwide. (For maps illustrating the location of specific stations or proposed storage yards, see Figure 1-4 in Chapter 1, which shows the entire LIRR system, and

Table 18-2

Summary of Adverse Effects for the Preferred Alternative

Analysis Area	Adverse Effects	Differences Between Option 1 and Option 2		Mitigation	Unmitigated Impacts
		Option 1	Option 2		
Land Use, Zoning, and Public Policy	None.	No difference.	No difference.	None.	None.
Social Conditions	None.	No difference.	No difference.	None.	None.
Property Acquisitions	Permanent acquisition of up to 14 businesses and 5 residences, requiring the displacement of up to 200 employees. Properties to be acquired include: • 47 E.44th Street for vent plant • Space for off-street entrances (see Option 1 vs. Option 2) • 38-64 43rd Street in Queens for Harold Interlocking work • Subsurface easements for the tunnel structure in Manhattan and Queens.	Permanent acquisition of space for new entrances: • 347 Madison Ave ground-floor retail space; • 245 Park Avenue sidewalk space; • 270 Park Avenue sidewalk space; • 280 Park Avenue ground-floor restaurant space; • 200 Park Avenue ground-floor restaurant space.	Permanent acquisition of space for new entrances: • 347 Madison Ave ground-floor retail space; • 245 Park Avenue sidewalk space; • 270 Park Avenue sidewalk space; • 280 Park Avenue ground-floor restaurant space; • 335 Madison Avenue ground-floor retail space.	The properties would be acquired following the requirements of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.	None.
Visual Quality	None.	No difference.	No difference.	None.	None.
Historic Resources	Changes to historic features of Grand Central Terminal. Potential changes to the context of historic resources near new entrances and new vent structures. Potential impacts during construction to historic resources near the construction work in Manhattan (see Option 1 vs. Option 2) and in Queens (in Sunnyside Yard).	In GCT, changes to Biltmore Room, Biltmore Passage, and portion of Dining Concourse; new ticket windows. Outside GCT, contextual issues at vent building on 44th St adjacent to Yale Club. Construction work in GCT, near Vanderbilt Concourse building and Yale Club, and beneath Racquet & Tennis Club and Lever House.	In GCT, changes to Biltmore Room, *new LIRR concourse on lower track level, possible extension of western grand staircase down to new LIRR concourse.* Outside GCT, contextual issues at vent building on 44th St adjacent to Yale Club and for vent structures above trainshed. Construction work in GCT, near Vanderbilt Concourse building and Yale Club; possibly near other resources (for vent structures). No underpinning of Racquet & Tennis Club or Lever House.	Ongoing consultation with SHPO regarding design features and development of construction protection plans work as detailed in a Programmatic Agreement.	None.

Table S-3 (Continued)

Summary of Adverse Effects for the Preferred Alternative

Analysis Area	Effects	Differences Between Option 1 and Option 2		Mitigation	Unmitigated Impacts
		Option 1	Option 2		
Archaeological Resources	Impacts would occur if significant archaeological resources exist in construction areas. Locations where that potential exists are in Manhattan (see Option 1 vs. Option 2) and Yard A/ Sunnyside Yard.	Archaeological resources may remain beneath 53rd St west of Park Ave and 54th St east of Park Ave.	Archaeological resources may remain beneath 55th St west of Park Ave.	Ongoing consultation with SHPO as detailed in a Programmatic Agreement regarding further analysis (e.g., review of boring logs, detailed research at certain locations, possible subsurface testing) and design of mitigative measures (e.g., excavation).	None.
Transportation	Addition of approximately 2,000 customers to the overcrowded southbound Lexington Ave subway. Addition of up to *4* buses in the peak hour to Madison and Lexington Aves. Impact to pedestrian condition at locations near GCT and in public spaces in GCT (see Option 1 vs. Option 2). Peak-hour traffic impacts at 12 intersections in Manhattan and 13 of the 39 intersections studied on Long Island. Parking shortfalls at Long Island LIRR stations. Displacement of NYAR and MNR yard facilities.	No difference.	No difference.	Improvements to NYCT station elements within GCT (e.g. new turnstiles, stairs, wider corridor) and improving throughput of trains would partially mitigate impact. Crosswalk widening and other measures to improve pedestrian flow. Standard traffic improvement measures (see Table S-4). LIRR's ongoing parking improvement program. Replacement train storage yard(s) and maintenance facilities.	Impacts to subway would be only partially mitigated.
Air Quality	No exceedence of the NAAQS would occur. Significant increase in carbon monoxide levels at Madison Ave/48th St in Manhattan.	No difference.	No difference.	Standard traffic improvement measures.	None.
Noise	Increased LIRR service would result in noise levels above FTA criteria along segments of the LIRR system: • Woodside to Hicksville • Jamaica to Valley Stream • Huntington to Port Jefferson	No difference.	No difference.	While the installation of sound barriers would be effective, it would not be practical due to the extensive wall length required.	Wayside noise impacts would be unmitigated.
Vibration	Potential ground-borne noise impacts in Manhattan (see Option 1 vs. Option 2). Potential ground-borne noise impacts in Queens at 45 residential and 37 nonresidential buildings.	Ground-borne noise impacts at 237 residential and 234 nonresidential properties.	Ground-borne noise impacts at six residential and two nonresidential buildings.	Installation of resilient ties and/or floating slabs under Option 1. Installation of resilient ties under Option 2.	None.
Energy	None.	No difference.	No difference.	None.	None.

Table S-3 (Continued)

Summary of Adverse Effects for the Preferred Alternative

Analysis Area	Effects	Differences Between Option 1 and Option 2		Mitigation	Unmitigated Impacts
		Option 1	Option 2		
Utilities	Potential conflicts with existing utilities in Manhattan (see Option 1 vs Option 2). Potential conflicts with existing utilities in Queens.	Option 1 would have more potential conflicts than Option 2.	Option 2 would have fewer potential conflicts than Option 1.	Temporary or permanent relocation; maintain service.	None.
Contaminated Materials	Potential for exposure to contaminated materials during construction.	No difference.	No difference.	Sampling, analysis, delineation and quantification of contamination prior to construction; development of site-specific CCMPs based on findings of the sampling program.	None.
Natural Resources	Increased runoff at Yard A and Highbridge could potentially affect Newtown Creek and Hudson River. Some yard sites in 100-year floodplain.	No difference.	No difference.	Reconstruction or creation of stormwater systems. Raise elevation of yards above floodplain.	None.
Safety and Security	None.	No difference.	No difference.	None.	None.
Construction Impacts: Property Acquisitions	Temporary use of: space within buildings in Manhattan (see Option 1 vs. Option 2) and space on General Motors property in Sunnyside, Queens.	Temporary property taking for underpinning: • Racquet & Tennis Club basement (locker room and tenant space); • Lever House basement (200-car garage); • 400 Park Avenue basement (retail storage space); • 410 Park Avenue basement (elevator machine room).	No temporary property takings.	Acquisitions would follow federal acquisition and relocation procedures.	None.
Construction Impacts: Land Use and Social Conditions	Temporary impacts on neighborhood character during construction at locations in Manhattan where cut-and-cover construction would occur (see Option 1 vs. Option 2) and at Newcomers High School in Queens.	Substantial disruptions at 52nd St (2 years), 53rd St (4 years), and 54th St (3 years). Other areas of disturbance near GCT of 1-1½ years each.	Small area of disruption on 55th St (2½ years). Other areas of disturbance near GCT of 1-1½ years each.	Partial mitigation in Manhattan through maintenance and protection of traffic plan. In Queens, the school would be shielded from construction activities as much as possible, and the project would work with the high school to resolve problems.	Unavoidable construction disruptions would remain partially unmitigated.

Table S-3 (Continued)

Summary of Adverse Effects for the Preferred Alternative

Analysis Area	Effects	Differences Between Option 1 and Option 2		Mitigation	Unmitigated Impacts
		Option 1	Option 2		
Construction Impacts: Transportation	Disruptions to traffic in Manhattan from cut-and-cover construction activities (see Option 1 vs. Option 2) and along Northern Boulevard in Queens. New truck trips to remove spoil and deliver materials in Manhattan and Queens. Impacts on MNR operations within GCT (see Option 1 vs. Option 2).	Greater disruption to traffic in Manhattan for Option 1. Greater number of trucks to remove spoil. Potential for substantial impacts to MNR operations during construction as a result of required track outages.	Limited disruption to traffic in Manhattan for Option 2. Fewer trucks required for spoil removal. Very limited effect on MNR operations during construction.	Maintenance and protection of traffic plan. Coordinate required track outages with MNR and using a rail simulation model.	Unavoidable impacts on MNR operations for Option 1 would remain partially unmitigated.
Construction Impacts: Air Quality, Noise, and Vibration	Increased noise, vibration, and dust near vent plant construction in Manhattan (see Option 1 vs. Option 2) and near shaft site in Queens (near Newcomers High School).	More traffic disturbance and excavation required under Option 1	Limited traffic disturbance and excavation required under Option 2	Maintenance and protection of traffic plans. Shield school from construction activities and work with school to resolve problems. *Mitigation could potentially include noise barriers, double-pane windows, installation of air conditioning.*	None.
Construction Impacts: Natural Resources	Potential increased erosion and stormwater runoff during construction.	No difference.	No difference.	Preparation of soil and sedimentation control Plan and other SPDES permitting requirements.	None.

Figures 2-4 and 2-24, which illustrate the locations of yards proposed by the Preferred Alternative). Figures 18-1 and 18-2 also depict the project's only regional significant adverse impacts that would not be mitigated—the noise impact that would result from increases to the number of train passbys. Other significant and unmitigated adverse impacts are not depicted on the graphic, because, as described below, they would affect workers and residents in a broad area, rather than those who live in close proximity. The people affected by the project's unmitigated significant adverse impacts are described below. More information on Figures 18-1 and 18-2 is provided in the analysis of noise impacts.

Land Use and Social Conditions

The temporary impacts to neighborhood character that would occur during construction of the Preferred Alternative would affect a diverse population. In Manhattan, there are few residents living with the immediate areas of construction. The population that does live in block groups within the area proximate to the affected locations is lower than the Manhattan average in terms of minority and low-income percentages. In addition to residents, this work would adversely affect daytime visitors to this part of Manhattan, including workers and shoppers in the area as well as other visitors. These daytime visitors would certainly be a diverse population.

In Queens, the population affected by the significant impact during construction to Long Island City High School would be the students of the school. Since this building is home to Newcomer High School, a school for immigrant students, the affected population is likely to be largely poor and most likely includes a high percentage of minority students. Also in Queens, the designated truck routes that would be used by construction-related deliveries and spoil removal (if it is truck) pass through an area of mixed racial and ethnic character. Overall, the Long Island City/ Sunnyside area is 60 percent white, 6 percent black, 19 percent Asian, and 40 percent Hispanic, with a median household slightly lower than the New York City median (see Table 18-1).

Transportation

The parking shortfalls predicted to occur with the Preferred Alternative would affect a broad spectrum of LIRR riders, most likely representing a cross section of Long Island's population. Similarly, the impacts that could occur to Metro-North service during construction of Option 1 would also affect a diverse population of commuters.

The temporary disruptions to traffic and pedestrian conditions on East 52nd, 53rd, and 54th Streets during construction of Option 1 and on 55th Street for Option 2 would affect the same type of broad population as described above under "Social Conditions" for this area.

The impacts predicted for the Lexington Avenue subway at 42nd Street would affect people who would experience more difficulty getting on and off the trains and up and down the stairs at the 42nd Street/Grand Central station and passengers on the trains who would be subject to greater crowding. To some extent, riders on the 7 line to and from Queens would share in the impact at the station. Within the NYCT system, the Lexington Avenue line acts both as a primary route and as a collector route serving East Midtown and Lower Manhattan. Passengers do board the trains at their home stations to proceed directly to Lower Manhattan or East Midtown. However, a large contingent transfer to the Lexington Avenue line from most other lines in the city, including the 2 and 3 (Bronx and Brooklyn), the D (Bronx and lower East Side), E and F (East 51st Street), F and Q (Lower East Side), N, R (Union Square and 59th Street), L (Union Square), J and M (Brooklyn Bridge), A, C, 2, 3, J and M (Fulton Street), and the 7 and shuttle trains at 42nd Street/Grand Central itself. The Lexington Avenue line also collects passengers

commuting from the suburbs by rail, including all commuter lines serving the city. Metro-North and LIRR commuters at Grand Central would comprise the larger group of such commuters.

The population using the 42nd Street/Grand Central subway station as an origin or destination would be made up primarily of workers in East Midtown. These comprise a broad spectrum of the region's population and do not contain a disproportionately high percentage of lower income, minority population. In considering the effect of crowding on the trains, it is important to note that the greatest crowding would occur as the trains approach or leave from 42nd Street/ Grand Central station, and the overall significant increment in crowding would be limited to East Midtown and the route to Lower Manhattan. As such, the trains would again contain the broadest mix of residents and commuters and would not hold a disproportionately high percentage of lower income or minority population. For those residents who get on or off the trains in their own neighborhoods, that experience would not change. These residents would share with others the overcrowding as the trains pass through the central business district. These residents do not comprise a disproportionate share of lower income or minority population; they come from a wide variety of New York City's neighborhoods—including the Bronx (most areas), East Harlem, the Upper East Side, East Midtown, Midtown South, the East Village, NoHo, SoHo, Chinatown/Little Italy, Lower Manhattan, Brooklyn Heights, downtown Brooklyn, Park Slope and Flatbush—and represent a cross-section of the city's population. Thus, the unmitigated impact on the Lexington Avenue line from additional LIRR commuters riding the subway would not have a high and disproportionate impact on lower income or minority populations.

Noise

Following the guidelines of the Federal Transit Administration (FTA), the noise analysis considered effects on different categories of land uses. The analysis concluded that some impacts would occur to "Category 1" land uses, which are defined as "tracts of land where quiet is an essential element in the intended purpose. This category includes lands set aside for serenity and quite, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use." These uses are generally places that are visited or used by people from a broad geographical area, and therefore noise impacts on such uses would not result in significant impacts to any one population group.

The analysis also predicted noise impacts from increases in train service for sensitive residential uses along the project route ("Category 2"). As detailed in Chapter 11, these impacts were predicted along six LIRR branch segments: Woodside to Jamaica, in Queens; Jamaica to Valley Stream, just across the Queens-Nassau County border; Jamaica to Floral Park, also just across the Queens-Nassau border; Floral Park to Mineola, in Nassau County; Mineola to Hicksville, in Nassau County; and Huntington to Port Jefferson, in Suffolk County. For each of those segments, an analysis was conducted of the racial/ethnic and economic composition of populations living close to the rail line. Data were gathered on the block group level—the smallest census unit for which this information is available—to identify small concentrations of low-income or minority residents, if present.

Using a Geographic Information System (GIS) to link block groups with rail segments, census data for all residents in block groups adjacent to the six affected rail segments were collected. Populations in block groups farther from the rail line were not evaluated, because noise levels would drop off to below the impact threshold within 100 feet of the rail line at all locations. The results of the analysis are summarized in Table 18-3, which demonstrates that, overall, the block

Table 18-3

Population Affected by the Preferred Alternative—Noise Impacts

Location	Total Population	Race and Ethnicity (Percent)					Economic Profile	
		White	Black	Asians and Pacific Islanders	American Indians, Eskimos, or Aleuts	Hispanic*	1989 Median Household Income**	Percent Below Poverty Level***
Queens Impacted Population	86,751	42.6	38.5	12.3	0.3	16.2	32,126	14.4
Queens Total	1,951,598	57.9	21.7	12.2	0.3	19.5	34,186	10.8
Nassau Impacted Population	34,079	80.8	13.6	2.8	0.1	9.9	47,169	5.4
Nassau County Total	1,287,348	86.6	8.6	3.1	0.1	6.0	54,283	3.7
Suffolk Impacted Population	62,677	91.0	3.4	3.9	0.1	4.6	56,317	3.2
Suffolk County Total	1,321,864	90.0	6.3	1.7	0.2	6.6	49,128	4.6
Total Impacted Population	174,555	69.2	19.2	8.0	0.2	10.6	52,841	7.3
Total LITC	8,349,010	64.5%	21.8%	6.2%	0.3%	16.3%	$36,300	13.8%

Notes:
Impacted population is the total of residents within block groups closest to the impact locations.
* An ethnic group that can include members of all different racial categories.
** The median household income reported for the different impacted locations is a weighted average of those reported for the census and/or block groups in the study area. The median household income for the LITC is a weighted average of those reported for the counties in the LITC.
*** Percent of persons with incomes below the established poverty level; poverty level varies depending on household size.
Source: U.S. Department of Commerce, Bureau of Census, *U.S. Census of Population and Housing*, 1990.

groups in which noise impacts would occur have an average population with minority and low-income populations similar to or smaller than the counties in which those block groups are located or the LITC as a whole.

Block Groups with Minority Concentrations. Following the U.S. Department of Transportation's guidelines as well as census categories, this analysis considers minority population to include residents who are black; Asian and Pacific Islander; American Indian, Eskimo, or Aleut; and Hispanic. The U.S. census considers all but the Hispanic category to be racial groups, and the Hispanic group to be ethnic. Consequently, residents can be both Hispanic and black, or Hispanic and white, etc. To be conservative in identifying block groups with minority residents, a total percentage of minority residents was estimated by adding together all residents who are any of those racial groups or Hispanic, even though this involves some double-counting for Hispanic residents. The analysis then identified any block groups where 50 percent or more of the population belonged to one or more of those minority groups. These block groups are shown in Figure 18-1.

As shown in the figure, while there are a number of clusters of block groups with 50 percent or more minority residents in the LITC, the largest clusters are in four general areas of New York City—one of which would be affected by noise impacts from operation of the Preferred Alternative. Minority concentration block groups in New York City center around upper Manhattan, central Brooklyn, north-central Queens, and southeast Queens. While the project avoids the three former clusters, the Jamaica to Floral Park and the Jamaica to Valley Stream LIRR segments do pass through Southeast Queens. In addition, the Sunnyside to Jamaica segment passes through a few scattered minority concentrated block groups.

In Nassau, the Mineola to Hicksville segment passes through a small cluster of block groups with minority concentrations, in the vicinity of the Village of Westbury. In Suffolk, the Huntington to Port Jefferson segment passes through a single minority concentrated block group near the Huntington Station. As indicated on Figure 18-1, overall, the majority of minority concentrated block groups in the LITC would not be affected by noise impacts from the Preferred Alternative. Furthermore, the majority of noise impacts along these six segments of LIRR trackage fall upon block groups in which minorities do not make up the majority of the population.

Block Groups with Concentrations of Poverty. To determine the areas with a high proportion of low-income residents, the census block groups where 20 percent or more of the population was "poor" in 1990 (as defined by the 1990 US Census definition of poverty) were considered to have a concentration of poverty.* In comparison, 18.9 percent of New York City's residents overall are in this category, so the use of 20 percent is conservative for this analysis. Figure 18-2 shows block groups with concentrations of poor residents.

While concentrations of poverty are less clustered than concentrations of minorities, there are still areas that exhibit clusters of block groups with concentrations of poverty. In Nassau and Suffolk Counties, there are few such areas, but in New York City, clusters exist in much of Brooklyn (especially central Brooklyn) and in Upper Manhattan.

* (Due to difficulties in gathering data on a block group level for the 1990 US Census category "Persons Below Poverty Level," data for the category "Poor Persons" was used instead. These two categories, while defined slightly differently, yield percentages that are statistically indistinguishable.)

As indicated on Figure 18-2, similar to the case for block groups with concentrations of minorities, overall, the majority of block groups with concentrations of poverty in the LITC are not affected by noise impacts from the Preferred Alternative. Furthermore, the majority of noise impacts along these six segments of LIRR trackage fall upon block groups in which poor people do not make up 20 percent of the population.

CONCLUSIONS REGARDING ENVIRONMENTAL JUSTICE

Overall, the impacts of the Preferred Alternative that could not be fully mitigated would not be disproportionate. While impacts would occur in some locations with concentrations of low-income and minority residents, similar impacts would occur in other locations with populations without those concentrations. Figures 18-1 and 18-2 illustrate that the project's noise impacts are not concentrated in areas with low-income and minority populations, and Table 18-3 further demonstrates that areas affected by noise impacts, on average, have proportions of low-income and minority residents similar to or smaller than the counties in which they are located or the LITC as a whole.

Furthermore, the project would provide substantial benefits that would affect the same broad range of people that would experience the project's impacts. For example, residents of Long Island who might experience noise impacts could also benefit from the improved service on the LIRR. In New York City, impacts to the Lexington Avenue subway line would occur, at the same time that substantial decreases in crowding on other subway lines would also occur, particularly subways serving Queens. The project would also result in decreases in vehicle miles traveled, and associated decreases in air pollutants, throughout the LITC as well as in the Bronx.

More specifically, the Preferred Alternative would result in a reduction in total daily VMT of approximately 342,000 in 2010 and 375,000 in 2020, as compared with the No Action Alternative (see Table 18-4), which represents a major benefit to the region. This reduction in daily VMT would be spread across all counties in the LITC—Manhattan, Queens, Brooklyn, Nassau, and Suffolk—as well as counties outside the LITC. The greatest daily VMT reductions would occur in Queens and Nassau. Queens VMT would decline due to two factors: fewer Queens residents commuting to Manhattan via automobile, and fewer Nassau and Suffolk County residents driving through Queens on their way to work. Nassau County, situated between Suffolk County and Manhattan, would experience the same effect.

Another beneficiary of reduced VMT as a result of the Preferred Alternative would be Bronx County (-51,000 VMT in 2010 and -55,000 VMT in 2020). A worsening of already congested highway conditions in Queens for 2010 and 2020 is forecast to cause commuters to divert to Bronx roads in large numbers without the construction of the Preferred Alternative (the No Action Alternative). With the construction of the Preferred Alternative, these Bronx "through-trips" would be greatly reduced. As noted on Table 18-1, the Bronx contains a relatively high proportion of minority populations and has a relatively low median income. Thus, in benefitting the LITC, the Preferred Alternative would affect a population that is not proportionately high in minority and low-income residents. However, the project would additionally benefit an area outside the LITC—i.e., the Bronx—where there is a relatively high proportion of lower income and minority residents.

On balance, the significant unmitigated impacts of the Preferred Alternative would not disproportionately affect low-income or minority populations. However, some of the benefits would focus on minority and low-income areas.

Table 18-4
Change in Vehicle Miles Traveled: 2010, 2020 No Action vs. Preferred

	2010			2020		
	Auto-Mode	Drive-to-Transit	Total	Auto-Mode	Drive-to-Transit	Total
Manhattan	(41,897)	0	(41,897)	(44,590)	0	(44,590)
Queens	(127,745)	8,336	(119,409)	(138,325)	8,719	(129,606)
Brooklyn	961	0	961	710	0	710
Bronx	(50,923)	0	(50,923)	(54,949)	0	(54,949)
Nassau	(117,720)	12,669	(105,051)	(129,059)	13,816	(115,243)
Suffolk	(37,997)	11,522	(26,475)	(42,832)	13,386	(29,446)
Other Counties	992	0	992	(1,553)	0	(1,553)
All Counties	(374,330)	32,527	(341,803)	(410,598)	35,921	(374,677)
Note: ( ) = reduction in VMT.						

POTENTIAL LONG ISLAND STORAGE YARDS

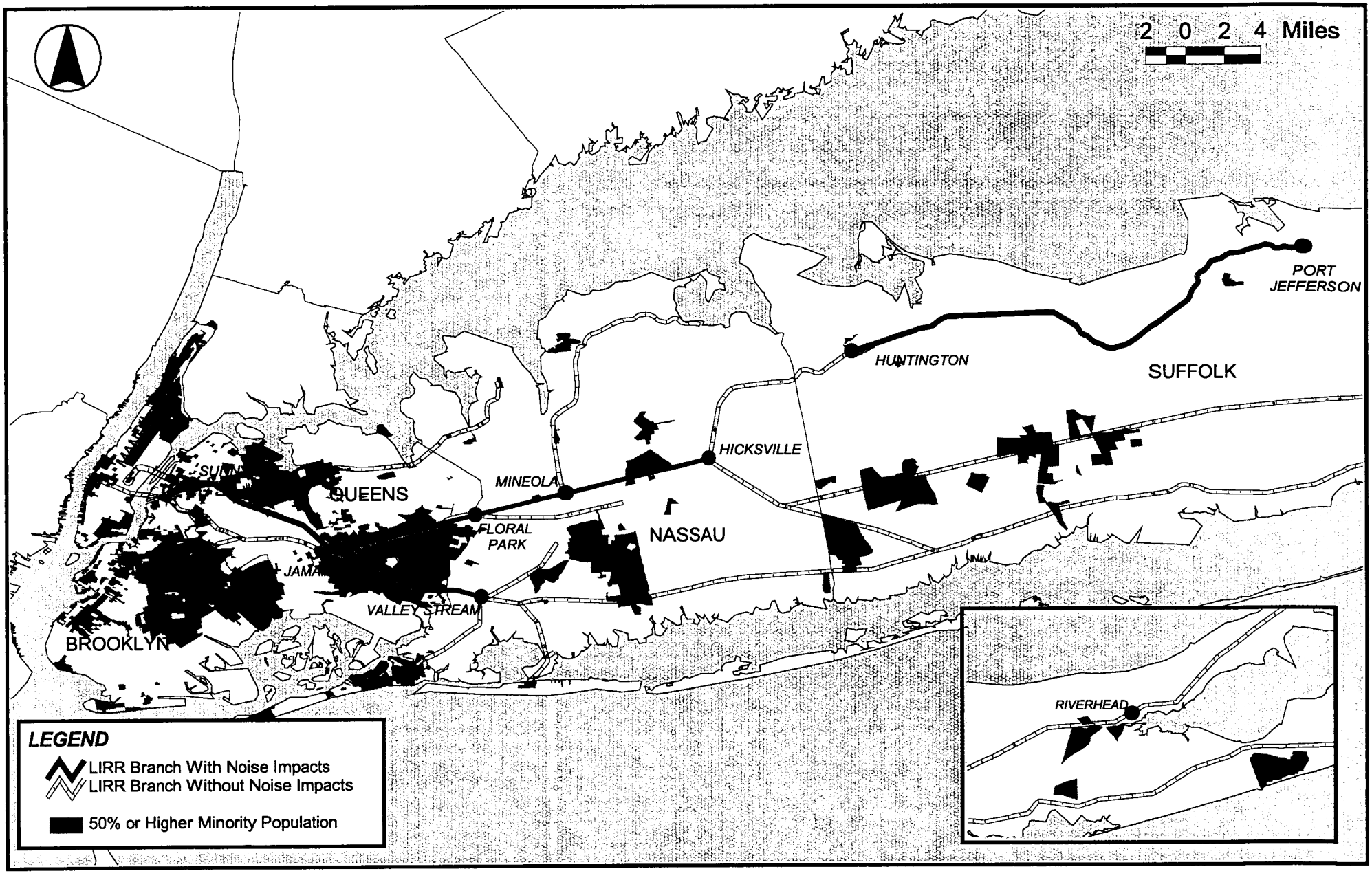
SUMMARY OF UNMITIGATED IMPACTS

Chapters 3 through 17 of this FEIS describe the general effects of developing potential storage yards at seven illustrative sites on Long Island, selected to represent a range of environmental issues that might be expected as a result of development of new train storage yards on Long Island in the future (see Chapter 2 for more information).

The analyses conducted for this FEIS concluded that, of the seven sites analyzed, a new yard would also result in permanent adverse impacts on community character at the Riverhead *site*, should that yard site be selected. The vegetated wall and/or landscaped buffer area would only partially mitigate the impacts on land use, social conditions, and visual character that would result from a new yard at this location *(see Table 18-5)*.

AFFECTED POPULATION

On Long Island, if the Riverhead site is selected for a new train storage yard, a significant adverse impact to community character would affect residents living in houses adjacent to the yards. This population of approximately 115 residents is largely white (the surrounding census tract was 89 percent white in 1990) and, judging by the type of housing in the area, may contain a disproportionate number of low-income households. No other unmitigated significant adverse impacts would occur at potential Long Island yard sites (see Chapter 4, "Social Conditions," for a full discussion of population characteristics near those sites).

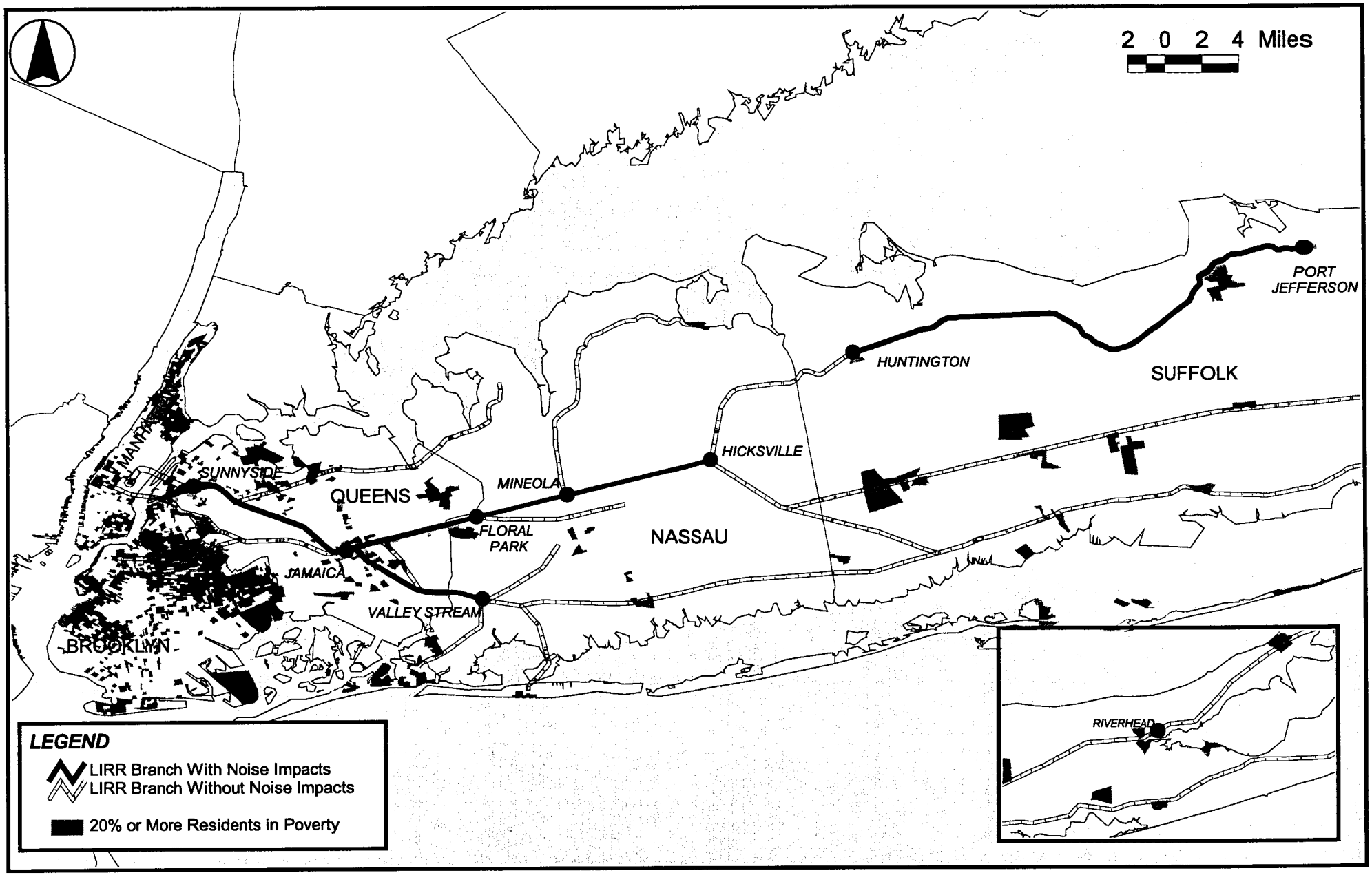


MTA / LIRR

East Side Access

Figure 18-1

Block Groups with Minority Concentrations: Long Island Transportation Corridor, 1990



MTA / LIRR

East Side Access

Figure 18-2

Block Groups with Concentrations of Poverty: Long Island Transportation Corridor, 1990

Table 18-5
Summary of Adverse Effects and Mitigation for Illustrative Yard Sites on Long Island

Analysis Area	Effects	Mitigation	Unmitigated Impacts
Land Use, Zoning, and Public Policy	Potential land use conflicts with surrounding uses at Babylon and Riverhead yard sites. Potential impacts from displacement of farmland at Yaphank East, Yaphank West, and Riverhead sites.	Buffers consisting of landscaped walls and/or vegetated areas would be constructed around new yards at Babylon and Riverhead. At Yaphank East and Riverhead, relocation of agricultural uses would take into consideration soil type and land suitability. At Yaphank West, the potential yard would be shifted to avoid land in agricultural use.	Impact would remain partially unmitigated at Riverhead.
Social Conditions	Adverse impact to character of residential communities surrounding Babylon and Riverhead yard sites. Development of Babylon site would also require displacement of 5 residences.	The yards would be buffered from adjacent or nearby properties by a landscaped wall or vegetated area. Properties at Babylon would be acquired following federal acquisition and relocation regulations.	Impact would remain partially unmitigated at Riverhead.
Property Acquisitions	Permanent acquisition of any yard site selected. Could involve displacement of active uses.	The properties would be acquired following the requirements of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.	None.
Visual Quality	Potential for impacts at Babylon, Yaphank East, and Riverhead Yard sites.	Buffers consisting of landscaped walls or vegetated areas would be provided around those new yards.	Impact would remain partially unmitigated at Riverhead.
Historic Resources	Potential demolition of Pilgrim Hospital structures on Long Island would constitute a significant adverse impact.	Ongoing consultation with SHPO regarding design alternatives if this site is selected.	None.
Archaeological Resources	Impacts would occur if significant archaeological resources exist at yard sites selected. All sites but Cerro Wire have potential for resources.	Ongoing consultation with SHPO as detailed in a Programmatic Agreement regarding further analysis and design of mitigative measures.	None.
Noise	Noise impact at site of potential new train storage yard in Riverhead.	A noise wall would be constructed around the yard.	None.
Contaminated Materials	Potential for exposure to contaminated materials during construction.	Sampling, analysis, delineation and quantification of contamination prior to construction; development of site-specific CCMPs based on findings of the sampling program.	None.

Table 18-5 (Continued)

Summary of Adverse Effects and Mitigation for Illustrative Yard Sites on Long Island

Analysis Area	*Effects*	*Mitigation*	*Unmitigated Impacts*
Natural Resources	*Babylon site could affect Sampwams Creek (freshwater wetland that connects to Critical Environmental Area).* *Yaphank East site could affect Carmans River (New York State Wild and Scenic River, freshwater wetlands, floodplain). Potential for impact on protected grassland species.* *Pilgrim Hospital site could affect freshwater wetland and Edgewood oak brush plains habitat, also a significant groundwater protection area.* *Riverhead site near wetlands that are part of a critical natural resources area under the Peconic Estuary Program.*	*Minimize clearing at Yaphank East and Pilgrim Hospital sites.* *Comply with runoff management policies of Coastal Zone Management Program at Riverhead.*	*None.*
Construction Impacts: Natural Resources	*Potential increased erosion and stormwater runoff during construction.*	*Preparation of soil and sedimentation control Plan and other SPDES permitting requirements.*	*None.*

CONCLUSIONS REGARDING ENVIRONMENTAL JUSTICE

For any sites selected for more detailed future evaluation as potential rail storage yards, environmental justice and other socioeconomic effects will be analyzed. ❖