

APPENDIX A

**TECHNICAL MEMORANDUM ON PROPOSED ACTION WITH
NORTHERN SERVICE OPTION**

**WORLD TRADE CENTER MEMORIAL
AND REDEVELOPMENT PLAN
TECHNICAL MEMORANDUM ON PROPOSED ACTION
WITH NORTHERN SERVICE OPTION**

1. INTRODUCTION

This Technical Memorandum considers in more detail a refinement of the At-Grade Loading Alternative analyzed in the Final Generic Environmental Impact Statement (FGEIS) for the World Trade Center Memorial and Redevelopment Plan (the Proposed Action). Since publication of the FGEIS, options for vehicular access and loading for the northwest quadrant of the Project Site have been developed further. As described below, this “Northern Service Option” primarily involves changes to one operational characteristic of the Proposed Action: vehicle access and truck loading for Freedom Tower, the performing arts center, and a small portion of the retail space included in the Proposed Action. The Vesey Street entrance would also serve as the entry and exit point for up to a 300-space parking garage for Freedom Tower tenants. With the Northern Service Option, above-grade physical changes to the overall development plan would be relatively limited, compared with that analyzed in the FGEIS.

This Technical Memorandum also describes two security screening variations for the Northern Service option—Variation 1 and Variation 2—and information on their operational characteristics. Changes in the anticipated construction are also identified. The technical analyses have been updated to reflect the refinements from the At-Grade Loading Alternative considered in the FGEIS. In addition, more detailed analysis has been undertaken for the specific impact areas where significant differences in impacts might be anticipated as a result of the Northern Service Option. These are neighborhood character, urban design and visual resources, traffic, air quality, noise, and construction.

2. DESCRIPTION OF NORTHERN SERVICE OPTION

2.1 OVERALL DESCRIPTION

With the Northern Service Option, service and parking access for Freedom Tower, the performing arts center, and approximately 75,000 square feet of retail space on the northwest quadrant of the WTC Site would be separated from the remainder of the Project Site’s below-grade service and vehicular circulation network. Access for trucks, vans, and automobiles for these uses would be from Vesey Street in the vicinity of Freedom Tower and the performing arts center. There would be a truck service area with space for trucks to maneuver, three truck-sized elevators, an oversized freight elevator, and space for unloading vans. The elevators would accommodate single-unit trucks. There would be a separate space for cars to enter and exit the building, with three car elevators. Below grade, there would be docks for the trucks and up to 300 parking spaces for Freedom Tower tenants. Above grade, the performing arts center may be required to be one story taller.

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A traffic signal would be added at the intersection of Vesey and Washington Streets, re-establishing the signal that existed in that location prior to September 11. Minor signal timing changes would be incorporated as part of the Northern Service Option.

Vesey Street would operate one-way eastbound, as considered under the Proposed Action with street direction changes in the FGEIS. The direction of Washington Street would be reversed to flow southbound between Barclay and Vesey Streets, as it did prior to September 11. Other features and components of this variation would also be the same as with the Proposed Action.

Security screening under the Northern Service Option is described below.

2.2 CONSTRUCTION

The Northern Service Option would not require construction of certain below-grade roadway elements that are part of the Proposed Action. Compared with the Proposed Action, areas that would be modified or eliminated include the roadway and security area west of and parallel to Greenwich Street that connects the northern portion of the Project Site with the Liberty Street ramp, as well as portions of the roadway/delivery area between Freedom Tower and Tower 2. The need for structural underpinning of the No. 1/9 subway in order to accommodate the below-grade roadway would also be reduced.

Overall, the Northern Service Option would permit construction of Freedom Tower, the performing arts center, and 75,000 square feet of retail space to proceed in advance of completion of the larger sub-grade infrastructure, access and loading facilities planned for the balance of the Project Site. By reducing the required sub-grade vehicle connections between the Liberty Street ramp and the northern portion of the WTC Site, this alternative would simplify and reduce construction activities in the sub-grade area between Greenwich Street and Route 9A. In addition to simplifying the construction of these components, this alternative would permit exploration of other uses, such as enhanced sustainable components for sub-grade portions of the Proposed Action.

2.3 OPERATIONS

Operations with the Northern Service Option would include either of two variations of security screening procedures. Each is described below.

VARIATION 1

With Variation 1, all trucks or vans serving the Freedom Tower, the performing arts center, and retail space would undergo a security check on Washington Street between Barclay and Vesey Streets before proceeding to the service area on the WTC Site off Vesey Street. To get to Washington Street, they are expected to either (1) turn from Route 9A onto Vesey Street, travel east to Church Street, then north on Church Street to Barclay Street, west on Barclay Street, and then south onto Washington Street; or (2) turn from Route 9A onto Murray Street, travel east on Murray Street, south on Greenwich Street, and west on Barclay Street to Washington Street.

The security check is expected to average several minutes per vehicle¹. Approximately 30 trucks and vans are expected to arrive in the peak hour². Assuming a surge factor of 1.25 (to account

¹ This estimate is based on surveys of NYSE operations (Philip Habib and Associates), on security checks with electronic scanners used by the Port Authority, and information from the Port Authority regarding truck security checks at the WTC prior to September 11, 2001.

for trucks not arriving in an evenly paced sequence over the hour), two trucks would likely be being screened at any given time during the peak hour. Since trucks bound for the 2.6 million-square-foot Freedom Tower would be screened at the same place on Washington Street as trucks bound for the new 7 WTC, it is assumed that the security checks would be made by one coordinated group with multiple teams. From Washington Street, trucks and vans would turn left onto eastbound Vesey Street and proceed to an entrance on the south side of Vesey Street.

In the truck service entrance area, there would be three truck elevators. The elevators could each carry up to 18 trucks down to the loading dock area and return 18 trucks to ground level in each hour³. It is also anticipated that vans would be unloaded at street level in the service area. With this combination of security checkpoints, elevators, and van unloading at ground level, truck queuing is not anticipated. Tractor trailers and other large trucks would be scheduled only for nighttime deliveries.

As noted above, the up to 300-space below-grade automobile parking garage would only be used by Freedom Tower tenants. Security screening for these vehicles would take place inside the vehicle entrance area before the automobiles enter the three automobile elevators.

Departing trucks and autos would return to ground level via the elevators. All vehicles would exit the area on Vesey Street traveling east.

This alternative would not alter the access for deliveries to Towers 2, 3, 4, and 5 and the remaining retail uses as described in the Proposed Action. However, access to and security for passenger car parking for Towers 2-5 would be via the ramp on Liberty Street instead of the Vesey Street entrance contemplated for the Proposed Action. As compared to the Proposed Action, most cars would use the Liberty Street ramp to access the Project Site, while some trucks would use the Vesey Street entrance.

VARIATION 2

This variation would be different from Variation 1 in that trucks bound for Freedom Tower, the performing arts center, and the 75,000 square feet of retail space on the northwest quadrant of the WTC Site would undergo security screening below grade on the WTC Site near Liberty Street. As with the Proposed Action, trucks would enter the WTC Site from Route 9A via the Liberty Street ramp. After screening, trucks would exit via the Liberty Street ramp to Route 9A, travel north to Vesey Street, and then turn right onto eastbound Vesey Street to the entrance to the service area and truck elevators. Cars for Freedom Tower tenants would continue to be screened at the Vesey Street entrance. Other construction and operating characteristics would be the same as those described above.

2.4 DELIVERY SCHEDULING

The Northern Service Option would include delivery scheduling that would bar large trucks (i.e., tractor trailers or other trucks in excess of 40 feet) from arriving during business and peak traffic hours except initial tenant move-in.

² Under the Northern Service Option, the lessees would be required to schedule all deliveries by heavy-duty trucks (tractor trailers or other trucks in excess of 40 feet) for nighttime hours. The 30-truck figure represents the remaining truck deliveries, which are expected to occur during the peak hours.

³ Based on information on proposed elevator operations provided by Philip Habib and Associates.

3. ASSESSMENT OF POTENTIAL IMPACTS OF THE NORTHERN SERVICE OPTION

As noted above, the principal areas where the potential impacts of the Northern Service Option might differ from those of the Proposed Action are neighborhood character, urban design and visual resources, traffic, air quality, noise, and construction. However, as discussed below, the analyses indicate that none of these differences would result in any significant adverse impacts beyond those described in the FGEIS for the Proposed Action. In other impact areas, the Northern Service Option would not have any significant new impacts either.

3.1 LAND USE AND PUBLIC POLICY

VARIATION 1

As with the Proposed Action as analyzed in the FGEIS, the Project Site would be redeveloped with a mix of active uses and open space. The operational changes would result in a slightly altered configuration of uses at the Project Site, compared with the Proposed Action as analyzed in the FGEIS. Specifically, a service area for trucks would be created at ground level in the vicinity of Freedom Tower and the performing arts center.

Compared with the Proposed Action, security checks for trucks and vans serving Freedom Tower, the performing arts center, and 75,000 square feet of retail would take place off-site on Washington Street instead of below grade on the WTC Site. While the presence of the security checks is unlikely to cause any change in use in the adjacent buildings, the security teams and their activities checking trucks would be a visible presence on Washington Street. One of the two main entry points to the Barclay-Vesey (Verizon) Building is located on this street, and this entry is the one that is closer to public transit. In tandem with security checks for trucks bound for 7 WTC, this variation would make vehicular drop-off or pick-up at the Washington Street entrance to the Verizon Building difficult, if not impossible, and would make pedestrian use of the Washington Street entrance less desirable.

Nevertheless, the major land uses introduced with this alternative would be the same as those introduced under the Proposed Action as analyzed in the FGEIS. These uses would be consistent with and supportive of the existing and future land uses and public policies in the surrounding Lower Manhattan central business district, as well as those uses and policies that existed at the Project Site before September 11, 2001. For this reason, despite the changes noted above, no significant adverse impacts to land use or public policy would result from the Northern Service Option with this screening variation.

VARIATION 2

Unlike Variation 1, this variation would not increase the security presence on Washington Street, as the security checks would be below grade on the WTC Site (similar to the Proposed Action). Overall, Variation 2 would provide the same major land use benefits as the Proposed Action as analyzed in the FGEIS, and would not have any significant new adverse impacts.

3.2 URBAN DESIGN AND VISUAL RESOURCES

VARIATION 1

With Variation 1, compared with the Proposed Action as analyzed in the FGEIS, trucks, vehicle elevators, and automobile parking garage access would become a part of the streetscape at the

performing arts center and on Vesey, Washington, Barclay, and Greenwich Streets. Trucks would be seen queuing on Washington Street for security checks before entering the truck elevators. Automobiles would also enter and exit the parking garage on Vesey Street. On the Project Site, sidewalks on Vesey Street would be interrupted by driveways and active vehicular movement. The performing arts center might be a slightly (one story) taller building because of this at-grade use. Otherwise, Variation 1 would have visual and urban design impacts similar to those of the Proposed Action as analyzed in the FGEIS. Overall, the benefits of the Proposed Action with this variation would outweigh the adverse effects, and there would be no significant new adverse impacts.

VARIATION 2

As with Variation 1, Variation 2 would introduce an active loading and service area to the streetscape along Vesey Street. However, since security screening would take place on the WTC Site and not along the street, there would be a reduced presence of truck queuing and security activities, particularly along Washington Street. As with Variation 1, the performing arts center would be a slightly taller building because of the at-grade loading uses.

3.3 HISTORIC RESOURCES

VARIATION 1

The increased visual presence of trucks with Variation 1 would affect the context of the Barclay-Vesey Building along its east façade on Washington Street. However, although the trucks would be more evident on Washington Street, they would not be new to the area. The loading docks for 7 WTC also open on this street and the truck docks for the Church Street Station/Federal Office Building face West Broadway. On balance, the increased truck presence under Variation 1 would not have a significant adverse effect on historic resources.

VARIATION 2

Under Variation 2, there would be no truck queuing and screening along Washington Street, but there would still be vehicular activities along the Vesey Street side of the performing arts center. Thus, contextual changes to the setting of the Barclay-Vesey Building would be less noticeable than those under Variation 1 and this would not have a significant new adverse effect on historic resources.

3.4 OPEN SPACE

Compared with the Proposed Action as analyzed in the FGEIS, both Variations 1 and 2 of the Northern Service Option would have the same amount and type of open space as well as the same number of potential open space users. Overall, open space conditions would be the same as those with the Proposed Action, and there would be no significant adverse impact to open space.

3.5 SHADOWS

Although there would be some at-grade (and below-grade) differences between the Northern Service Option, in both Variations 1 and 2, and the Proposed Action as analyzed in the FGEIS related to loading and vehicular circulation, there would be no substantial difference in building height, bulk, or volume for all of the buildings on the Project Site, except for the performing arts center, which might be slightly higher. This would result in a small amount of additional shadow on the open space of 7 WTC. Overall, under either variation of the Northern Service Option, the

effect of shadows resulting from new structures would be substantially the same as those disclosed in the FGEIS.

3.6 COMMUNITY FACILITIES AND SERVICES

Compared with the Proposed Action as analyzed in the FGEIS, the Northern Service Option, in both Variations 1 and 2, would have the same potential users of community facilities. Overall, conditions would be the same as those with the Proposed Action, and there would be no significant new adverse impact to community facilities.

3.7 SOCIOECONOMIC CONDITIONS

As with the Proposed Action as analyzed in the FGEIS, the Northern Service Option, in both Variations 1 and 2, would result in substantial redevelopment, including equal amounts of new office and retail space and new non-commercial land uses. Therefore, many of the economic benefits associated with the construction and operation of the proposed uses—including direct and indirect employment, wages and salaries, business and sales tax, and total economic output—would be expected to be similar. Because below-grade construction requirements would be somewhat reduced under either variation of the Northern Service Option, the economic benefits generated by this aspect of construction would be similarly reduced. Overall, the Northern Service Option is not expected to result in any new significant adverse socioeconomic impacts.

3.8 NEIGHBORHOOD CHARACTER

VARIATION 1

As with the Proposed Action as analyzed in the FGEIS, Variation 1 would represent a substantial improvement to the WTC Site and surrounding area by replacing a largely vacant and inactive site that is a detriment to the area's character with a mix of active uses, new urban design elements, improved transportation connections, and new open spaces. The construction of this option's at-grade vehicular access points would not change the benefits to neighborhood character that would result from the redeveloped Project Site. Similar to the Proposed Action, the amenities associated with Variation 1 would make the area livelier and would serve as a key component of the broader initiative to make Lower Manhattan a more attractive place to live, work, and visit, and to improve the post-disaster, blighted conditions that currently exist at the WTC Site.

However, as discussed below, truck queuing on Washington Street and Barclay Street as well as possible car queuing on Vesey Street could affect the immediate neighborhood. There would be a number of delivery vehicles on Washington Street undergoing their security checks. There might also be changes to the ground floor plan of the performing arts center that would affect the street-level presence of that building along Vesey Street. These uses would be replaced with truck docks and elevators, as well as passenger vehicle queuing, inspection, and elevator areas. Along Washington Street, waiting trucks, security teams, and their inspection activities would be a visible presence.

As described above, one of the two main entry points to the historic Barclay-Vesey Building is located on Washington Street, and this variation would affect the context of that building and could also affect vehicular access to that side of the building. The 7 WTC loading dock—itsself an active truck-related use—will also be located on Washington Street.

Overall, compared with the Proposed Action as analyzed in the FGEIS, the Northern Service Option with Variation 1 would have many of the same benefits to neighborhood character, since it would redevelop the Project Site with a mix of active uses and open space that would improve conditions on the site. While this variation would be less attractive in terms of neighborhood character in that it would result in truck queuing and inspection along Washington Street and a visible truck and vehicle entrance along Vesey Street. Overall, these localized adverse effects on Washington and Vesey Streets would be outweighed by the substantial benefits of the project in these locations, as well as throughout the study area, and there would be no significant new adverse impact to neighborhood character.

VARIATION 2

Like Variation 1, Variation 2 would be similar to the Proposed Action as analyzed in the FGEIS in most respects and would thus have many of the same benefits to neighborhood character. Variation 2 would be the same as Variation 1 except that truck inspections would take place underground on the WTC Site rather than on Washington Street. This means that under Variation 2 there would be smaller effects to the context and operation of the Barclay-Vesey Building and no noticeable change to Washington Street, as compared with the Proposed Action. There would still be some effect with this variation (primarily along Vesey Street), as there would still be an active truck and vehicle entrance, reduced ground-floor retail space, and a street-level atmosphere that would be less welcoming to pedestrians and visitors. That, however, is not expected to result in any significant new adverse impacts to neighborhood character.

3.9 HAZARDOUS MATERIALS

Both the Northern Service Option with Variations 1 and 2 would have the same hazardous materials conditions as the Proposed Action as analyzed in the FGEIS. Overall, measures that would be undertaken during construction would be the same as those described in the FGEIS, and there would be no significant adverse hazardous materials impacts.

3.10 INFRASTRUCTURE

With the Northern Service Option with both Variations 1 and 2, there would be small changes to infrastructure conditions, compared with the Proposed Action as analyzed in the FGEIS. However, as noted above, both variations could provide an opportunity for the Lower Manhattan Development Corporation (LMDC), the Port Authority of New York and New Jersey (the Port Authority), and Silverstein Properties to explore more efficient uses of sub-grade space on the Project Site to enhance sustainability at the site. With either Variation 1 or 2, there would be no significant adverse impacts to infrastructure.

3.11 TRAFFIC AND PARKING

As described above, there are two variations under the Northern Service Option. Variation 1 consists of delivery vehicle security screening for deliveries to the Freedom Tower quadrant occurring on the east curb lane on southbound Washington Street between Vesey and Barclay Streets, with screened delivery vehicles subsequently proceeding east on Vesey Street into at-grade elevators to below-grade truck loading docks. Variation 2 consists of delivery vehicle screening for all deliveries within the Liberty Street garage (similar to the Proposed Action), with screened delivery vehicles destined to the Freedom Tower quadrant proceeding out the

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Liberty Street garage exit, north on Route 9A, and east on Vesey Street into at-grade elevators to the below-grade truck loading docks.

All street directions and vehicular traffic assignments for the two variations are identical, except for Washington Street (southbound in Variation 1 and northbound in Variation 2). Under either variation, traffic and parking patterns would most likely remain the same north of Chambers Street and south of Rector Street on Route 9A. The parking garages proposed for the Freedom Tower quadrant and the remainder of the Project Site, respectively, would operate within the garages' capacities in 2015.

Taxis would pick up and drop off riders in the same areas as with the Proposed Action. Buses would pick up and drop off riders in the same area on the west curb of Greenwich Street, continue to be checked by security at the Liberty Street entrance to the underground garage, and circulate in approximately the same way as the Proposed Action, with a slight variation—buses would exit at Liberty Street where they entered, instead of being able to exit at Vesey or Liberty Streets as they would under the Proposed Action, where the two garage access/egress points would be linked by a continuous underground roadway network.

Passenger cars for Towers 2 through 5 would enter and exit the below-grade system via the ramp at Liberty Street instead of at Vesey Street. Passenger cars for tenants of the Freedom Tower would be screened by security personnel either on the south curb of Vesey Street between Route 9A and the Vesey Street access, or just inside the access, and enter and exit the garage using elevators adjacent to truck elevators along Vesey Street.

VARIATION 1

Trucks traveling on Route 9A would turn onto eastbound Vesey Street, northbound Church Street, and westbound Barclay Street to await inspection on southbound Washington Street. Washington Street would need to be made one-way southbound. A traffic signal would be reinstalled at the intersection of Vesey and Washington Streets to facilitate truck maneuvers across Vesey Street. Trucks could also approach the Washington Street screening area from the north by traveling eastbound on Murray or Chambers Streets, southbound on Greenwich Street, and westbound on Barclay Street; or from the south, by traveling eastbound on Liberty Street, northbound on Church Street and westbound on Barclay Street. Additional truck queuing (and possibly mixed with taxi drop-offs and pick-ups) would need to be accommodated along Barclay and Vesey Streets.

VARIATION 2

Variation 2 differs from Variation 1 only in the routing of delivery vehicles approaching the site, as described above; delivery vehicles using the Vesey and Liberty Street exits from the underground garages would leave the Project Site using the same traffic assignments as Variation 1.

TRAFFIC VOLUMES

Variation 1

Traffic volume networks were developed for Variation 1 for full build-out conditions in 2015. For this variation, it was assumed that Washington Street would operate as a southbound street between Barclay and Vesey Streets, and with the street direction changes analyzed in the FGEIS, primarily a one-way eastbound Vesey Street and a two directional ramp along Liberty Street to the underground garage beneath the southern end of the Project Site.

Under Variation 2, compared with the Proposed Action, more vehicle trips would be shifted inland from Route 9A onto the Vesey and Barclay Street corridors as a result of the circuitous approach route needed to access security screening locations for the Freedom Tower and the performing arts center. Also, more vehicle trips would be shifted farther east on Vesey Street to northbound Church Street to westbound Barclay Street because the direction of Washington Street would be reversed from northbound to southbound.

The principal traffic issues of Variation 1 would stem from the conflicts that could be created on the one block of Washington Street between Vesey and Barclay Streets. Deliveries to 7 WTC would use truck docks on the east curb of Washington Street, while security screening activities for the Freedom Tower and the performing arts center would use the same street. Trucks bound for 7 WTC loading docks would proceed south on Washington Street past the loading docks and then back into the truck docks. With the Proposed Action, these trucks would have traveled north on Washington Street and backed into the truck docks. The maneuvers for 7 WTC trucks and security screening of Freedom Tower quadrant trucks on the same street would require coordinated traffic management and screening procedures to minimize congestion. These additional maneuvers for 7 WTC trucks, and security screening queuing on westbound Barclay and southbound Washington Street for WTC Site trucks, could cause delays on Barclay and Vesey Streets not calculated in conventional intersection levels of service. Also, one curb lane on Washington Street would be blocked, whereas under the Proposed Action, truck activity at that curb would be largely limited to 7 WTC operations.

Compared with the Proposed Action, southbound Route 9A traffic volumes between Vesey and Liberty Streets with Variation 1 would be similar. Since a portion of delivery vehicles would likely turn off Route 9A in advance of Vesey Street to use inland streets, such as Greenwich and Church Streets en route to Barclay Street, southbound Route 9A traffic volumes would decrease slightly, but truck traffic volumes on some of the narrower streets north of Vesey Street would increase. The majority of auto traffic that would enter the garage via Vesey Street in the Proposed Action would enter the garage from Liberty Street in this variation, which would increase southbound Route 9A traffic volumes between Vesey and Liberty Streets.

The street direction changes and revised auto and truck assignments with Variation 1 would translate into approximately 0-20 more vph turning from southbound Route 9A onto Murray Street, 0-75 fewer vph turning from southbound Route 9A onto Vesey Street, and between 0-55 more vph turning from southbound Route 9A onto Liberty Street to access the garage, compared with the Proposed Action. Traffic on eastbound Vesey Street and westbound Barclay Street at Greenwich Street would increase by 70-100 and 90-130 vph, respectively, under Variation 1. These volumes would be higher because of the circuitous truck security inspection route for the Freedom Tower deliveries and diversions due to the reversal of Washington Street.

Variation 2

Traffic volume networks were developed for Variation 2 for full build-out conditions in 2015. The street direction assumptions for this variation were the same as those used for Variation 1, except that Washington Street would not need to be made one-way southbound.

For Variation 2, traffic volumes would be 10-45 vph per direction higher on Route 9A between Vesey and Liberty Streets than under Variation 1 because trucks arriving to deliver their goods to the Freedom Tower quadrant would pass through Route 9A's intersections at Vesey, Fulton, and Liberty Streets twice on their inbound trip—one time to arrive at the security screening area

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inside the Liberty Street garage entrance, and a second time on their trip to the at-grade loading elevators on Vesey Street. This would cause higher traffic delays than with Variation 1 and the Proposed Action. However, with the elimination of the circuitous security screening route on Washington Street necessary with Variation 1, the Vesey and Barclay Street corridors would experience slightly lower delays under Variation 2.

The street direction changes and revised auto and truck assignments would translate to approximately 5-90 fewer vph turning from southbound Route 9A onto Vesey Street and 5-90 more vph turning from southbound Route 9A into the Liberty Street entrance to the underground garage, compared with the Proposed Action. Traffic on eastbound Vesey Street and westbound Barclay Street at Greenwich Street would increase by 0-50 vph and 30-40 vph, respectively, under Variation 2. These volumes would be higher because of Freedom Tower delivery truck exits to Route 9A via eastbound Vesey Street, northbound Church Street and westbound Barclay Street.

TRAFFIC LEVELS OF SERVICE, POTENTIAL IMPACTS AND MITIGATION

Variation 1

Future traffic levels of service in 2015 with Variation 1 were determined and compared to the Proposed Action for both the Route 9A at-grade arterial design option and the Route 9A short bypass tunnel option. Under the Proposed Action, there would be 25-26 intersections significantly impacted; 25-27 intersections would be significantly impacted with Variation 1. In the AM peak hour, the Greenwich Street and Fulton Street intersection would not be significantly impacted with Variation 1 as it would be with the Proposed Action. However, in the AM and PM peak hours, the Barclay Street intersection at West Broadway would be significantly impacted in Variation 1, while it would not be with the Proposed Action. Overall intersection traffic levels of service would be similar to those determined for the Proposed Action. Relevant intersection levels of service are shown in Figures 1 through 6 for Variation 1.

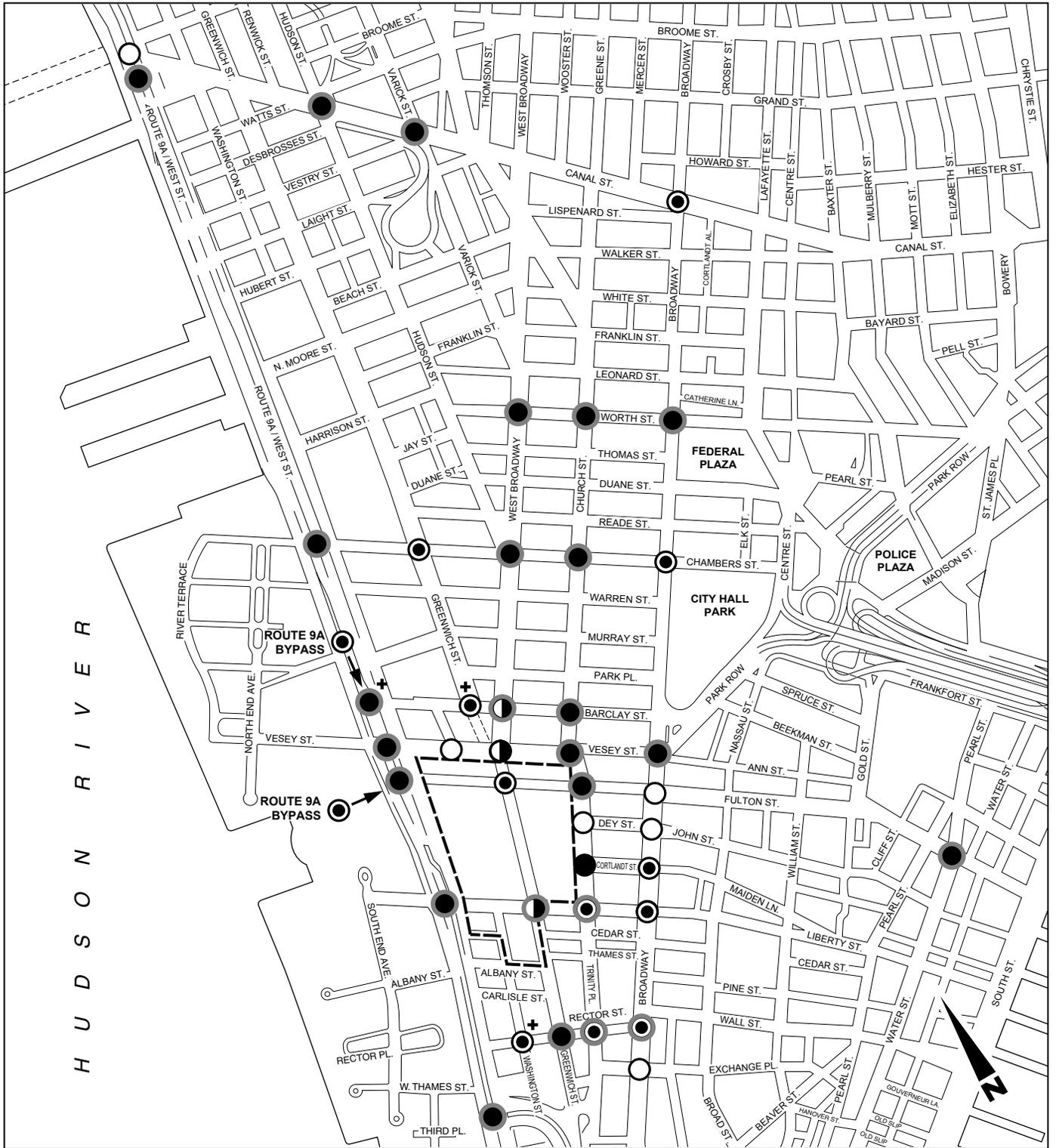
For the Route 9A at-grade arterial design option, the Vesey Street and Route 9A intersection would be expected to operate at overall LOS F under both the Proposed Action and Variation 1, and would not be mitigated.

At the Route 9A/Fulton Street intersection, the level of service would be slightly better with Variation 1 as compared to the Proposed Action since there would be a sufficient diversion of traffic off of Fulton Street that would allow for partial or full mitigation, unlike conditions with the Proposed Action, which could not be mitigated.

At the Route 9A/Liberty Street intersection, levels of service for the Proposed Action and Variation 1 would be in the LOS E to F range and could not be mitigated.

Along the Vesey and Barclay Street corridors, levels of service would generally decline under Variation 1, compared with the Proposed Action; however, only one additional intersection would experience significant impacts for this variation. The Barclay Street/West Broadway intersection would be impacted in the AM and PM peak hours and would operate at LOS D or better conditions, compared with LOS C and no significant impacts under the Proposed Action. Shifting five seconds of green time to the impacted approach would fully mitigate significant impacts during both of these time periods.

For the Route 9A short bypass tunnel option, the primary traffic effects relate to through traffic volumes on Route 9A, which increases intersection capacity. The same volume patterns discussed above relative to Variation 1 apply. The Route 9A/Vesey Street and the Route



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

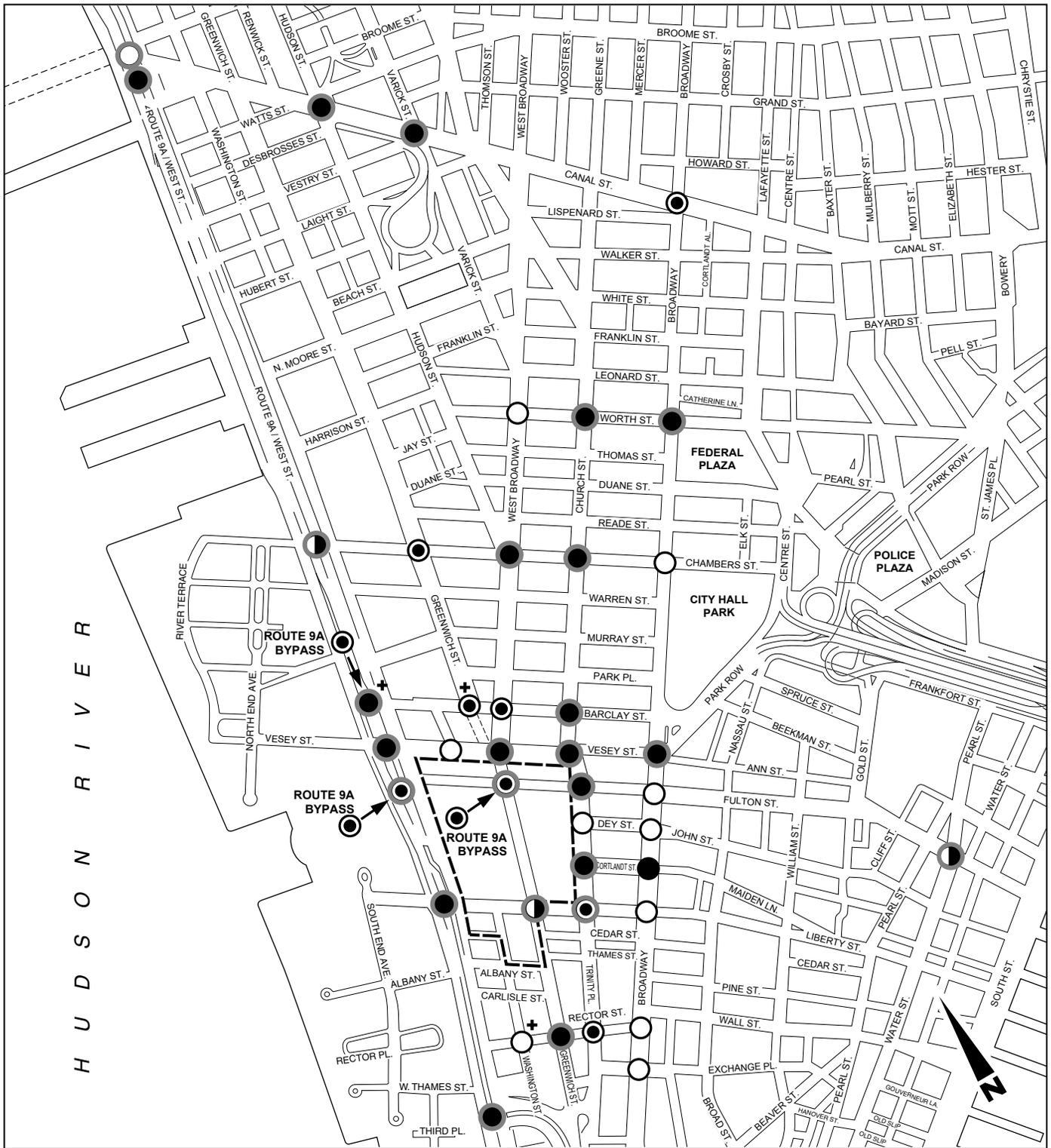
◐ LOS C

◑ LOS D

● LOS E or F

○ Significant Impact

Traffic Levels of Service and Significant Impacts
 2015 Build Conditions
 Option 1 with Route 9A At-Grade
 AM Peak Hour



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

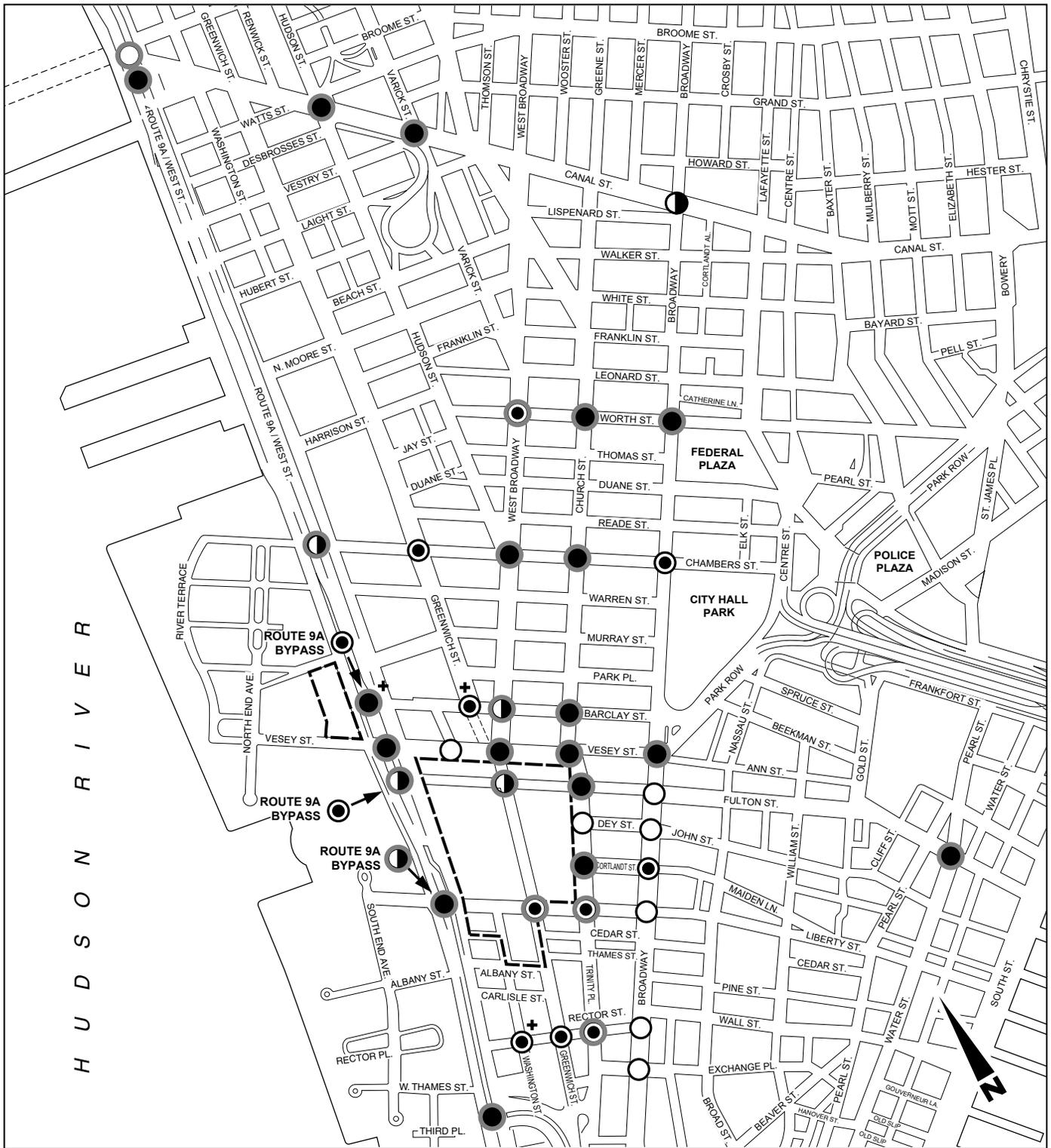
◐ LOS C

◑ LOS D

● LOS E or F

○ Significant Impact

Traffic Levels of Service and Significant Impacts
 2015 Build Conditions
 Option 1 with Route 9A At-Grade
 Midday Peak Hour



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

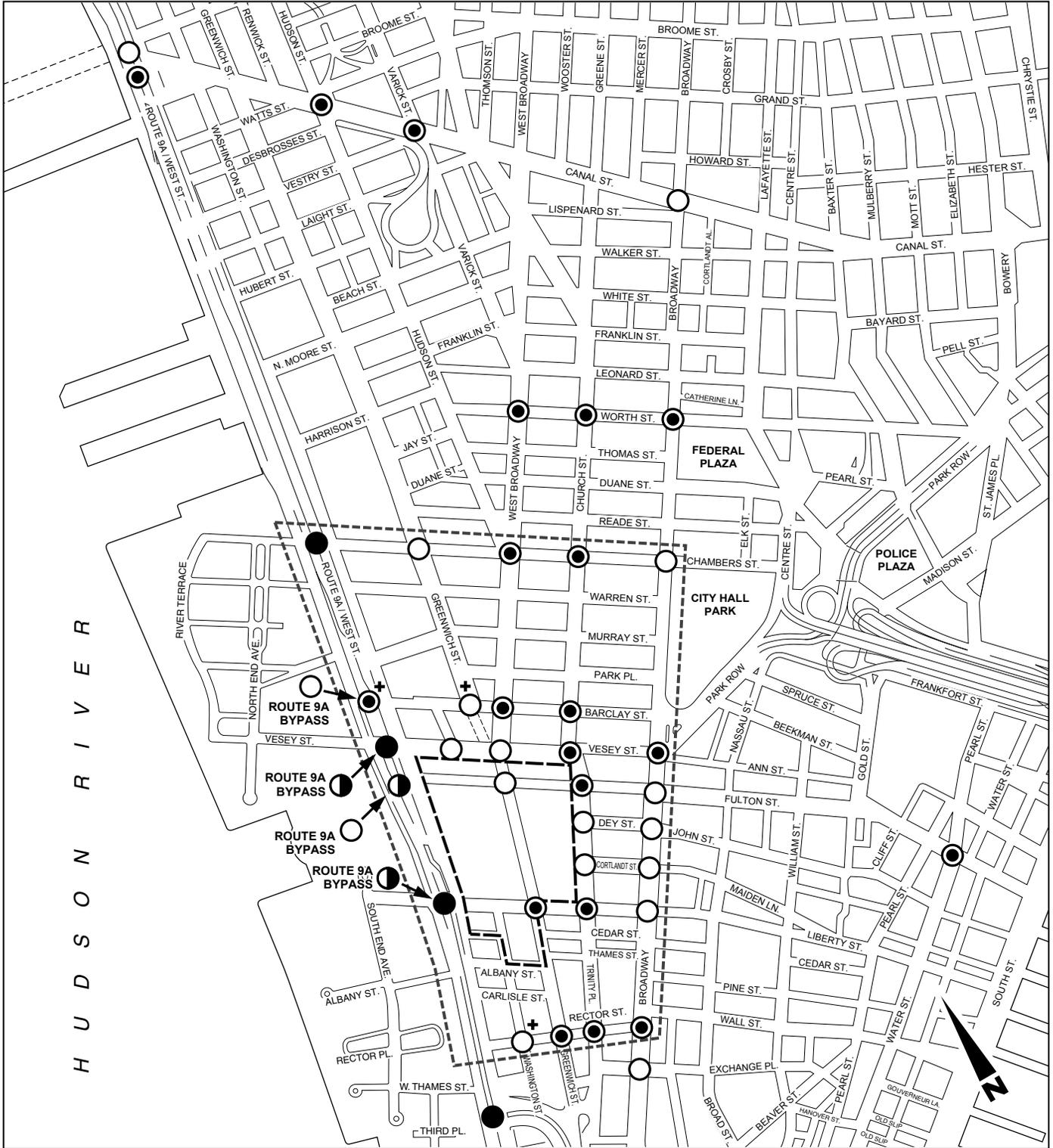
● LOS C

◐ LOS D

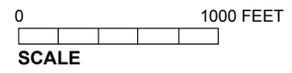
● LOS E or F

○ Significant Impact

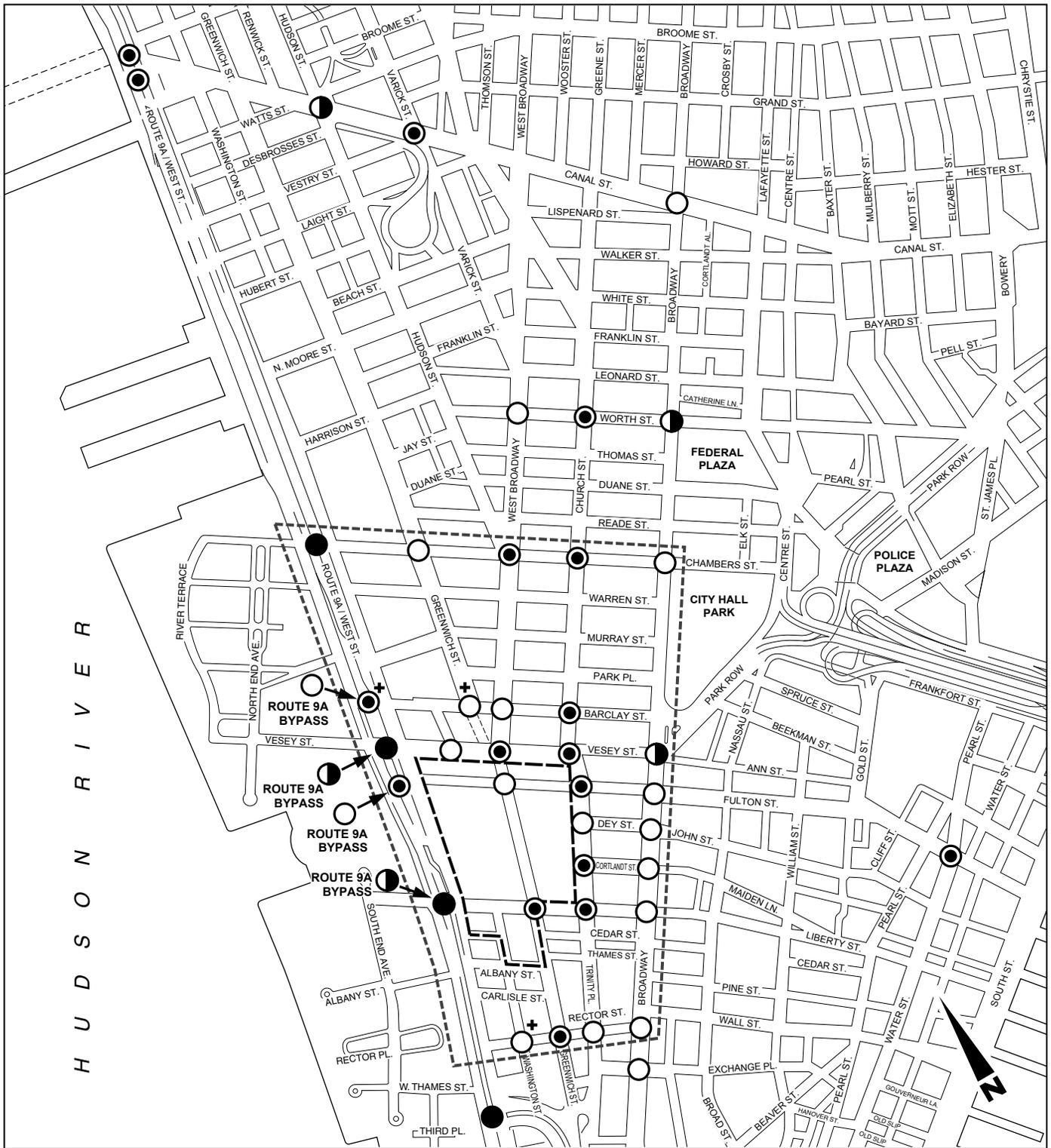
**Traffic Levels of Service and Significant Impacts
2015 Build Conditions
Option 1 with Route 9A At-Grade
PM Peak Hour**



- Project Site Boundary
- Primary Study Area Boundary
- No Significant Impact
- Mitigated Impact
- ◐ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection



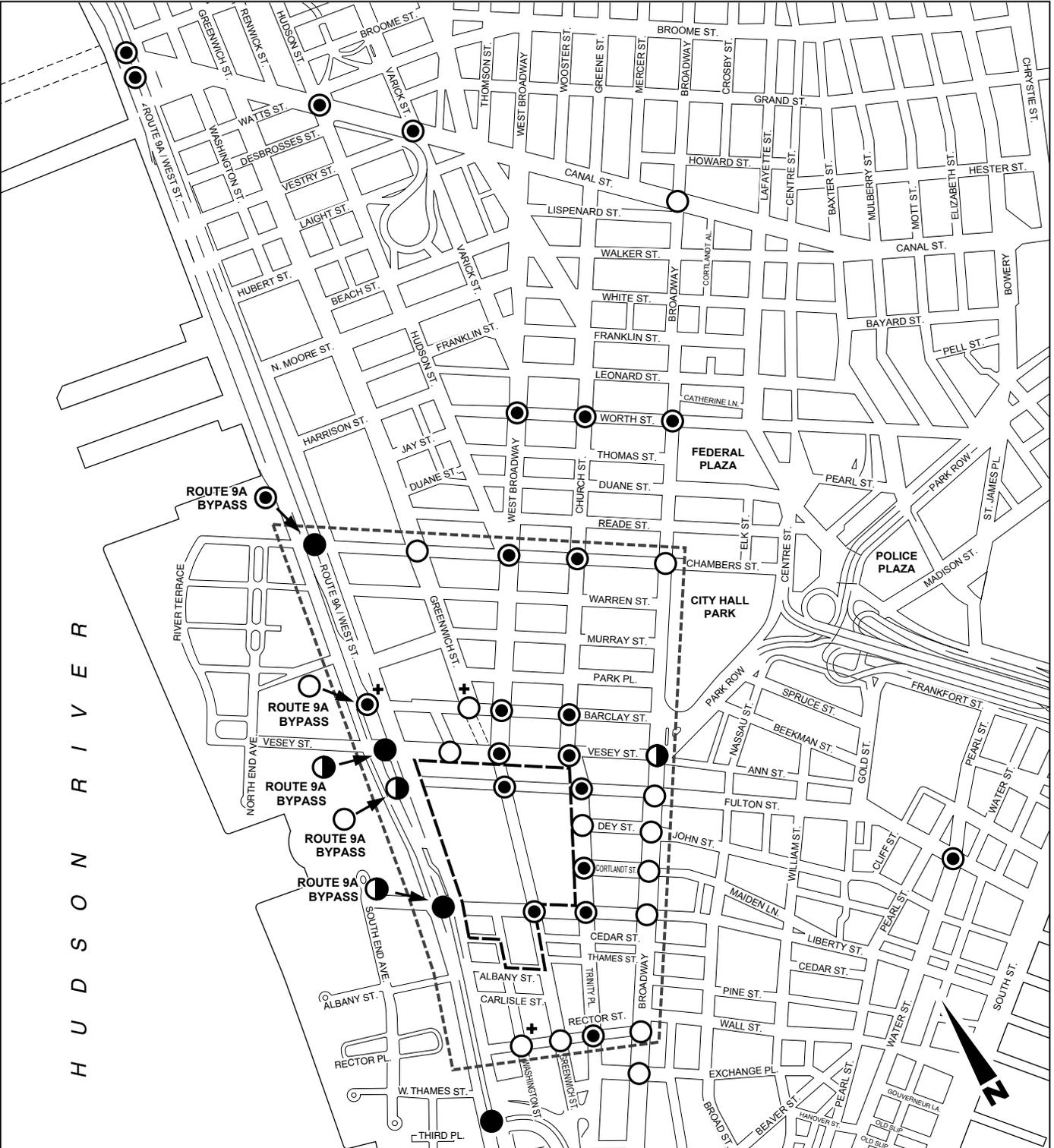
Traffic Mitigation Overview 2015 Option 1 with Route 9A At-Grade AM Peak Hour



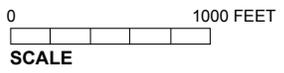
- Project Site Boundary
- Primary Study Area Boundary
- No Significant Impact
- Mitigated Impact
- ◐ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection

0 1000 FEET
SCALE

Traffic Mitigation Overview 2015 Option 1 with Route 9A At-Grade Midday Peak Hour



- Project Site Boundary
- - - Primary Study Area Boundary
- No Significant Impact
- Mitigated Impact
- ◐ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection



Traffic Mitigation Overview 2015 Option 1 with Route 9A At-Grade PM Peak Hour

9A/Liberty Street intersections could be partially mitigated with Variation 1, as with the Proposed Action.

Variation 2

Overall intersection traffic levels of service would be similar to those for Variation 1, with the exception of the Route 9A intersections at Vesey and Liberty Streets. The number and location of intersections significantly impacted under Variation 2 would be the same as Variation 1 with 25-26 intersections significantly impacted under the Proposed Action and 25-27 intersections significantly impacted under Variation 2. Overall intersection levels of service are shown in Figures 7 through 12 for Variation 2.

Traffic delays would be approximately 5 to 20 seconds higher at the intersections of Route 9A with Vesey, Fulton, and Liberty Streets in Variation 2 as compared to Variation 1. Traffic delays would be slightly lower (0 to 10 seconds) in Variation 2, as compared to Variation 1, on the Vesey Street and Barclay Street corridors. As noted, however, none of these differences would amount to significant new traffic impacts.

3.12 TRANSIT AND PEDESTRIANS

VARIATION 1

Variation 1 is expected to result in approximately 46 truck and van movements arriving at the security check on Washington Street between Barclay and Vesey Streets during the AM peak hour. The truck movements during this period would amount to less than one per minute. In general, pedestrians are projected to move in platoons as a result of the traffic signal located east and west of the truck driveway on Vesey Street. This would include those proposed at the east-west crosswalk on northern side of the Vesey Street and Washington Street and the north-south crosswalk at the eastern side of the Vesey Street and Washington Street to serve to control the number and frequency of trucks entering the Vesey Street and Washington Street intersection. Truck movements are not expected to have a significant impact on pedestrians, assuming trucks would not block the Vesey Street and Washington Street intersection or the south sidewalk on Vesey Street. Moderately increased pedestrian delays by approximately an additional 15-20 seconds are expected while trucks temporarily stack along Vesey Street queue to enter the elevators. Passenger car entrances and exits at Vesey Street would not add significantly to pedestrian delay.

VARIATION 2

For Variation 2, the number of truck movements turning from Vesey Street into the truck elevators would not differ from Variation 1, nor would truck movements be expected to have a significant impact on pedestrians, assuming trucks do not block the Vesey Street and Washington Street intersection or the south sidewalk on Vesey Street. Moderately increased pedestrian delays are expected by approximately an additional 15-20 seconds while trucks temporarily stack at the traffic signal along Vesey Street queue to enter the elevators. Passenger car entrances and exits at Vesey Street would not add significantly to pedestrian delay.

3.13 AIR QUALITY

Either Variation 1 or 2 of the Northern Service Option would replace the Vesey Street sub-grade vehicular portal with vehicle elevators for cars and trucks serving Freedom Tower, the performing arts center, and retail space. Since sub-grade vehicular activity would still occur, the

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emissions predicted from the below-grade facilities (described in the FGEIS Chapter 14, “Air Quality”) would be similar, and the ventilation system could still be planned in such a manner so as to ensure that no significant adverse air quality impacts occur due to ventilation.

Since this option would be expected to increase truck traffic in the area of Vesey and Washington Streets, and may cause queuing of trucks on Washington and Vesey Streets for security inspection prior to entering and possibly queuing of trucks and cars in general due to the use of elevators, additional emissions would be expected at street level. The layout of the queue locations, and other planning measures, such as strict enforcement of engine shut-down during queuing, would need to be considered in such a way as to minimize any potential air quality impacts.

Since this option, compared with the Proposed Action as analyzed in the FGEIS, is not expected to create any significant change in traffic patterns or volumes at the major intersections that were analyzed as the worst-case intersections for impacts related to the Proposed Action (see “Traffic and Parking” section, above), the analyses presented in the FGEIS would represent the worst case for intersections under this option as well. Significant air quality impacts were not predicted for these intersections under the Proposed Action, and therefore significant air quality impacts were not predicted at any location due to changes in traffic. Therefore, significant air quality impacts would not be expected under this alternative either due to the effect of this option on traffic patterns and volumes.

The impact of idle emissions at Vesey and Washington Streets under Variation 1, together with on-street emissions, was assessed as presented below. Security inspection under Variation 2 would occur in the Liberty Street garage similar to that analyzed in the FGEIS, and thus does not require further analysis.

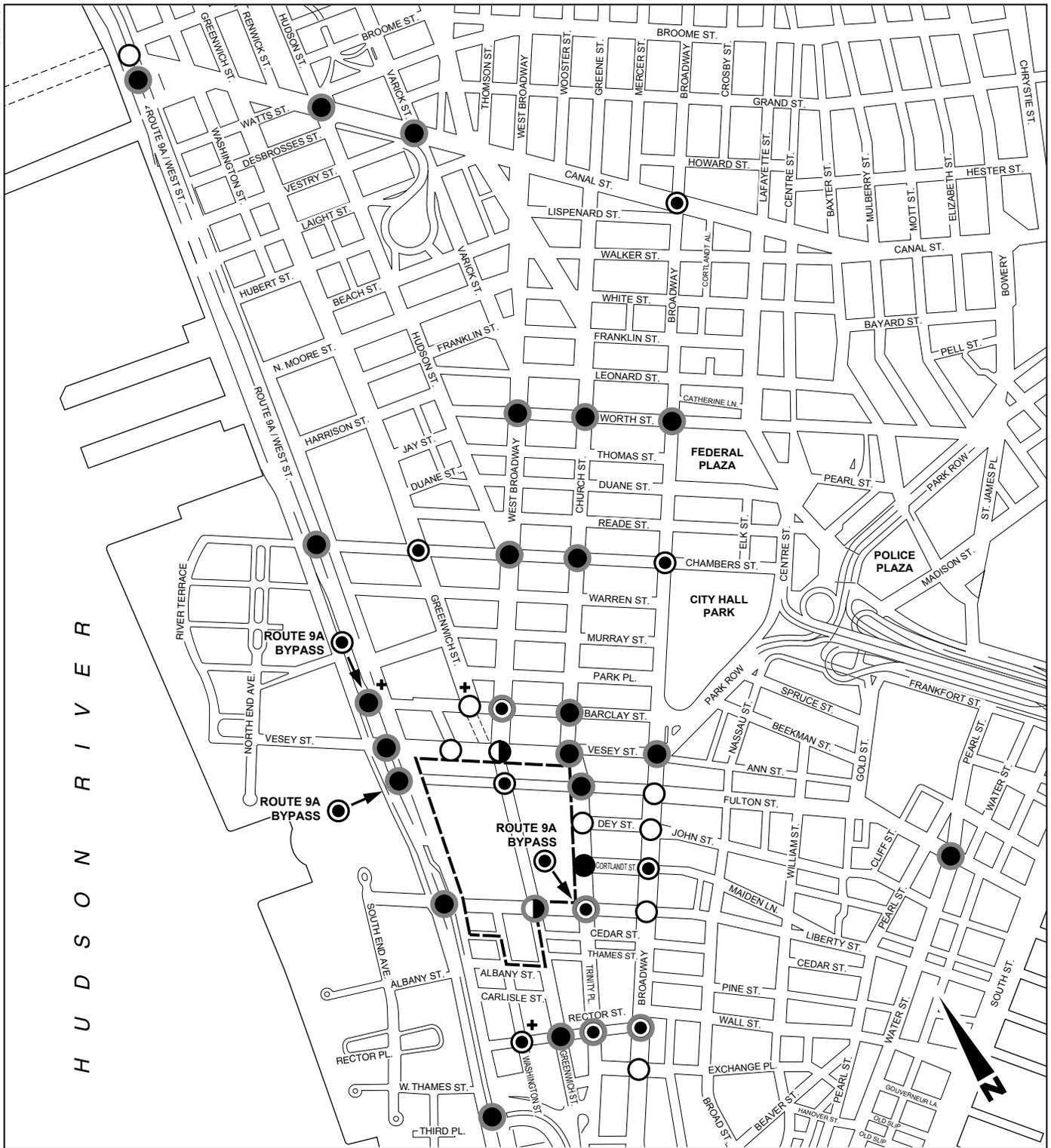
AIR QUALITY IMPACT ANALYSIS AT WASHINGTON AND VESEY STREETS

Methodology

In order to assess the potential impact of trucks that may queue for security inspection and while waiting for the availability of elevators on Washington or Vesey Streets, an air quality modeling analysis was performed.

Emissions were estimated based on the predicted number of trucks during each hour of the day, and on emission factors for trucks as computed using the EPA Mobile6 model. Emissions were predicted for 2009—since emissions are predicted to decrease over the years and the number of trucks would be constant, these would be the highest predicted emissions from the trucks. (As described below, these emissions were coupled with the highest predicted emissions from other on-road sources from both 2009 and 2015.) Idle time per truck was assumed to be 200 seconds—the cycle time for each elevator operation truck entering to the return of the elevator to street level. This is a conservatively high estimate for emissions, since security inspection would be shorter than that time, and since under sub-saturated conditions trucks would not need to idle that entire time (they would simply drive into the available elevator immediately after inspection).

Emissions from up to three security inspection locations were modeled. The actual number of emission locations was determined on an hourly basis, based on the number of trucks multiplied by the idle time divided by 60 (the available minutes in any given hour—i.e., <60 is one station, <120 two stations etc.). This too is a conservative estimate, since even in sub-saturated conditions the trucks may use any of the locations for security and idling, and the emissions



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

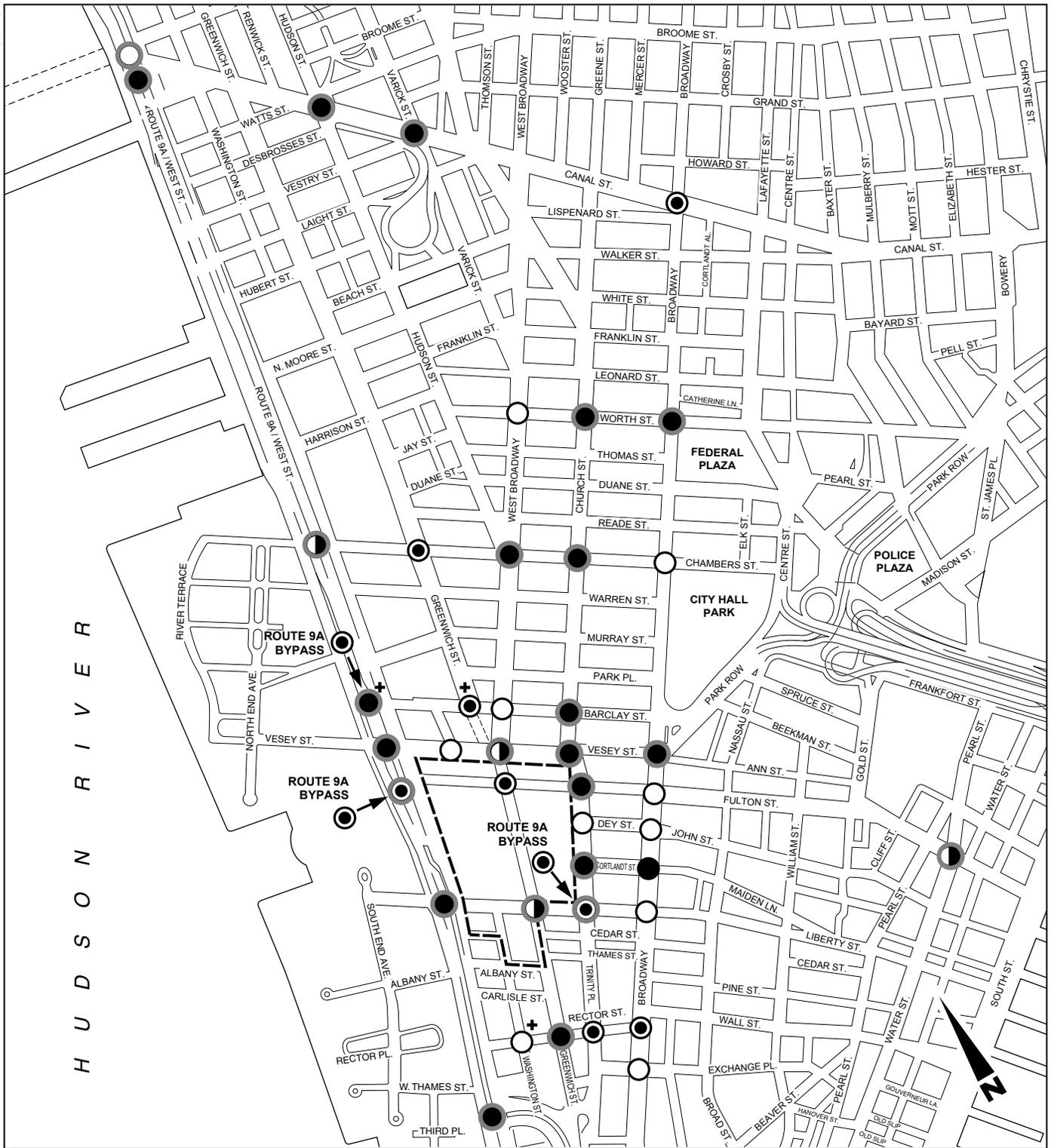
◐ LOS C

◑ LOS D

● LOS E or F

○ Significant Impact

**Traffic Levels of Service and Significant Impacts
2015 Build Conditions
Option 2 with Route 9A At-Grade
AM Peak Hour**



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

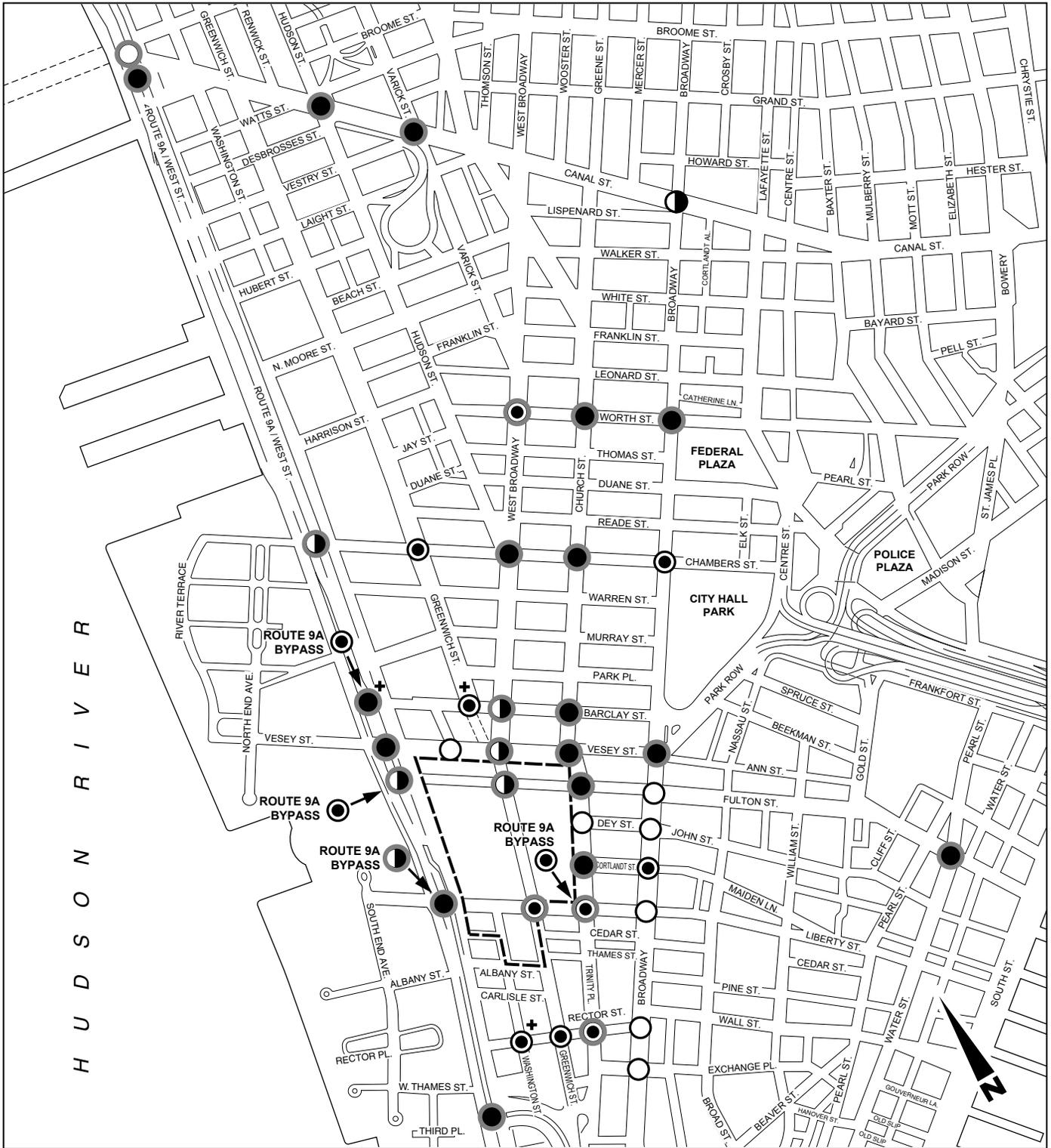
● LOS C

◐ LOS D

● LOS E or F

○ Significant Impact

Traffic Levels of Service and Significant Impacts
 2015 Build Conditions
 Option 2 with Route 9A At-Grade
 Midday Peak Hour



--- Project Site Boundary

+ Unsignalized Intersection

Note: Overall intersection LOS is shown for signalized intersections

○ LOS A or B

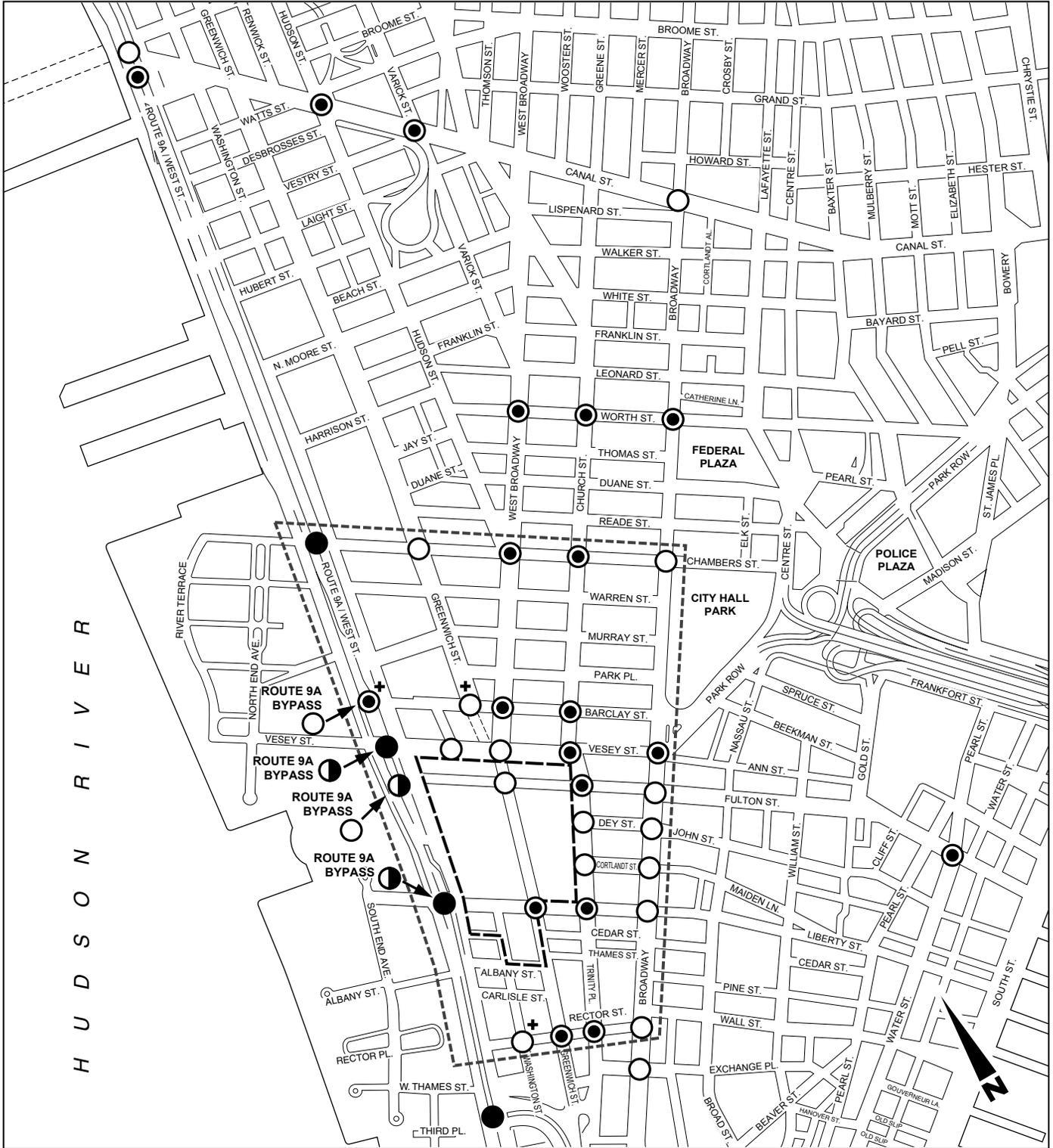
● LOS C

◐ LOS D

● LOS E or F

○ Significant Impact

**Traffic Levels of Service and Significant Impacts
2015 Build Conditions
Option 2 with Route 9A At-Grade
PM Peak Hour**

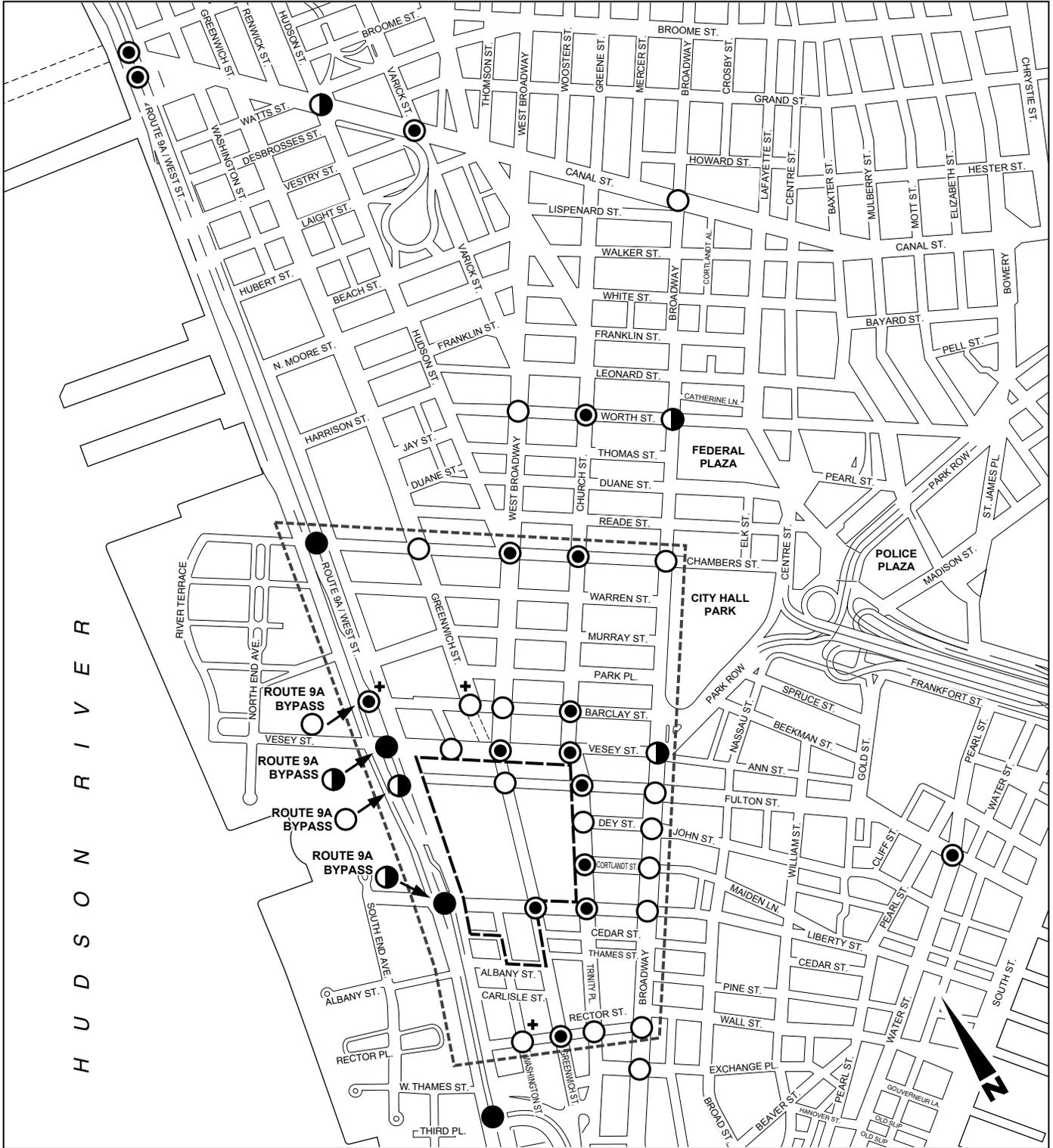


- Project Site Boundary
- Primary Study Area Boundary
- No Significant Impact
- Mitigated Impact
- ◐ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection

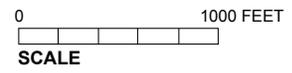
0 1000 FEET
SCALE

Traffic Mitigation Overview 2015 Option 2 with Route 9A At-Grade AM Peak Hour

Figure 10

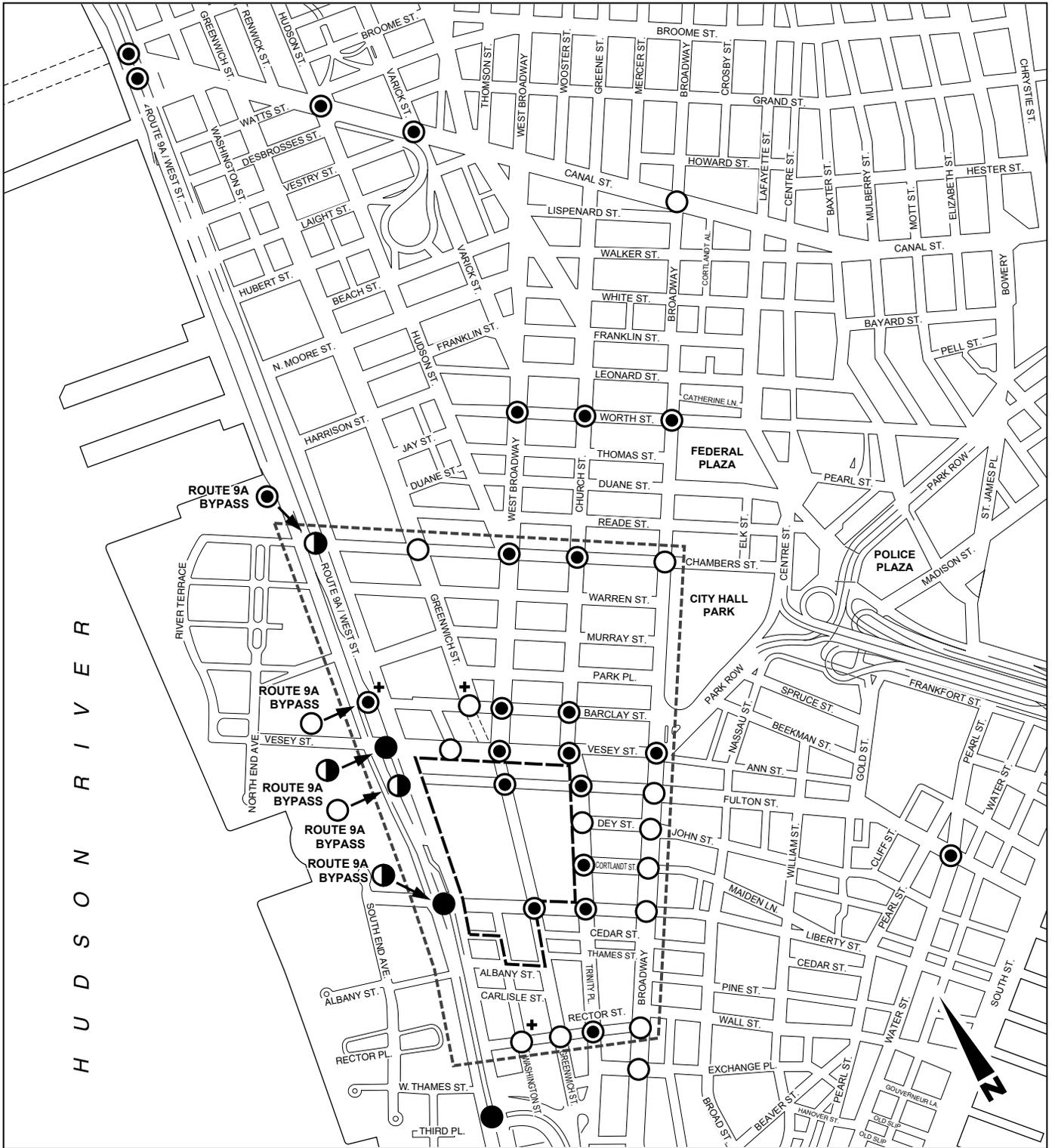


- Project Site Boundary
- Primary Study Area Boundary
- No Significant Impact
- Mitigated Impact
- ◐ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection



Traffic Mitigation Overview 2015 Option 2 with Route 9A At-Grade Midday Peak Hour

Figure 11



- Project Site Boundary
- Primary Study Area Boundary
- No Significant Impact
- ◐ Mitigated Impact
- ◑ Partially Mitigated Impact
- Unmitigated Impact
- + Unsignalized Intersection

0 1000 FEET
SCALE

Traffic Mitigation Overview 2015 Option 2 with Route 9A At-Grade PM Peak Hour

Figure 12

would therefore be less concentrated than the modeled representation; also, some of the idling may take place in the entrance bay where the mechanical ventilation system would eliminate local emissions.

The above analysis assumes that parking management procedures, such as communication between the elevator operators and the security teams, would ensure that idling vehicles do not queue in locations other than those designated, and that trucks would not be permitted to idle.

Since the main pollutant of concern from diesel engines is particulate matter, analysis of PM_{2.5} was performed using the EPA's ISC model. The model included cruise emissions from the trucks along both Vesey and Washington Streets, as well as idle emissions as described above. The maximum predicted concentrations resulting from additional emissions from on-street traffic, as presented in the FGEIS, were added to the result of this analysis, producing the total predicted contribution to local concentrations due to this Northern Service Option.

Concentrations were calculated at adjacent sidewalk locations for the 24-hour average local analysis, and averaged over a 1-kilometer-square grid (at a resolution of 25 meters) for the neighborhood scale annual average analysis.

For additional detail on pollutants, benchmarks and regulations, and air quality modeling procedures, see Chapter 14 in the FGEIS.

Results

The highest total predicted PM_{2.5} concentrations due to trucks at Washington and Vesey Streets would be 2.0 µg/m³ and 0.0015 µg/m³ on a 24-hour average and annual neighborhood scale average basis, respectively. The highest total on-street contribution due to the Proposed Action at this location, as presented in the FGEIS, was predicted to be 0.90 µg/m³ and 0.039 µg/m³ on a 24-hour average and annual neighborhood scale average basis, respectively. Although these contributions may not occur under the same conditions or at the same location, when conservatively added together, the total maximum increase in PM_{2.5} concentrations due to the Proposed Action with the Northern Service Option would be 2.9 µg/m³ and 0.041 µg/m³ on a 24-hour average and annual neighborhood scale average basis, respectively.

These increments are much lower than the city's interim guidance thresholds, would be considered insignificant, and would not be expected to cause any new exceedances or increase the severity or frequency of existing exceedances of the PM_{2.5} NAAQS.

Based on these results, and on the analysis presented above, the operation of either variation of the Northern Service Option would not have any significant impact on air quality.

3.14 NOISE

VARIATION 1

Mobile Sources

Noise level increases during AM peak traffic hours were calculated for the 24 representative receptor sites evaluated in FGEIS. Noise increases were analyzed for AM peak traffic condition, reflecting a conservative analysis, as traffic would be most intense during this period of the day. Noise associated with Variation 1 was calculated based on incremental changes in traffic volumes, including cars, vans, buses, and trucks, projected for this variation. The analyses described in this section take into account the requirement that heavy trucks will deliver during nighttime hours only, when overall traffic volumes are lower. The noise levels under Variation 1

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were compared with the noise levels under the future without the Proposed Action conditions to assess the potential for significant impacts. Potential impacts under Variation 1 were also compared against the impacts identified for the Proposed Action in the FGEIS to assess whether potential significant impacts under Variation 1 would be substantially the same or different from those presented for the Proposed Action in the FGEIS.

The analysis results for Variation 1 are presented in Table 1. Under this variation, none of the sites evaluated would experience noise level increases of greater than approximately 2 dBA over the future without the Proposed Action. A greater than 3 dBA increase in noise levels over noise levels in the future without the Proposed Action is considered to be threshold for significant impact in areas with high ambient noise levels, such as those in New York City. As increases in noise levels under Variation 1 would be less than 3 dBA, Variation 1 would not result in significant noise impacts.

Comparison between the impacts of Variation 1 and the Proposed Action analyzed in the FGEIS indicates that where impacts of Variation 1 are greater than those under the Proposed Action, they do not exceed 2 dBA. Of all sites analyzed, Site 16 would experience the largest decibel increase between Variation 1 and the Proposed Action. The difference in projected noise levels at Site 16 is due to the introduction of trucks along Barclay Street under Variation 1. Noise levels at Site 16 under Variation 1 were projected at 77 dBA, compared with 75 dBA at this site under the Proposed Action. In sum, although noise levels would increase at some locations under Variation 1, compared with the Proposed Action as presented in the FGEIS, such increases would not result in significant adverse impacts. No significant adverse noise impacts were projected for the Proposed Action in the FGEIS. With regard to potentially significant impacts, Variation 1 would therefore be the same as the Proposed Action analyzed in the FGEIS.

Stationary Sources

Under this alternative, it is anticipated that there would be two to three trucks idling on Washington Street during the peak traffic hour awaiting inspection. Idling would not be allowed during the inspection. Following inspection on Washington Street, trucks and vans would turn onto Vesey Street and into the parking access and truck elevator area under Freedom Tower. The elevators and entry/exit ramps would be underground and covered by the surface pavement and would not generate any additional noise at the street level.

Table 1
Noise Levels in 2015 Without the Proposed Action
and Noise Levels for Variation 1

Site ID	Site Name and Address	Land Use	Future Without the Proposed Action	Future with Variation 1	
			L _{eq} (dBA)	L _{eq} (dBA)	Changes in L _{eq} (dBA)
1	PS 89 Playground on West St	Public facilities and institutions	73	74	+1
2	NW corner of Murray St and West St	Open space and outdoor recreation	74	75	+1
3	Embassy Suites and Regal Cinemas on Vesey St	Hotel	69	69	+0
4	World Financial Center/Dow Jones, side of West St (Vesey St and Liberty St)	Bikeway	69	70	+1
5	Gateway Plaza (corner of Liberty St and South End Av)	Residential	70	70	0
6	SW corner of Albany St and West St (parking lot)	Residential	75	75	0
7	Cedar St and Washington St (fence on Cedar St)	Proposed park/church residential	66	66	0
8	Marriott Hotel, 85 West St, side of Albany St	Residential	74	74	0
9	4 Albany St	Residential	69	69	0
10	120 Cedar St (on Greenwich St)	Institutional	68	70	+2
11	114 Liberty St	Residential	81	82	+1
12	95 Trinity Building	Institutional	79	79	0
13	SE corner of Liberty St and Trinity Pl (at Park corner)	Public open space	80	80	0
14	Millenium Hotel-Dey Street	Hotel	76	76	0
15	St. Peter's Church on Church St	Public facilities and institutions	78	78	0
16	100 Church Street-Barclay St entrance (2)	Commercial and office	75	76	+1
17	Barclay St and Washington St intersection(2)	Commercial and office	77	79	+2
18	Park Pl and Greenwich St (corner of BMCC)	Commercial and office	73	73	0
19	NE corner of Park Pl and West Broadway	Residential	71	71	0
20	Tower 270, Broadway and Chambers St	Residential	75	75	0
21	St. Paul's Chapel NW corner of Broadway and Fulton St	Church	86	86	0
22	180 Broadway	Residential	77	77	0
23	WTC Bathtub	Proposed Memorial	64	65	+1
24	WTC Bathtub	Proposed Memorial	64	64	0

Notes:
1. Variation 1 noise levels and their changes were calculated based on reasonable worst-case conditions, under which Route 9A was assumed to be constructed at-grade. Although the detailed modeling results were not available for the Route 9A tunnel alternative, it is estimated that noise levels at Sites 4, 23, and 24 would be approximately 6 dBA less than those presented in this table.
2. Noise levels at Sites 16 and 17 were calculated using detailed parameters using the FHWA Traffic Noise Model (TNM 2.5).
Source: The Louis Berger Group, Inc., 2004

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The proposed security check on Washington Street would be located between two commercial office buildings; there are no sensitive receptors in the immediate vicinity of the proposed security check on Washington Street or at the Freedom Tower parking access and truck elevator areas along Vesey Street. While, this alternative would result in additional noise from trucks idling at the security check on Washington Street, any noise impacts as the result of this variation would not be significant and thus, in terms of significance, stationary source noise impacts of Variation 1 would be similar to those generated by the Proposed Action.

No impacts are anticipated from the automobile vehicle inspection stations associated with the At-Grade Loading alternative since they would be at indoor locations.

VARIATION 2

Mobile Sources

Variation 2 differs from Variation 1 only in the routing of delivery vehicles approaching the site, as described above; delivery vehicles using the Vesey and Liberty Street exits from the underground garages under Variation 2 would leave the Project Site using the same assignments as Variation 1.

Under Variation 2, trucks arriving to deliver their goods to the Freedom Tower quadrant would pass twice through Route 9A's intersections at Vesey, Fulton, and Liberty Streets on their inbound trip—one time to arrive at the security screening area inside the Liberty Street garage entrance, and a second time on their trip to the at-grade loading elevators on Vesey Street.

The noise level increases for Variation 2 associated with mobile sources (cars, vans, trucks and buses) are presented in Table 2. None of the sites evaluated would experience 3 dBA or more increases in noise levels under Variation 2 over future without the Proposed Action alternative 1.

Comparison between the impacts of Variation 2 and the Proposed Action analyzed in the FGEIS indicates that where impacts of Variation 2 are greater than those under the Proposed Action, they do not exceed 2 dBA. Under Variation 2, Sites 10 and 17 would experience the greatest noise level increases (2 decibels) over the future without the Proposed Action. While Sites 10 and 17 would experience the largest decibel increases between Variation 2 and the Proposed Action of almost 2 decibels, the increases would still not result in significant increases over noise levels in the future without the Proposed Action alternative. In sum, although noise levels would increase at some locations under Variation 2, compared with the Proposed Action as presented in the FGEIS, such increases would not result in significant adverse impacts. No significant adverse noise impacts were projected for the Proposed Action in the FGEIS. With regard to potentially significant impacts, Variation 2 would therefore be the same as the Proposed Action analyzed in the FGEIS.

Stationary Sources

Under the Variation 2, trucks may idle during the traffic signal along eastbound Vesey Street at Washington Street during the peak hours. Idling duration in such instances would occur for a maximum time of one signal cycle and would not result in additional impacts as identified for the Proposed Action.

Table 2
Noise Levels in 2015 Without the Proposed Action
and Noise Levels for Variation 2

Site ID	Site Name and Address	Land Use	Future Without the Proposed Action	Future with Variation 2	
			L _{eq} (dBA)	L _{eq} (dBA)	Changes in L _{eq} (dBA)
1	PS 89 Playground on West St	Public facilities and institutions	73	74	+1
2	NW corner of Murray St and West St	Open space and outdoor recreation	74	75	+1
3	Embassy Suites and Regal Cinemas on Vesey St	Hotel	69	69	0
4	World Financial Center/Dow Jones, side of West St (Vesey St and Liberty St)	Bikeway	69	70	+1
5	Gateway Plaza (corner of Liberty St and South End Av)	Residential	70	70	0
6	SW corner of Albany St and West St (parking lot)	Residential	75	75	0
7	Cedar St and Washington St (fence on Cedar St)	Proposed park/church residential	66	66	0
8	Marriott Hotel, 85 West Street, side of Albany Street	Residential	74	74	0
9	4 Albany St	Residential	69	69	0
10	120 Cedar St (on Greenwich St) (2)	Institutional	68	70	+2
11	114 Liberty St	Residential	81	82	+1
12	95 Trinity Building	Institutional	79	77	0
13	SE corner of Liberty St and Trinity Pl (at Park corner)	Public open space	80	79	0
14	Millenium Hotel, Dey Street	Hotel	76	74	0
15	St. Peter's Church on Church St	Public facilities and institutions	78	78	0
16	100 Church St, Barclay St entrance	Commercial and office	75	76	+1
17	Barclay St and Washington St intersection (2)	Commercial and office	77	79	+2
18	Park Pl and Greenwich St (corner of BMCC)	Commercial and office	73	73	0
19	NE corner of Park Pl and West Broadway	Residential	71	72	+1
20	Tower 270, Broadway and Chambers	Residential	75	75	0
21	St. Paul's Chapel NW corner of Broadway and Fulton St	Church	86	86	0
22	180 Broadway	Residential	77	77	0
23	WTC Bathtub	Proposed Memorial	64	65	+1
24	WTC Bathtub	Proposed Memorial	64	65	+1

Notes:

- The "with Variation 2" noise levels and their changes were calculated based on reasonable worst-case conditions, under which Route 9A was assumed to be constructed at-grade. Although the detailed modeling results were not available for the Route 9A tunnel alternative, it is estimated that noise levels at Sites 4, 23, and 24 would be approximately 6 dBA less than those presented in this table.
- Noise levels at Sites 10 and 17 were calculated using detailed parameters using the FHWA Traffic Noise Model (TNM 2.5).

Source: The Louis Berger Group, Inc., 2004

Conclusion

The maximum noise level increases related to mobile sources associated with Variation 1 and Variation 2 in 2015 would be 2 decibel (dBA) or less. An increase of 3 dBA in noise levels (the threshold for significant noise impacts) is barely perceptible. Variation 1 and Variation 2 would thus not have significant noise impacts from mobile sources in 2015 and in terms of potentially significant impacts would therefore be the same as the Proposed Action analyzed in the FGEIS.

Potential stationary sources of noise would include truck idling at the security inspection station or at proposed traffic signal sites. While, these alternatives would result in additional noise from truck idling, any noise impacts as the result of either the Variation 1 or Variation 2 are anticipated to be similar to those generated by the Proposed Action. Therefore, neither Variation 1 nor Variation 2 would result in any significant noise impacts from stationary sources in 2015.

3.15 COASTAL ZONE

Like the Proposed Action, either variation of the Northern Service Option would be consistent with coastal resources policies, including those aimed at supporting revitalization and providing access to waterfront areas.

3.16 FLOODPLAIN

As with the Proposed Action, development of either variation of the Northern Service Option would not have an impact on floodplain conditions.

3.17 NATURAL RESOURCES

Compared with the Proposed Action, both Variations 1 and 2 would have the same potential for impacts to natural resources.

3.18 ELECTROMAGNETIC FIELDS

With either variation of the Northern Service Option, EMF conditions would be substantially similar to those with the Proposed Action. In either case, there would be no significant impacts.

3.19 CONSTRUCTION IMPACTS

The development of either Variation 1 or 2 of the Northern Service Option would have fewer impacts than described for the Proposed Action due to the elimination of the need to construct connections to below grade infrastructure east of Greenwich Street and south of Liberty Streets at the Project Site. It is anticipated that construction tasks identified in the Proposed Action, such as underpinning the 1/9 subway lines and the construction of connections to below grade automobile ramps and circulation areas west of Greenwich Street would also be required. The shorter initial construction period required for this option could have the benefit of reducing some attendant truck trips, air quality impacts, and noise level exceedances. *