Executive Summary

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S.1 Proposed Action

The Federal Highway Administration (FHWA) in conjunction with the District of Columbia Department of Transportation (DDOT) is issuing this Draft Environmental Impact Statement (Draft EIS) in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, as the lead and local agencies for the proposed reconstruction of the Virginia Avenue Tunnel (the Project). The tunnel is owned by CSX Transportation, Inc. (CSX) and is located in the Capitol Hill neighborhood of the District of Columbia (DC or District) beneath eastbound Virginia Avenue SE from 2nd Street SE to 9th Street SE; Virginia Avenue Park between 9th and 11th Streets; and the 11th Street Bridge right-of-way. The tunnel is also aligned on the south side of Interstate 695 (I-695) previously known as Interstate 295 (I-295) (see Figure S-1). The tunnel portals are located a short distance west of 2nd Street SE and a short distance east of 11th Street SE. The tunnel and rail lines running through the District are part of CSX's eastern seaboard freight rail corridor, which connects Mid-Atlantic and Midwest states.

As the project sponsor, CSX is seeking approval from FHWA because reconstruction of the tunnel would require the short-term (approximately a week or less) closure of ramps of an Interstate Highway (I-695). CSX is also seeking approval from DDOT for the Project effects on I-695 and all roadways that would be affected by construction, including Virginia Avenue SE. The reconstruction of the tunnel would require temporary closure of Virginia Avenue SE between 2nd and 9th Streets SE, as well as other interim effects on several adjacent city streets during construction.

The CSX proposal includes the complete reconstruction of the tunnel, which was built over 100 years ago. The Project would transform the tunnel into a two-track configuration and provide the necessary vertical clearance (minimum 21 feet) to allow double-stack intermodal container freight

Double-Stack Intermodal Container Freight Train

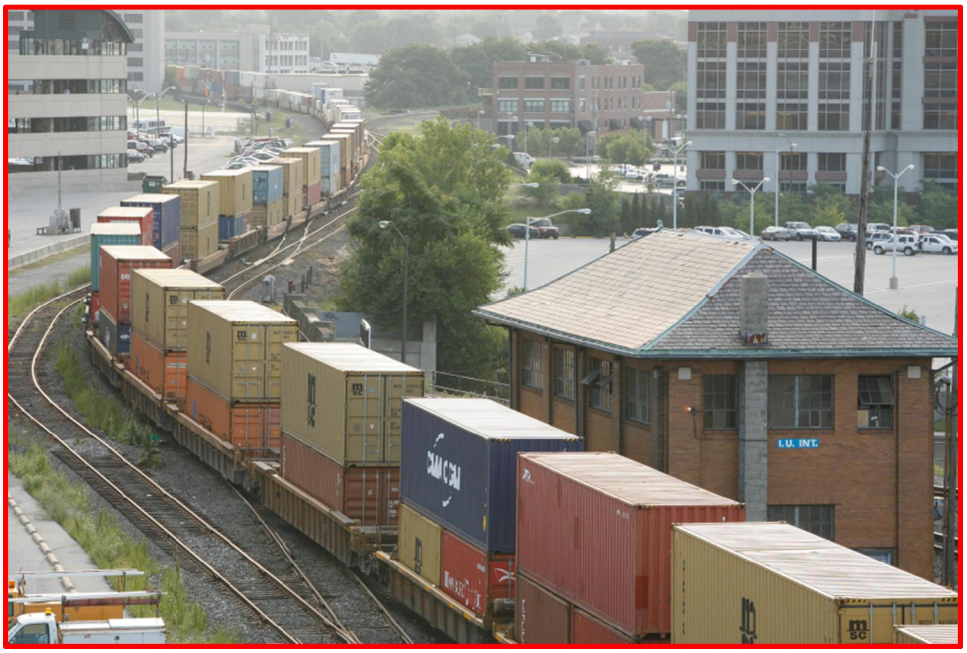
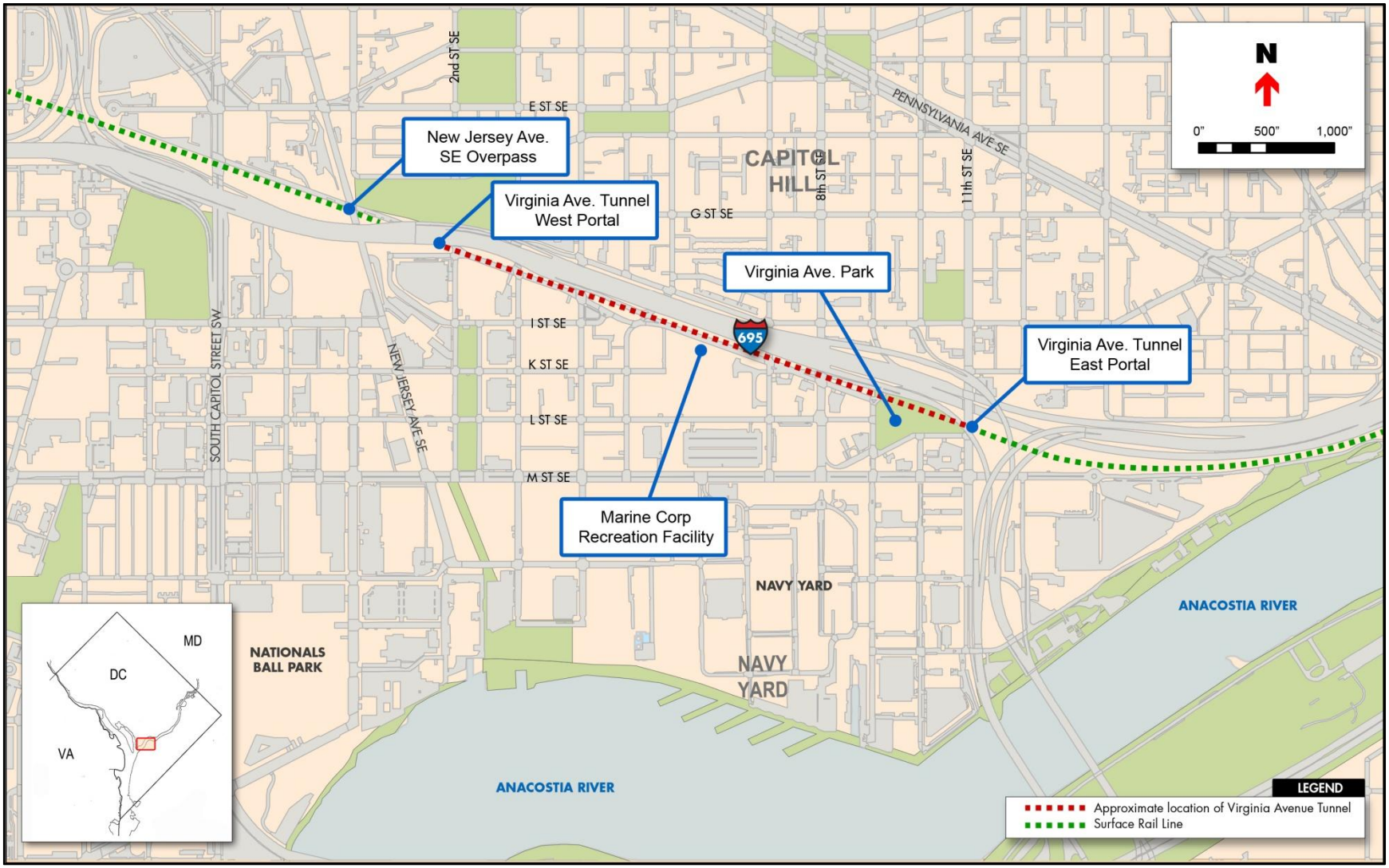


Figure S-1
Project Location



train operations. This would allow more efficient freight movement, especially in light of expected increases in freight traffic. Reconstructing the tunnel to allow double-stack intermodal container freight trains would require lowering the grade below the rail line's New Jersey Avenue SE Overpass.

S.2 Purpose and Need

The purpose of the proposed action is to preserve, over the long-term, the continued ability to provide efficient freight transportation services in the District of Columbia, the Washington Metropolitan Area and the eastern seaboard. These services would continue if the following needs are met:

1. Address the structural and operational deficiencies of the century-old Virginia Avenue Tunnel;
2. Accommodate expected increases in freight transportation that, in part, would stem from the Panama Canal expansion scheduled for 2015; and
3. Ensure that during construction freight transportation services remain uninterrupted while the functions of the tunnel are being replaced with a new facility.

Structural and Operational Deficiencies of Virginia Avenue Tunnel

Virginia Avenue Tunnel's horizontal clearance only allows a single railroad track within the tunnel, which causes a bottleneck in the rail network due to the existence of two railroad tracks on both sides of the tunnel. In addition, the tunnel's vertical clearance does not allow the operation of double-stack intermodal container freight trains, a type of operation that CSX and other major railroad companies have adopted as the norm in the freight rail transportation industry where the rail network allows it. Finally, as an aging piece of infrastructure nearing the end of its useful life, the tunnel is increasingly subject to inspection and preventative maintenance for safe rail operations. These frequent inspections and preventive maintenance activities are difficult to conduct without compromising normal rail operations.

Freight Transportation Demand

Virginia Avenue Tunnel and the eastern seaboard freight rail corridor need to accommodate expected increases in freight transportation demand over the next few years, in part due to the Panama Canal expansion scheduled to occur in 2015. The projected increased demand for freight transportation requires taking steps now to modernize the freight rail network, including replacing the tunnel with a more modern facility. By accommodating double-stacked intermodal containers, CSX would be able to transport the expected increase in freight in fewer trains than would otherwise be possible.

Commerce Demands

Reconstructing an existing and vital piece of transportation infrastructure presents challenges in terms of how to maintain freight operations during the construction of the replacement

tunnel. The ability to quickly and efficiently move goods to markets throughout the country is vital to the U.S. economy. As one of the nation's major freight railroad companies, CSX provides a valuable service by facilitating the shipment of goods and services to the general public.

S.3 Reasonable Alternatives Considered

Three Build Alternatives are being considered, in addition to a No Action Alternative. They were developed from among 12 preliminary concepts that were considered as candidates for the Project. These 12 concepts were developed through a preliminary assessment of the engineering and physical constraints along the alignment of the existing tunnel, as well as input from DDOT, FHWA and other government agencies, interested parties and the general public. The 12 preliminary concepts are as follows:

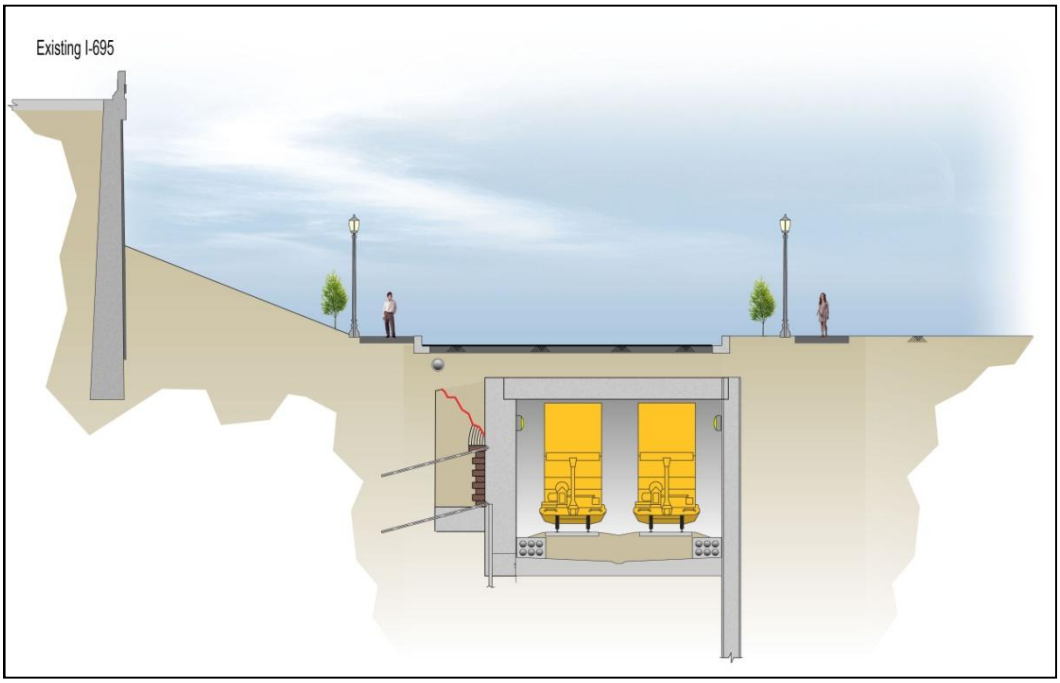
- Concept 1 is the no action or no build condition.
- Concepts 2 through 7 (includes two versions of Concept 3) involve the reconstruction of the Virginia Avenue Tunnel.
- Concepts 8 through 11 involve rerouting the main rail line outside of the existing Virginia Avenue Tunnel, but the tunnel would remain to service Washington Metropolitan Area regional customers.

Following an evaluation of these concepts based largely on their ability to meet the Project's Purpose and Need, the following alternatives were identified for this Draft EIS:

Alternative 1 - No Build (originally Concept 1): The No Build alternative is automatically carried forward into the Draft EIS. The tunnel would not be rebuilt under this alternative. However, the railroad would continue to operate trains through the tunnel and at some point, emergency or unplanned major repairs or rehabilitation could be required to this critical, aging infrastructure that might prove equally disruptive to the community than the Build Alternatives.

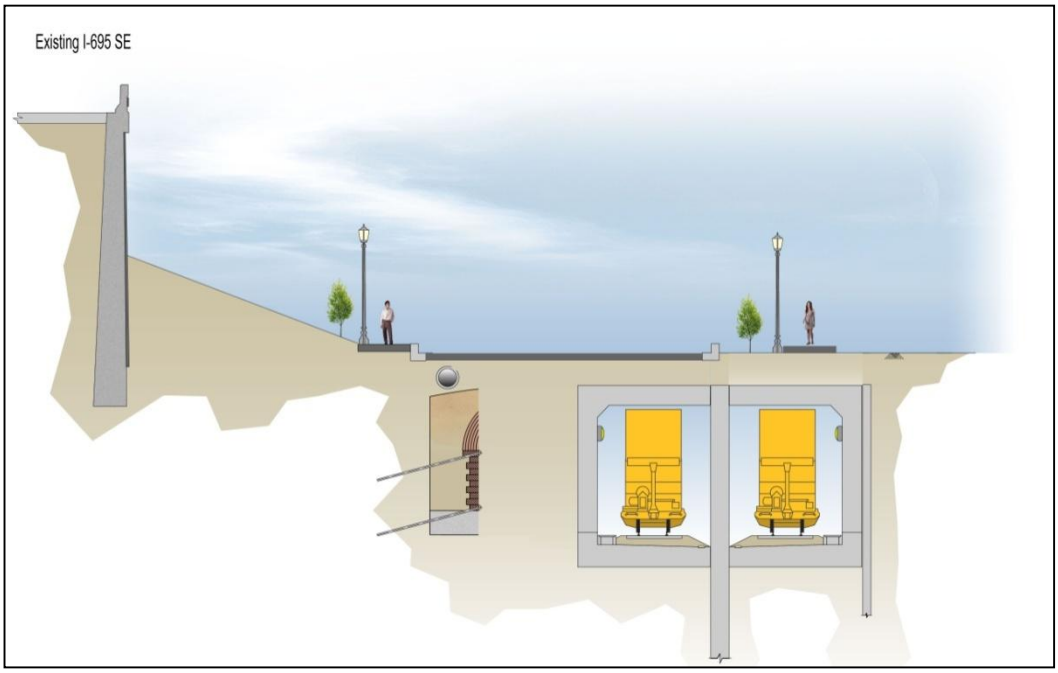
Alternative 2 -Rebuilt Tunnel / Temporary Runaround Track (originally *Concept 2*): This Alternative involves rebuilding the existing Virginia Avenue Tunnel. It would be rebuilt with two tracks and enough vertical clearance to accommodate double-stack intermodal container freight trains (see Figure S-2). It would be rebuilt in generally the same location, except aligned approximately seven feet to the south of the existing tunnel center line. It would be rebuilt using protected open trench construction methods. During construction, freight trains would be temporarily routed through a protected open trench outside the existing tunnel (runaround track). The runaround track would be aligned to the south and generally parallel to the existing tunnel, and would be located below street level. Due to new columns associated with the rebuilt 11th Street Bridge, the runaround track would slightly separate from the tunnel alignment on the east end starting just west of Virginia Avenue Park. Safety measures such as securing fencing would be used to prevent pedestrians and cyclists from accessing the runaround track.

Figure S-2
Cross Section View of Post-Construction Alternative 2
between 3rd Street and 9th Streets SE



Alternative 3 - Two New Tunnels (originally *Concept 5*): This Alternative involves replacing the existing Virginia Avenue Tunnel with two new permanent tunnels constructed sequentially (see Figure S-3). Each new tunnel would have a single railroad track with enough vertical clearance to allow double-stack intermodal container freight trains. A new parallel south side tunnel would be built first as trains continue operating in the existing Virginia Avenue Tunnel. After the south side tunnel is completed, train operations would switch over to the new tunnel and the existing Virginia Avenue Tunnel would be demolished and rebuilt. With the exception of operating in a protected open trench for approximately 230 feet immediately east of the 2nd Street portal (within the Virginia Avenue SE segment between 2nd and 3rd Streets SE), trains would operate in enclosed tunnels throughout construction under Alternative 3. Throughout most of the length of the entire rebuilt tunnel, the two tunnels would be separated by a center wall. This center wall would be the new centerline of the two tunnels, and it would be aligned approximately 25 feet south of the existing tunnel centerline, between 2nd and 9th Streets SE. Due to new columns associated with the rebuilt 11th Street Bridge, the tunnels would be separated on the east end starting just west of Virginia Avenue Park, resulting in two separate single-track tunnels and openings at the east portal.

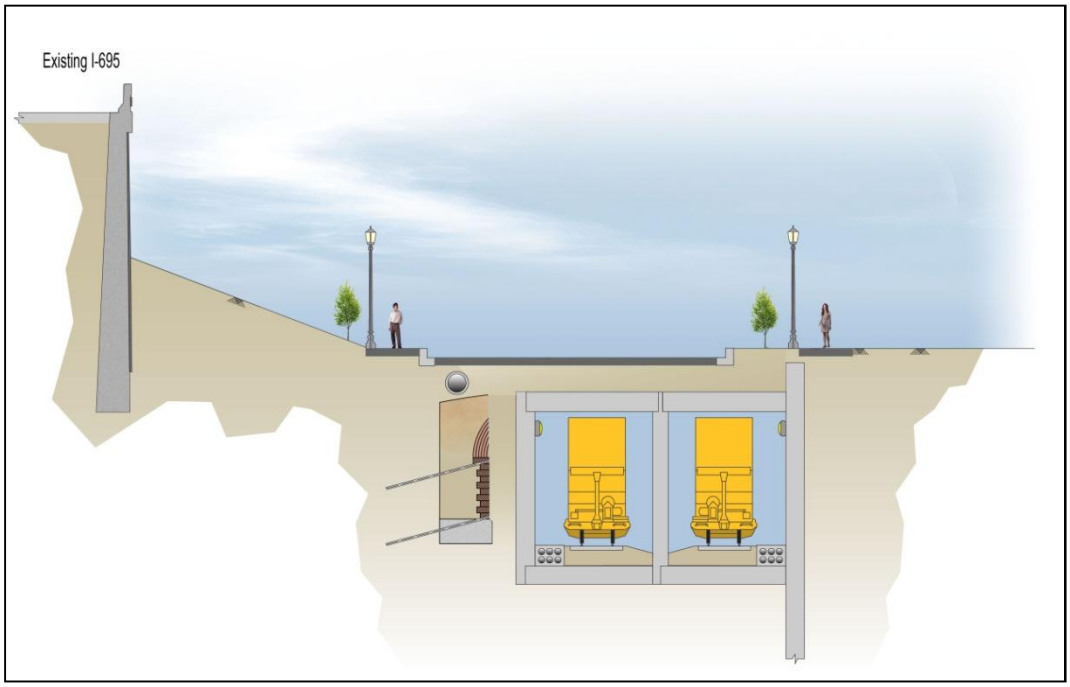
Figure S-3
Cross Section View of Post-Construction Alternative 3
between 3rd and 9th Streets SE



Alternative 4 - New Partitioned Tunnel / Online Rebuild (originally *Concept 6*): Alternative 4 would result in a new tunnel with two permanent tracks (see Figure S-4). Similar to Alternative 3, the new tunnel would be partitioned and have enough vertical clearance to allow double-stack intermodal container freight trains. It would be aligned approximately 17 feet south of the existing tunnel's centerline. The new tunnel would be built using protected open trench construction methods. The rebuild would occur 'online' meaning that during the period of construction, the protected open trench would accommodate both construction activities and train operations. Maintaining safe and reliable temporary train operations is a more complicated endeavor under Alternative 4 than under the other two Build Alternatives because of the online rebuild approach.

Regardless of the Build Alternative, the Project would extend the east portal by approximately 330 feet to a location northeast of the 12th Street and M Street T-intersection, and the existing north tunnel wall would largely remain in place after construction as shown on Figures S-2 through S-4. However, Alternative 4 would remove most of the wall on the east end. The wall would serve as an earth retention system, which would reduce the risk of damaging I-695 structures. During final design, the earth retention system would be further evaluated, including determining if portions of the north wall could be removed during construction. In addition, safety measures, such as secured fencing, would be used to prevent unauthorized access to the work area regardless of the Build Alternative.

Figure S-4
Cross Section View of Post-Construction Alternative 4
between 3rd and 9th Streets SE



As used in this Draft EIS, the term limits of disturbance (LOD) means all areas where construction would take place, including areas needed for staging, materials stockpiling, utility relocations, and temporary freight train operations. The LOD would be restricted from the general public, except Virginia Avenue's cross streets, which would remain open for public passage throughout construction by means of temporary bridges.

Each Build Alternative includes the restoration of Virginia Avenue SE, and other areas affected by construction, including Virginia Avenue Park and the Marine Corp Recreation Facility. As a community benefit, the restored streetscape could include bike facilities, improved sidewalks, additional landscaped areas and reduction of lanes, in particularly between 6th and 8th Streets SE.

S.4 Other Nearby Major Governmental Proposed Actions

The following other government actions are currently taking place or would be conducted in the near future in the general vicinity of the LOD:

- 11th Street Bridges project (currently under construction), which will replace two existing bridges with three new bridges and improve the associated interchanges;
- South Capitol Street Corridor Project would include a new Frederick Douglass Memorial Bridge, transform the street into a boulevard to improve safety, multi-modal transportation and community access to support economic development;

- Clean Rivers Project, a multi-billion dollar effort by DC Water, which would include a combined sewer overflow (CSO) tunnel under the Anacostia River, but also includes diversion tunnel beneath M Street SE (currently under construction);
- Garfield-Canal Park Connector would establish a pedestrian and bicycle connection linking Garfield Park and Canal Park;
- Southeast Boulevard, which would convert the segment of the Southeast Freeway from 11th Street Bridge to Barney Circle to an urban boulevard;
- Relocation of Marine Corps Enlisted Bachelors Quarters (Building 20); and
- Other Anacostia Waterfront Initiatives, such as:
  - The Southwest Waterfront with Market Square and Civic Park,
  - Southeast Federal Center and Waterfront Park,
  - Capper Carrollsburg Hope VI Redevelopment and Canal Blocks Park, and
  - Anacostia Riverwalk and Trail.

S.5 Summary of Environmental Impacts and Proposed Mitigation

Table S-1 summarizes the results of environmental impact studies conducted for the Project. The use of this table is meant to reduce repetition of text because in most topics covered in this Draft EIS, the Build Alternatives are predicted to have the same or very similar impacts, as well as having the same proposed mitigation measures. Where there are differences in impacts and proposed mitigation measures, these differences are noted in Table S-1. The table includes the entire range of environmental topics covered in this Draft EIS from land use to public transportation. The first column summarizes the environmental impacts of Alternative 1. The second column summarizes the expected environmental impacts and proposed mitigation measures common to all three Build Alternatives. The third column notes any differences in potential impacts and proposed mitigation measures among the Build Alternatives. If there are no differences among the Build Alternative, the second and third column cells are combined.

As stated earlier, Alternative 1 does not include any major repairs or rehabilitation of the tunnel in the near future. However, given that the tunnel is over a hundred years old, it could eventually require emergency or unplanned repairs at some point in the future. Alternatives 2, 3 and 4 would all reconstruct the Virginia Avenue Tunnel in generally the same location and alignment as the existing tunnel. Their differences involve slightly different alignments and how train operations would be conducted during construction.

Following construction, freight train activities would resume back to pre-construction conditions, except for greater service and energy efficiencies due to the provision of two tracks and the minimum 21 feet of vertical clearance within the rebuilt tunnel. Due to the nature of the Project, most of the anticipated impacts of the Project would be related to or occur during construction. The Project is not anticipated to result in indirect effects or contribute to cumulative impacts to the community.

Table S-1
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Land Use		
Construction: None.	Construction: The LOD is mostly within public rights-of-way or CSX property, except the Marine Corps Recreation Facility and Virginia Avenue Park, which is owned by the National Park Service (NPS). All areas affected by construction would be restored. No private property would be required.	With the exception of the Marine Corps property, Alternative 4's LOD is a few feet narrower along Virginia Avenue SE, and it needs less area within Virginia Avenue Park.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar impacts noted under construction for Build Alternatives.	Post-Construction: Approvals for necessary right-of-way would be needed from DDOT. Current development trends and realization of government land use plans in the general vicinity of Virginia Avenue Tunnel would continue with no influence from the Project.	Alternative 3 would be partially located within the Marine Corps property and would require approval.
Mitigation: Not Applicable.	Mitigation: Project sponsors would work with DDOT, the NPS and the Marine Corps to obtain the necessary approvals to allow construction on their properties.	
Farmland		
Construction: None.	Construction: None.	
Post-Construction: None.	Post-Construction: None.	
Mitigation: Not applicable.	Mitigation: None.	
Social and Community Conditions		
Construction: None.	Construction: Implementation of the maintenance of traffic (MOT) plan would ensure that all schools, and religious, social services and community facilities near and in the general vicinity of the LOD are accessible by auto, walking and cycling. The neighborhoods would remain connected and emergency response services would be unaffected. Although an Environmental Justice population was identified (Capper Senior Apartments), no disproportionately high and adverse impact in accordance with Executive Order 12898 on Environmental Justice is anticipated.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Social and Community Conditions (continued)		
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar impacts noted under construction for Build Alternatives.	Post-Construction: Social and community conditions would revert back to pre-construction conditions.	
Mitigation: Not applicable.	Mitigation: The MOT plan includes measures specifically related to the special transportation needs of the Capper Senior Apartments, such as provisions for emergency response vehicles. The Project's community outreach program would keep the residents of Capper Senior Apartments apprised about the status of construction, especially if something may affect their daily activities.	
Economic Conditions		
Construction:	Construction: Implementation of the MOT plan would ensure that all businesses near and in the general vicinity of the LOD are accessible by auto, walking and cycling. The Phase 2 MOT would require displacing on-street parking on I Street SE in proximity to Barracks Row, an important commercial district in the community. The overall effect to this loss of parking to general business conditions is not expected to be noticeable because of the availability of other parking and transportation options.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar economic impacts noted under construction for Build Alternatives.	Post-Construction: Business conditions would revert back to pre-construction conditions.	
Mitigation: Not applicable.	Mitigation: See mitigation under Transportation – Parking on Page S-20.	
Air Quality		
Construction: None.	Construction: Not predicted to exceed the General Conformity (GC) Rule's *de minimis* emission thresholds or exceed the thresholds set by the National Ambient Air Quality Standards (NAAQS).	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Air Quality (continued)		
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar air quality impacts noted under construction for Build Alternatives.	Post-Construction: Not predicted to exceed the GC Rule's *de minimis* emission thresholds of the NAAQS.	
Mitigation: Not applicable.	Mitigation: Dust control "best practices" measures would be implemented during construction to prevent fugitive dust from excavation and other dust-producing activities from affecting areas beyond the construction site. In addition, best practices would be used, where feasible, to minimize other air pollutant emissions, such as assuring proper equipment operations and not placing stationary equipment with air pollutant emissions near sensitive land uses or where people tend to congregate.	
Noise		
Construction: None.	Construction: Based on noise modeling conducted for the Project, construction activities are predicted to exceed the Construction Noise Impact Criteria established by the Federal Transit Administration (FTA) at noise sensitive receptors representing Capitol Quarter and Capper Senior Apartments. Other residential receptors would largely avoid exceeding the criteria because they are set back further from the LOD. Train operations are also not predicted to surpass the FTA moderate impact criteria thresholds.	Alternative 4 requires sheet piling, a construction activity that is predicted to exceed the criteria at all noise sensitive receptors analyzed.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar noise impacts noted under construction for Build Alternatives.	Post-Construction: None are predicted to exceed the FTA thresholds for moderate noise impacts.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Noise (continued)		
Mitigation: Not applicable.	Mitigation: Best practices that reduce the amount of noise generated during construction would be employed. They include, but are not limited to, public notification of high noise producing activities, using LOD fencing as noise barriers near residences, properly maintaining equipment, choosing construction techniques that are less noisy where feasible, and noise monitoring.	Mitigation: If Alternative 4 is selected, sheet piling would be conducted only between 8:30 AM and 4:30 PM on weekdays.
Vibration		
Construction: None.	Construction: Based on vibration modeling conducted for the Project, construction activities are not likely to cause vibration effects to human annoyance or buildings. However, certain construction activities if near buildings could cause intermittent localized vibration in the structure. Train operations are not predicted to cause human annoyance or building damage.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar vibration impacts noted under construction for Build Alternatives.	Post-Construction: Train operations are not predicted to cause human annoyance or building damage.	
Mitigation: Not applicable.	Mitigation: Buildings close enough to a construction activity that could experience damage to that structure due to vibration would be entitled to pre-construction inspections. Activities predicted to cause vibration human annoyance due to the activities' proximity to residences would only be conducted during weekday daytime hours when many residents are away from their homes. Best practices that reduce the amount of vibration generated during construction would be employed. They include, but not limited to, properly maintaining equipment and phasing high vibration generating activities when feasible so that they do not occur within the same time period.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Site Contamination - Soil		
Construction: None.	Construction: Soil and groundwater testing along the LOD for a number of constituents, such as petroleum hydrocarbons and certain metals, showed concentrations of some of these constituents above residential, but below industrial criteria. This may be due to past uses or just normal background concentrations. The testing did not indicate widespread contamination. Contaminated soil or groundwater handled during construction would be disposed of in accordance with applicable federal and local laws and regulations.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar site contamination and soil impacts noted under construction for Build Alternatives.	Post-Construction: Any contaminated water encountered during long term dewatering of the new tunnel (to keep it dry) would be disposed of in accordance with applicable laws and regulations.	
Mitigation: Not applicable.	Mitigation: All appropriate regulatory precautions would be taken to properly handle and dispose any contaminated soil or groundwater encountered during construction.	
Water Resources		
Construction: None.	Construction: Due to implementation of construction stormwater management and control measures, no effect to the quality of nearby surface waters is expected. The quantities of extracted groundwater would be relatively small. A portion of the staging and stockpile area would be within a 500-year floodplain. Following construction, the affected area would be re-graded to pre-construction conditions.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar water related impacts noted under construction for Build Alternatives.	Post-Construction: Restored Virginia Avenue SE would include a stormwater management system.	
Mitigation: Not applicable.	Mitigation: Sediment and erosion control measures would be installed along the perimeter of the entire construction site. In addition, spill prevention and control plans would be prepared. Adherence to District and federal design criteria for the construction of roadways and bridges would eliminate the potential for long-term soil erosion from construction.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Vegetation and Wildlife		
Construction: None.	Construction: Vegetation within the LOD would be removed, including trees within CSX properties, 15 trees in Virginia Avenue Park and eight trees in Marine Corps Recreation Facility. Within the public right-of-way, differences among the Build Alternatives are noted to the right. Short term habitat loss for species adapted to urban environments. Rodent control program would be initiated at the beginning and would be maintained throughout construction	Alternatives 2 and 3 would remove 168 street trees on public right-of-way. Alternative 4 would remove 164 street trees on public right-of-way.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar impacts noted under construction for Build Alternatives.	Post-Construction: Restoration of Virginia Avenue SE, as well as affected areas of Virginia Avenue Park and Marine Corps Recreation Facility. Landscaping plans would be coordinated with pertinent owners and stakeholders.	
Mitigation: Not applicable.	Mitigation: International Society of Arboriculture certified tree inventory survey would be conducted to confirm the size and health of the street trees previously evaluated. A one-to-one tree replacement plan would be prepared and coordinated with pertinent owners and stakeholders. This plan would be implemented (tree replacements) towards the end of construction when surface areas are restored.	
Historic and Archaeological Resources		
Construction: None.	Construction: Eighteen historic properties were identified within the Project's Area of Potential Effects (APE), including the tunnel itself, which is eligible for the National Register of Historic Places. A FHWA "adverse effect" determination in accordance with Section 106 of the National Historic Preservation Act (NHPA) would be expected because of the proposed demolition of the existing tunnel; construction-period impacts to the L'Enfant Plan and the Capitol Hill Historic District; and construction-period proximity to St Paul AUMP Church.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Historic and Archaeological Resources (continued)		
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in at least partial demolition of the tunnel.	Post-Construction: The restoration of Virginia Avenue SE may possibly straighten the section between 4th and 5th/6th Streets SE, in keeping with the original L'Enfant Plan for the street.	
Mitigation: Not applicable.	Mitigation: Mitigation would be developed in consultation with the DC State Historic Preservation Officer (SHPO) and consulting parties in the preparation of a Memorandum of Agreement (MOA), which at a minimum, would include the historic recordation of the tunnel.	
Parks and Recreational Resources		
Construction: None.	Construction: The LOD includes part of Virginia Avenue Park, but not the park's community garden. Due to the need to relocate the Tiber Creek Sewer, the construction area also includes the area under I-695 at 2nd Street SE, which would prevent public access to Garfield Park at this location.	The LOD for Alternatives 2 and 3 would be larger in Virginia Avenue Park than under Alternative 4. Alternative 4 would occupy the park between 38 to 54 months. Alternative 2 and 3 would occupy the park between 30-36 months. Under Alternatives 2 and 4, trains would operate in a protected open trench within the park. Under Alternative 3, trains would always operate in a tunnel within the park.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar impacts noted under construction for Build Alternatives.	Post-Construction: Virginia Avenue Park would be restored. Pending NPS input, the provisions of Section 6(f) of the Land and Water Conservation Fund Act would not apply to the Project because no portion of the park would be converted to other uses.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Parks and Recreational Resources (cont.)		
Mitigation: Not applicable.	Mitigation: Due to the extended temporary use of Virginia Avenue Park for construction, CSX would provide enhancements to the park at the conclusion of construction in coordination with NPS and the DC Department of Parks and Recreation. Wayfinding signs would be provided showing alternatives routes (New Jersey Avenue SE and 3rd Street SE) to Garfield Park from the south side of I-695.	
Visual and Aesthetic Resources		
Construction: None.	Construction: Fencing and barriers would be erected around all construction sites, including anywhere that freight trains are operating. Construction equipment, activities and the fencing would be visible especially from adjacent buildings of at least three stories. The duration of these visual impacts would vary by alternative (see right).	Alternative 4 would require 54 to 66 months of construction; Alternative 2 and 3 would require 30-36 months of construction.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar visual impacts noted under construction for Build Alternatives.	Post-Construction: Initially, the effectiveness of the replanted street trees along Virginia Avenue SE in relieving the visual conflict caused by I-695 would be lessened because the replanted trees would generally be younger with smaller canopies than the existing street trees removed by the Project. Over time, the re-planted street trees would enhance the visual environment.	
Mitigation: Not applicable.	Mitigation: The type of fencing or barrier used along the construction area could vary depending on location. Good housekeeping practices would be employed, such as the orderly parking of equipment and vehicles when not in use, daily regular clean-up, and that soil stockpiles are seeded as grassy mounds (also a dust control measure).	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Utilities		
Construction: None.	Construction: Dozens of storm and sanitary sewer, water, natural gas, electric power and communications utilities would require relocation, protection, or support-in-place. Due to the LOD requirements within the Marine Corps Recreation Facility, the heating-ventilation-air conditioning unit located near Virginia Avenue SE would be temporarily or permanently repositioned.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar utility impacts noted under construction for Build Alternatives.	Post-Construction: None.	
Mitigation: Not applicable.	Mitigation: Coordination with utility companies to limit service disruptions to utility customers. If a service disruption is unavoidable, every attempt would be made to conduct the utility work during non-peak usage hours.	
Transportation-Freight		
Construction: None.	Construction: Current to slight increase in the number of trains passing through could be accommodated. There are operational differences between the Alternatives (see right).	Alternative 2 would allow double-stack intermodal container freight trains to operate sooner because the runaround track would become operational in shorter time frame than provisions under Alternatives 3 and 4. Under Alternative 3 trains would always operate inside a tunnel except for a 230 foot segment at the west end of the tunnel. Alternative 4 would pose a greater risk of service disruptions.

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Transportation-Freight		
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may potentially result in substantial freight service disruptions.	Post-Construction: Provision of two railroad tracks (eliminates the bottleneck) and enough vertical clearance to allow double-stack intermodal container trains (doubles the capacity for this type of freight on a single train) would lead to greater efficiencies of the freight rail network. The ability to operate double-stack intermodal container freight trains would mean that the overall number of trains may be reduced in comparison to the no build condition.	
Mitigation: Not applicable.	Mitigation: None.	
Transportation-Roadways		
Construction: None.	Construction: The Project would require closure of Virginia Avenue SE between 2nd and 9th Streets SE. To ensure that vehicular, pedestrian and bicycling mobility would be maintained throughout the construction period, a maintenance of traffic (MOT) plan was prepared. The MOT plan would be two-phased, based on not having to entirely close the street in the first phase(see right).	During the first phase, Alternatives 2 and 3 would keep a single eastbound lane on Virginia Avenue SE (northernmost lane) open between the I-695 off-ramp at 6th Street SE and the 8th Street SE intersection. During this first phase, Alternative 4's first several months of construction would be concentrated in the area between 2nd and 5th/6th Streets SE. During construction of the temporary crossing of 11th Street SE under Alternatives 2 and 3, the 11th Street / Potomac Avenue SE intersection would be closed.

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Transportation-Roadways (cont.)		
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar roadway impacts noted under construction for Build Alternatives.	Post-Construction: Virginia Avenue SE would be restored to its pre-construction condition. It is possible to make relatively minor changes to this street if desired by stakeholders, such as providing pedestrian/bicycle facilities and reducing the number of lanes from four to three. The Project's Build Alternatives were designed in coordination with the 11th Street Bridges project, and therefore, none of them would structurally or operationally affect I-695.	
Mitigation: Not applicable.	Mitigation: The effects of roadway closures needed to construct the Project would be mitigated by implementing the MOT plan.	
Transportation-Traffic		
Construction: None.	Construction: Traffic mobility in the surrounding community and access to all adjacent properties would be maintained, largely because cross street traffic would be available and detours would be provided. Although peak hour congestion is predicted at certain intersections, traffic signal optimization could be used to effectively relieve these congestion points. Traffic conditions on I-695 would not be affected by the implementation of the MOT plan.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in disruptions to traffic to allow the repairs.	Post-Construction: Traffic flow should return to previous levels after the completion of the Project.	
Mitigation: Not applicable.	Mitigation: During final design, further signal optimization analyses would be conducted to improve intersection conditions during implementation of the MOT. In coordination with DDOT, temporary traffic signals and timing schemes would be employed along the westbound Virginia Avenue SE / I Street SE during the Phase 2 MOT between 6th and 8th Streets. These intersections would be monitored at the beginning of the Phase 2 MOT to determine the effectiveness of the optimization schemes. Other mitigation would include incentivizing construction workers to carpool or use transit.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)	
	Common	Alternative-Specific
Transportation-Parking		
Construction: None.	Construction: In MOT Phase 1, 57 on-street parking spaces would be displaced. In Phase 2, an additional 48 on-street parking spaces would be displaced for a total impact of 105 spaces. Applicable fees would be paid to DDOT for the temporary parking losses.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar parking impacts noted under construction for Build Alternatives.	Post-Construction: As Virginia Avenue SE is restored, the on-street parking would also be restored as well.	
Mitigation: Not applicable.	Mitigation: Prioritized parking (i.e., those who carpool) would be provided for construction workers. Construction workers would be restricted from using on-street parking used by residents. Temporary wayfinding signs would be provided as part of the MOT to direct motorists to available off-street parking.	
Transportation-Pedestrian and Bicycle		
Construction: None.	Construction: The MOT plans provides for the mobility of pedestrians and cyclists as cross street traffic would be available and detours would be provided. Pedestrian access at 2nd Street SE would be prohibited due to the Tiber Creek Sewer relocation.	
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar pedestrian and bicycling impacts noted under construction for Build Alternatives.	Post-Construction: Return to pre-construction conditions. If desired by stakeholders, bike facilities and/or improved sidewalks could be provided on Virginia Avenue SE.	
Mitigation: Not applicable.	Mitigation: The MOT includes provisions to ensure that pedestrians and cyclists would be able to cross the construction area on Virginia Avenue. Temporary wayfinding signs would be provided for pedestrians. Although east-west movements would be limited on Virginia Avenue SE, parallel detours would be established.	

Table S-1 (continued)
Summary of Environmental Impact Studies and Proposed Mitigation

Alternative 1 (No Build)	Build Alternatives (2, 3 and 4)
Transportation-Public Transit	
Construction: None.	Construction: Metrobus and DC Circulator routes would not be affected because north-south crossings, such as at 8th Street SE, would be available.
Post-Construction: Risk of tunnel failure may necessitate emergency repairs, which may result in similar impacts noted under construction for Build Alternatives.	Post-Construction: None.
Mitigation: Not applicable.	Mitigation: None.

S.6 Areas of Controversy

A number of issues were generated from the public and agencies during the project's outreach efforts. As noted below, the following comments were related to the construction impacts, including the temporary freight rail operations, of the Project:

- Access to adjacent properties;
- Air quality;
- Coordination with other construction projects;
- Damage to residences;
- Right-of-way
- Economic effects to businesses;
- Environmental Justice populations;
- Virginia Avenue Park, including the community;
- Mobility of motorists, pedestrians, cyclists and public transit users;
- Noise (including from temporary freight operations);
- Pest and rodent control;
- Property values of adjacent residences;
- Public safety and security of construction sites and temporary freight operations;
- Soil removal;
- Street tree displacements;
- Utility disruptions;
- Vibration (including from temporary freight operations); and
- Visual appearance of the construction site.

Other issues raised by the public included:

- Alternatives identification;
- CSX and DDOT rights-of-way;
- Freight rail transportation after construction;
- Freight transport of hazardous materials and refuse through the District;
- Future streetscape of Virginia Avenue SE; and
- Post-construction noise and vibration impacts from freight operations.

S.7 Major Unresolved Issues

The major unresolved issues relate to Project compliance with NHPA Section 106, Section 4(f) of the U.S. Department of Transportation Act, both of which are ongoing.

S.8 Other Federal Actions Required

Other than NEPA, the following federal actions are required before final Project approval in accordance with NEPA could occur:

- NHPA Section 106 requires FHWA and DDOT to consult with the DC SHPO on the Project's effects on historic properties. A Memorandum of Agreement, which would stipulate measures to address an adverse effect, may be required.
- FHWA approval of the Section 4(f) Evaluation of the use Virginia Avenue Tunnel, L'Enfant Plan, Capitol Hill Historic District and Virginia Avenue Park.

S.9 Environmental Commitments

Related to the mitigation measures summarized in Table S-1, the following are the commitments of the project sponsor to ensure maintenance of the environmental quality of the area surrounding Virginia Avenue Tunnel during and after construction of the Project:

Construction Related Commitments

These commitments would be conducted to mitigate construction-related impacts:

- Implementing a community outreach program using a project website, email blasts, flyers and other forms of open communication and dialogue for the purposes of informing certain stakeholders (e.g., residents of Capper Senior Apartments and Capitol Quarters) and the general public about construction status and activities that may disrupt normal daily activities (e.g., temporary disruption of utility service), but also used to solicit any public complaints about construction activities.

- Maintaining a community office located at 861 New Jersey Avenue SE where members of the community can obtain construction information, and ask questions about the project.

- Ensuing that the LOD would not include private property.

- Ensuring that vehicular, pedestrian and bicycling mobility is maintained throughout construction and that all properties, including those adjacent to the LOD, are accessible through the provision of temporary bridges across Virginia Avenue SE and detours that include converting the westbound Virginia Avenue SE/I Street SE between 6th and 8th Streets to two-way operations and providing the necessary traffic signals.

- Providing all properties with driveways directly adjacent to the LOD with provisions for driveway access so that these properties remain accessible for owners, users and visitors, as appropriate, as well as to fire and emergency response vehicles.

- Providing temporary wayfinding signs to Garfield Park, off-street parking lots and other facilities and amenities located near the LOD, such as Barracks Row.

- Where needed to prevent unauthorized access, providing fencing of at least eight feet high along the perimeter of the construction area, including areas used for temporary train operations and at cross streets where vehicles, pedestrians and cyclists would be allowed to cross the construction area. The type of fencing or barrier may vary along the LOD. For those sections near residences and the park, screens would be attached to the chain link fencing or stockade fencing may be used.

- Restrict public access of the LOD to keep the general public from construction activities and temporary freight operations, which would include but not necessarily limited to fencing (as noted above), suitable lighting, and regular patrols by railroad police officers assigned to the Project.

- Using dust control "best practices" to prevent fugitive dust from excavation and other dust-producing activities from affecting areas beyond the construction site. These practices include, but are not necessarily limited to frequent watering, material stockpile stabilization, and good housekeeping, which would also help in the appearance of the construction area.

- Using best practices to limit non-dust air pollutant emissions as reasonably practical and feasible. These practices include, but are not necessarily limited to, turning off the engines of construction vehicles if they are left idling for more than 30 minutes, and using appropriate emission-control devices per U.S. Environmental Protection Agency regulations. In addition, stationary equipment that has air emissions would not be placed in direct proximity to sensitive land uses or where people tend to congregate to the extent feasible.

- Only for Alternative 4, limit driving sheet piling from 8:30 AM to 4:30 PM because of its noise impacts (Alternatives 2 and 3 do not require sheet piling). Vibratory techniques would be used to install the sheet piles, instead of driven techniques, if working near residences.

- Using noise control best practices as reasonably practical and feasible. These practices include, but are not necessarily limited to, using drilled installation methods instead of driven methods when installing support piles near residences, using demolition equipment with crush/shear technology, limiting high noise generating activities to daytime and weekdays, and properly maintaining all motorized equipment in a state of good repair to limit wear induced noise.

- Providing the owner of any building located adjacent to the LOD with pre-construction building inspections to document the condition of the structure.

- Using vibration control best practices as reasonably practical and feasible. These practices include, but are not necessarily limited to, conducting monitoring of vibration-producing activities, maintaining all motorized equipment in a state of good repair to limit wear induced vibration, and limiting pile driving near residences to weekday daytime hours to minimize the number of people who could be annoyed by the vibration of this activity.

- Taking all appropriate regulatory precautions to properly handle and dispose of any contaminated soil or groundwater encountered during construction. A Health and Safety Plan would be prepared and implemented where contamination is identified and handled.

- Installing erosion control measures and stormwater management systems to reduce or eliminate contamination of surface water runoff resulting from the construction site. In addition, appropriate spill prevention and control plans would be prepared.

- Implementing a rodent control program that would be initiated prior to the start of construction and maintained during the entire duration of construction.

- Conducting utility relocation work that requires unavoidable service disruptions during non-peak usage hours. Any utility service disruptions would be announced through the community outreach program noted above.

- Providing incentives to construction workers to carpool or use public transportation for commuting.

- Providing about 90 parking spaces within the west staging area (New Jersey Yard) for construction workers. Parking preferences would be given to those construction workers who carpool. Construction workers would be prohibited from parking at metered or are two-hour residential spaces.

Post-Construction Commitments

Although these commitments would be provided during construction, they would continue to provide benefits after completion of the Project:

- Restoring Virginia Avenue SE between 2nd and 9th Streets to at least its pre-construction condition if desired by DDOT in consultation with the community and other stakeholders. Alternatively and if desired by DDOT in consultation with the community and other stakeholders, the configuration of Virginia Avenue SE between 2nd and 9th Streets could be changed to incorporate enhancements to the streetscape, such as providing widened sidewalks, bike facilities, additional landscaping, more parking, and improved street lighting, traffic signals and crosswalks.

- Restoring the affected areas of Virginia Avenue Park and the Marine Corps Recreation Facility to at least their pre-construction conditions, including replacing trees displaced by the Project. The tree replacement plan for the park and the Marine facility would be coordinated with NPS/DC Department of Parks and Recreation (DPR) and the Marine Corps, respectively. The Project would provide additional amenities at Virginia Avenue Park to be determined following consultation with NPS and DPR.

- Improving access to Garfield Park at 2nd Street SE in accordance with the Americans with Disabilities Act.

- Although not directly related to the Project, changing the mandatory practice of requiring every train to blow its horn before entering and exiting the tunnel. Engineers would still have the discretion to use the train horn for safety reasons.

- Replacing street trees displaced by the Project on a one-to-one ratio based on total diameter at breast height impacts. A tree replacement plan would be coordinated with DDOT Urban Forestry Administration during the landscaping plan development.

As noted in Section S.7, the Section 106 process is ongoing, but an adverse effect determination is expected. Any environmental commitments relating to resolving this expected adverse effect determination would be developed in consultation with the DC SHPO and consulting parties in the preparation of a Memorandum of Agreement (MOA).