A. INTRODUCTION

The New York State Department of Transportation (NYSDOT), in cooperation with the Federal Highway Administration (FHWA), proposes to reconstruct a portion of Route 9A between Chambers and West Thames Streets in Lower Manhattan. This area is being considered for reconstruction as a result of the terrorist attacks of September 11, 2001, that destroyed the World Trade Center (WTC) and severely damaged or destroyed additional nearby structures and transportation infrastructure including portions of Route 9A. The proposed project, which is being reviewed under the National Environmental Policy Act (NEPA) as a supplement to the 1994 Route 9A Reconstruction Project Final Environmental Impact Statement (FEIS), is one of several federally funded Lower Manhattan recovery projects proposed in response to the devastation of September 11, 2001. As a transportation cornerstone in this recovery effort, the project is intended to provide a safe and efficient transportation facility that meets the goals and objectives established for Route 9A, prior to and since September 11, 2001.

The proposed project takes into consideration the redevelopment efforts in Lower Manhattan; specifically, those at the WTC Site. These other initiatives have resulted in a new set of existing and future conditions, such as the WTC Memorial, which could not be foreseen in the 1994 FEIS. Therefore, while the project’s goals and objectives from the 1994 FEIS still apply, they have been updated and expanded to reflect this new set of conditions.

B. PROJECT IDENTIFICATION / LOCATION

Located near the Hudson River between Battery Place and 59th Street in Manhattan (see Figure S-1), Route 9A (also known as West Street) is a six- to eight-lane principal urban arterial with a continuous bikeway and walkway. Route 9A is a multi-modal facility used by cars, trucks, buses, bicycles, and pedestrians. The section of Route 9A that is the subject of the proposed project lies at the southern end of New York State Route 9A, which begins at Battery Place and extends northward for approximately 47.5 miles into northern Westchester County.

As shown in Figure S-1, NYSDOT is currently progressing two separate actions related to the reconstruction of Route 9A south of Chambers Street. In addition to the subject of this FSEIS, NYSDOT is reconstructing the Promenade South Project south of West Thames Street. Because of its similarity to the Selected Alternative from the 1994 Record of Decision, an FEIS re-evaluation, which satisfies the National Environmental Policy Act (NEPA) environmental review requirements, was performed to determine whether any supplemental analysis was required. Since the Promenade South Project would not result in any new significant adverse impacts from those discussed in the 1994 FEIS neither an environmental assessment (EA) nor an EIS was necessary for the project.
Corridor Map
Battery Place to 59th Street
FIGURE S-1
C. PROBLEM IDENTIFICATION

At the time of the September 11, 2001, terrorist attacks, the reconstruction of Route 9A pursuant to the 1994 FEIS Record of Decision (ROD) was nearly complete. The attacks destroyed the section of the roadway in the vicinity of the WTC, between Liberty and Vesey Streets. In this area, Route 9A consisted of four northbound and four southbound lanes, with a sidewalk on the eastern side of the roadway. The sidewalk, as well as the two easternmost northbound lanes, rested on top of the WTC garage structure, within what later became commonly known as the “bathtub.” This area, which is approximately 47 feet wide, was obliterated during the attacks. The attacks also heavily damaged the remaining portions of the roadway, which suffered further damage as the result of the post-September 11, 2001 recovery and cleanup efforts. The North Bridge, a pedestrian connection between the WTC and the World Financial Center (WFC) was also destroyed.

As soon as access into the damaged area was permitted, NYSDOT constructed a six-lane interim roadway between Liberty and Vesey Streets. Opened in March 2002, the interim roadway restored vehicular access and mobility on Route 9A and allowed the reopening of the Brooklyn-Battery Tunnel (BBT). The interim roadway, which is still in place, consists of three northbound and three southbound lanes, with no median and no turning lanes. To construct it, NYSDOT, in conjunction with PANYNJ, closed the entry ramps that had led to the WTC garage and removed the Port Authority Trans-Hudson (PATH) ventilation structures. The interim roadway was constructed with temporary pavement and provides less capacity than the eight-lane roadway (the selected alternative from the 1994 ROD) that existed prior to September 11, 2001.

After September 11, 2001, a temporary pedestrian bridge was constructed by NYSDOT in the vicinity of Rector Street to facilitate the crossing of Route 9A. NYSDOT also constructed a temporary pedestrian bridge at Vesey Street, which opened in November 2003.

TRANSPORTATION SERVICE

Route 9A serves regional, arterial, and local transportation activities and needs. It connects with the BBT; the Franklin Delano Roosevelt (FDR) Drive and the East River Bridges via the Battery Park Underpass (BPU); the Holland and Lincoln Tunnels; and the Henry Hudson Parkway, which provides access to the George Washington Bridge and Westchester County. The roadway is a major north-south artery in Manhattan’s street grid that serves through movements in the borough. It is also a local street that provides vehicular and pedestrian access to the activities, businesses, and residences that line its right-of-way.

Prior to September 11, 2001, this portion of Route 9A served 240,000 people per day, walking, biking, and driving. This figure included approximately 80,000 vehicles and 110,000 pedestrians. Each weekday morning peak hour, approximately 260 commuter buses carrying 14,000 people exited the BBT High Occupancy Vehicle (HOV) lane onto Route 9A.

Prior to September 11, 2001, three bridges, in addition to several at-grade crossings, provided pedestrian access across Route 9A. They connected the WFC and BPC with the WTC, subway and PATH stations, and other developments further east.

Since September 11, 2001, Route 9A crossing provisions for pedestrians have been reduced due to the loss of the north pedestrian bridge at the Winter Garden. The construction of the interim roadway, however, included measures to restore capacity for pedestrians. A new temporary pedestrian bridge was erected across Route 9A at Rector Street. More recently, another
temporary bridge was opened at Vesey Street. The south pedestrian bridge at Liberty Street was reopened with a temporary, covered, and elevated approach walkway leading along Liberty Street to the east.

Over the next 20 years, several development projects in Lower Manhattan will introduce or restore vehicle trips to Lower Manhattan. As described later in this FSEIS, residential and commercial development projects are anticipated to complete the build out of Battery Park City and the Washington Street Urban Renewal Area. New residential projects are also planned near the South Street Seaport, the Stock Exchange, and south of the WTC Site. As proposed under the WTC Memorial and Redevelopment Plan, the WTC Site itself will be developed with a memorial and memorial-related uses, 8 million square feet of office, up to 1 million square feet of retail, a hotel, and cultural facilities. Many of the residents, workers, and visitors to these developments will use Route 9A and its connections to the BBT, the Holland Tunnel, and the George Washington Bridge. Thus, traffic along the Route 9A corridor in the vicinity of the WTC Site will increase by 17 percent or more as compared to today.

D. PROJECT BACKGROUND

The goal of the Route 9A Reconstruction Project was to reconstruct Route 9A between Battery Place and 59th Street as a predominately at-grade urban boulevard with a continuous bikeway. A study was concluded in 1994 with the publication of a NEPA/State Environmental Quality Review Act (SEQRA) EIS/Section 4(f) and ROD. In Lower Manhattan from the Battery Park Underpass to Chambers Street, the selected alternative referred to as the Enhanced Basic Reconstruction Alternative featured an at-grade roadway with generally four northbound lanes and four southbound lanes; left turn lanes at appropriate locations; a bike path and walkway lying just to the west of the roadway; wide landscaped medians; urban design features; and, in the area of the WTC, direct connections to the WTC garage and a southbound connection to the BBT. North of Harrison Street, Route 9A features three southbound lanes and four northbound lanes. The fourth northbound lane is dropped at 14th Street where northbound 10th Avenue intersects Route 9A.

E. CURRENT PLANNING CONTEXT

NYSDOT has identified and analyzed a range of alternatives for this portion of Route 9A that is consistent with the project’s original goals and objectives, while considering the modified environment of Lower Manhattan. The alternatives have been developed in consideration of the other Lower Manhattan recovery projects, especially the proposed WTC Memorial and Redevelopment Plan, which is adjacent to the project site. The major contributors include the Lower Manhattan Development Corporation (LMDC) master planning effort and the WTC Memorial; Governor Pataki’s “Lower Manhattan Transportation Strategies,” and other federally funded transportation projects, including PANYNJ’s permanent WTC PATH Terminal, South Ferry Terminal, Fulton Street Transit Center, and projects by MTA/New York City Transit (NYCT).

WTC MEMORIAL AND REDEVELOPMENT PLAN

LMDC is a joint city and state public-benefit corporation that is tasked with overseeing the revitalization and rebuilding of Lower Manhattan. It is undertaking, in cooperation with the United States Department of Housing and Urban Development (HUD) and PANYNJ, a WTC Memorial and Redevelopment Plan. Based on a master plan by Studio Daniel Libeskind, the
project includes the construction of a WTC Memorial and memorial-related improvements, as well as commercial, retail, and hotel space; museum and cultural facilities; open space; new street configurations; and infrastructure improvements at the WTC Site and adjacent parcels.

A key part of LMDC’s planning efforts is the creation of a permanent memorial to those who were lost in the attacks on September 11, 2001 and in the prior attack in 1993. The memorial at the WTC Site is expected to attract an estimated 5.5 million visitors annually, and would increase the daily number of visitors in Lower Manhattan and the WTC Site to levels significantly above the pre-September 11, 2001 levels.

GOVERNOR’S LOWER MANHATTAN TRANSPORTATION STRATEGIES

On April 24, 2003, Governor Pataki distributed his plan for the redevelopment of Lower Manhattan. The plan, developed in coordination with LMDC, builds on many of the tenets of Mayor Bloomberg’s “Vision for a 21st Century Lower Manhattan” plan, and envisions an upgraded transportation network, which will complement development at the WTC Site and act as a catalyst for the economic rebirth of Lower Manhattan.

The document sets out the following four fundamental pillars for the plan:

- To provide a respectful setting for a memorial and create a grand promenade along West Street;
- To create a new grand point of arrival in Lower Manhattan;
- To rationalize and improve Lower Manhattan’s tangled web of subway lines; and
- To create direct rail and ferry access to Long Island and the region’s three major airports.

The plan proposes modifications to create a promenade to beautify Route 9A/West Street and provide connectivity between BPC and the rest of Lower Manhattan.

HUDSON RIVER PARK

The Hudson River Park Trust (HRPT) is vested with the responsibility of managing and developing the west portion of the Route 9A corridor and waterfront piers as a linear park and esplanade adjacent to Route 9A. The master plan provides for a bikeway and walkways, as was constructed as part of the Route 9A project. Currently, the HRPT is in the process of implementing the master plan and has retained design consultants to prepare construction documents in completed sections of West Street/Route 9A. Since Route 9A was not fully completed prior to September 11, 2001, no definitive HRPT plans have been provided south of Chambers Street. The proposed Hudson River Park will be developed in conjunction with the Route 9A Project and in coordination with the HRPT.

F. GOALS AND OBJECTIVES

The planning, development and selection of a preferred alternative in the 1994 FEIS were guided by three major goals:

- Provide effective, safe transportation service;
- Provide efficient, cost-effective transportation service; and
- Maximize benefits of the project, and minimize adverse impacts.

The project goals and objectives to support them were presented at NYSDOT’s June 24 and November 19, 2003 Public Information presentations. A simplified list of these goals and
Executive Summary

Objectives are the guiding principles being followed in the NYSDOT development of a “preferred alternative” for Route 9A in Lower Manhattan and are as follows:

- Permanently restore the functionality of Route 9A.
- Improve pedestrian movements along and across Route 9A.
- Provide for an appropriate and respectful setting for the World Trade Center Memorial.
- Enhance green areas and open space.
- Support economic recovery and development of Lower Manhattan.
- Ensure community involvement and public participation in an open and inclusive process.
- Coordinate with other major transportation and development projects.
- Avoid or minimize environmental and construction impacts to the community.
- Provide a safe, timely, and cost effective transportation solution.

EIS Process

The alternatives for the Route 9A Project are being examined in this Supplement to the 1994 FEIS. This FSEIS presents and evaluates reasonable alternatives for the proposed project; identifies significant impacts, both beneficial and adverse; and recommends measures to mitigate adverse impacts, where possible and prudent. This FSEIS responds to comments on the DSEIS which was published on May 28, 2004. A Public Hearing on the DSEIS was held on June 24, 2004. In addition, this FSEIS recommends a preferred alternative. NYSDOT has prepared this FSEIS with and on behalf of FHWA, and in coordination with appropriate federal, state and city agencies, including sponsors of the other Lower Manhattan recovery projects. The FHWA has approved the FSEIS circulation for public review and comment. Notices of document availability have been published. The FSEIS has been sent to public officials, interest groups, private individuals known to have an interest in the proposed action, and federal, state, and local agencies, as appropriate. The record will be open for public comment for 30 days after the Notice of Availability is published in the Federal Register per 23 CFR 771.127(a) and NYSDOT Project Development Manual Chapter 4, Section 4.4.3 NEPA Class I Phase IV.

Lower Manhattan Transportation Projects Coordination

NYSDOT, MTA/NYCT and PANYNJ have developed, in cooperation with FTA and FHWA, an Environmental Analysis Framework for Federally Funded Transportation Projects in Lower Manhattan. This framework seeks to evaluate and minimize potential adverse environmental effects, particularly the cumulative effects from other projects scheduled to be under construction in the area. It also intended to create a coordinated approach to environmental documentation and construction, and will be used by each public agency undertaking major construction in the area. It proposes to develop and incorporate environmentally friendly measures, i.e., Environmental Performance Commitments (EPCs), by each of the agencies undertaking projects in Lower Manhattan (see Table S-1). In addition to framework coordination, scheduling and efficient combining of projects will need to be considered.

Since publication of the DSEIS, Governor Pataki has announced the establishment of the Lower Manhattan Construction Command Center (LMCCC). The LMCCC will coordinate the public and private construction activities in Lower Manhattan from 2004 to 2010 focusing on many issues, including construction staging, traffic management, environmental commitments, community disruption, utility coordination, safety and security, and access for businesses.
Table S-1

Environmental Performance Commitments (EPCs)

<table>
<thead>
<tr>
<th>Technical Area</th>
<th>Proposed Commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>Use ultra low sulfur diesel fuel in off-road construction equipment with engine horsepower (HP) rating of 60 HP and above.</td>
</tr>
<tr>
<td></td>
<td>Where practicable, use diesel engine retrofit technology in off-road equipment to further reduce emissions. Such technology may include Diesel Oxidation Catalyst / Diesel Particulate Filters, engine upgrades, engine replacements, or combinations of these strategies.</td>
</tr>
<tr>
<td></td>
<td>Limit unnecessary idling times on diesel powered engines to 3 minutes</td>
</tr>
<tr>
<td></td>
<td>Locate diesel powered exhausts away from fresh air intakes.</td>
</tr>
<tr>
<td>Control dust related to construction site through a Soil Erosion Sediment Control Plan that includes, among other things: a) spraying of a suppressing agent on dust pile (non-hazardous, biodegradable); b) containment of fugitive dust; c) adjustment for meteorological conditions as appropriate.</td>
<td></td>
</tr>
<tr>
<td><strong>Noise and Vibration</strong></td>
<td>Where practicable, schedule individual project construction activities to avoid or minimize adverse impacts.</td>
</tr>
<tr>
<td></td>
<td>Coordinate construction activities with projects under construction in adjacent and nearby locations to avoid or minimize impacts.</td>
</tr>
<tr>
<td></td>
<td>Consider condition of surrounding buildings, structures, infrastructures, and utilities where appropriate.</td>
</tr>
<tr>
<td></td>
<td>Prepare contingency measures in the event established limits are exceeded.</td>
</tr>
<tr>
<td><strong>Cultural and Historic Resources</strong></td>
<td>Establish coordination among projects to avoid or minimize interruption in access to cultural and historic sites.</td>
</tr>
<tr>
<td></td>
<td>Initiate public information and involvement outreach with sensitivity to local cultural resources.</td>
</tr>
<tr>
<td></td>
<td>Identify public information outlets that will receive and provide current information about access during construction.</td>
</tr>
<tr>
<td></td>
<td>Consult with the New York State Office of Historic Preservation and the New York City Landmarks Preservation Commission regarding potentially impacted, culturally significant sites. Monitor noise and vibration during construction at such sites as appropriate.</td>
</tr>
<tr>
<td><strong>Access and Circulation</strong></td>
<td>Establish a project-specific pedestrian and vehicular maintenance and protection plan.</td>
</tr>
<tr>
<td></td>
<td>Promote public awareness through mechanisms such as: a) signage; b) telephone hotline; and c) Web site updates.</td>
</tr>
<tr>
<td></td>
<td>Ensure sufficient alternate street, building, and station access during construction period.</td>
</tr>
<tr>
<td></td>
<td>Regular communication with New York City Department of Transportation and participation in its construction efforts.</td>
</tr>
<tr>
<td><strong>Economic Effects</strong></td>
<td>Coordinate with LMDC, Downtown Alliance or other entities to minimize residential and retail impacts as required through: a) relocation assistance, as applicable, to persons to businesses physically displaced by the project; and b) focus on essential business and amenities to remain in Lower Manhattan.</td>
</tr>
<tr>
<td></td>
<td>Add appropriate signage for affected businesses and amenities.</td>
</tr>
<tr>
<td><strong>Design for the Environment</strong></td>
<td>Energy Efficiency/Renewable Energy</td>
</tr>
<tr>
<td></td>
<td>Enhanced Indoor Environmental Quality (IEQ)</td>
</tr>
<tr>
<td></td>
<td>Conserving Material and Resources</td>
</tr>
<tr>
<td></td>
<td>Environmentally-friendly Operations &amp; Maintenance</td>
</tr>
<tr>
<td></td>
<td>Water Conservation and Site Management</td>
</tr>
<tr>
<td></td>
<td>Waste Management and Recycling (including during construction)</td>
</tr>
</tbody>
</table>

residents and tourists. NYSDOT, as a member of the Lower Manhattan Construction Executive Committee, will coordinate the Route 9A construction activities with the LMCCC as the project moves through the design and construction stages.
G. DESCRIPTION OF THE ALTERNATIVES

The alternative development process considered a wide range of alternatives to address transportation needs and problems to meet project goals. The result was identification of a set of reasonable alternatives for study in the ESEIS, including a No Action Alternative. Alternatives include those that meet project goals and objectives and are thus suitable candidates for eventual selection as a recommended alternative. The analysis considered both non-reconstruction and reconstruction alternatives.

NON-RECONSTRUCTION ALTERNATIVES

- Public Transportation Alternatives—The 1994 Route 9A FEIS considered such transit operations as local or express bus service or a dedicated transitway in the development of alternatives. More local bus service and increased express bus or van service would affect only a small portion of travelers who use Route 9A, while a dedicated transitway would have low demand for service in the area.

  In addition, many of the project goals and objectives for the current ESEIS would not be met by a public transportation alternative alone. Therefore, the public transportation alternative has been eliminated from further consideration for this project.

- Transportation Systems Management (TSM) Alternative—A complete TSM alternative, thoroughly explored in the 1994 Route 9A FEIS, was developed for Route 9A from Battery Place to 59th Street. This alternative, including High-Occupancy Vehicle (HOV) lanes, was determined infeasible for reconstruction of Route 9A. The current conditions and vehicular use of Route 9A has not significantly changed; therefore, that conclusion is still valid for the proposed project. In addition, the goals and objectives of the current Route 9A project are different and further indicate these strategies will not fulfill those needs.

- Transportation Demand Management (TDM) Alternative—The inclusion of Intelligent Transportation Systems (ITS) improvements was considered in the 1994 Route 9A Project for the Preferred Alternative. A separate NYSDOT ITS installation project is currently underway for the Route 9A corridor. The project will provide such ITS elements as closed circuit television cameras; video image detectors or traffic controllers and related features; and fiber optic cables and conduits.

RECONSTRUCTION ALTERNATIVES

Three alternatives are under consideration for the Route 9A Project: the No Action, the At-Grade, and the Short Bypass.

NO ACTION ALTERNATIVE

The No Action Alternative would make permanent the six-lane temporary roadway that was constructed after the September 11, 2001 terrorist attacks. Reconstruction of the temporary pavement and other minor improvements would be necessary under this alternative.

The alternative can be divided into three geographical sections:

West Thames Street to Murray Street

Here, the No Action Alternative would retain the existing roadway, four lanes northbound and three lanes southbound. The narrow, 10-foot-wide sidewalk east of the roadway and the
northbound parking/standing lane would be retained. The temporary Rector Street pedestrian bridge would be removed. A possible future bridge at Rector/Carlisle Streets is under study. No changes would be made to the existing bikeway, adjacent community/park facilities, lawn, and parking areas on the west side of Route 9A.

Albany Street to Murray Street

In this area, the six-lane temporary roadway that was opened in March 2002 would remain as the permanent Route 9A roadway. To accommodate the WTC slurry wall (the “bathtub”) and haul road, the alignment of the temporary roadway in the area between Cedar and Barclay Streets was shifted slightly westward of the pre-September 11, 2001 roadway; once it is no longer needed for construction, the haul road would be removed.

The roadway’s temporary asphalt pavement would be replaced with permanent pavement. The current concrete median barrier, which separates the six lanes (three in each direction) would be replaced with a narrow, raised median area. Single left-turn lanes would be provided in both directions at Liberty Street and at Vesey Street. The Liberty Street pedestrian bridge would be modified or replaced, and the temporary Vesey Street bridge removed. A possible new bridge could be provided at Murray Street.

The six-lane roadway would transition to the pre-September 11, 2001 sections in the vicinity of Cedar and Barclay Streets, where four lanes exist in each travel direction. The west curb line would match the current west curb line, thereby retaining the pre-September 11, 2001 and current frontage at the World Financial Center (WFC).

The limited roadway work would be coordinated with the WTC Site and PATH improvements now under consideration by LMDC and PANYNJ, respectively. These actions include:

- Extension of the WTC Site and slurry wall south of Liberty Street;
- Relocation of river water cooling intake and discharge lines;
- PATH ventilation and emergency egress;
- A planned pedestrian concourse beneath Route 9A in the vicinity of Fulton Street; and
- Freedom Tower and the WTC Memorial development.

Murray Street to Chambers Street

No changes would be made to the existing roadway except for concrete pavement repair as needed. The alternative would maintain the existing four lanes in each travel direction with separate left-turn lanes at northbound and southbound Murray Street, northbound Warren Street, and southbound Chambers Street. The 15-foot-wide east sidewalk would be retained, as would the current bikeway and walkway on the west side.

Schedule

The replacement of the temporary pavement on the interim roadway between Cedar and Barclay Streets would be coordinated with work related to the WTC Site and PATH. The other sections have new pavements with a 50-year design life and would need routine maintenance.

Cost

The estimated cost of the No Action Alternative is $135 million, including design, inspection, construction, and cost escalation.
AT-GRADE ALTERNATIVE

West Thames Street to Albany Street

The alternative would retain this section’s current lane configuration of four northbound lanes and three southbound lanes separated by the West Street Underpass. To accommodate pedestrian enhancements, the narrow east sidewalk area would be doubled in width. The northbound parking lane between J.P. Ward Street and north of Rector Street would be eliminated. Vehicular travel lanes would remain in their current condition, except at Carlisle and Albany Streets where they would be shifted from their current configuration by 20 feet. A parking/taxi loading zone would be provided between Carlisle and Albany Street, and the right travel lane could be used as a loading/unloading lane during off-peak hours between J.P. Ward and Carlisle Streets. The alternative would include the continuous Class I bikeway west of the roadway, with some minor adjustments near Albany Street, and a continuous walkway, or promenade, separated from the bikeway by a planting strip. The temporary Rector Street bridge would be removed. A replacement bridge in the vicinity of Rector or Carlisle Streets is a possibility. The temporary playgrounds and other current uses to the west of Route 9A would be reconfigured as part of the Hudson River Park.

Albany Street to Murray Street

In this area, the At-Grade Alternative would restore the eight-lane configuration (four through lanes in each travel direction plus left-turn lanes) that existed prior to September 11, 2001. To improve pedestrian movements along and across West Street, a new at-grade pedestrian crossing would be provided at Fulton Street. The temporary Vesey Street Bridge would be removed, and a modified, or replacement, bridge provided at Liberty Street. A bridge at Vesey, Murray, or Warren Streets is also a possibility.

To provide more frontage area to accommodate pedestrians adjacent to the WTC Site, the northbound roadway would be shifted west (outside of the WTC bathtub slurry wall), and the east sidewalk area between Albany and Murray Streets would be widened. The shift in the roadway would result in a narrower frontage area at the WFC and a wide sidewalk area west of the WTC Site slurry wall adjacent to the WTC Memorial.

The At-Grade Alternative would accommodate the WTC Site and PATH improvements identified by the PANYNJ and LMDC described above under the No Action Alternative.

The grade of the roadway between Cedar and Vesey Streets would be raised to minimize the flooding potential of the WTC Site during a 100-year storm. With the regrading, the steps that lead to WFC buildings would be eliminated. The grading change may require the raising of the Vesey/West Street intersection and the sidewalk at the arcade corner of the Verizon Building.

Murray Street to Chambers Street

Between Murray and Chambers Streets, the current four northbound lanes would be maintained as in the No Action Alternative. The four-lane southbound and northbound roadways would be retained and a new southbound left turn lane added at Warren Street to help facilitate southbound Route 9A left turn movements. The sidewalk on the east side of Route 9A would be improved with urban design features but the 15-foot width would be retained. The median width in that area would be retained except for the new left turn at Warren.
Modified Features from DSEIS

The At-Grade Alternative includes the following modified design features from the At-Grade Alternative contained in the DSEIS:

- Reduced median width between Liberty and Vesey Streets and a single rather than dual left (southbound) turn lane at Vesey Street to increase frontage at the Memorial and Freedom Tower.
- Dual left turn lanes at Murray Street rather than single left turns.
- Retention of the existing pavement and east sidewalk widths.
- Retention of left turn lane configurations at Murray and Warren Street intersections to allow concurrent dual left turn movements.
- Retention of all roadway pavement north of Barclay Street.

Schedule

Construction for the At-Grade Alternative would take approximately 26 months to complete.

Cost

The estimated cost of the At-Grade Alternative is $265 million, including design, inspection, construction, and cost escalation.

SHORT BYPASS ALTERNATIVE

The Route 9A Short Bypass Alternative would reconstruct eight lanes in front of the WTC Site, and would feature four lanes placed below ground and four lanes at the surface (see Figure 2-4). Through traffic, which is estimated to make up 75 percent of the total traffic, depending on the travel direction and time of day, would travel below ground in a covered roadway, with portals at Liberty Street (south end) and Vesey Street (north end). The bypass would surface at Albany Street and Murray Street. Local traffic would remain on the surface lanes.

West Thames Street to Albany Street

In this area the Short Bypass Alternative is identical to the At-Grade Alternative except for minor differences in the alignment of the Albany Street intersection, where the entrance to the Short Bypass begins. The temporary Rector Street bridge would be removed and a possible future bridge at either Rector or Carlisle Streets is under study.

Albany Street to Murray Street

From Albany Street to Murray Street, the 1,100 foot long depressed bypass would be parallel to and approximately 15 to 20 feet from the WTC Site slurry wall. The roadway rises to the surface south of Murray Street, where there is a signalized intersection. Left turns would not be permitted on Route 9A at either Murray or Albany Streets, but vehicles from westbound Fulton Street would be able to access both the northbound and southbound surface roadways. The two southbound surface lanes would be located at the existing west side curb line, and a wide frontage area at the WFC site, between Liberty and Vesey Streets, would be maintained. To create a wider frontage and sidewalk area in front of the WTC Memorial and Freedom Tower, the two northbound lanes would be shifted west of the slurry wall to the greatest extent possible.

Extensive relocations of utility systems in the corridor would be required between Albany and Murray Streets, including that of a 78-inch interceptor sewer and related regulator tide gate, and
outfall sewer at Vesey Street. Several hundred communication conduits and cable/fiber optic lines that connect to the Verizon building at Vesey Street would also be relocated."

The grade of the surface streets would be raised to be consistent with the WTC Site elevations and the PANYNJ plans to raise the WTC Site slurry wall to avoid flooding during the 100-year storm, while accommodating the subsurface roadway, concourse and infrastructure, and utilities. This would necessitate adjustments to the top of the slurry wall and the grades at the entry to BPC Site 26, 2 WFC, 3 WFC, the Winter Garden, and garage entry. Like the At-Grade Alternative, the existing grade at the Vesey/West Thames Street intersection-Verizon Building arcade intersection would be retained.

Pedestrians would be able to cross the two, two-lane divided surface roadways on a wide crosswalk between the WFC and WTC sites at Fulton Street. To provide ample refuge for pedestrians, the northbound and southbound lanes would be separated by a median, that would vary in width from approximately 20 up to 100 feet wide at the Liberty and Vesey crossings. This alternative would modify, but retain the wide 2/3 WFC frontage, 9A bikeway/walkway, and proposed Hudson River Park along the west side of Route 9A.

The Short Bypass Alternative would remove the temporary Vesey Street pedestrian bridge, and the Liberty Street pedestrian bridge would no longer be necessary once construction is complete. A possible future bridge at Murray Street or Warren Street is under study.

The bypass structure would include a jet fan ventilation system. Related tunnel systems (fire, life-safety, closed circuit TV/ITS/traffic control monitoring, etc.) would also be incorporated, including a drainage pumping station located beneath each end of the bypass for storm water discharge.

Like the other alternatives, the Short Bypass Alternative would incorporate the possible WTC Site and PATH improvements identified by PANYNJ and LMDC, including a truck exit ramp from the WTC Site which would connect to the northbound bypass below Liberty Street with an acceleration lane. The PATH concourse and WTC Site river water intake and discharge lines would be located beneath the bypass structure. Ventilation requirements and emergency access for the PATH tubes will be studied during design development in conjunction with PANYNJ.

**Murray Street to Chambers Street**

The Short Bypass Alternative would provide the same treatment in this section as described for the At-Grade Alternative. Urban design enhancements would be provided throughout. The east sidewalk width would remain at 15 feet.

**Modified Features from DSEIS**

The Short Bypass Alternative includes the following modified design features from the Short Bypass Alternative contained in the DSEIS:

- Reduced median width between Liberty and Vesey Streets and realignment to increase frontage at the Memorial and Freedom Tower.
- Surface street left turn pockets added at Liberty and Vesey Street intersections.
- Narrowing of the bypass structure by placement of jet fans in roof notches rather than at the side walls to reduce utility conflicts and costs.

Retention of existing mainline pavement and east sidewalks north of Murray Street.
**Schedule**  
Construction of the Short Bypass Alternative would take approximately 48 months.

**Cost**  
The estimated cost of the Short Bypass Alternative is $895 million, including design, inspection, construction, and cost escalation.

**ALTERNATIVES AND CONCEPTS**

Table S-2 presents the alternatives and concepts that were discarded because they did not adequately meet the project needs or goals and objectives. An alternatives screening process resulted in the advancement of three feasible and reasonable alternatives for further study and consideration. Alternatives eliminated during the screening include various Long Tunnel Concepts (LTC) and a Lowered Roadway with Pedestrian Deck treatment at the WTC Site.

<table>
<thead>
<tr>
<th>Route 9A/West Street (West Thames Street to Chambers Street)</th>
<th>Alternatives/Concepts Considered</th>
<th>For Further FSEIS Analyses</th>
<th>Alternative Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Action</td>
<td>Yes</td>
<td>Post-September 11, 2001 six-lane interim roadway with minor upgrade (pavements, etc.)</td>
<td></td>
</tr>
<tr>
<td>At-Grade</td>
<td>Yes</td>
<td>1994 FEIS Preferred Alternative (eight lanes) realigned for exposed WTC Site slurry walls</td>
<td></td>
</tr>
<tr>
<td>Lowered Roadway with Pedestrian Deck (Discarded)</td>
<td>No</td>
<td>Lowered eight-lane Route 9A with pedestrian deck at WTC Site</td>
<td></td>
</tr>
<tr>
<td>Short Bypass</td>
<td>Yes</td>
<td>Four-lane depressed/covered roadway for through traffic with 4 surface lanes for local traffic</td>
<td></td>
</tr>
</tbody>
</table>

| Route 9A/West Street (Battery Place to Chambers Street)     | Long Tunnel (Discarded)        | No                           | Four-lane depressed Long Tunnel with six surface lanes from Murray Street to BBT Plaza and Battery Park Underpass |
| Mobility Concept/Alternatives (Discarded)                  | *                              | Public Transportation Alternative TSM, TDM, and ITS Concepts |

**Note:** * To be incorporated to the extent possible into the selected alternative.

**LOWERED ROADWAY WITH PEDESTRIAN DECK CONCEPT AT THE WTC SITE—WEST STREET (LIBERTY STREET TO VESEY STREET)**

The Lowered Roadway with Pedestrian Deck Concept is not being considered for further evaluation and study due to its incompatibility with the setting of the WTC Site Memorial featured in the selected Studio Daniel Libeskind plan for the WTC Site. The Memorial plan by Michael Arad and Peter Walker, which was selected in January 2004, also is incompatible with the deck pedestrian alternative.
LONG TUNNEL CONCEPT (BATTERY PLACE TO CHAMBERS STREET)

The LTC was discarded because of its inability to meet numerous project goals and objectives, its significant construction impacts and disruption to the surrounding community, and its lengthy closures of the approach ramps to the BBT and Battery Park Underpass during construction, resulting in significant traffic impacts to those heavily traveled roadways. In addition, the LTC would allow the reduction of only one lane in each direction and would cost approximately $2.3 billion.

It is, therefore, concluded that further study and/or consideration of the LTC are not warranted.

DISCARDED SHORT BYPASS ALTERNATIVE – CEDAR PORTAL OPTION

A Cedar Street southerly portal option of the Short Bypass Alternative presented in the DSEIS was dropped from further consideration since it would have more adverse effects, and not perform as well as the retained Short Bypass with a Liberty portal. The Cedar Portal Option had been presented in the DSEIS to assess whether there were any benefits with having the bypass coincide with the southerly extension of the WTC Site to Cedar Street.

Specifically the Cedar Portal Option was dropped for, among others, the following reasons:

- The Cedar Portal Option did not enhance the placement of WTC Site access ramps and other features at the WTC South Site.
- Southbound surface West Street traffic, due to the elimination of the Albany Street–Route 9A intersection, would not be able to access the West Street Tunnel to the BBT.
- The Cedar Portal Option affected the community facilities on the west side between West Thames Street and Albany Street.
- Northbound surface traffic from Carlisle and Albany Streets would not be able to access the northbound bypass.
- The Cedar Street Portal Option eliminated the Albany Street intersection.
- A Cedar Portal would have added more time in bypass construction duration at the south end of the bypass due to greater involvement with the West Street Underpass.
- The Cedar Street Portal Option would have been more costly than the Liberty Street Portal Option.

H. PREFERRED ALTERNATIVE

To reach a decision on the Preferred Alternative, the performance of the three project alternatives (No Action, At-Grade, and the Short Bypass) were assessed against the project goals using transportation, design, engineering, and environmental measures. Figure S-2 lists the nine project goals and illustrates the extent to which each alternative attained them.

Due to its inability to meet the basic transportation needs of the Route 9A corridor as well as failing to meet several project goals, the No Action Alternative could not be recommended.

As discussed above, both build (At-Grade and Short Bypass) Alternatives would meet or exceed all of the project goals developed as part of the project’s purpose and need. While their performance is similar with respect to improving transportation service over the No Action Alternative, both along Route 9A and throughout Lower Manhattan, their performance differs in other respects. Both Build...
GOAL | NO-ACTION | AT-GRADE | SHORT BYPASS
--- | --- | --- | ---
1. PERMANENTLY RESTORE THE FUNCTIONALITY OF ROUTE 9A/ WEST STREET | ☐ | ☒ | ☐
2. IMPROVE PEDESTRIAN MOVEMENTS ALONG AND ACROSS ROUTE 9A | ☐ | ☒ | ☐
3. PROVIDE FOR AN APPROPRIATE AND RESPECTFUL SETTING FOR THE WTC MEMORIAL | ☐ | ☒ | ☐
4. ENHANCE GREEN AREAS AND OPEN SPACE | ☐ | ☒ | ☐
5. SUPPORT ECONOMIC RECOVERY AND REDEVELOPMENT OF LOWER MANHATTAN | ☒ | ☒ | ☐
6. ENSURE COMMUNITY INVOLVEMENT AND PUBLIC PARTICIPATION IN AN OPEN AND INCLUSIVE PROCESS | ☐ | ☒ | ☐
7. COORDINATE WITH OTHER MAJOR TRANSPORTATION AND DEVELOPMENT PROJECTS | ☐ | ☒ | ☐
8. AVOID OR MINIMIZE ENVIRONMENTAL AND CONSTRUCTION IMPACTS TO THE COMMUNITY | ☐ | ☒ | ☐
9. PROVIDE A SAFE, TIMELY AND COST EFFECTIVE TRANSPORTATION SOLUTION | ☒ | ☒ | ☐

LEGEND: ☒ Exceeds Goal
☐ Meets Goals
○ Neutral
○ Does Not Meet Goals
☒ Fails
Alternatives would exceed two project goals. The Short Bypass Alternative would exceed Goal II: “Improve Pedestrian Movements Along and Across Route 9A” and Goal III: “Provide for an Appropriate and Respectful Setting for the WTC Memorial.” The At-Grade Alternative would exceed Goal VIII: “Avoid or Minimize Environmental and Construction Impacts to the Community” and Goal IX: “Provide a Safe, Timely and Cost-Effective Solution.” The At-Grade Alternative successfully achieves the project goals at a significantly lower cost, with a shorter construction period. It minimizes impacts to local utilities, which reduces schedule risk that could affect the economic recovery of Lower Manhattan. Therefore, for these reasons, and in consideration of the many public comments received supporting it, the At-Grade Alternative is recommended as the Preferred Alternative.

I. PROBABLE IMPACTS OF THE PROPOSED PROJECT

Tables S-3 and S-4 show the probable impacts of the proposed project during both the construction period and operation.

J. CUMULATIVE EFFECTS

The selected Project Alternative for the Route 9A Project would be part of the larger redevelopment of Lower Manhattan that includes transportation and development projects being sponsored by both public and private groups. Although funded and planned separately, these projects would have a cumulative effect on the character and quality of Lower Manhattan and the region as a whole both during and after construction. Recognizing the potential impacts of such large-scale development in a relatively small geographic area, the lead federal agencies have developed a framework for the analysis of cumulative impacts for projects being reviewed under NEPA.

The study of cumulative impacts focuses on subject areas most prone to potential adverse effects. The federal partners and local project sponsors identified five areas with the highest potential for cumulative effects—access and circulation; air quality; noise and vibration; cultural and historic resources; and economic factors. The local project sponsors have coordinated amongst themselves and with federal agencies to develop consistent methodologies, assumptions, data sources, and impact criteria for the evaluation of impacts for the five cumulative effects subject areas. Furthermore, the project sponsors agreed to a consistent set of EPCs for these resource areas to be implemented as part of their projects in order to minimize or avoid adverse impacts during construction.

The cumulative effects analysis considers both the potential short-term (construction period) and long-term (operational period) beneficial and adverse impacts. For short-term, construction period assessment, the analysis explicitly considers the cumulative effects of the five federally funded Lower Manhattan Recovery Projects—the Route 9A Project, permanent WTC PATH Terminal, WTC Memorial and Redevelopment Plan, Fulton Street Transit Center, and South Ferry Terminal. As discussed in Chapter 16, “Cumulative Effects,” other privately funded initiatives were considered but were not explicitly modeled. These projects were either too small to influence the outcome or were considered as part of the baseline from which cumulative effects were projected.

Generally, the long-term cumulative effects of projects currently planned for Lower Manhattan are beneficial while the short-term effects are adverse. Because the Lower Manhattan Recovery Projects are either improvements to existing infrastructure or replacements of facilities destroyed
## Table S-3

<table>
<thead>
<tr>
<th>Resource Area</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land Use, Public Policy, and Neighborhood Character</td>
<td>The minor construction activities associated with the No Action Alternative would not adversely impact land use or neighborhood character.</td>
<td>Lane closures, trucking activities, air pollutant emissions and noise associated with construction may temporarily affect the quality of life for Lower Manhattan’s employees, residents, and visitors; however, these disruptions would be temporary and no long-term effects to land use or neighborhood character would result.</td>
<td>While construction with the Short Bypass Alternative would be of longer duration than the At-Grade Alternative, the effects on land use and neighborhood character would be similar, since extensive below-grade work in Route 9A is necessary for specific elements of other Lower Manhattan Recovery Projects with any Route 9A alternative.</td>
</tr>
<tr>
<td>Socioeconomic Conditions</td>
<td>Similar to Land Use and Neighborhood Character, the short-term effects from construction of the No Action Alternative would not adversely impact socioeconomic conditions in the study area.</td>
<td>No residential or businesses displacement would occur since construction would occur entirely within the existing RT 9A right-of-way. A Maintenance and Protection of Traffic (MPT) plan would ensure that residents, employees, and visitors to Lower Manhattan can access existing residential, business, or retail establishments.</td>
<td>No residential or businesses displacement would occur since construction of the Short Bypass Alternative would occur entirely within the RT 9A right-of-way. A Maintenance and Protection of Traffic (MPT) plan would be developed to ensure that residents, employees, and visitors to Lower Manhattan can access existing residential, business, or retail establishments.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>Historic Resources: The No Action Alternative would not directly alter or disturb historic resources within the area of potential affect. Any changes to historic resources under this alternative would be attributed to construction associated with other nearby projects. All Route 9A alternatives have been designed to avoid covering the now exposed “bathtub” at the WTC site. Vibration generated by construction equipment has the potential to adversely impact fragile structures in the area of potential affect. A construction protection plan would be employed to mitigate any potential adverse effects on these structures.</td>
<td>PANYNJ-sponsored construction of the permanent WTC PATH Terminal, involving the pedestrian concourse and river water cooling lines, may require removal of short segments of the Hudson River Bulkhead, buried underground along the western edge of Route 9A. There would be no effect to the bulkhead as a result of New York State Department of Transportation (NYSDOT) highway work under the At-Grade Alternative. Vibration generated by construction equipment has the potential to adversely impact fragile structures in the area of potential affect. A construction protection plan, similar to the procedures developed as part of the FEIS, would be employed to mitigate any potential adverse effects on these structures.</td>
<td>Construction of the Short Bypass Alternative has the potential to directly disturb or alter the Hudson River Bulkhead. NYSDOT and FHWA, in consultation with the New York State Department of Parks, Recreation, and Historic Preservation, would develop measures to minimize or avoid potential adverse impacts to these listed or eligible historic resources. The existing Programmatic Agreement, developed for the 1994 FEIS, was amended to reflect the current conditions including the S/NR eligible WTC Site. No adverse effects would occur due to alteration or removal of elements of the WTC which are located beneath Route 9A.</td>
</tr>
<tr>
<td>Archaeological Resources</td>
<td>The No Action Alternative would not disturb known or suspected archaeological resources. Therefore, any potential impacts to archaeological resources under the No Action Alternative would result from activities associated with independent actions.</td>
<td>No adverse effects to pre-historic archaeological resources.</td>
<td>No adverse effects to pre-historic archaeological resources. See above for Hudson River Bulkhead.</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>The minor construction activities with the No Action Alternative would have no substantial effect on visual resources. To a greater degree, the visual environment with this alternative would be affected by other nearby construction projects. Above-grade construction activities would be temporary and may temporarily impact streetscape features. Therefore, it is not anticipated that there would be an adverse impact to visual resources and view corridors in the study area during the construction period.</td>
<td>While longer in duration than the At-Grade Alternative, the effects during construction with the Short Bypass Alternative would be similar.</td>
<td>While longer in duration than the At-Grade Alternative, the effects during construction with the Short Bypass Alternative would be similar.</td>
</tr>
<tr>
<td>Transportation</td>
<td>Vehicular Traffic and Parking: Project-generated construction vehicles would not result in any significant traffic dislocation for the project area. Project-generated construction vehicles would generally use Route 9A to access the project area. Approximately 200 trucks per day would be required during peak periods of activity with 50 to 60 vehicles per day. In particular, there would be no significant adverse impacts found as a result of adverse effects on corridors on alternative routes outside of the study area. NYSDOT is committed to preparing a traffic management plan to be employed during construction of the Route 9A Project as well as the other major Lower Manhattan Recovery Projects.</td>
<td>Project-generated construction vehicles would generally use Route 9A to access the project area. Approximately 200 trucks per day would be required during peak periods of activity with 50 to 60 vehicles per day. In particular, there would be no significant adverse impacts found as a result of adverse effects on corridors on alternative routes outside of the study area. NYSDOT is committed to preparing a traffic management plan to be employed during construction of the Route 9A Project as well as the other major Lower Manhattan Recovery Projects.</td>
<td>Similar to the At-Grade Alternative, the Short Bypass Alternative would generate approximately 200 trucks per day during peak construction activity with 50 to 60 vehicles on a typical day. NYSDOT would prepare a traffic management plan to be employed during construction, which would coordinate truck activity along Route 9A for all of the Lower Manhattan Recovery Projects.</td>
</tr>
<tr>
<td>Transit</td>
<td>The No Action Alternative would not result in any adverse impacts to transit service during the construction period.</td>
<td>Transit service along Route 9A would be maintained during construction of the At-Grade Alternative, avoiding any adverse effects.</td>
<td>Transit service would be maintained along Route 9A during construction of the Short Bypass Alternative, avoiding any adverse effects.</td>
</tr>
<tr>
<td>Pedestrians</td>
<td>Elements of the construction of other projects (i.e., South Ferry Terminal, the Permanent WTC PATH Terminal, and World Trade Center Memorial and Redevelopment Plan) may result in temporary disruptions to on-street, pedestrian circulation in the vicinity of Route 9A. However, the No Action Alternative, itself, would have no adverse impacts to pedestrians during the construction period.</td>
<td>The temporary pedestrian bridges at Rector and Vesey Streets would be maintained during construction of the At-Grade Alternative.</td>
<td>Similar to the At-Grade Alternative, the temporary bridges at Rector and Vesey Streets would remain in operation during construction of the Short Bypass Alternative.</td>
</tr>
</tbody>
</table>
### Probable Impacts of the Project Alternatives—Construction Period

<table>
<thead>
<tr>
<th>Resource Area</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality</strong></td>
<td>Under the No Action Alternative, emissions in the area would be highly influenced by the construction activity for the WTC Memorial and Redevelopment Plan, Permanent WTC PATH Terminal, Fulton Street Transit Center, and South Ferry Terminal, and other public and private development projects.</td>
<td>Construction of the At-Grade Alternative would result in increased emissions of carbon monoxide (CO), particulate matter (PM$<em>{10}$, PM$</em>{2.5}$) and NO$<em>x$ at receptor sites in close proximity to the construction zone. However, the increases in CO, PM$</em>{10}$, and NO$<em>x$ would not exceed National Ambient Air Quality Standards and, therefore, would not result in adverse impacts. However, increases in PM$</em>{2.5}$ would exceed the NYSDOT threshold guidance, at locations in close proximity to the construction zone. NYSDOT has committed to additional measures, including the use of Diesel Particulate Filters (DPFs) and Tier II equipment that would reduce particulate emissions up to 90%.</td>
<td>Similar to the results with the At-Grade Alternative, construction of the Short Bypass Alternative would increase PM$_{2.5}$ concentrations in excess of the NYSDOT criteria. NYSDOT has committed to additional measures, including the use of Diesel Particulate Filters (DPFs) and Tier II equipment that would reduce particulate emissions up to 90%.</td>
</tr>
<tr>
<td><strong>Noise and Vibration</strong></td>
<td>Under the No Action Alternative, noise levels in the area would be highly influenced by the construction activity for the WTC Memorial and Redevelopment Plan and the Permanent WTC PATH Terminal.</td>
<td>Project-related construction noise levels for the At-Grade Alternative would exceed the NYSDOT Guidance Level of 85 dBA Leq(1) at two receptor sites adjacent to Route 9A. The exceedances would generally occur between Murray and Liberty Streets. Depending upon the receptor location, the NYSDOT Guidance Level would be exceeded by project-related construction noise levels for approximately one and one-half to two and one-half months. Measures to mitigate these exceedances of construction noise guidance have been included in the FSEIS. Elevated levels of ground-borne vibration during the construction period have the potential to adversely impact historic buildings in close proximity (within approximately 90 feet) of the project site. These structures are located on the east side of Route 9A and include the Barclay-Vesey Building (140 West Street) and 90 West Street. Detailed construction noise and vibration abatement measures are currently being developed. These measures will be consistent with the Route 9A Special Note for Building Condition Survey and Vibration Control, the Route 9A Special Note for Noise Control, and the Environmental Performance Commitments (EPCs) relating to noise and vibration that have been developed for all Lower Manhattan Recovery Projects. Since noise and vibration levels at certain locations affected by Route 9A construction activities would also be affected by construction activities related to PANYNJ's permanent WTC PATH Terminal and LMDC’s WTC Memorial and Redevelopment plan, noise and vibration abatement measures for these locations are being developed jointly with these other projects.</td>
<td>Project-related construction noise levels for the Short Bypass Alternative would exceed the NYSDOT Guidance Level of 85 dBA Leq(1) at three receptor sites adjacent to Route 9A. The exceedances would generally occur between Murray and Liberty Streets. Depending upon the receptor location, the NYSDOT Guidance Level would be exceeded by project-related construction noise levels for approximately three to eight months. As with the At-Grade Alternative, noise mitigation measures would be applied at all locations and during all time periods during which impacts occur, to ensure that construction noise impacts are mitigated to the greatest extent possible. Ground-borne vibration effects for the Short Bypass Alternative would be similar to those for the At-Grade Alternative. As discussed for the At-Grade Alternative, detailed construction noise and vibration abatement measures are being developed, consistent with the Route 9A Special Notes and the EPCs, and in conjunction with the other Lower Manhattan Recovery Projects for locations that are affected by multiple projects.</td>
</tr>
<tr>
<td><strong>Utilities</strong></td>
<td>No major utility relocations would be required under the No Action Alternative. However, relocations may be required for elements of PANYNJ’s Permanent WTC PATH Terminal and LMDC’s WTC Memorial and Redevelopment.</td>
<td>Similar to the No Action Alternative, the At-Grade Alternative by itself would not require any substantial utility relocation.</td>
<td>The Short Bypass Alternative would require the relocation of the sewers between Barclay and Cedar Streets, including a 78-inch interceptor. Three NYDEP water mains would also be relocated. It is anticipated that the WTC river water cooling lines beneath Route 9A would be rebuilt.</td>
</tr>
<tr>
<td>Resource Area</td>
<td>No Action Alternative</td>
<td>At-Grade Alternative</td>
<td>Short Bypass Alternative</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Energy and Greenhouse Gases</strong></td>
<td>Total construction energy consumption would be 1,174 billion BTU with greenhouse gas emissions of 18,746 tons Carbon under the No Action Alternative.</td>
<td>Total construction energy consumption would be 1,677 billion BTU with greenhouse gas emissions of 36,505 tons Carbon under the At-Grade Alternative.</td>
<td>Total construction energy consumption would be 5,793 billion BTU with greenhouse gas emissions of 126,091 tons Carbon under the Short Bypass.</td>
</tr>
<tr>
<td><strong>Contaminated Materials</strong></td>
<td>Since the roadway is located in an area of past industrial use, there is a potential that soils and/or groundwater beneath Rt. 9A may have been contaminated. While the No Action Alternative would not require any deep excavation, work related to other projects in the Route 9A corridor would. Therefore, the potential for impacts to contaminated materials would be present and mitigation measures similar to the At-Grade and Short Bypass would be required.</td>
<td>The At-Grade Alternative would have the potential to disturb mostly shallow soils impacted by WTC debris or potentially contaminated fill. Deeper excavation would be required for the LMDC and PANYNJ’s projects. Between the DSEIS and FSEIS subsurface testing of the soil and groundwater beneath Route 9A was conducted. While no hazardous materials were detected, contaminated soil similar to what was previously found in the 1994 FEIS, typical of NYC fill material, were encountered. To avoid any adverse impacts to workers, the public, and the environment, mitigation measures would be employed. Measures to be employed during construction include the implementation of a Health and Safety Plan and Soil and Groundwater Management Plans.</td>
<td>Similar to the At-Grade Alternative, but to a greater extent, the Short Bypass Alternative could disturb contaminated soil beneath Route 9A and/or groundwater. The work required for the LMDC and PANYNJ’s projects would further increase the amount of contaminated material that could be involved. The mitigation measures would be the same as discussed for the At-Grade Alternative.</td>
</tr>
<tr>
<td><strong>Natural and Water Resources</strong></td>
<td>Generally, the natural resources at the project site are characteristic of those found in the urban landscape. There are no known endangered or threatened species, nor any of special concern at the site. No tidal or freshwater wetlands are present, nor are there sensitive habitats. The majority of the roadway runoff drains to the City’s combined sewers, with overflows to the Hudson River at several locations along the roadway. The No Action Alternative would not adversely affect these resources.</td>
<td>During construction, a Stormwater Pollution Prevention Plan (SWPPP) would be implemented, including best management practices for erosion and sediment control to minimize any adverse effects to the municipal stormwater system.</td>
<td>Similar to the At-Grade Alternative, a SWPPP would be implemented to minimize any adverse effects to natural and water resources during construction of the Short Bypass Alternative.</td>
</tr>
</tbody>
</table>
### Table S-4
Probable Impacts of the Project Alternatives—Opening and Design Years

<table>
<thead>
<tr>
<th>Land Use, Neighborhood Character, and Public Policy</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By 2025</strong> the project’s design year, development of the study area is expected to intensify as the recovery of Lower Manhattan is completed. Overall, an additional 14 million square feet of office space, 1 million square feet of retail space, one-thousand hotel rooms, 3,200 residential units and over 800,000 square feet of cultural and educational space is expected to be developed. These developments are consistent with existing trends to create a more mixed-use community throughout Lower Manhattan, while maintaining a strong community presence. Under the No Action Alternative this development would increase traffic volumes beyond the roadway’s ability to process it efficiently. This would lead to increases in congestion and delays not only on Route 9A, but also on Manhattan’s principle Westside North/South arteries (e.g., Broadway, Greenpoint St. and Church St.). These conditions could impede business operations, increase commute times and negatively impact the business and residential communities. This would result in adverse impacts on the neighborhood’s character. This Alternative would be inconsistent with existing city, state and federal policies that support the recovery and growth of Lower Manhattan as both a central business district and an evolving 24-hour community.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>By restoring the roadway’s capacity to pre-September 11, 2001 conditions, the At-Grade Alternative would improve future traffic flow in the areas compared to the No Action Alternative and positively affect land use and neighborhood character. This alternative would not adversely affect neighborhood character and would be consistent with the goals of city, state and federal agencies to restore the transportation network of Lower Manhattan.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By restoring transportation service along Route 9A, the At-Grade Alternative would provide a better contextual environment than the No Action Alternative in terms of transportation service, access and urban design. Generally, over the long term, the No Action Alternative would not substantially affect the context of any historic resource. However, increased congestion with this alternative could affect access to some of the area’s resources, both on Route 9A and on Church Street and Broadway.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Similar to land use and neighborhood character over the next twenty years, Lower Manhattan is expected to recover from the attacks of September 11, 2001 and by 2025 increase population and employment beyond previous levels. The increase in traffic congestion, resulting in higher vehicle delays throughout the study area with the No Action Alternative would have an adverse effect on the overall socioeconomic conditions in Lower Manhattan.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The At-Grade Alternative would provide the greatest benefit to socioeconomic conditions in Lower Manhattan by removing traffic from inland streets and decreasing overall congestion to the greatest extent of the three alternatives. No direct displacement would result from this alternative.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The Short Bypass Alternative would result in slightly greater benefits to neighborhood character and land use by providing a higher level of transportation service than the other alternatives. This alternative would remove the greatest amount of traffic from inland streets, resulting in lower congestion levels and travel times of the three alternatives. While the At-Grade Alternative would restore the transportation service lost on September 11, 2001, the Short Bypass Alternative would improve upon these conditions.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Similar to the At-Grade Alternative, the improved transportation service with the Short Bypass Alternative would provide an improved context with respect to historic structures as compared to the No Action and At-Grade Alternatives.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Since the No Action Alternative would not directly result in changes to the WTC site or adjacent properties, any contextual impacts to historic resources would be the result of other independent actions.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Like the No Action Alternative, the At-Grade Alternative would not have resulted in construction in areas with known or potential archaeological sensitivity, there would be no adverse impacts to archaeological resources.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Visual Resources</strong></td>
<td><strong>With the No Action Alternative, there would be limited ability and space for urban design and aesthetic improvements although some limited work would be included.</strong></td>
<td><strong>The At Grade Alternative would result in substantial improvement in visual quality in the study area. A promenade would be created that would enhance the pedestrian spaces both adjacent to the planned WTC Memorial and along the project’s length. This alternative would include a comprehensive landscaping plan including street tree planting, decorative lighting and appurtenances, decorative pavement and other amenities. Sidewalks would be widened providing for enhanced pedestrian crossings and opportunities for pedestrian-oriented ground-level uses.</strong></td>
<td><strong>Similar to the At Grade Alternative, the Short Bypass Alternative would result in substantial improvement to the visual quality of the project area. The Short Bypass Alternative provides for even more area on the surface to accommodate pedestrians, enhance greenspace and open space than the At Grade Alternative. It provides for an additional benefit of removing several thousand vehicles per hour from surface traffic at the site of the proposed WTC Memorial. The potential adverse effects of the bypass ramps would be mitigated by utilizing a high standard of detailing and materials on their walls.</strong></td>
</tr>
</tbody>
</table>
### Probable Impacts of the Project Alternatives—Opening and Design Years

<table>
<thead>
<tr>
<th>Vehicular Traffic and Parking</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>The No Action Alternative would result in a reduction in traffic volumes and vehicle-miles-traveled (VMT) along Route 9A as compared to either Build alternative. Subsequently, traffic on inland streets (Greenwich Street, Broadway and Church Street) would increase with the No Action Alternative. Annual vehicle-hours-of-delay (VHD) would be 755,000 in the study area with 8,000 hours at AM peak and 3,000 hours at PM peak hours. A total of 18 and 16 intersection movements would operate at LOS E or F during the AM and PM peak hours, respectively. The number of intersection significantly affected by queues would be 5 and 2 in the two peak hours, respectively.</td>
<td>The At-Grade Alternative would increase traffic volumes on Route 9A as compared to the No Action Alternative. The At-Grade Alternative results in improving traffic flow in the study area. Annual VHD would be 555,000 hours with 7,500 hours at AM peak and 2,000 hours at PM peak. The number of intersection movements experiencing poor LOS (E or F) would be reduced to 5 in the AM and F in the PM peak hours. Not only would this degrade transit operations along Route 9A but it may also degrade bus operations on interior streets where traffic diverted from Route 9A would increase delays and decrease average travel speeds.</td>
<td>The Short Bypass Alternative would result in the highest traffic volumes and VMT along Route 9A. VMT on Route 9A within the study area would increase by approximately 10 percent in both the AM and PM peak periods. Annual VHD and PHD would be 458,000 and 1.1 million hours, respectively. The number of intersection movements operating at LOS E or F would be reduced to 20 and 12 in the two peak periods. No Route 9A intersections would be impacted by significant queues under this alternative.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Probable Impacts of the Project Alternatives—Opening and Design Years</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>The No Action Alternative would result in a reduction in traffic volumes and vehicle-miles-traveled (VMT) along Route 9A as compared to either Build alternative. Subsequently, traffic on inland streets (Greenwich Street, Broadway and Church Street) would increase with the No Action Alternative. Annual vehicle-hours-of-delay (VHD) would be 755,000 in the study area with 8,000 hours at AM peak and 3,000 hours at PM peak hours. A total of 18 and 16 intersection movements would operate at LOS E or F during the AM and PM peak hours, respectively. The number of intersection significantly affected by queues would be 5 and 2 in the two peak hours, respectively.</td>
<td>The At-Grade Alternative would increase traffic volumes on Route 9A as compared to the No Action Alternative. The At-Grade Alternative results in improving traffic flow in the study area. Annual VHD would be 555,000 hours with 7,500 hours at AM peak and 2,000 hours at PM peak. The number of intersection movements experiencing poor LOS (E or F) would be reduced to 5 in the AM and F in the PM peak hours. Not only would this degrade transit operations along Route 9A but it may also degrade bus operations on interior streets where traffic diverted from Route 9A would increase delays and decrease average travel speeds.</td>
<td>The Short Bypass Alternative would result in the highest traffic volumes and VMT along Route 9A. VMT on Route 9A within the study area would increase by approximately 10 percent in both the AM and PM peak periods. Annual VHD and PHD would be 458,000 and 1.1 million hours, respectively. The number of intersection movements operating at LOS E or F would be reduced to 20 and 12 in the two peak periods. No Route 9A intersections would be impacted by significant queues under this alternative.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transportation</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Because the No Action Alternative would not restore capacity on Route 9A, congestion would increase as vehicle trips to Lower Manhattan increase with the completion of current and future redevelopment efforts. Not only would this degrade transit operations along Route 9A but it may also degrade bus operations on interior streets where traffic diverted from Route 9A would increase delays and decrease average travel speeds.</td>
<td>The At-Grade Alternative would restore capacity along Route 9A as compared to the No Action Alternative resulting in a decrease in congestion on Route 9A and other streets in the study area. This would lead to higher average speeds for buses and generally improve transit service.</td>
<td>The Short Bypass Alternative would improve traffic flow in the study area resulting in lower travel times for surface transit users as compared to the No Action Alternative.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pedestrians</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>As compared to the build alternatives, the No Action Alternative would result in the greatest number of pedestrian locations that would operate at substandard LOS E/F condition during peak hours. These conditions would require a permanent pedestrian bridge over Route 9A at Liberty Street.</td>
<td>Similar to the No Action Alternative, the At-Grade Alternative would not result in localized exceedances of the NAAQS. This alternative would decrease emissions of CO, NOx, VOC, and particulate matter by 64 tons per year over the No Action Alternative in 2009 and by 21 tons per year in 2015.</td>
<td>Similar to the other alternatives, local concentrations of CO and PM10 would be below their respective NAAQS. The Short Bypass Alternative would further reduce emissions of CO, NOx, VOC, and particulate matter from the At-Grade Alternative, resulting in a reduction of more than 71 tons per year over the No Action Alternative in 2009 and by more than 26 tons per year in 2015.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Quality</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concentrations of Carbon Monoxide (CO) and PM10, adjacent to Route 9A would be below the National Ambient Air Quality Standards (NAAQS). However, the No Action Alternative would increase emissions of CO, Nitrogen Oxides (NOx), Volatile Organic Compounds (VOC), and particulate matter in Lower Manhattan by more than 54 and 1 tons per year in 2009 and by 34 and 11 tons per year in 2015 as compared to the At-Grade alternative.</td>
<td>Noise levels under the No Action Alternative would approach or exceed FHWA's Noise Abatement Criteria (NAC) at 6 outdoor uses, 72 existing dwelling units, and 103 future dwelling units. The NYSDEC criterion for substantial exceedance of existing noise levels would not be met at any receptors under the No Action Alternative.</td>
<td>The Short Bypass Alternative would result in noise impacts at 6 outdoor uses, 272 existing dwelling units, 103 future dwelling units, and a total of 4 commercial and institutional buildings. The NYSDEC criterion for substantial exceedance of existing noise levels would not be met at any receptors under the NAC.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Noise and Vibration</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise levels under the At-Grade Alternative would approach or exceed FHWA's Noise Abatement Criteria (NAC) at 6 outdoor uses, 72 existing dwelling units, and 103 future dwelling units. The NYSDEC criterion for substantial exceedance of existing noise levels would not be met at any receptors under the No Action Alternative.</td>
<td>The At-Grade Alternative would result in noise impacts at 6 outdoor uses, 272 existing dwelling units, 103 future dwelling units, and a total of 4 commercial and institutional buildings. The NYSDEC criterion for substantial exceedance of existing noise levels would not be met at any receptors under the At-Grade Alternative.</td>
<td>As with the At-Grade Alternative, a range of noise abatement measures was considered and none were found to be reasonable and feasible in the context of the goals and objectives of the proposed project. As a result, the noise impacts expected to result from the At-Grade Alternative would remain unabated.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infrastructure and Energy</th>
<th>No Action Alternative</th>
<th>At-Grade Alternative</th>
<th>Short Bypass Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual energy usage (269 billion BTU) and greenhouse gas emissions (5,862 tons Carbon) by vehicles in the corridor would be higher with the No Action Alternative than either of the build alternatives due to increased fuel consumption from vehicles in Lower Manhattan traveling on more congestive roadways.</td>
<td>Annual energy usage (244 billion BTU) and greenhouse gas emissions (2,525 tons Carbon) by vehicles in the study area would be reduced as compared to the No Action Alternative and higher than the Short Bypass Alternative.</td>
<td>Annual energy usage (222 billion BTU) and greenhouse gas emissions (1,835 tons Carbon) in the study area would be the lowest with the Short Bypass Alternative. However, some of this energy savings would be offset by the energy consumption that powers the alternative’s bypass exhaust system. The Short Bypass Alternative would require an additional 4.5 billion BTUs per year to power the alternative’s mechanical (e.g., ventilation, lighting, pumps, etc.) systems.</td>
<td></td>
</tr>
<tr>
<td>Natural and Water Resources</td>
<td>Any adverse impacts to natural and water resources under the No Action Alternative would result from the construction or operation of independent projects on or near the WTC site. The No Action Alternative itself would not result in adverse impacts to natural and water resources.</td>
<td>The additional green space and plantings would benefit wildlife by providing some habitat and green connections between Hudson River Park and Battery Park. Stormwater generated on-site would be discharged to the City’s combined sewer system, the same as the pre-September 11, 2001 roadway. Therefore, this alternative would not result in adverse impacts to aquatic species or water quality. The proposed project would not have an adverse effect on floodplains or increase the risk of flooding.</td>
<td>The potential impacts to natural and water resources, including floodplains, for this alternative would be the same as described for the At-Grade Alternative. The Short Bypass Alternative would provide a more expansive green space than the No Action and At-Grade Alternatives and therefore increased benefits to wildlife.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Coastal Zone Management</td>
<td>Because the No Action Alternative would be inconsistent with long range plans for Lower Manhattan, it would not comply with one of the ten policies of New York City’s Local Waterfront Revitalization Program.</td>
<td>This alternative would be consistent with the policies set forth in the New York City Local Waterfront Revitalization Program.</td>
<td>Similar to the At-Grade Alternative, the Short Bypass Alternative would be consistent with the policies set forth in New York City’s Local Waterfront Revitalization Program.</td>
</tr>
<tr>
<td>Contaminated Materials</td>
<td>The No Action Alternative would not have adverse impacts from the generation of or exposure to contaminated materials during the operation of the project. Any hazardous waste encountered during construction would be removed from the project site while other contaminated materials would be remediated or isolated in-situ. Thus, this alternative would not result in adverse impacts from the exposure to generation of contaminated materials.</td>
<td>Similar to the At-Grade Alternative, any hazardous waste encountered during construction would be removed from the project site. Other contaminated material would be remediated or isolated in-situ. Thus, this alternative would not result in adverse impacts from the exposure to generation of contaminated materials.</td>
<td>Similar to the At-Grade Alternative, any hazardous waste encountered during construction would be removed from the project site and other contaminated material would be remediated or isolated in-situ. Thus, this alternative would not result in adverse impacts from the exposure to generation of contaminated materials.</td>
</tr>
</tbody>
</table>
Executive Summary

On September 11, 2001, they have been planned with the specific purpose of economic recovery coupled with improvements to the environment of Lower Manhattan. This is particularly true with respect to transportation, since all five Lower Manhattan Recovery Projects include elements that would improve access to, from, and within Lower Manhattan as compared to pre-September 11, 2001 conditions. However, to attain these goals, the area would experience an intense level of construction over the next several years. Therefore, this cumulative analysis gives a greater focus to minimizing and mitigating of the potential adverse effects during construction of these projects.

SHORT-TERM CONSTRUCTION PERIOD EFFECTS

It is estimated that four federally sponsored, Lower Manhattan Recovery Projects, as well as numerous private development projects, would be in construction concurrent with the peak construction activity for the Route 9A Project. Due to the anticipated volume of construction activity, 2006 was designated as the peak year for analysis purposes in the DSEIS. Based on current project schedules, peak cumulative construction activity for the Lower Manhattan Recovery Projects would occur in 2007 through 2008. The analysis of 2006 in the DSEIS was a conservative estimate of the potential adverse effects due to the cumulative construction of the recovery projects. Therefore, the analysis and the estimated construction activity in the critical year has been retained in this FSEIS.

ACCESS AND CIRCULATION

An analysis was conducted for the potential construction period impacts from the combined increase in vehicle traffic during the construction period and geometric changes to Route 9A associated with construction of the Short Bypass. During the AM and PM peak hours, there would be no adverse impacts to intersections along Route 9A in the peak construction year.

Although there would be no adverse impacts to intersections along Route 9A, NYSDOT, in cooperation with the other Lower Manhattan project sponsors and NYCDOT, would develop an overall plan to manage traffic during construction of the Lower Manhattan Recovery Projects. This plan would coordinate the elements of the individual project Maintenance and Protection of Traffic (MPT) Plans to provide for access throughout Lower Manhattan.

AIR QUALITY

As described in Chapter 2, “Project Alternatives” and Chapter 3, “Construction Practices,” NYSDOT would implement EPCs to reduce the potential construction period impacts of the project. These measures were developed through a coordinated effort of the sponsors of the Lower Manhattan recovery projects and would be incorporated into construction of each project to cumulatively reduce air quality emissions.

Although measures to reduce the emission of particulate matter from construction activities have been incorporated into the existing project and taken into account in this analysis, adverse impacts have been predicted in the vicinity of the site. Since the cumulative impact from the other major projects are predicted to impact air quality in the same area, further coordinated action would be necessary to reduce emissions from all construction activities to minimize the emission of particulate matter.
With a commitment by all of the major reconstruction projects to implement a combination of the mitigation measures shown in Chapter 9, “Air Quality,” projected PM emissions from construction equipment would be substantially reduced.

LMDC has incorporated additional mitigation measures in the Record of Decision (ROD) for the WTC Memorial and Redevelopment Plan, which were included in the baseline assessment above. NYSDOT is committed to the additional mitigation measures as described in Chapter 9, “Air Quality,” and reiterated below. PANYNJ and FTA has recognized the same need in the Draft EIS for the WTC Permanent Path Terminal. MTA has proposed emissions reductions as part of the Fulton Street Transit Center project. The following additional mitigation measures are being planned by PANYNJ, FTA, MTA and NYSDOT:

- Electrification
- Advanced Reduction Technologies such as DPFs
- Newer Tier 2 Engines
- Fuel Emulsions

These measures were developed through a coordinated effort of the sponsors of the Lower Manhattan Recovery Projects and would be incorporated into construction of each project to cumulatively reduce air quality emissions. As described above, NYSDOT’s current mitigation plan, as it pertains to air quality, assumes a higher level of commitment to reduce emissions than was originally agreed to under the coordinated EPCs.

Maximum cumulative PM$_{2.5}$ increments were predicted to be reduced by mitigation by approximately 66 percent. More important, potential for exceedance of the PM$_{10}$ 24-hour NAAQS would be eliminated, the extent of increments above local threshold levels could be significantly reduced, and the potential for exceedances of the 24-hour NAAQS for PM$_{2.5}$ would be reduced to a single location adjacent to the site boundary, along the Route 9A bikeway.

**NOISE AND VIBRATION**

Table S-5 shows maximum predicted L$_{eq}$ noise levels in the year 2006 resulting from construction of the major Lower Manhattan Recovery Projects, without mitigation. The predicted noise levels with construction of the Route 9A At-Grade and Short Bypass Alternatives without mitigation are also shown for comparison. At Site 4, cumulative construction noise levels would be dominated by construction of the southern extension of the WTC Site, and contributions from Route 9A construction activities would be relatively minor. However, at Sites 5 and 6, Route 9A construction activities would be a major contributor to cumulative noise levels.

The results of the cumulative analysis show that construction operations would substantially increase noise levels at sensitive receptors immediately adjacent to the sites of the various major recovery projects. In addition, these impacts would occur for a considerable period of time.

The construction projects would also result in varying degrees of ground vibration, depending on the stage of construction, the equipment and construction methods employed, and the distance from the construction to buildings and vibration-sensitive structures. Cumulative vibration effects are a concern at several historic buildings (e.g., Barclay-Vesey, 90 West Street) on the east side of Route 9A.
Table S-5
Cumulative Construction Noise Levels (in dBA)

<table>
<thead>
<tr>
<th>Receptor Site</th>
<th>Location</th>
<th>Cumulative Construction Noise Levels $L_{eq(1)}$</th>
<th>Route 9A At-Grade Alternative Construction Noise Levels $L_{eq(1)}$</th>
<th>Route 9A Short Bypass Alternative Construction Noise Levels $L_{eq(1)}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Albany Street between Route 9A and Washington Street (Marriott Hotel)</td>
<td>83</td>
<td>69</td>
<td>73</td>
</tr>
<tr>
<td>5</td>
<td>Route 9A between Liberty Street and Vesey Street (World Financial Center)</td>
<td>92</td>
<td>87</td>
<td>92</td>
</tr>
<tr>
<td>6</td>
<td>Vesey Street between North End Avenue and Route 9A (Embassy Suites)</td>
<td>86</td>
<td>83</td>
<td>86</td>
</tr>
</tbody>
</table>

The implementation of the mitigation measures would eliminate all construction noise impacts generated by the At-Grade and Short Bypass Alternatives, respectively. To address potential vibration impacts to nearby historic structures, NYSDOT, in consultation with the State Historic Preservation Officer (SHPO) has developed a Construction Protection Plan based on the requirements laid out in the “New York City Department of Buildings Technical Policy and Procedure Notice #10/88.” Furthermore, the amended Programmatic Agreement pursuant to Section 106 of the National Historic Preservation Act includes stipulations to protect historic structures during construction.

The other major Lower Manhattan Recovery Projects are also developing construction noise and vibration mitigation measures, examples of which are described in Chapter 16. Implementation of these mitigation measures is expected to minimize or eliminate construction-related individual and cumulative noise and vibration impacts. The sponsors of the Lower Manhattan Recovery Projects—LMDC, MTA/NYCT, NYSDOT, and PANYNJ—are coordinating their efforts through the Lower Manhattan Construction Coordination Group (LMCCG) in conjunction with the Lower Manhattan Construction Command Center (LMCCC).

**CULTURAL AND HISTORIC RESOURCES**

The Route 9A Project’s Area of Potential Effect (APE) contains 16 resources that are listed or are eligible for listing on the State and National Registers of Historic Places and/or as a New York City Landmark. The assessments of potential impacts identified eight resources within the APE that may be impacted by the project’s construction.

Because construction of the South Ferry Terminal and the Fulton Street Transit Center would occur outside the Area of Potential Effect (APE) for the Route 9A Project (see Figure 6-1), there is no potential for cumulative construction-period impacts from the combination of these projects. However, construction of the WTC Memorial and Redevelopment Plan and the permanent WTC PATH Terminal, in combination with Route 9A, would have cumulative construction-period effects to 4 resources within the APE as follows:

- Hudson River Bulkhead, Battery to 59th Street;
- Barclay-Vesey Building, 140 West Street;
Potential, cumulative ground-borne vibration impacts may occur at the Barclay-Vesey Building, WTC Site, and 90 West Street. These potential impacts would be resolved through coordinated Construction Protection Plans, which would establish the sensitivity of fragile structures and provide stipulations to protect them during construction of the Lower Manhattan Recovery Projects. As per the guidance of the EPCs, NYSDOT, PANYNJ, LMDC, and MTA would coordinate with the State Historic Preservation Officer (SHPO) and the New York City Landmarks Preservation Commission to develop plans for structures that would be cumulatively affected by vibration during the construction period.

Construction of the Route 9A Project and the permanent WTC PATH Terminal may disturb the Hudson River Bulkhead. As part of the Hudson River Park project, a Programmatic Agreement between the U.S. Army Corps of Engineers, the Hudson River Park Trust, and SHPO was established, which provides stipulations for minimizing potential impacts to the bulkhead. An amendment to the 1994 Programmatic Agreement for the Route 9A Reconstruction Project has been developed that includes a stipulation regarding the avoidance, minimization, and mitigation of adverse effects to the bulkhead consistent with the earlier agreement between ACOE, SHPO, and HRPT.

**ECONOMIC CONDITIONS**

The five Lower Manhattan recovery projects would create thousands of jobs during the construction period. Not only would these projects spur employment within Lower Manhattan, but they would provide jobs for the region, as a whole, with the off-site production of materials. These projects would also directly enhance the local economy with the expenditure of dollars for labor and materials and with the generation of tax revenues. In addition, businesses in Lower Manhattan would benefit from daily expenditures by the construction workforce induced by the recovery projects.

Construction activities in general have the potential to disrupt business and retail operations as a result of restricted access for pedestrians (customers) and vehicles (deliveries). The Route 9A Project, itself, is unlikely to directly restrict vehicle access for extended periods of time throughout its construction stage since three travel lanes would be maintained along Route 9A during the construction period. Some temporary access restrictions may occur on Vesey and Liberty Streets, but NYSDOT would implement a Maintenance and Protection of Traffic (MPT) Plan to maintain movement through these areas to the extent possible.

NYSDOT also constructed a pedestrian bridge across Route 9A at Vesey Street. The bridge, in combination with the bridge at Liberty Street, would maintain access between Church Street and Battery Park City for businesses, workers, commuters, and residents.

Construction of the WTC Memorial and Redevelopment Plan is not expected to result in the long-term, full-closure of streets in Lower Manhattan because most construction activities would be within the WTC Site itself. For activities that may require disruption to traffic, LMDC would develop a MPT Plan in coordination with the other project sponsors to ensure that access is maintained to local business throughout the construction period.

PANYNJ would coordinate with NYSDOT in constructing the West Street concourse such that access along Route 9A is maintained. Much of the work associated with construction of the
permanent WTC PATH Terminal would be contained within the WTC Site and would not require any extensive access restrictions to local businesses.

The Fulton Street Transit Center would include construction of the Dey Street Passageway between Broadway and Church Street and the pedestrian connector between the N/R subway station at Church Street and the E subway terminal on the WTC Site. The construction at Dey Street would affect deliveries to Dey Street and in particular Century 21, a major department store in the area. Access to Century 21 could also be affected by construction truck traffic associated with the Fulton Street Transit Center, the permanent WTC PATH Terminal, the WTC Memorial and Redevelopment Plan, and with DDC’s proposed reconstruction of Church Street.

Vehicular access to portions of Fulton Street would also be temporarily disrupted in certain locations; however alternate access points would be made available for service and deliveries. For example, alternative loading areas could be established on the north side of Cortlandt Street during construction to enable truck access to Century 21.

NYSDOT and NYCDOT are working with the sponsors of the Lower Manhattan recovery projects and the LMCCC to coordinate and develop MPT plans that would ensure access is maintained through the area as individual projects proceed into their construction phases. This coordinated plan would help to minimize the potential adverse economic effects to business during the construction period.

PROBABLE LONG-TERM, OPERATIONAL EFFECTS

The federal government has pledged billions of dollars for the redevelopment and revitalization of Lower Manhattan. These funds recognize the devastating short- and long-term effects of the terrorist attacks to Lower Manhattan and the region, as a whole. As such, the five major Lower Manhattan recovery projects have been planned and coordinated to provide for the short-term recovery of facilities that were damaged or lost and the long-term economic vitality of Lower Manhattan, New York City, and the region, as a whole.

Within the framework of each individual project’s environmental review processes, certain alternatives are being evaluated for the potential direct and indirect impacts. Cumulatively, some of these alternatives could limit the long-term benefits of the Lower Manhattan recovery efforts.

In each of the previous chapters, the potential long-term effects of the project alternatives have been discussed. By definition, these impact assessments include as part of their analysis, a consideration of other projects likely to be completed by the project’s 2025 design year. The impact analysis conducted for traffic, pedestrians, air quality, and noise is based on future forecasts that assume the full recovery of Lower Manhattan, including the redevelopment of the WTC. Therefore, the analysis in Chapters 8, 9, and 10 fully assess the cumulative effects of the project alternatives in conjunction with the other Lower Manhattan recovery projects. The following sections summarize the potential benefits and limitations of the three alternatives considered as part of the FSEIS.

NO ACTION ALTERNATIVE

With respect to the long-term cumulative effects of the Lower Manhattan recovery projects, the No Action Alternative would not provide the positive benefits of the proposed project’s Build alternatives. In fact, as discussed in Chapter 8A, “Traffic,” Chapter 8C, “Pedestrians,” and Chapter 9, “Air Quality,” the No Action Alternative would result in increased traffic congestion, reduced pedestrian access, and increased air pollution emissions in Lower Manhattan, compared
with the project's Build alternatives. Chapter 4, “Land Use, Public Policy, and Neighborhood Character,” and Chapter 5, “Socioeconomic Conditions,” describe how the operational aspects of the No Action Alternative could have an adverse effect on the economic recovery of Lower Manhattan and not support the public policy goals and plans for the WTC Site redevelopment.

BUILD ALTERNATIVES

As described in Chapters 4 through 15, both the At-Grade and Short Bypass Alternatives would provide a long-term transportation benefit, compared with the No Action Alternative in Lower Manhattan. While the alternatives may differ slightly in their effects on individual intersections and roadway segments, they would generally result in improved traffic and pedestrian flow along and across the corridor, compared with the No Action Alternative.