DRAFT SCOPE

World Trade Center Memorial and Redevelopment Plan
Generic Environmental Impact Statement

A. INTRODUCTION

The Lower Manhattan Development Corporation (LMDC), a subsidiary of the New York State Urban Development Corporation doing business as Empire State Development Corporation (ESDC, a political subdivision and public benefit corporation of the State of New York), is proposing to undertake, in cooperation with the United States Department of Housing and Urban Development (HUD) and The Port Authority of New York and New Jersey (Port Authority, a municipal corporate instrumentality of the States of New York and New Jersey), a World Trade Center Memorial and Redevelopment Plan (Proposed Action) that includes the construction of a World Trade Center Memorial and memorial-related improvements, as well as commercial, retail, museum and cultural facilities, new open space areas, new street configurations, and certain infrastructure improvements at the World Trade Center Site (WTC Site) (see Figure 1).

LMDC is conducting a coordinated environmental review of the Proposed Action, pursuant to federal statute, as the recipient of HUD Community Development Block Grant program funds (42 USC § 5304(g)) and as lead agency under both the National Environmental Policy Act (NEPA) and the New York State Environmental Quality Review Act (SEQRA) and its implementing regulations (6 NYCRR Part 617). LMDC will prepare a Generic Environmental Impact Statement (GEIS) as part of that review. As a first step in that process, LMDC has prepared this draft Scope for the draft GEIS (DGEIS) and has made it available to agencies and the public for review and comment. LMDC invites comments on this draft Scope. Written comments should be addressed to:

Lower Manhattan Development Corporation
Attention: Comments WTC Memorial and Redevelopment Plan/DGEIS
One Liberty Plaza
New York, NY 10006

Comments may also be submitted through the comment form on LMDC's website – www.RenewNYC.com – in the section on Planning, Design & Development.

In addition, public scoping meetings will be held at Tribeca Performing Arts Center at the Borough of Manhattan Community College, 199 Chambers Street, New York, New York on Wednesday July 23, 2003, from 2 PM to 5 PM Eastern Daylight Time (EDT) and from 6 PM to 9 PM EDT. Public comments will be solicited at the meetings. The public comment period will then remain open for submission of further written comments, which must be received by LMDC at the above addresses by 5 PM EDT on Monday, August 4, 2003.

This document is the draft Scope for the DGEIS. It contains a description of the Proposed Action and outlines the studies to be conducted to analyze the potential environmental impacts of the Proposed Action. The final Scope will be issued following the public review and comment period referred to above.

B. BACKGROUND

1. WORLD TRADE CENTER

In 1962 the States of New York and New Jersey authorized and directed the Port Authority to acquire the Hudson Tubes (now known as "PATH"), to construct the World Trade Center ("WTC") complex and to cooperate with other governmental agencies for the purpose of reviewing and improving the WTC area as part of the Port Authority's mission to develop the port. Construction on a 16-acre site owned by the Port Authority (the "WTC Site") began in 1966 and was completed in 1981. Occupancy of One World Trade Center commenced in December 1970 and of Two World Trade Center in April 1972. In July 2001, the Port Authority entered into long-term leases for the office and retail spaces at the WTC Site (not including the hotel at Three World Trade Center or the U.S. Customs House at Six World Trade Center) with affiliates of Silverstein Properties and Westfield America (the "Net Lessees").

The WTC Site is bounded generally by Church Street on the east, Liberty Street on the south, West Street on the west and Vesey and Barclay Streets on the north. It was best known for its ''Twin Towers,'' One and Two World Trade Center, two 110-story buildings that rose over 1,350 feet. One World Trade Center also had a 351.5-foot mast supporting television and FM radio antennae for major public and private broadcasters in New York City. One and Two World Trade Center and the two 9-story buildings (Four and Five World Trade Center), an 8-story United States Customs House (Six World Trade Center) and a 22-story hotel (Three World Trade Center), surrounded the Austin J. Tobin Plaza (the ''Plaza''). Directly below the Plaza was the Concourse, consisting of a retail mall and transportation hub. Pursuant to an agreement between the Port Authority and New York State's Battery Park City Authority (BPCA), a pedestrian bridge was built connecting the northern part of the WTC complex with the commercial core of the Battery Park City project constructed by the BPCA west of the WTC. A 47-story office building, known as Seven World Trade Center (7WTC), was located north of the WTC Site across Vesey Street, on a site over two electrical sub-stations occupied by Con Edison.

All told, the WTC complex included over 12 million square feet of office space, of which over 10 million square feet were located on the WTC Site. The WTC Site also included approximately 500,000 square feet of retail space and a 22-story hotel.

2. SEPTEMBER 11, 2001

On September 11, 2001, terrorists hijacked three commercial jetliners and used them to destroy the WTC and damage the Pentagon. A fourth hijacked plane subsequently crashed in Pennsylvania. These terrorist attacks resulted in substantial destruction of property and loss of life, including the loss of approximately 2,800 people at the WTC complex. In addition to the destruction of the Church of St. Nicholas to the south of the WTC Site, other buildings surrounding the WTC Site, 90 West Street, 130 Liberty Street, the Hilton Hotel and the Federal Office Building/US Post Office on Church Street, Fiterman Hall on Barclay Street, the NY Telephone Building on West Street, the Winter Garden and the World Financial Center, and Gateway Plaza, were severely damaged. Material covered a larger area, and much of Lower Manhattan was cordoned off in the days and weeks following the attacks. Some streets remain closed or occupied by safety installations and construction equipment. As described below, over the next 10 months, approximately 1.8 million tons of material were removed from the WTC and

surrounding areas. Many of the businesses and residents in the surrounding area were temporarily displaced and others have not returned.

3. RECOVERY AND INITIAL RECONSTRUCTION*

WTC AREA

Rescue and recovery operations began immediately. Work on the WTC Site continued 24 hours a day and 7 days a week. During the period ending on June 30, 2002, the City of New York (the "City") controlled the WTC Site and was responsible for material removal, including contracting with private entities to provide such services in coordination with various Federal and New York State entities. Control of the portion of the WTC Site upon which 7 WTC was located was returned by the City to Port Authority control on May 7, 2002, with the balance of the WTC Site returned to Port Authority control on June 30, 2002.

As material was cleared in nearby areas and the safety of standing structures was verified, workers and residents were generally allowed to return to the surrounding area. By the beginning of 2002, the restricted area was pushed back west of Broadway, and a public viewing platform was constructed on Fulton Street just east of Church Street. The platform remained in place until Church Street was opened and a wide sidewalk/viewing area on the west side of the street (on the edge of the WTC Site) was created. Today Liberty, Vesey, Barclay, and Park Place are closed to vehicular traffic, and pedestrian paths have been created across Vesey and Liberty Streets from Church Street to West Street. However, some buildings to both the south and the north of the WTC Site remain unoccupied. Some are being repaired or reconstructed, but the fate of at least two, 130 Liberty Street and Fiterman Hall, is uncertain.

Construction of a temporary WTC PATH station began in July 2002, upon completion of WTC Site recovery and material removal operations, and is expected to be completed in November 2003. The temporary WTC PATH station will be constructed in substantially the same configuration as existed prior to September 11, 2001, except that the tracks and platforms will not be fully enclosed, and the station will not be heated or air-conditioned, will have fewer pedestrian and transit connections, and will have only one entrance/exit on Church Street. The temporary WTC PATH station is expected to be in operation until a permanent WTC PATH Terminal is constructed.

7 WTC

In 2002 ESDC approved the first redevelopment at the WTC complex, the 7 World Trade Center Civic and Land Use Improvement Project. The project was undertaken in cooperation with the Port Authority, the City, LMDC, Consolidated Edison Company of New York, Inc., and Silverstein Properties. The replacement structure, now in construction, will have a gross floor area of approximately 1.685 million square feet (240,000 square feet smaller than the original 7 WTC building), including approximately 76,500 square feet dedicated to the Con Edison substations and their support facilities to replace the substation destroyed on September 11. The first substation is expected to be completed during the summer of 2003, and the 7 WTC replacement building is expected to be complete in 2005. The replacement building is configured

* These projects are assumed as part of the future without the Proposed Action in the Current Conditions Scenario. See description under "Analysis Format" page 8.

on the west end of the 7 WTC site in order to preserve the option of opening a Greenwich Street corridor to pedestrians and possibly vehicular access.

PERMANENT WTC PATH TERMINAL

The Port Authority is currently completing construction of a temporary outdoor WTC PATH station to permit the resumption of PATH commuter service to Lower Manhattan by late 2003. The Port Authority is also completing plans for a permanent WTC PATH Terminal that would restore full PATH operations to the WTC Site and provide year-round indoor passageways to surrounding streets while improving passenger egress on platforms and permitting use of 10-car PATH trains. Construction of the permanent WTC PATH Terminal is expected to begin in 2004/5 and be complete by 2008/9. It would have one more track than the temporary WTC PATH station (for a total of five) and its platforms would be longer to the north and south than the interim station. The level above the tracks would be devoted to mezzanine and fare collection facilities. Above the mezzanine would be a concourse connecting the mezzanine, surrounding streets, the World Financial Center, and Battery Park City. The Federal Transit Administration (FTA) will be the federal lead agency for all environmental reviews for the permanent WTC PATH Terminal, which is a project independent of the Proposed Action and is undergoing a separate environmental review.

FULTON STREET TRANSIT CENTER

The Fulton Street Transit Center is a project being undertaken by FTA, Metropolitan Transportation Authority (MTA), and MTA New York City Transit. It will rehabilitate, reconfigure, and enhance the multilevel complex of subway stations serving nine different lines, with improved platforms, mezzanines and connecting corridors, and a new central concourse with a new above-ground presence. The Fulton Street Transit Center is projected to be completed in 2007. The Fulton Street Transit Center is a project independent of the Proposed Action, which is undergoing a separate environmental review by MTA and FTA.

LMDC

LMDC was created in November 2001 by Governor Pataki and then-Mayor Giuliani to help plan and coordinate the rebuilding and revitalization of Lower Manhattan south of Houston Street. LMDC is a subsidiary of ESDC; it is governed by a 16-member Board of Directors, half of whom are appointed on recommendation of the Governor of New York and half of whom are appointed by the Mayor of New York City. LMDC is the state instrumentality responsible for administering the HUD funding for the WTC Memorial and Redevelopment Plan.

LMDC efforts are directed at more than just physical reconstruction projects. The Residential Grant Program provides financial incentives to encourage individuals to remain in, or move to, housing in Lower Manhattan. LMDC is also sponsoring History and Heritage in Downtown NYC, a joint initiative of nine cultural institutions located in Lower Manhattan that is intended to encourage tourists and visitors to explore Downtown's unique cultural identity.

Starting in March 2002, LMDC helped establish and finance the interim WTC Memorial in Battery Park. The "Sphere", which formed the highest element of the "Plaza Fountain Sculpture" at the WTC and was damaged as a result of the events of September 11, was made available by the Port Authority for public display as part of this interim memorial.

GOVERNOR'S IMMEDIATE ACTION PLAN

On April 24, 2003 Governor Pataki identified a series of short-term capital projects that are independent of the Proposed Action and have two over-arching objectives: to improve accessibility in and around Lower Manhattan and to enhance the quality of life in Lower Manhattan, making it a more attractive place to live, work, and visit. Specifically, the Governor called for the LMDC to provide funding for the following projects identified with the help of the Mayor's Office and business and community leaders:

- Pedestrian Crossings across West Street—Improvements to the Liberty Street pedestrian crossing and the pedestrian walkway connecting to Church Street will be made, and a new temporary Vesey Street pedestrian crossing to be completed by the fall when the temporary PATH station opens.
- Streetscape Improvements—The Downtown Alliance's Streetscape program will be put into place along Broadway between City Hall Park and Battery Park.
- Greenmarket—The Greenmarket that operated at the WTC will open on Liberty Plaza.
- New York Stock Exchange security—Improvements will be made to maintain the security of the area while beautifying the area and making it more accessible.
- 130 Liberty Street Mural—The black shroud on the damaged building will be replaced with a mural relating to Studio Daniel Libeskind's 1776 Freedom Tower.
- Millenium High School—A contribution to the planned school will make its opening in September 2003 possible.
- Open Spaces—Contributions will be made to fund enhancements of open spaces throughout Lower Manhattan—in Chinatown, the Lower East Side, Tribeca and elsewhere as called for in the Mayor's Vision.
- Hudson River Park—LMDC will work with the State and the City to move forward completion of the park in Tribeca.

Other initiatives announced by the Governor include a marketing campaign by ESDC for Lower Manhattan shopping, restaurants and cultural institutions.

LMDC is currently assessing each of these proposals and expects to complete its reviews by the fall of 2003.

4. PLANNING FOR REDEVELOPMENT

On April 9, 2002, LMDC released its Preliminary Principles for Development and Blueprint for Renewal. This document presented planning concepts for traffic and transportation, commercial and residential development, open space, and other principles to be considered in the formulation of a plan for the redevelopment of the WTC Site and surrounding area.

Six initial concept plans were released to the public on July 16, 2002. LMDC and the Port Authority conducted an extensive outreach program to solicit public comment. The plans were available for comment on the LMDC's website, in an exhibit at Federal Hall on Wall Street and at public meetings in the five boroughs and New Jersey. On July 20 and July 22, 2002, Town Meetings attended by a total of over 4,000 people were held at the Javits Center. Leading comments from the public called for recognizing the Tower footprints for a Memorial, filling the

void in Lower Manhattan's skyline with a powerful symbol, and reducing the required amount of commercial space on the WTC Site. In response to the strong public sentiment for more exciting concepts, LMDC and the Port Authority called for a new round of design proposals.

Seven teams were selected from 406 submissions to take part in a new Innovative Design Study for the WTC Site. On December 18, 2002, nine designs for the WTC Site were released. Each design was subjected to rigorous analysis based on a combination of factors, including feasibility, context for the Memorial, phasing and public comment collected during an unprecedented outreach campaign, "Plans in Progress." Although all of the designs had positive elements, the THINK World Cultural Center and Studio Daniel Libeskind design concepts were found to best satisfy the criteria. After additional design efforts by the remaining teams, discussion and evaluation by the LMDC, the Port Authority and other officials, Governor Pataki and Mayor Bloomberg announced on February 27, 2003, that the Studio Daniel Libeskind design, Memory Foundations had been selected as the basis for the proposed World Trade Center Memorial and Redevelopment Plan.

C. THE PROPOSED ACTION

On the 16-acre WTC Site, the Proposed Action provides for the construction of a World Trade Center Memorial and memorial-related improvements, up to 10 million square feet of commercial office space, up to 1 million square feet of retail space, up to 1 million square feet of conference center and hotel facilities, new open space areas, museum and cultural facilities and certain infrastructure improvements (see Figure 2).

The Proposed Action would provide retail uses flanking the pedestrian concourse of the permanent WTC PATH Terminal. The pedestrian concourse would thus become active retail space linking the several uses on the WTC Site and providing a further link to street-level retail activity on the WTC Site and its surrounding streets.

The proposed design for the 16-acre former WTC Site would divide it into unequal quadrants in the context of new street configurations. Specifically, Fulton Street would run east-west through the WTC Site and Greenwich Street would run north-south through the WTC Site.

The Memorial District would encompass the area where the Towers once stood in the southwest quadrant. It would be a sunken area revealing the "slurry" wall on the west side of the WTC Site (see Figure 3). The preferred Memorial design will be identified in the fall of 2003 and will be described in more detail in the GEIS. Pedestrian access would be provided from September 11 Place at the southwest corner of Fulton and Greenwich Streets, from Greenwich Street halfway down the block south to Liberty Street, and from Liberty Street near West Street. A museum and other cultural facilities would be located on the southwest quadrant.

The northwest quadrant would be the location of the 1776 Freedom Tower (a 1,776-foot-tall structure), Heroes Park, office space, ground floor retail, and the performing arts center (see Figure 4). Trucks (and buses) would enter the complex from Vesey Street at Washington Street.

The northeast corner of the WTC Site would be the location of a hotel and office building with ground floor retail. In the southeast quadrant there would be two office towers with lower level retail on either side of a pedestrian passageway, Cortlandt Way, extending the view corridor of Cortlandt Street west through the WTC Site. They would be south of the permanent WTC PATH Terminal as it rises above grade on the south side of the Wedge of Light plaza (see Figure 5). In the southeast quadrant the Proposed Action would include retail space.

The portions of the Proposed Action scheduled for initial development include the Memorial, memorial-related improvements and museum and cultural facilities, the 1776 Freedom Tower, and the retail uses described above. LMDC, the Port Authority, the Port Authority's Net Lessees, and Studio Daniel Libeskind are working together to develop design guidelines for these structures and the others, which would follow in subsequent years.

D. AGENCY ACTIONS AND APPROVALS

The Proposed Action may require or involve, among others, the following regulatory agency notifications, actions, permits and/or approvals:

FEDERAL

HUD—funding and action plan approval

Department of Transportation, FAA—review of building heights

Department of Transportation, FTA—possible funding and determination of conformity with transportation plans

Department of Transportation, FHWA—possible approval of pedestrian passageway

Federal Emergency Management Agency—possible funding approval and possible flood map amendment

U.S. Army Corps of Engineers—possible permits under Section 404 of the Clean Water Act and Section 10 of Rivers and Harbors Act

Advisory Council on Historic Preservation—review under Section 106 of National Historic Preservation Act

BI-STATE

The Port Authority—plan approval and implementation

STATE

LMDC—General Project Plan approval and implementation

Office of Parks Recreation and Historic Preservation (OPRHP)—possible review pursuant to National Historic Preservation Act and State Historic Preservation Act

Department of State—Coastal Zone Consistency review

Department of Environmental Conservation—possible stationary source and indirect source air permits; possible Phase II stormwater permit, protection of waters and tidal wetlands permits and water quality certifications

New York State Department of Transportation (NYSDOT)—possible approvals for pedestrian passageway

LOCAL

New York City Planning Commission—Coastal Zone Consistency determination

E. PREPARATION OF A GENERIC ENVIRONMENTAL IMPACT STATEMENT (GEIS)

The Proposed Action would result in substantial redevelopment, introduction of new non-commercial land uses, reconfiguration of various traffic and transit services, the return of businesses with thousands of employees, and increases in the number of visitors and residents in Lower Manhattan. Redevelopment at the WTC Site will require extensive construction lasting for an extended period of time in a neighborhood sensitized by the effects of the recovery effort. Consequently, there is potential for impacts on a broad range of resources during both construction and operation of the project. The proposed approaches to assessing the impacts in the GEIS are discussed below. A GEIS is a particularly appropriate way to evaluate the environmental impacts the Proposed Action with its many components.

ANALYSIS FORMAT

The analyses in the GEIS will evaluate a variety of services and resources accounting for future conditions with and without the Proposed Action in two separate analysis years. The first analysis year, 2009, was chosen to represent a time frame in which the initial phases of the Proposed Action will have been completed, but when major construction is still on-going. The second year, 2015, was chosen for environmental analysis purposes as the time when full build-out and occupancy of the Proposed Action are assumed.

The customary approach to presenting an impact analysis under NEPA and SEQRA is to start with a baseline of existing conditions in the relevant study areas and then forecast those conditions forward to a time in the future that is appropriate for assessing project impacts. Future year conditions with and without the Proposed Action are then compared as a basis for presenting incremental change and identifying impacts. The reference point of conditions without the project is established by adjusting existing conditions to account for other known developments, policy initiatives, and trends that are expected to influence future conditions in the study area. This future condition without the project is then modified by overlaying the development and activity expected from the proposal under review to form a depiction of future conditions with the project in place. This comparison of future conditions with and without the project identifies the project impacts and the need, if any, for mitigation.

In the case of the Proposed Action, because of the unique historical circumstances, the complexity of the planning context and the scale of the project, the GEIS will present a range of potential conditions, thereby providing a framework for depicting a full consideration of impacts associated with the Proposed Action. Two reference points of conditions without the Proposed Action will be established: one begins with the WTC Site in its current condition, while the other is based on the previous development that existed at the WTC area before September 11, 2001.

The first scenario ("Current Conditions Scenario") will start with conditions today in 2003, with the WTC site in its post-September 11 excavated state—vacant except for temporary WTC PATH station construction and the 1/9 subway lines crossing the site—and then modify the baseline to forecast a profile of the future analysis years of 2009 and 2015. This scenario will account for anticipated construction and public initiatives in the larger study area along with background growth trends to depict a "Future Without the Proposed Action—Current Conditions Scenario" in which other expected development activity moves forward, but the WTC Site remains in its current state. The other development activity considered here would include not only specific office, residential, institutional and retail development, but also expected

transportation improvements such as the Fulton Street Transit Center and the permanent WTC PATH Terminal. This framework will then form the basis for adding the overlay of development and activity associated with the Proposed Action and formulating a depiction of the "Future With the Proposed Action." This redevelopment condition would incorporate the specific envelope of redevelopment proposed for the WTC Site.

The second scenario ("Pre-September 11 Scenario") reflects a reasonable depiction of conditions that would have been expected in the study area absent the events of September 11. It accounts for the development and activity that were present on the WTC Site prior to September 11, 2001, and then adjusts that baseline to account for projects that had been initiated at that time and would likely have been completed by the 2009 and 2015 analysis years ("Future Without the Proposed Action—Pre-September 11 Scenario"). This Pre-September 11 Scenario of the Future Without the Proposed Action will be a benchmark against which expected impacts of the Proposed Action are assessed. That is, impacts will be identified by comparing the Future With the Proposed Action to the Pre-September 11 Scenario of the Future Without the Proposed Action.

As noted above, two separate analysis years—2009 and 2015—would be established for assessing environmental impacts under both the Current Conditions Scenario and Pre-September 11 Scenario, as carried forward and adjusted for each of those years. The interim conditions in 2009 and the full build-out conditions in 2015 would then be compared to these Scenarios to depict expected environmental impacts from the Proposed Action.

To mitigate any adverse impacts from the Proposed Action, the Future with the Proposed Action would be compared to the Pre-September 11 Scenario of the Future Without the Proposed Action in both 2009 and 2015. To the extent practicable, mitigation will be considered with the objective of returning conditions to the levels that would have existed in that analysis year absent the events of September 11. Where appropriate and feasible, further mitigation measures may also be formulated to address additional adverse impacts identified by comparison with the Current Conditions Scenario for those years.

Impact assessments will be completed for several study areas defined in the scope of work below. Primary study areas will be described in a greater level of detail and will be the subject of more quantitative assessment than secondary study areas, which will generally receive more qualitative assessments.

The GEIS will contain:

- A description of the Proposed Action and the environmental setting;
- A statement of the environmental impacts of the Proposed Action, including its short- and long-term effects, and typical associated environmental effects;
- An identification of any adverse environmental effects that cannot be avoided if the Proposed Action is implemented;
- A discussion of alternatives to the Proposed Action;
- An identification of any irreversible and irretrievable commitments of resources that will be involved in the Proposed Action should it be implemented; and
- A description of mitigation measures identified to minimize adverse environmental impacts for the Proposed Action.

The analyses will include the short-term and long-term cumulative impacts of other projects that may affect conditions in the study area. The specific tasks are described below.

TASK 1: PROJECT DESCRIPTION

The first chapter of the GEIS introduces the reader to the Proposed Action and sets the context in which to assess impacts. The chapter will contain a project identification (description and location of the project); the background and/or history of the project, including the Port Authority's role in the original development of the WTC Site, the lease arrangements with the Net Lessees, September 11 and its aftermath, creation and purpose of LMDC, collaborative planning effort between LMDC and the Port Authority leading to the development of the Proposed Action, and the public involvement program. A statement of purpose and need as well as a detailed description of the Proposed Action will be provided.

The project description will include a discussion of elements of the Proposed Action, such as site plans and elevations, access and circulation, and other project commitments. The section on required approvals will describe all federal, State, and City actions required to implement the redevelopment.

The roles of LMDC, the Port Authority, and other public agencies in the approval process will also be described. The role of the GEIS as a full disclosure document to aid in decision-making will be identified and its relationship to any other approval procedures will be described.

TASK 2: LAND USE AND PUBLIC POLICY

Construction on the WTC Site will bring redevelopment and new non-commercial land uses to the WTC area. These include the Memorial and memorial-related improvements and the museum and cultural facilities that are expected to attract millions of visitors. For assessing impacts, a primary study area surrounding the WTC project area will include the area south of Chambers Street and north of Battery Place/Beaver Street from the Hudson River east to Centre/Nassau/Broad Streets. The larger secondary study area will include all of Lower Manhattan south of Canal Street and west of Pike Street from river to river. Both study areas will be divided geographically for ease of description. The land use section will include the tasks listed below.

a. Provide a brief development history of Lower Manhattan focusing in particular on the WTC Site, the Financial District, and Tribeca.

b. Describe the project site, both its current condition and its pre-September 11 development.

c. Describe predominant land use patterns in the study area, including both current and pre-September 11 development trends. Sensitive uses such as schools and places of worship will also be identified.

d. Describe zoning and other land use policies that are relevant to the study area, including specific development projects and plans for public improvements.

e. Determine future No Action conditions in the build analysis years based on both a Current Conditions scenario and a Pre-September 11 scenario, as described above in "Analysis Format." Prepare a list of future projects in the study area and describe how these projects might affect land use patterns and development trends in the study area in the future without the project. These projects would include the Fulton Street Transit Center, the WTC PATH Terminal, Route 9A reconstruction, and other transportation projects as well as development

projects, the Mayor's Vision for Lower Manhattan, and other studies and possible initiatives. Also identify pending zoning actions (including those associated with the proposed No Build projects) or other public policy actions that could affect land use patterns and trends in the study area as they relate to the Proposed Action.

f. For each of the analysis Build Years, assess impacts of the Proposed Action on land use and land use trends, and public policy. Impacts will be assessed based on a comparison of the Proposed Action with the future No Action scenarios identified above. Consider the short-term and long-term cumulative effects on the study area of the Proposed Action along with other reasonably foreseeable actions.

TASK 3: SOCIOECONOMIC CONDITIONS

The objective of the socioeconomic analysis will be to analyze the impacts of the Proposed Action on the existing commercial office and retail activity in the study area, as well as existing residential resources and socioeconomic characteristics of the study area.

The analysis will focus on potential impacts on commercial office and retail uses in the study area, including potential indirect displacement as well as beneficial impacts that may result from the redevelopment of the large amount of office and retail space previously located on the site, as well as the associated economic benefits that may accrue from the redevelopment.

Study areas are expected to conform to submarkets commonly used by major real estate brokerage companies to report leasing and construction data. These submarkets typically include districts known as World Trade, City Hall, Insurance, Financial East and Financial West, and roughly conform to an area south of Canal Street and the ramps to the Manhattan Bridge. Adjustments will be made where necessary to conform to census tracts in this same area.

Tasks will include:

Commercial Office/Retail Analysis

Existing Conditions

a. For both current conditions and pre-September 11 conditions, develop an inventory of commercial office space and retail space in the study area. This will be based on existing studies of the area, and supplemented as necessary by estimates from the city's Real Property Assessment Division (RPAD) data or other published real estate industry sources, such as quarterly reports from major real estate brokerage firms.

b. Analyze employment characteristics in the study area for current conditions as well as pre-September 11 conditions, based on available NYS Department of Labor data. The analysis will include employment trends in pre- and post-September 11 conditions, with emphasis on the type of jobs in the study area, as indicated by major categories of Standard Industrial Classification (SIC) codes.

Future Without the Proposed Action/Future With the Proposed Action

c. For each Build Year, describe future conditions with and without the Proposed Action, based on both a current conditions scenario and a pre-September 11 scenario. This will include known commercial office and retail developments in the study area, as well as likely employment in the study area.

d. An estimate of average commercial office and retail rents will be determined with the assistance of major real estate development, management, and brokerage firms in the city.

e. Impacts on the commercial office and retail inventory will be assessed, based on the rents and occupancy factors discussed above. Potential for indirect displacement of or beneficial effects on existing tenants will be discussed, based on a comparison of estimated office and retail rents in the Build Scenario, as well as a comparison of the quality of available office and retail space, and likely tenancy.

f. Impacts on employment in the study area will be evaluated, as well as potential consequences for employment opportunities throughout Manhattan.

g. Impacts on retail sales will be evaluated in the context of the anticipated increase in employment in the study area, as well as anticipated demand that would likely be generated by tourists visiting the Memorial and museum and cultural facilities.

h. Economic benefits of the construction and operation of the Proposed Action will be estimated, using the Regional Input-Output Modeling System (RIMS II) or other available economic impact models. This will include estimates of direct and indirect employment, wages and salaries, a range of business and sales taxes (excluding real property taxes), and total economic output (or demand for goods and services) generated by the Proposed Action in New York City and New York State.

i. Public sector costs associated with the redevelopment of commercial office and retail components of the project will be estimated, such as infrastructure costs related to the Proposed Action and increased police and fire safety costs that would be required to service the Proposed Action.

Socioeconomic and Residential Analysis

Existing Conditions

j. Demographic characteristics of the study area will be described for current and pre-September 11 conditions, based on Census 2000 data and other relevant data.

k. Housing characteristics in the study area will be described for current and pre-September 11 conditions, based on Census 2000 data and other relevant data.

l. Recent sales and leasing trends will be described, based on interviews with real estate developers, managers, and brokers who are working in the study area.

Future Without the Proposed Action

m. Determine future No Action conditions in the build analysis years, based on both the current conditions scenario and a pre-September 11 scenario. Residential development projects that have been planned or proposed within the study area will be identified and described, including location, number of units, approximate sizes, tenure (if known), and estimated rents or sales prices (if known).

Future With the Proposed Action

n. The potential for indirect displacement of and benefits to existing residential tenants will be analyzed, based on the potential for the Proposed Action, i.e., a critical mass of non-residential use, to make the surrounding area more attractive as a residential neighborhood.

TASK 4: COMMUNITY FACILITIES AND SERVICES

This chapter of the GEIS will evaluate the need for community services likely to result from the Proposed Action. In general commercial development is not expected to generate significant demand for most community facilities.

a. Based on the proposed building program, determine the types of community facilities for which an assessment is warranted.

b. For both current conditions and pre-September 11 conditions, describe the community facilities that serve the project site, including services provided, capacity, and utilization. As appropriate, conduct phone interviews and/or written communication with department representatives.

c. For 2009 and 2015, identify conditions for community facilities in the study area in the future without the Proposed Action. This will include future No Action conditions based on both a current conditions scenario and a pre-September 11 scenario (as described above in "Analysis Format.") Changes may include addition or removal of facilities, administrative changes that alter capacity, and policy changes that may increase or decrease services and capacity.

d. For the build years, discuss the Proposed Action's potential to result in impacts to community facilities. The analysis of impacts will account for the cumulative effects of related projects, and will be based on a comparison of the Proposed Action with both of the future No Action scenarios.

TASK 5: OPEN SPACE AREAS AND RECREATIONAL FACILITIES

The Proposed Action would provide some new open space areas on the WTC Site while returning thousands of workers and bringing millions of visitors to Lower Manhattan. These visitors could generate a new demand for open space areas in the Financial District and Lower Manhattan, which in general have traditionally been lacking in open space amenities. The following tasks will be performed to determine whether the Proposed Action may affect the quantitative and qualitative measures of open space adequacy.

a. Inventory open space and recreational facilities in a ¼-mile radius for current and pre-September 11 conditions. Tally open space acreage for active and passive, publicly accessible recreational facilities.

b. Estimate employment and residential population of the open space study area using 2000 Census data on population and 2000 reverse journey-to-work data as well as information available from the Alliance for Downtown New York. Population estimates will be presented for current as well as pre-September 11 conditions.

c. Assess the adequacy of publicly accessible open space facilities. The assessment of adequacy may be based on a comparison of the ratio of total passive space per 1,000 workers and residents to city guidelines.

d. For both analysis years and for both future No Action conditions, assess expected changes in future levels of open space supply and demand in the analysis years based on other planned development projects within the study area. Develop open space ratios for future conditions and compare them with existing ratios to determine changes in future levels of adequacy.

e. Based on the population associated with the Proposed Action and accounting for any new open space areas to be created, assess the potential effects of the Proposed Action on open space supply and demand by comparing open space ratios with the project to open space ratios in both scenarios for the future without the project.

TASK 6: SHADOWS

A shadow impact assessment will be prepared for any publicly accessible open space areas or historic resource with a significant sun-sensitive feature that is within the path of the shadow of a building in the Proposed Action. Open space areas created on the WTC Site as well as nearby existing open spaces areas such as the WFC lawn area, the bikeway/walkway along the west side of Route 9A, and the ballfields in Battery Park City will be considered. The significance of sun/shadow sensitivity will be determined based on the nature of the resource at issue in accordance with appropriate environmental review standards.

a. In coordination with the open space task above and the historic resources task below, identify potential sensitive receptors within the shadow range of the proposed structures. Determine whether identified historic resources have significant sun-sensitive features. Map features of potentially affected open spaces including new open space areas created on the WTC Site.

b. Prepare shadow diagrams showing the extent of shadows on sensitive receptors for the four analysis dates: March/September 21, May/August 6, June 21 and December 21. Diagrams will be prepared for conditions pre-September 11 and for the Proposed Action.

c. Prepare duration tables for each of the sensitive receptors.

d. Assess potential impacts on sensitive receptors.

e. Identify mitigation measures, if necessary.

TASK 7: HISTORIC RESOURCES

Lower Manhattan is home to many of New York City's most important historic resources, including over 15 National Historic Landmarks south of Chambers Street. LMDC will serve as lead agency for review under Section 106 of the National Historic Preservation Act (16 USC § 470 et seq.) and its implementing regulations (36 CFR Part 800). The GEIS will examine whether proposed construction could cause damage to historic resources; whether a number of large structures might alter the context of historic resources; and whether changes in traffic flow might affect the context of historic resources. The primary study area for historic resources will be bounded by the Hudson River bulkhead, Murray and Spruce Streets, Broad and Nassau Streets, and Exchange Place and Joseph P. Ward Street. The secondary study area will extend along routes with important changes in traffic volumes or direction.

This task will involve both historic and archaeological resources.

a. Map and briefly describe designated historic resources (properties listed on the State and National Registers of Historic Places and New York City Landmarks). Resources under consideration for Landmarks designation and resources that have been determined eligible for listing on the Registers will also be identified based on information from Landmarks Preservation Commission (LPC) and the New York State Office of Parks, Recreation and Historic Preservation (OPRHP).

b. Based on consultation with OPRHP and LPC, compare the Proposed Action to both scenarios in the future without the Proposed Action and assess the project's impacts on historic resources, any visual and contextual changes as well as direct physical alterations—including construction impacts, demolition or alteration, and street changes. Identify potential mitigation measures.

c. Prepare a disturbance analysis comparing existing basement or previous excavation depths to planned excavation to identify areas that may be newly disturbed by the Proposed Action. This work will be done in coordination with both LPC and OPRHP and in consultation with these two agencies, the need for further archaeological analysis will be determined.

d. If necessary, prepare Stage IA Archaeological Resources Analysis. This may be necessary for the streets immediately surrounding the WTC Site if they would be disturbed by project activity. Summarize the results of those studies for inclusion in the GEIS.

TASK 8: URBAN DESIGN/VISUAL RESOURCES

Urban design issues and considerations, such as the restoration of view corridors and enlivening sidewalk activity, have played an important role in developing the Proposed Action. Creating anew the built fabric and open space areas for 16 acres in a highly visible portion of the City is a major urban design effort. This task will be coordinated with the Historic Resources analysis, above, and have the same study area definition. It will also consider open space design and use, street activity, street walls, and building materials, as described below.

a. Provide a brief urban design history of the WTC Site including the street network and buildings prior to the construction of the WTC. Discuss the urban design and visual characteristics of the WTC Site in its current condition and its pre-September 11 condition. The text will be supplemented with photographs and maps as appropriate.

b. Describe in photographs and text the urban design characteristics and significant visual resources in the study area(s) both in their current conditions and their pre-September 11 condition.

c. Describe any anticipated changes to the urban design characteristics and visual resources in the study area by the analysis years, based on the current conditions scenario and the pre-September 11 scenario.

d. Describe the development anticipated with the Proposed Action in terms of building height, Floor-Area Ratio (FAR), and massing. Based on drawings, model photographs, or computer simulations from the project architects, describe effects of the Proposed Action on the streetscape and urban design characteristics of the area, including the buildings' relationship to street-level activity. Describe the open space areas provided and the visual linkages across the WTC Site. Compare the Proposed Action to the No Action condition of both the current conditions scenario and the pre-September 11 scenario.

TASK 9: NEIGHBORHOOD CHARACTER

The Proposed Action would return elements of the neighborhood, lost on September 11 and would restore some elements of the neighborhood that existed prior to the construction of the WTC. The character of a neighborhood is established by numerous factors, including land use patterns, the scale of its development, the design of its buildings, the presence of notable landmarks, and a variety of other physical features that include traffic and pedestrian patterns,

noise, etc. These elements are covered in depth in other GEIS sections, but are brought together here considering their cumulative impacts on the neighborhood. The elements of this task are as follows:

a. Drawing on other GEIS chapters, describe the predominant factors that contributed to defining the character of the neighborhood pre-September 11 and today. Address the role of current traffic patterns as they affect (or do not affect) neighborhood character near the WTC Site and in the surrounding area.

b. Based on planned development projects, land use policy initiatives (not defined as being part of this project), and planned public improvements, summarize changes that can be expected in the character of the neighborhood in the future without the Proposed Action. Future No Action conditions for 2009 and 2015 will be projected based on both current conditions and pre-September 11 conditions.

c. The analysis of the impacts of the Proposed Action in various GEIS chapters will serve as the basis for assessing and summarizing the Proposed Action's impacts on neighborhood character. In addition, describe the potential for an increased level of activity, the return of office and retail workers, and the increased numbers of visitors coming to Lower Manhattan.

TASK 10: HAZARDOUS MATERIALS

Considering both construction and operations, this section of the document will assess the potential effects of exposure to any hazardous materials found and describe any required disposal/remediation means and locations.

TASK 11: INFRASTRUCTURE, SOLID WASTE AND SANITATION, AND ENERGY

The infrastructure that once existed was sufficient to handle the demands of the WTC. That infrastructure is being or is expected to be reconstructed (e.g., the Consolidated Edison substation at 7 WTC). This chapter will include the following.

a. Steps to reconstruct infrastructure services to the project area will be described.

b. Green building and sustainability principles developed by LMDC in cooperation with the Port Authority and others for the WTC Site will be considered, including potential benefits with respect to energy efficiency, enhanced indoor environmental quality, conservation of materials and environmentally friendly operations and maintenance, water conservation, and waste management and recycling.

c. Amounts of water and energy consumed will be estimated and disclosed.

d. Sewage and solid waste generation will be estimated and disclosed.

TASK 12: TRAFFIC AND PARKING/TRANSIT AND PEDESTRIANS

The traffic and transportation analysis component of the GEIS will address the potential for significant impacts of the Proposed Action on traffic, parking, transit, and pedestrian conditions in the study area, and the improvements to mitigate such impacts. Issues that will be addressed by the traffic and transportation impact studies, include the following:

- Potential impacts of the project on traffic flows and levels of service in the area, given potential increases in activity levels and in the context of a new street configuration at the WTC Site, involving the extension of Greenwich and Fulton Streets through the WTC Site,

and potential changes of access points to underground levels of the WTC Site for truck deliveries, and parking. Other traffic considerations will include charter/tour bus activity associated with the proposed Memorial and memorial-related improvements and museum and cultural facilities on the WTC Site.

- The adequacy of parking in the area to accommodate generated traffic, including cars and buses.
- Potential bus garage facilities under the WTC Site or potential bus parking on area streets will also be analyzed.
- Potential changes in transit passenger and pedestrian flows due to the two proposed street extensions.
- Activity associated with the proposed Memorial, memorial-related improvements and museum and cultural facilities on the WTC Site, as well as additional activity generated by increased retail development.

Independent projects that will be considered as part of the No Action condition will include:

- Potential creation of a below-grade tunnel section for Route 9A between Liberty and Vesey Streets or the reconstruction of Route 9A at grade.
- A permanent WTC PATH Terminal and the proposed Fulton Street Transit Center that will connect subway lines to the east with the WTC Site and the World Financial Center.

As available, information from other on-going traffic and transportation studies in Lower Manhattan including Route 9A, Fulton Street Transit Center, and LMDC Chinatown traffic study will be used in this analysis.

Traffic and Parking

a. Define a traffic study area, preliminarily assumed to cover a primary area bounded by Chambers Street, Broadway, Rector Street, and West Street to the west (with most, but not all, intersections within this area to be considered) (see Figure 6). It will also include major intersections that could be significantly impacted in a secondary study area outside the primary area, including key intersections along major approach routes such as the West Street / Route 9A corridor, Broadway north and south of the primary study area, Wall, Liberty or Fulton Streets extended east to Water Street, and other key analysis locations. It may also be warranted to address potential effects at the major bridge and tunnel entry points to Lower Manhattan, such as the Brooklyn-Battery Tunnel, Brooklyn and Manhattan Bridges, and the Holland Tunnel. Up to 30 intersections will be analyzed within the primary traffic study area, and up to 10 additional locations will be analyzed within the secondary traffic study area.

b. Inventory street widths, sidewalk widths, traffic flow directions, lane markings, parking regulations, and other items required for traffic analyses. Obtain signal timings from DOT to update the field inventory of traffic control devices in the study area.

c. Establish both current conditions and pre-September 11 conditions traffic flow networks in the study area for the weekday AM, midday, and PM peak hours (and for a weekend midday analysis period, if required once the trip generation analysis is completed, but not expected to represent a critical traffic condition). The traffic flow networks will be established using a blend of existing data and new count data, including a blend of Automatic Traffic Recorder

(ATR) to establish daily and hourly patterns, and manual intersection turning counts. Collect vehicle classification counts and conduct travel time and delay runs along key corridors to be used for air quality studies.

d. Analyze the capacity of the street system in the study area for existing conditions using *2000 Highway Capacity Manual* (HCM) procedures and determine the existing levels of service (LOS), volume-to-capacity (v/c) ratios, and delays on streets in the traffic study area for each peak hour. Congested locations will be highlighted.

e. Determine future No Action conditions in the build analysis years based on the current conditions scenario and the pre-September 11 scenario (see "Analysis Format," above). Estimate future traffic volumes using existing volume information and by adding incremental increases in traffic from discrete projects plus an appropriate background growth rate.

f. Determine the volume of person trips and vehicle trips that would be generated by the amount and type of development envisioned as the reasonable worst-case under the Proposed Action. Appropriate trip generation rates, modal splits, and average vehicle occupancies will be used. Independent research will be conducted for new uses that are expected to be included in the Proposed Action, e.g. the proposed Memorial and memorial-related improvements and museum and cultural facilities on the WTC Site.

g. Assign the generated vehicle trips through the traffic study area based on the specific origins and destinations of trips, and develop build condition traffic volume networks for each of the traffic analysis hours. Traffic volumes expected to be generated as a result of the new street configuration at the WTC Site will be identified.

h. Assess the potential significant impacts of the Proposed Action's traffic volumes on the street network in terms of potentially significant impacts on levels of service, v/c ratios, and/or average vehicle delays. Potential impacts will be identified through a comparison with both scenarios of future No Action conditions.

i. Identify and evaluate traffic improvement measures that would mitigate significant impacts under the Proposed Action. These measures could include signalization modifications, parking regulation modifications, intersection channelization improvements, signage changes, street widenings, one-way streets, turn prohibitions, or other comparable measures.

j. Prepare traffic inputs for analysis of air quality in the study area, including volumes, speeds, and vehicle classifications for principal study area corridors, as well as the arrival/departure and auto/taxi/heavy vehicle splits for the project increment.

k. Past, current and future parking conditions in the area will be analyzed, including a survey/update of existing public parking facilities to assess available capacity and average utilization within one-quarter and one-half mile distances from the WTC Site. A curbside parking inventory will be performed for streets immediately adjacent to the WTC Site. In the analysis of future conditions, changes in the parking supply and in accumulated parking demand generated in the future with and without the Proposed Action will be identified.

Transit and Pedestrians

l. Define a transit study area that includes the following subway lines and stations: the Seventh Avenue #1/9, 2 and 3 lines and their stations at Chambers Street, the former Cortlandt Street station, and Rector Street; the A, C, and E lines and their station at Chambers Street/WTC;

the N and R lines and their stations at Cortlandt Street and Rector Street; and the Lexington Avenue #4 and 5 lines, Seventh Avenue #2 and #3 lines, and the A, C, J, M, and Z lines and their station at Fulton Street.

m. Obtain station utilization counts as available from MTA New York City Transit records or other available study reports, including turnstile registration counts, stairwell counts and line-haul ridership data. Conduct additional counts where needed to fill in missing data gaps.

n. Prepare a detailed quantitative analysis of both current conditions and pre-September 11 conditions 8-9 AM and 5-6 PM peak hour conditions including line-haul capacity utilization, stairwell levels of service for key stairwells, and turnstile area levels of service.

o. For both analysis years, analyze the future No Action conditions that will be based on the current conditions scenario as well as the pre-September 11 scenario. An appropriate background ridership growth rate and major new developments in the area will be accounted for.

p. Analyze future conditions with the Proposed Action, and determine potentially significant impacts and mitigation measures, if needed.

q. Inventory bus routes serving the study area including hours of operation, frequency of service, and load levels within the study area and at peak load points if they exist just outside the study area. Local bus service will be examined qualitatively. Charter/tour bus demands for activity at the proposed Memorial and museum and cultural facilities will be prepared and evaluated.

r. Define pedestrian analysis locations that focus on key sidewalks, crosswalks, and corner reservoir areas immediately adjacent to development sites envisioned as part of the Proposed Action.

s. Assemble available pedestrian count data and supplement it with new counts where needed for an analysis of weekday AM, midday, and PM peak hour conditions (and weekend conditions, if needed as per trip generation estimates).

t. Evaluate pedestrian level of service conditions for current conditions and pre-September 11 conditions, future No Action conditions, and future conditions with the Proposed Action. For potential extension of the area's street grid (including pedestrian routes) through the WTC Site, pedestrian volume projections will be developed for those new sidewalks and crosswalks.

u. Document PATH system ridership and capacity characteristics under pre-September 11 conditions and projected future no action conditions based on information to be provided by the Port Authority. Capacity utilization and/or level of service characteristics will be documented from the information provided.

v. Document ferry system ridership and capacity characteristics under pre- and post-September 11 conditions and projected future conditions based on information to be provided by the Port Authority. Capacity utilization will be documented from the information provided.

w. Identify significant pedestrian level of service impacts and identify and evaluate improvements that would be needed to mitigate those impacts.

TASK 13: AIR QUALITY

The air quality studies for the Proposed Action will focus on mobile sources. Emissions generated from stationary sources on the WTC Site will be insignificant since the Proposed Action will utilize steam from Consolidated Edison for heating purposes. The mobile source air quality impact analysis will address two potential issues:

- Effect of traffic-generated emissions—including those related to queuing and possible tunnel and parking garages—on pollutant levels (e.g., carbon monoxide concentrations) at locations within the study area, and also at peripheral locations along the major feeder roadways to and from the project area; and
- Consistency with the applicable State Implementation Plan (SIP).

The Proposed Action could generate new and restored traffic and create new routes to carry existing and project-generated traffic. At peripheral locations, along major feeder roadways to and from the study area, there are a number of locations that currently have high traffic volumes and congested flow conditions. These locations will be subjected to detailed mobile source air quality impact modeling studies since the Proposed Action is expected to add traffic and may have the potential for causing significant air quality impacts.

The work program will consist of determining (using computerized dispersion modeling techniques) the effects of the Proposed Action on carbon monoxide and particulate matter levels at intersection locations within the study area, and, if significant project impacts are predicted to occur, identifying feasible traffic measures to alleviate those impacts.

The analysis methodology is relatively straightforward—selection of appropriate receptor sites, calculation of vehicular emissions, calculation of pollutant levels using dispersion models that have been approved by the applicable air quality review agencies (i.e., the U.S. Environmental Protection Agency [EPA], DEC, and the New York City Department of Environmental Protection [DEP]), and the determination of impacts. At locations where exceedances may occur, EPA's refined simulation model will be used.

As described above under "Analysis Format," the air quality analysis will discuss existing conditions (with both current conditions and pre-September 11 conditions), estimate future conditions without the Proposed Action for 2009 and 2015, and evaluate impacts through a comparison of the Proposed Action with No Action conditions.

The specific work program for the mobile source air quality studies is as follows:

a. Gather existing air quality data. Collect and summarize existing ambient air quality data for the study area. This will include data collected pre-and post-September 11. Air quality monitoring data from EPA and other sources post-September 11 will also reviewed and disclosed in this section.

b. Determine receptor locations for microscale analysis. Select critical intersection locations in the study area based on data obtained from the project's traffic analysis as well as traffic planners and engineers for the project. It is anticipated that up to 10 intersections will be analyzed for carbon monoxide (CO) and up to five locations will be analyzed for particulate matter (PM_{10} and $PM_{2.5}$).

c. Select the dispersion model for the microscale CO and $PM_{10}/PM_{2.5}$ analyses. It is anticipated that the EPA's mobile source CAL3QHC dispersion model will be used. However, due to the congested nature of the study area traffic network, coupled with the expected number of

new vehicle trips, EPA's CAL3QHCR refined intersection model may be used at selected intersections.

d. Select "worst case" meteorological conditions. Worst-case conditions to be assumed for the CAL3QHC analysis are 1.0 meter/second wind speed, Class D stability, 50°F temperature, and a 0.77 persistence factor. The latest five years of meteorological data collected at LaGuardia Airport will be used for the CAL3QHCR analysis.

e. Select background levels. Background levels for the study area, which will be obtained from EPA and DEC, will be added to modeled results to determine total pollutant concentrations. For the microscale CO analysis, projected future background CO levels for the study area will be based on recommended values from the DEP.

f. Select an appropriate emission calculation methodology. Select the methodology and input parameters needed to compute emission source strengths. The task will involve computing vehicular emissions using the emission factor model most recently recommended by EPA for New York. Use DEP- and/or DEC-supplied information regarding credits to account for the state vehicle inspection and maintenance (I&M) program (including any applicable future I&M programs), and the state anti-tampering program. In addition, the most recent New York City vehicle age and mileage distribution data will be used. CO vehicular emissions will be computed using the EPA-developed MOBILE5b model (or MOBILE6 model if available) reflecting changes to the emission factor model and its inputs, released by DEP in September 2000. Particulate emissions will be computed using EPA's PART5 (or MOBILE6 if available). While the latest EPA emissions model is MOBILE6, the DEC and DEP have not yet agreed on all the input variables for MOBILE6. Therefore, the scope assumes that the MOBILE5b model will still be used for this study.

g. Determine CO pollutant levels. At each microscale analysis site, calculate maximum 1- and 8-hour CO concentrations for the 2009 and 2015 build condition analysis years. The 2009 analysis will also consider impacts from projected construction-related traffic. The analyses will be conducted for peak traffic periods at critical intersections.

h. Quantitatively assess the potential impacts associated with proposed parking garage facilities. Impacts from on-street sources and emissions from enclosed parking garages will be calculated.

i. Assess impacts from enclosed queuing areas, and/or covered roadways and cumulative impacts from nearby on-street sources, where appropriate.

j. Determine PM_{10} and $PM_{2.5}$ pollutant levels. A detailed microscale analysis will be conducted at locations experiencing substantial increases in traffic from heavy-duty vehicles (e.g., trucks and buses). The analysis will be conducted under the reference point conditions for the 2009 and 2015 analysis years at the locations with the highest number of project-generated heavy-duty vehicles. The 2009 analysis will also consider impacts from projected construction-related traffic. Annual average and maximum 24-hour PM_{10} and $PM_{2.5}$ concentrations will be estimated.

k. Compare the existing and future CO and PM_{10} pollutant levels with National Ambient Air Quality Standards (NAAQS) standards to determine trends and impacts of the Proposed Action. CO levels will also be compared to the City's *de minimis* levels. $PM_{2.5}$ levels will be compared to appropriate available concentration thresholds to evaluate the Proposed Action's effect.

l. Examine mitigation measures. At air quality receptor locations where the Proposed Action is predicted to have a significant air quality impact and/or cause a violation of standards, perform analyses to determine what, if any, local mitigation measures could be implemented to alleviate the significant impacts and the resultant effect on air quality.

m. Perform a mesoscale (area wide) air quality analysis by computing pollutant burdens for the primary and secondary study areas. Pollutant burdens represent the total expected quantities of pollutant emissions for the region for a known time period. Pollutant burdens for annual quantities of CO, VOCs, particulate matter, hydrocarbons (HC), and NO_X, (primary air pollutants related to motor vehicle exhaust) will be calculated for emissions from changes in vehicular activity within the roadway network. Vehicular pollutant burdens will be to be computed based on the most recent EPA mobile source emission estimating procedures, and the vehicle miles traveled (VMT) for the analysis years.

n. Determine the consistency of the Proposed Action with the strategies contained in the SIP for the area. At any receptor sites where potential exceedances of standards are estimated, determine what mitigation measures will be required to attain standards.

TASK 14: NOISE

The noise analysis will address three issues: first, whether the diversion of traffic and changes in traffic volumes due to the Proposed Action would result in a significant increase in traffic-related noise levels in the WTC area; second, whether, the operation of mechanical and electrical equipment associated with the Proposed Action would result in a significant increase in noise levels in the WTC area; and third, what level of attenuation is necessary to ensure that noise levels within proposed buildings and other noise-sensitive areas do not exceed desired and regulatory limits.

Because of the various funding sources and regulatory bodies involved in the project, a variety of noise descriptors and impact criteria may be used for the analyses. Two levels of analysis would be performed—first, screening level analyses will be performed to determine if there is the potential for significant impacts, and then, if necessary, detailed analyses will be performed, at specific locations where the potential for significant impacts have been identified taking into account relevant HUD noise standards at 24 CFR Part 51 and other relevant criteria. If necessary, measures to mitigate or reduce impacts will be identified.

The following specific work tasks are proposed:

a. Appropriate noise descriptors will be selected to describe the noise environment and the impact of the Proposed Action. These are expected to include the L_{10} and 1-hour equivalent ($L_{eq(1)}$) noise levels; however, where appropriate, additional noise descriptors such as the day-night (L_{dn}), and 24-hour equivalent ($L_{eq(24)}$) noise levels may be examined.

b. Receptor sites will be selected for analysis purposes. These sites would include locations where the Proposed Action has the greatest potential to increase ambient noise levels and thus have a significant impact, locations where there are or would be noise-sensitive land uses (i.e., residences, schools, religious institutions, parks and open spaces, etc.), and locations that would provide geographic coverage of the WTC Site. A maximum of 20 receptor locations will be selected.

c. Current noise levels will be determined based upon field measurements and pre-September 11 noise conditions will be estimated based on those measurements and accounting for

pre-/post-September 11 changes in traffic. Two types of measurements will be made—continuous 24-hour and spot 20-minute measurements. Continuous 24-hour noise measurements will be made at a maximum of three locations (primarily at receptor sites adjacent to existing residential uses). At the remaining receptor locations spot 20-minute measurements will be performed during weekday AM, midday, and PM peak periods. At some of these sites spot 20-minute measurements will also be performed during late night hours. All measurements will be performed using Type I instrumentation. Parameters to be measured would be L_{eq}, L_1, L_{10}, L_{50}, and L_{90} values. These measurements will be supplemented by measurements from other studies, and computer modeling (where necessary).

d. Perform screening analyses. Screening analyses will be performed to determine whether changes in traffic and/or operation of mechanical or electrical equipment would have the potential for causing a significant noise impact. These screening level analyses will examine current and pre-September 11 baseline conditions, future conditions without the Proposed Action, and future conditions with the Proposed Action. A compendium of impact criteria (including NYC CEQR criteria) will be used for purposes of this evaluation. For example, based upon CEQR criteria a doubling of traffic (specifically "passenger car equivalents") would indicate the potential for a significant adverse noise impact.

At locations where the potential for a significant noise impact is identified, a detailed noise analysis will be performed. The detailed analysis would consist of the following:

i) Based upon measured noise levels, noise levels for current and pre-September 11 baseline conditions will be determined using acoustical fundamentals, and a variety of techniques may be used including proportional modeling and use of the TNM model.

ii) Future conditions without the Proposed Action (for 2009 and 2015, based on the current conditions scenario and the pre-September 11 scenario) will be determined using acoustical fundamentals and a variety of techniques that may include proportional modeling and use of the TNM model.

iii) Future conditions with the Proposed Action will be determined using acoustical fundamentals and other techniques. In the case of project-generated traffic, proportional modeling and/or the TNM model will be used. In the case of mechanical or electrical equipment, noise from the source will be superimposed upon No Build noise levels. Other noise sources would be treated using approved state-of-the-art modeling techniques.

iv) Project impacts would be determined based upon a comparison of noise levels with the Proposed Action with noise levels without the Proposed Action (or where appropriate to baseline noise levels) with NYC CEQR impact criteria, and other appropriate noise impact criteria.

v) If significant adverse impacts are predicted to occur, the feasibility and effectiveness of various mitigation measures will be examined and evaluated.

e. Attenuation requirements. Analyses will be performed to determine the level of attenuation necessary to ensure that noise levels within buildings and at other noise-sensitive areas do not exceed desired and regulatory limits (i.e., NYC CEQR requirements).

f. Mitigation. If necessary, identify and examine the effectiveness of potential mitigation measures to avoid or reduce significant adverse noise impact. These measures may include use of silencers, sound attenuators, enclosures, etc. on mechanical equipment, and traffic control measures for traffic-related noise impacts.

TASK 15: COASTAL ZONE

Technically, the WTC Site is located within the boundaries of the coastal zone. Therefore, the Proposed Action must be assessed for compatibility with the state and city coastal policies. Earlier in 2002, the state approved New York City's new Waterfront Revitalization Program (WRP), which consists of 10 policies specifically drafted for use by projects within the city's boundaries. The analysis will examine and describe the consistency or inconsistency of the Proposed Action with each of the ten WRP policies. The analysis will also consider potential floodplain impacts consistent with 24 CFR Part 55.

TASK 16: FLOOD PLAIN

The Proposed Action must be assessed for compliance with Executive Order (EO) 11988-Floodplain Management and 24 CFR Part 55. EO 11988 requires federal agencies to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains. EO 11988 also requires federal agencies are to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. HUD regulations provided in 24 CFR Part 55 provide a consistent means for implementing the agency's interpretation of the executive order in the project approval decision making process. The analysis will include: relevant maps defining floodplain/floodway boundaries within the project area; reports and studies documenting the scope of the project and surrounding areas as it relates to direct, indirect, and cumulative impacts; and documentation of all programs and plans, and coordination with other agencies.

TASK 17: CONSTRUCTION IMPACTS

The GEIS will include a detailed assessment of the potential impacts of the project's construction activities for each of the technical areas covered in the document, focusing on pedestrian and vehicular access and circulation, air quality, noise and vibration, business/economic interests, and historic resources. The analyses will consider the potential effects of the various stages of construction, as well as the cumulative effects of other projects in construction at the same time. This analysis will identify any potential for significant adverse impacts and identify specific mitigation measures. Some of the issues to be addressed include the following:

- Location of construction staging areas.
- Traffic-Potential effects from construction workers' vehicles and parking, trucks used for material delivery, disposal of material and dredge spoils as well as the possible loss of capacity due to a reduction in travel lanes.
- Maintenance of pedestrian access.
- Air Quality-Direct emissions from construction site activity including fugitive dust and on-site diesel equipment. Potential effects from increases in mobile source emissions of trucks

and worker vehicles at nearby sensitive receptors and congested locations and from potential long-term traffic diversions.

- Noise and Vibration-Potential effects from direct construction activity including pile driving, caisson drilling, and blasting. Ground-borne noise effects from the possible use of tunnel boring machines.
- Economic Conditions-Effect of construction on access to existing businesses and possible disruption in sales. Direct and indirect economic effects from the expenditure of capital funds. Estimate the capital costs and the number of construction jobs that would result from the project and evaluate the direct and indirect effect on the region's economy. Regional modeling of secondary impacts due to multiplier effects from these expenditures will also be performed.
- Construction site safety and security.
- Utility disruption.
- Foundation settlement and protection of existing subsurface structures.
- Protection of cultural resources including historic resources and possibly archaeological remains.
- Hazardous materials—a summary of construction-related impacts that were described in detail in previous GEIS chapters.

TASK 18: ENVIRONMENTAL JUSTICE

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

This analysis will involve identifying communities of concern that could be affected by the project, and then considering whether those communities might experience disproportionately high and adverse human health or environmental effects from the project. The analysis will incorporate the results of the analyses of other impact areas, and will specifically consider how any negative environmental impacts might affect low-income and minority populations. Using information from the 2000 U.S. Census of Population and Housing, together with input from community participation and outreach, census block groups with low-income and minority populations will be identified and specific impacts on those populations assessed. This will involve compiling data on race, ethnicity, and income from the 2000 U.S. Census for the populations that could be affected by the project (those within approximately ½ mile of the project) to identify low-income and minority communities. The environmental impacts identified in other analysis areas will then be evaluated to determine whether any significant adverse impacts might disproportionately affect low-income and minority residents. If disproportionate impacts are identified, mitigation measures and enhancement measures for the affected populations will be considered and described.

TASK 19: MITIGATION

This task will identify measures used in project planning to avoid or minimize adverse impacts. Where significant project impacts have been identified in the analyses discussed above, measures will be described that might mitigate those impacts. Where it is not practicable to mitigate impacts, they will be described as unavoidable adverse impacts.

TASK 20: ALTERNATIVES

This section will begin with the discussion of the reasons for selecting the Proposed Action from the large number of alternatives considered. Previously considered alternatives will be identified, and the reasons for their rejection, including relevant social, economic, and legal considerations, will be briefly described.

Alternatives that will be looked at in the GEIS will include a "No Build Alternative" and a reasonable range of other alternatives, such as design alternatives or, if feasible, a "no impact" or "reduced impact" alternative that might accomplish LMDC's goals for the Proposed Action (which will be identified in the GEIS description of the project). The analyses will be quantitative in those areas where impacts of the project have been identified; in other areas, the level of analysis will depend on an assessment of project impacts identified in the GEIS.

As part of its discussion, this section of the DGEIS will:

a) Present a historical summary of the alternatives considered for the WTC Site, and describe why they were not proposed for implementation;

b) Select alternatives to be examined in the GEIS;

c) Describe each alternative clearly, using graphics as appropriate, to a level of detail that allows comparison of each with the Proposed Action; and

d) Compare each alternative to the Proposed Action, highlighting those technical areas in which effects of an alternative differ from those of the Proposed Action.

In carrying out this Task, the lead agency typically determines the reasonable range of alternatives for analysis as potential impacts of the Proposed Action become clarified. In this case, the range of alternatives to be discussed will be drawn from among the following, even though some may prove to be neither reasonable nor feasible:

i.) No-Action Alternative: Leave the WTC Site in approximately its present condition, after completion of the permanent WTC PATH Terminal and interim improvements;

ii.) Restoration Alternative: Restore the WTC Site substantially as it existed before September 11, 2001.

iii.) Rebuilding Alternatives: These alternatives would be drawn from the plans previously considered by LMDC during the final stages of LMDC's Innovative Design Study and would likely include an alternative plan similar to the "tower of culture" proposal considered during that Study, as well as a Memorial-only alternative.

iv.) Distributed Bulk Alternative: This alternative would be similar to the Proposed Action except that the office space to be located along the east side of the WTC Site would be distributed into four slimmer buildings rather than the three towers identified in the Proposed Action.

v.) Redistributed Retail: This alternative would consider alternative configurations for the retail uses to be included as part of the Proposed Action.

vi.) Reduced Impact (or No Impact) Alternative: This alternative would vary uses, density or other major components of the Proposed Action in order to eliminate or reduce to the bare minimum any significant adverse impacts of the Proposed Action.

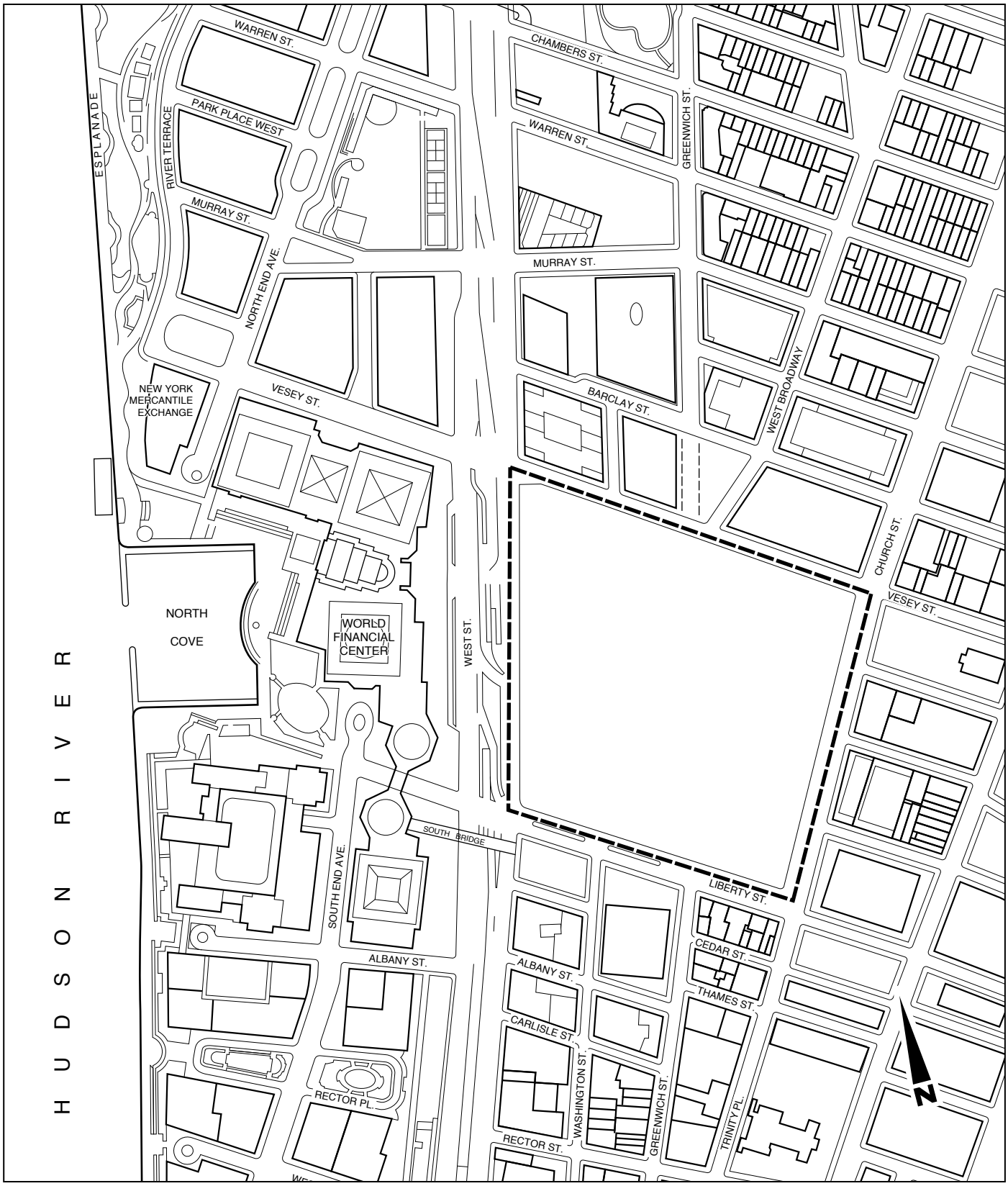
vii.) Design Alternatives: These alternatives would vary major design components of project uses in order to reduce any visual, shadow, wind or similar environmental impacts.

viii.) Enhanced Green Construction Alternative: This alternative would consider the environmental benefits and costs of feasible construction, waste disposal and other project environmental management practices not already incorporated into the Proposed Action.

It bears emphasis that this is a preliminary list of the selected alternatives for GEIS analysis only and will be refined as impact assessment progresses. Reasonable alternatives that are feasible will then be compared to the Proposed Action in terms of their environmental impacts, relevant social, economic and legal considerations and ability to realize LMDC's and other public goals for the redevelopment of Lower Manhattan and the WTC Site.

TASK 21: EXECUTIVE SUMMARY

Once the GEIS technical sections have been prepared, a concise executive summary will be drafted. The executive summary will utilize relevant material from the body of the GEIS to describe the Proposed Action, its environmental impacts, practicable measures to mitigate those impacts, and alternatives to the Proposed Action. ✷



Project Location

Figure 1

World Trade Center Memorial
and Redevelopment Plan

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Proposed Site Plan

Figure 2

World Trade Center Memorial
and Redevelopment Plan

View of Memorial Location from Northeast

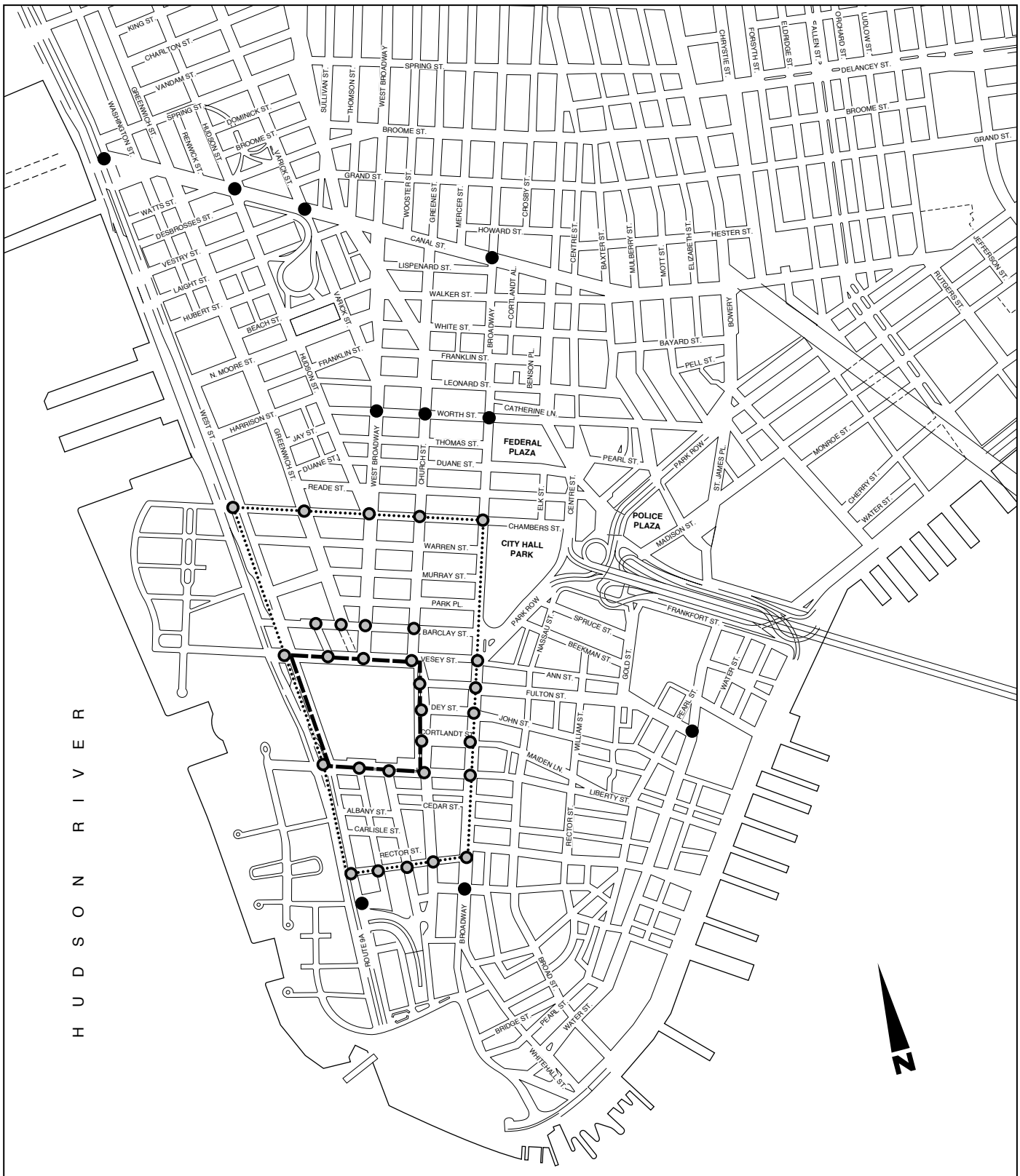
Figure 3

View from Hudson River

Figure 4

View of Wedge of Light Plaza from East

Figure 5



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SCALE

- Project Site
- Primary Traffic Study Area
- Primary Area Analysis Locations
- Secondary Area Analysis Location

Proposed Traffic Analysis Locations

Figure 6

World Trade Center Memorial
and Redevelopment Plan