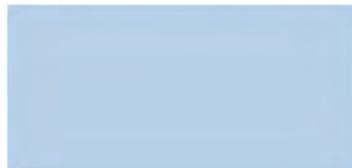
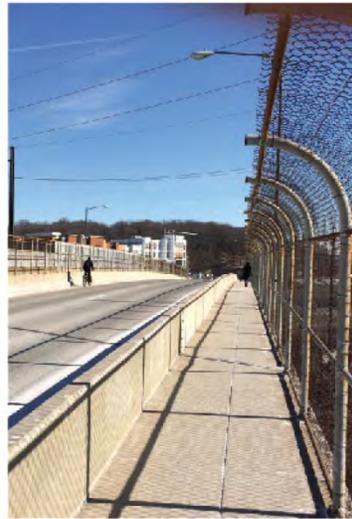


BENNING ROAD & BRIDGES TRANSPORTATION IMPROVEMENTS

FINAL ENVIRONMENTAL ASSESSMENT

FINAL NOVEMBER 2020



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FINAL ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT
FOR THE
BENNING ROAD & BRIDGES
TRANSPORTATION IMPROVEMENTS
WASHINGTON, DC

Prepared pursuant to 42 U.S.C. 4332(2)(c) by:
U.S. Department of Transportation
Federal Highway Administration and
District Department of Transportation

in cooperation with
Federal Transit Administration
National Park Service
National Capital Planning Commission

11/20/20
Date of Approval



Jeff Marootian
Director
District Department of Transportation

11/30/20
Date of Approval



Joseph C. Lawson
Division Administrator
Federal Highway Administration
DC Division Office

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EXECUTIVE SUMMARY

ES-1 PREFACE

The District Department of Transportation (DDOT), in conjunction with the Federal Highway Administration (FHWA), prepared this Final Environmental Assessment (EA) for the proposed Benning Road and Bridges Transportation Improvements project (the proposed action) in northeast Washington, DC. Actions common to both Build Alternatives evaluated in the Draft EA include:

- extension of the H/Benning Streetcar service to the Benning Road Metrorail Station;
- replacement of the Lorraine H. Whitlock Memorial Bridge (Whitlock Bridge);
- modification of the Ethel Kennedy Memorial Bridge to support streetcar traffic;
- construction of a new rail connection to the D.C. Streetcar Can Barn;
- installation streetcar stations and propulsion systems; and
- various safety improvements for motorists, pedestrians, and cyclists.

FHWA is the lead federal agency for the EA, with DDOT (the Applicant) as the local sponsor. The Federal Transit Administration (FTA), the National Capital Planning Commission (NCPC), and the National Park Service (NPS) are cooperating agencies.

The proposed action qualifies as an eligible project for Federal-aid funding under 23 CFR § 810.102 Eligible projects. FHWA concurred with mass transit use of the Benning Road ROW in a letter to DDOT dated April 18, 2013. The proposed action is included in the National Capital Region *Transportation Planning Board's adopted Transportation Improvement Program (TIP)* and the *2016 Financially Constrained Long-Range Plan for the National Capital Region (CLRP)*.

The Benning Road and Bridges Transportation Improvement Final EA is a federal document prepared in accordance with: the National Environmental Policy Act of 1969 (NEPA); the Council on Environmental Quality (CEQ) regulations (40 CFR 1500-1508); FHWA's Environmental Impact and Related Procedures (23 CFR 771); FHWA's Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents (T6640.8A); Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Guidance Manual; and DDOT's Environmental Process Manual and all other federal regulatory and environmental requirements and Executive Orders.

Additionally, this EA includes an evaluation of potential effects to historic properties and archaeological resources, a determination of finding statement and completed consultation with the DC SHPO, in accordance with Section 106 of the National Historic Preservation Act (54 U.S.C. 300101 et seq.) as **Appendix F**. The Final EA also includes a Final Section 4(f) Evaluation that was prepared in accordance with US Department of Transportation regulations for Section 4(f) compliance (23 CFR 774) as **Chapter 5**.

ES-2 CHANGES SINCE THE DRAFT EA

The Draft EA was released for a 30-day public comment period on May 4, 2016 and a public hearing was held on May 19, 2016. The public and agencies were given the opportunity to review and comment on the EA until June 2, 2016. This Final EA addresses comments submitted on the EA at the public hearing and during the associated public comment period.

Public and agency coordination efforts have continued since the Draft EA and public hearing. DDOT held an Open House for the EA on November 15, 2017. The purpose of this Open House was to provide an update on the status of the EA. Prior to the Open House, community outreach was conducted beginning in October 2017. In the weeks prior to the Open House, staff attended Advisory Neighborhood Commission (ANC) meetings for ANCs 7C, 7D, 7E, 7F and 5D, and made announcements and distributed meeting announcement to meeting attendees.

After thorough consideration of input received from the public and agencies after publication of the Draft EA and based on technical analyses and the evaluation of alternatives, DDOT has selected Build Alternative 2 - Median Streetcar Alignment with wired propulsion as the Preferred Alternative.

Based on the comments received on the Draft EA and from subsequent outreach efforts, DDOT selected the median-running alignment as the Preferred Alternative to avoid significant impacts arising from the curb-side alternative; including but not limited to: Right-of-Way (ROW), parking, traffic, noise and vibration, and access of the neighborhood facilities. This Final EA provides: more specific analysis of the proposed improvements; a more detailed description of the proposed improvements; and updated impact analyses. Specifically, the Final EA includes information and analysis related to proposed traction power substation (TPSS) facilities and their locations. The propulsion methods under consideration are reviewed, along with descriptions of how these systems would be integrated into the larger streetcar network. The proposed new tracks and switch leading to the DC Streetcar Car Barn Training Center are identified and analyzed as part of the proposed action. The Final EA includes more specific information related to design of the proposed action, such as stop platforms and pedestrian connections. In addition, the assessment for the Bike Lane Option identified between Kingman Island and 36th Street now includes a realigned full two-way bike path.

The study area used to assess potential impacts to transportation networks (vehicular and mass transit) was expanded since the release of the Draft EA to include a broader range of facilities, including: DC-295 (Anacostia Freeway), East Capital Street, and Nannie Helen Burroughs Ave. This change was made to provide a more detailed review of transportation facilities located beyond the proposed limits of work. Specifically, modifications proposed on the Benning Road/DC-295 interchange are expected to affect the traffic scenarios and construction schedule of the Preferred Alternative. DDOT is assessing the Benning Road/DC-295 interchange improvements through a separate Interchange Modification Report (IMR) process. The associated Categorical Exclusion I and II is attached as **Appendix M**. It is expected that the proposed improvements will result in permanent changes to the overall traffic patterns on the Benning Road NE in the vicinity of DC-295 interchange. Therefore, in order to provide a full assessment of traffic scenarios in the study area, DDOT has prepared a complete set of traffic analysis evaluating Benning Road

infrastructure improvements proposed in this EA and DC-295 interchange improvements together in the IMR. The Final EA considers traffic scenarios and impacts under the No Build and Build conditions in **Appendix E** for the Preferred Alternative only. In addition, DDOT will prepare Construction Management Plan along with the Maintenance of Traffic (MOT) including the Preferred Alternative and DC-295 interchange improvements together. The inclusion of both projects in the Construction Management Plan would guide phasing of construction to minimize impact to the community; and to realistically assess construction phasing of the bridges, DC-295 ramps, and the streetcar extension. A preliminary MOT concept plan for the Preferred Alternative can be found in **Appendix D**.

The project team revised the build year used to assess the operation of these networks from 2040 to 2045. This change brings the project's build year in line with the forecasts used by the National Capital Region Transportation Planning Board's Visualize 2045 Long Range Plan.

The Final EA also includes changes to the content and structure of the document. For each of the resources discussed in **Chapter 4**, the analysis has been refined to improve clarity and address the Build Alternatives based on the refinements summarized above. The topics Geology, Topography, and Soils have been removed because, with the exception of a description in the vibration section about how vibration waves transmit through soils, these topics have no bearing on the decision to be made. The Final Section 4(f) Evaluation, mentioned above, has been removed from the Environmental Consequences discussion and is instead addressed in **Chapter 5**.

ES-3 PURPOSE AND NEED

The purpose of the Benning Road and Bridges Transportation Improvements project is to address deficiencies in transportation infrastructure conditions, improve safety conditions and operations for both motorized and non-motorized access, and to provide for increased mobility and accessibility between the intersection of Benning Road, and Oklahoma Avenue and the Benning Road Metrorail Station.

The portion of Benning Road in the study area has been part of several transit enhancement and development studies and plans in the past including the *DC Transit Future System Plan* (DDOT, 2010), *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013) and *Benning Road Corridor Redevelopment Framework Plan* (DC Office of Planning, 2008). In particular, extension of streetcar service to the study area was specifically identified as the first element of DDOT's 22-mile priority streetcar system plan in the *DC's Transit Future System Plan*. The need to improve the portion of Benning Road in the study area to safely and efficiently accommodate all modes of transportation was noted in these plans and studies. In particular, the studies and this EA identified specific goals related to safety, bridge conditions, and mass transit challenges that are specific to the study area:

- Improve transportation infrastructure conditions;
- Enhance safety and operations along the corridor and at key intersections;
- Enhance and install pedestrian and bicycle facilities; and
- Extend streetcar transit service.

The Purpose and Need was vetted through public and agency coordination (**Chapter 6, Public and Agency Coordination**) and was used to develop and screen alternatives (**Chapter 2, Alternatives Considered**).

ES-4 PROJECT BACKGROUND

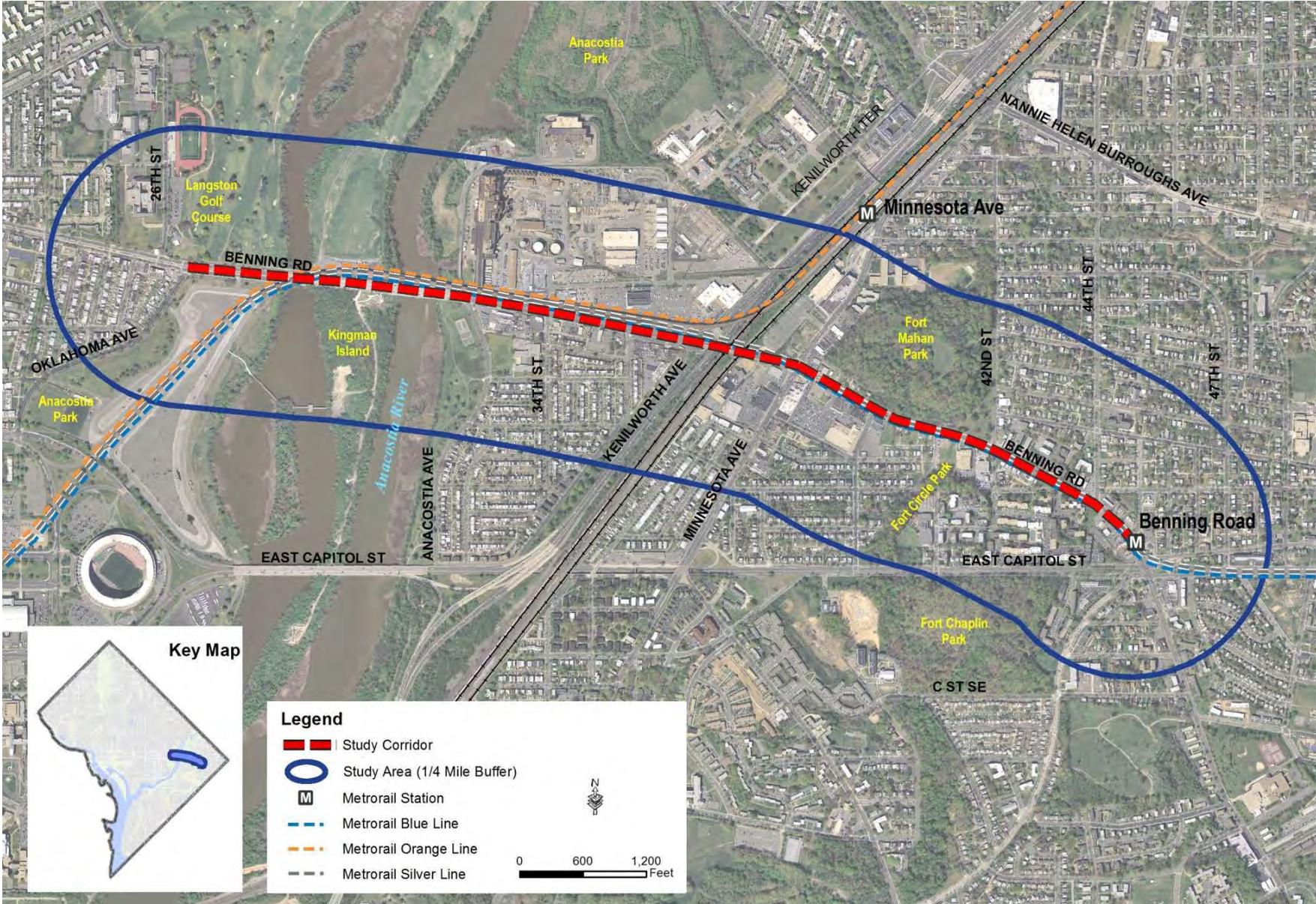
The Benning Road and Bridges Transportation Improvements Project is focused on the section of Benning Road between Oklahoma Avenue and the Benning Road Metro Station (**Figure ES-1**). This segment is approximately two miles long. The study area is the geographic area within one-quarter mile of Benning Road between and around the western and eastern termini.

The previous studies and plans identified in **Section ES-3** and this Final EA identify specific conditions related to safety, bridge conditions, and mass transit challenges that are specific to the study area:

- **Safety:** The intersection of Benning Road and Minnesota Avenue has a high volume of pedestrian and vehicular activity. This intersection presents safety challenges and is listed as one of the top five intersections with both high crash rates and crash frequency within the District. Existing conditions of sidewalks and pedestrian routes also present safety challenges.
- **Bridge conditions:** The Whitlock Bridge over both DC-295 (Kenilworth Avenue) and the CSX railroad presents structural as well as functional challenges. The Whitlock Bridge consists of two parallel structures, one eastbound the other westbound; both structures are in need of repair or rehabilitation and lack adequate sidewalks.
- **Mass Transit:** The reliability of existing bus services in the study area is affected by roadway congestion. Existing buses are overcrowded.

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Figure ES-1: Study Area



ES-5 ALTERNATIVES

The project team developed and analyzed multiple concepts for the proposed action using a screening process that considered: the ability to achieve the Purpose and Need for the proposed action; the benefits and effects that the concepts would have on the natural and social environment; and public and agency comment. The details are provided in **Chapter 2, Alternatives Considered**. Three alternatives are considered in the EA, and described below:

- Build Alternative 1 – Curbside Alignment Streetcar
- Preferred Alternative – Median Alignment Streetcar
- No Build Alternative

Proposed actions common to each Build Alternative are the following:

- Safety Improvements (including 36th Street, bridge improvements, and the Minnesota Avenue intersection)
- Streetcar Vehicles
- Stop Platforms
- Streetcar Propulsion
- Traction Power Substations (TPSS)
- DC Streetcar Car Barn Training Center

ES-5.1 THE BUILD ALTERNATIVES AT-A-GLANCE

Development of either of the build alternatives would involve reconstructing the Benning Road roadway and structures between the Benning Road/Oklahoma Avenue intersection and the Benning Road Metrorail Station to:

- accommodate streetcar appurtenances;
- enhance pedestrian and bicycle mobility; and
- improve vehicular safety and operations.

Each Build Alternative would extend streetcar service along Benning Road in the study area corridor. Each Build Alternative would reconstruct the intersection of Benning Road and Minnesota Avenue, the Whitlock Bridge over DC-295 and the CSX railroad tracks. **Table ES-1** summarizes the proposed elements of the Build Alternatives to achieve the Purpose and Need for the proposed action.

Build Alternatives 1 and 2 would extend H/Benning Streetcar Line to the Benning Road Metrorail Station using a shared travel lane configuration. Supporting infrastructure for the streetcar in each build alternative would include an electric propulsion system and new track connections to the existing operation and maintenance facility (DC Streetcar Car Barn Training Center) located at 2550 Benning Road. Streetcar stops would be separate from stops for bus service.

Table ES-1: Build Alternatives 1 and 2 – Proposed Infrastructure Changes

Needs for Proposed Action	Proposed Infrastructure Changes
Improve transportation infrastructure conditions	<ul style="list-style-type: none"> Replacement of both eastbound and westbound Whitlock Bridge structures with a new bridge.
Enhance safety and operations along the corridor and at key intersections	<ul style="list-style-type: none"> Reconstruction of the intersection of Benning Road and Minnesota Avenue. Provision of a longer left-turn lane for eastbound Benning Road to northbound Minnesota Avenue. Provision of a second turn lane from northbound Minnesota Avenue to westbound Benning Road, and extending the right-turn pocket lane from southbound Minnesota Avenue to westbound Benning Road. Provision of an ADA-compliant sidewalks on both sides of the bridge. Provision of pedestrian safety improvements at Benning Road and 36th Street.
Enhance and install pedestrian and bicycle facilities	<ul style="list-style-type: none"> Reconstruction of sidewalks and provision of shared-use paths along the corridor.
Extend streetcar transit service	<ul style="list-style-type: none"> Provision of shared streetcar lanes and ancillary facilities including platforms and propulsion and communication system elements; Build Alternative 1 would have curbside streetcar tracks, whereas Build Alternative 2 would have median streetcar tracks.

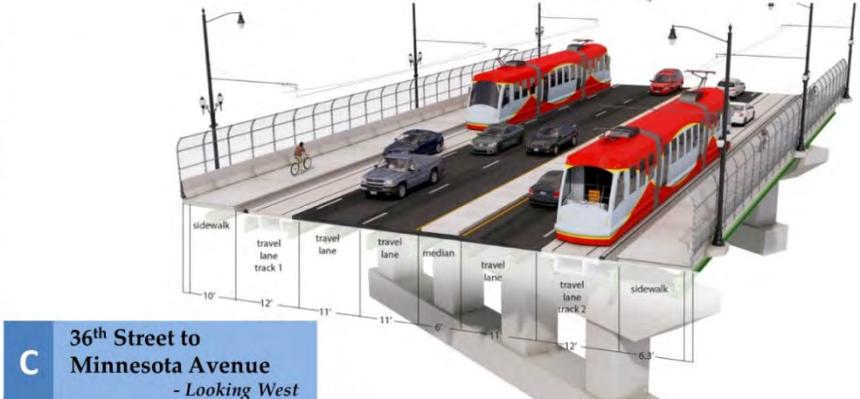
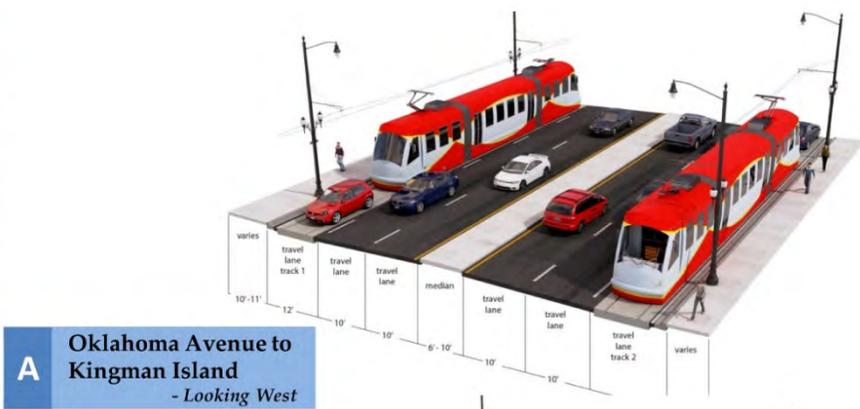
ES-5.2 BUILD ALTERNATIVE 1

Build Alternative 1 would provide an 11-foot to 12-foot wide, curbside, shared, streetcar lane for the length of Benning Road in the study area and new pedestrian, bicycle, and safety improvements. Streetcar tracks would be provided in the lane adjacent to the outside curb and pedestrian facilities. Typical roadway cross sections are shown in **Figure ES-2** (wired propulsion).

Build Alternative 1 would include facilities and structures required for the streetcar operations, such as TPSS, wired or wireless propulsion equipment (for example, overhead wire and support poles, or charging elements) and streetcar stop platforms. Build Alternative 1 would provide streetcar stops at five locations approximately one-quarter mile apart along Benning Road, with separate curbside platforms at each stop location for eastbound or westbound travel (**Figure ES-3**):

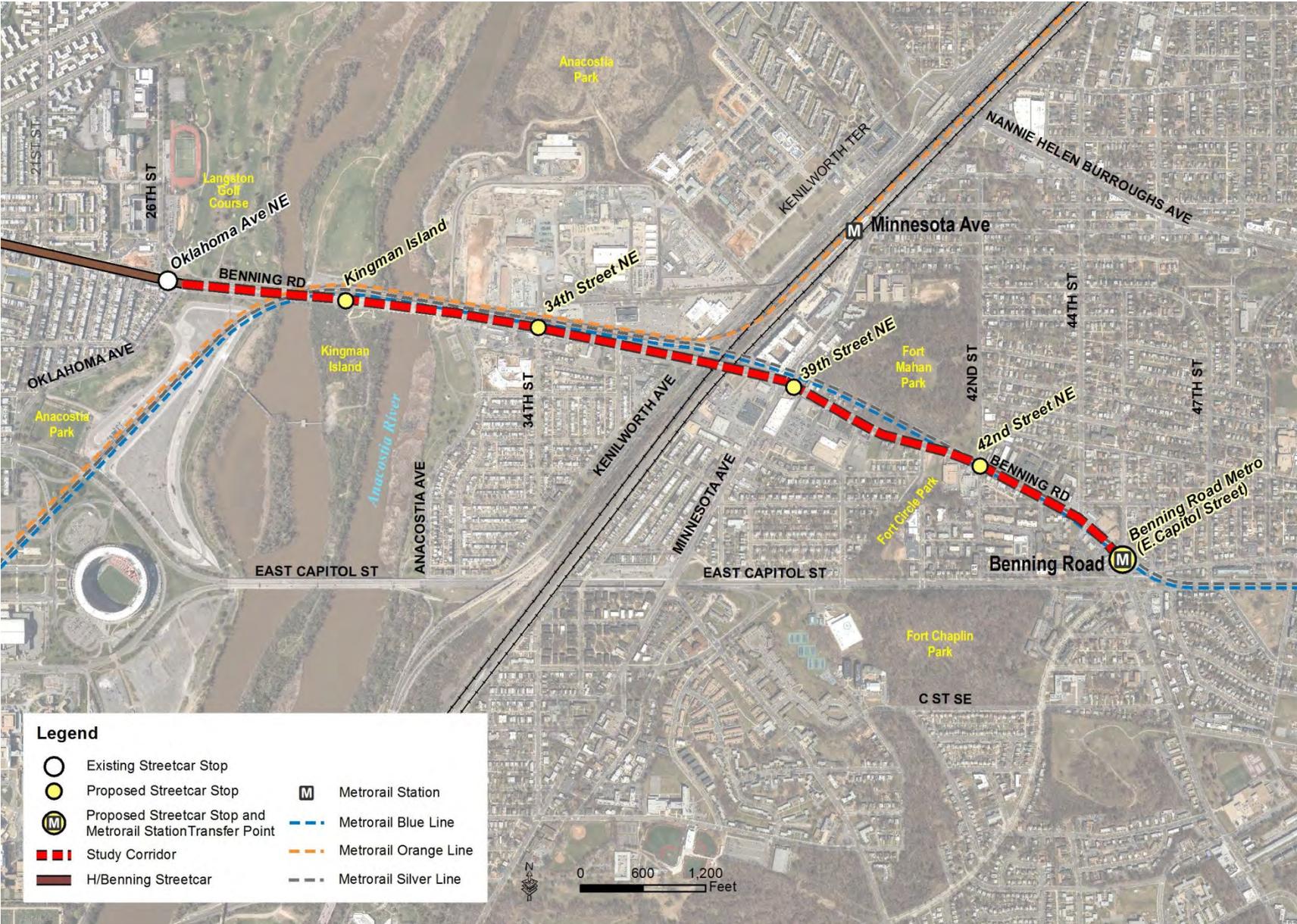
- Kingman Island
- 34th Street
- 39th Street
- 42nd Street
- Benning Road Metrorail Station (eastern terminus)

Figure ES-2: Build Alternative 1 Typical Sections (Wired Propulsion System)



Details of the overhead propulsion system would be determined during final design. Renderings show only one possible treatment for overhead wiring

Figure ES-3: Proposed Stop Locations



ES-5.3 THE PREFERRED ALTERNATIVE (BUILD ALTERNATIVE 2)

The Preferred Alternative would provide an 11-foot to 12-foot wide, median, shared, streetcar lane for the length of the Benning Road corridor and new pedestrian, bicycle, and safety improvements. Streetcar tracks would be provided in the inside lane adjacent to the median. Typical roadway cross sections are shown in (wired propulsion).

The Preferred Alternative would include facilities and structures required for the streetcar operations such as TPSS, wired or wireless propulsion equipment (for example, overhead wire and support poles, or charging elements) and streetcar stop platforms. The Preferred Alternative would provide streetcar stops at the same approximate quarter-mile spacing as Build Alternative 1. However, the Preferred Alternative would provide a single platform within the median to serve both eastbound and westbound directions of travel (**Figure ES-4**):

- Kingman Island
- 34th Street
- 39th Street
- 42nd Street
- Benning Road Metrorail Station (eastern terminus)

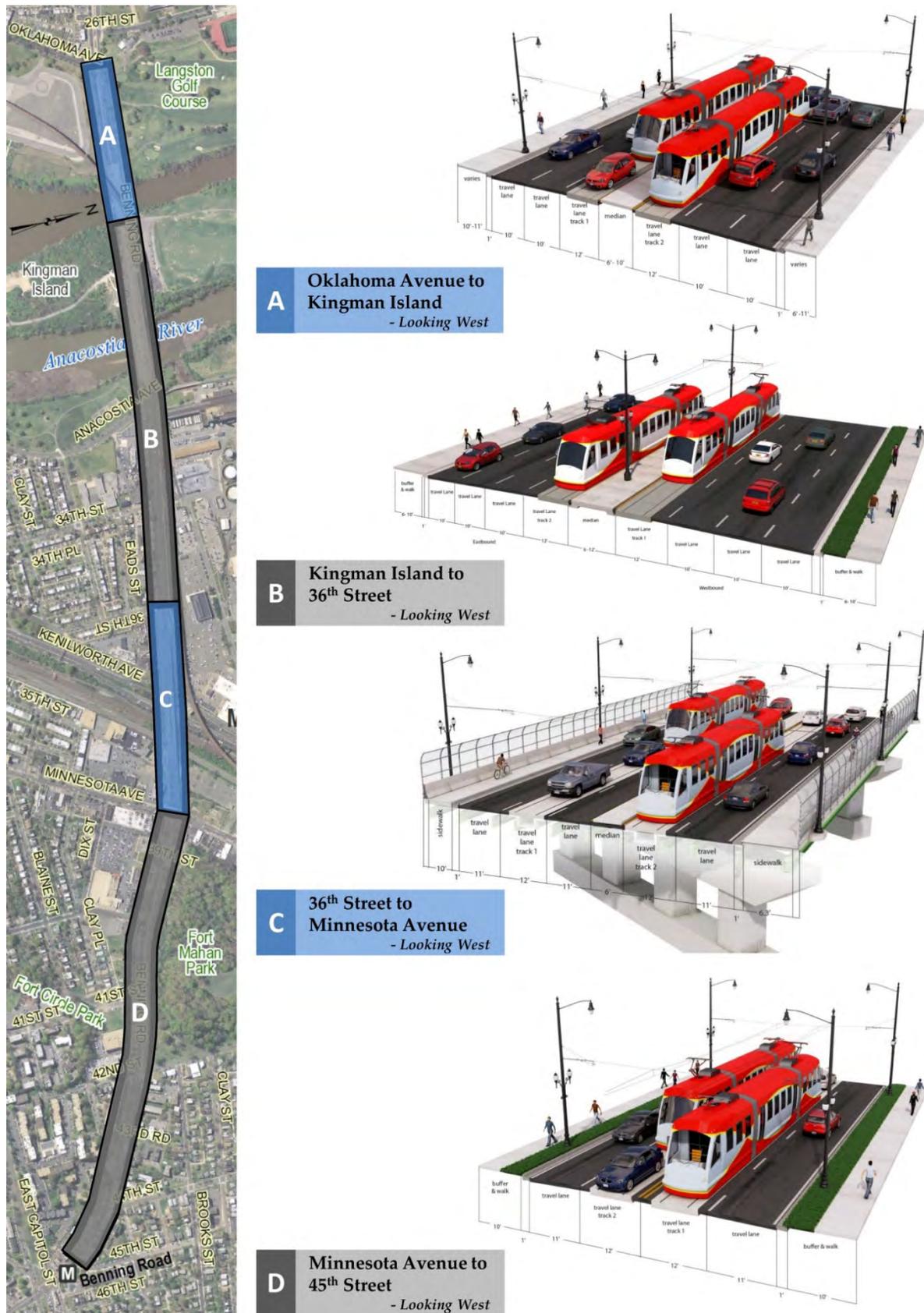
ES-5.4 NO BUILD ALTERNATIVE

The No Build Alternative assumes completion of currently programmed, committed, or funded transportation projects in the study area as identified in the Financially Constrained Long-Range Plan for the National Capital Region and the Transportation Improvement Program for the Washington Metropolitan Region, except for the proposed action (**Figure ES-5**).

While the No Build Alternative does not meet the Purpose and Need of the proposed action, it provides a baseline for comparing the environmental consequences of the Build Alternatives.

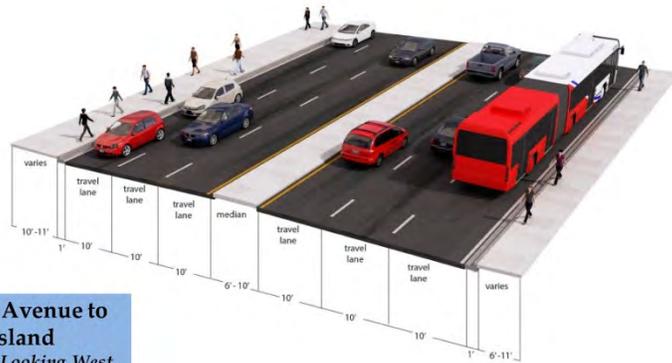
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Figure ES-4: Preferred Alternative Typical Sections (Wired Propulsion System)

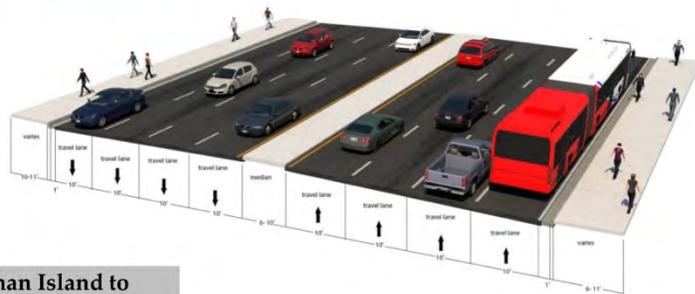


Details of the overhead propulsion system would be determined during final design. Renderings show only one possible treatment for overhead wiring.

Figure ES-5: Existing/No Build Alternative Roadway Typical Sections



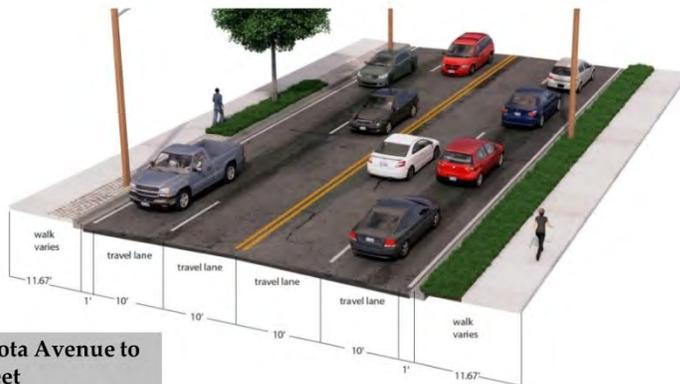
A Oklahoma Avenue to Kingman Island - Looking West



B Kingman Island to 36th Street - Looking West



C 36th Street to Minnesota Avenue - Looking West



D Minnesota Avenue to 45th Street - Looking West

ES-6 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The EA identifies existing social, economic, and natural resources within the study area. Specific resources analyzed in the EA include:

- Zoning and Land Use;
- Right-of-way and Relocation Impacts
- Neighborhoods and Community Facilities;
- Transportation (including the roadway network, parking and access, mass transit, pedestrian and bicycle facilities and freight rail service);
- Parklands;
- Historic Properties and Archaeological Resources;
- Aesthetics and Visual Quality;
- Surface Water Resources;
- Wildlife including Threatened and Endangered Species;
- Vegetation;
- Utilities;
- Hazardous Materials;
- Noise and Vibration;
- Air Quality;
- Energy Use and Climate Change; and
- Environmental Justice.

The EA analyzes reasonably foreseeable direct, indirect, and cumulative environmental impacts associated with the No Build Alternative and the two build alternatives for each of the resource areas.¹ Table ES-2 summarizes the results of the quantitative and qualitative analyses for each alternative. The results in this table show that for some factors such as “Zoning and Land Use,” the build alternatives would perform similarly, while for other factors, such as “Right-of-way and Relocation Impacts,” each would perform differently:

- **Build Alternative 1:** Build Alternative 1 would achieve the purpose and need for the proposed action. As indicated in **Table ES-2**, forecasted development in the study area would provide some economic benefit and would be greater than in the No Build Alternative. Travel demand and ridership modeling analysis for 2040 indicates that the proposed transportation improvements would be able to accommodate this growth. Build Alternative 1, however, would cause impacts in the areas of: visual changes, noise levels, vibration levels, loss of on-street parking, loss of street trees, and construction impacts. Mitigation is identified to address each of these impacts.
- **The Preferred Alternative:** The Preferred Alternative, like Build Alternative 1, would achieve the purpose and need for the proposed action. The Preferred Alternative would have many of the same benefits and impacts as Build Alternative 1. The Preferred

¹ Direct impacts are caused by the action and occur at the same time and place. Indirect impacts are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative impacts are the impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.80).

Alternative impacts differ from Build Alternative 1 in having no loss of on-street parking and fewer noise and vibration impacts.

- **The No Build Alternative:** The No Build Alternative will not achieve the purpose and need for the proposed action. Forecasted development in the study area would provide some economic benefit; however, impacts to the transportation network would also likely occur as population and employment increases. The No Build Alternative would provide no means of accommodating these impacts.

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Table ES-2: Summary of Benefits, Impacts and Mitigation for the No Build and Preferred Alternatives

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
Zoning and Land Use	None	<ul style="list-style-type: none"> No impacts are anticipated. 	<ul style="list-style-type: none"> The District’s zoning regulations will continue to manage existing and future development. For proposed streetcar infrastructure related facilities, DDOT sought sites that are zoned for transportation use and are undeveloped.
ROW and Relocation Impacts	None	<ul style="list-style-type: none"> No residences, businesses, or community facilities would be relocated. Temporary construction easements would be required throughout the corridor to accommodate the installation of fencing, erosion and sediment control measures, and similar temporary facilities. Construction would occur within a total of approximately 8,547 sq. ft of two Washington Metropolitan Area Transit Authority (WMATA) properties: the Benning Road Metro Station and an open lot adjacent to it. 	<ul style="list-style-type: none"> DDOT will coordinate with WMATA to attain required ROW agreements and/or real property acquisition at the Benning Road Metrorail Station for the streetcar stop and the TPSS facility location.
Neighborhoods and Community Facilities	None	<ul style="list-style-type: none"> Visual impacts would occur from continuous overhead wires for the wired option, and street tree removal. Noise impacts would occur at 13 residences. Vibration impacts would occur at 20 residences and the Dorothy I. Height/Benning Neighborhood Library. 	<ul style="list-style-type: none"> DDOT will use context sensitive design measures at the TPSS and stop platforms. DDOT will consider burying overhead utilities at select locations. DDOT will use approved design measures to reduce the generation of noise and vibration. DDOT will be replace any street trees removed from construction.
Transportation and Traffic Operations	<p>Benefits: None</p> <p>Impacts:</p> <ul style="list-style-type: none"> On-going transit, roadway, intersection, bicycle and pedestrian deficiencies Potential for losses due to crashes 	<ul style="list-style-type: none"> Temporary delays to traffic operations would occur during construction. The LOS at Benning Road-East Capitol Street Intersection would be permanently reduced. Temporary loss of on-street parking would occur during construction. Permanent loss of 12 on-street parking spaces on the southbound side of 26th Street would occur. Reconfiguration of Benning Road Metro Station would occur to accommodate curbside streetcar stop. 	<ul style="list-style-type: none"> The DDOT Traffic Management Plan will include adjusted signal timing, the development of alternative routing, and the installation of detours. Vehicular delays resulting from streetcar operations will be mitigated through changes in signal timing and network optimization. Once construction is complete, existing site conditions will be restored, thereby resolving any temporary loss of on-street parking. DDOT will continue to coordinate with WMATA so that there is minimal to no effect on WMATA’s transit schedule due to

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
		<ul style="list-style-type: none"> • Temporary Metrobus operational delays may occur during construction. • Temporary use of CSX right-of way for construction access would be required. 	<p>the construction phasing and operation of the Preferred Alternative.</p> <ul style="list-style-type: none"> • DDOT will coordinate with CSX to attain a temporary construction easement within their ROW, and convey the timing of construction activities.
Parklands	None	<ul style="list-style-type: none"> • Reconstruction of sidewalks on the eastbound-side of the Ethel Kennedy Bridge would require temporary construction access from Kingman and Heritage Islands Park and Anacostia Park. • Visual impacts of continuous overhead wires, and street tree removal near Fort Mahan Park would occur. • Permanent increases in noise at Fort Mahan Park due to the proximity of the proposed streetcar stop would occur. 	<ul style="list-style-type: none"> • Temporary impacts to park features and operations will be mitigated through the restoration of disturbed site features in accordance with the permit conditions. • DDOT will replace street trees. • DDOT will use context sensitive design measures at TPSS and stop platforms; and • DDOT will consider burying of overhead utilities at select locations. • DDOT will use approved design measures which reduce the generation of noise and vibration.
Historic Properties and Archeological Resources	None	<ul style="list-style-type: none"> • Temporary construction related access to areas within the Kingman and Heritage Island Park, Anacostia Park, the Baltimore & Potomac Railroad (part of the CSX rail facility under the Whitlock Bridge), and the PEPCO powerplant (located within the Benning Service Center) would be required. • Sidewalk improvements at the intersection of Benning Road and 36th St would result in no adverse effect on the historic Fire and Police call boxes. • Noise and vibration impacts in Spingarn High School, Kingman Park Historic District; Browne, Phelps, Spingarn, and Young Educational Campus Historic District; 4208 Benning Road and the block of rowhouses located between 4201 and 4243 Benning Road would occur. • Aesthetic and visual quality impacts for Fort Mahan Park & historic properties located in eastern Benning Road Key View would occur. 	<ul style="list-style-type: none"> • DDOT will apply for temporary construction related permits from DOEE, NPS, CSX and Pepco. Temporary impacts will be minimized through the restoration of site features in accordance with the permit conditions. • Avoidance measures will be implemented, as recommended by DC SHPO, to avoid any adverse impacts to the Section 106 resources: 1) DDOT will consult with DC SHPO to determine the appropriate sites to relocate the historic fire and police call boxes in order to ensure their integrity of location and setting is diminished as little as possible (i.e. the relocation sites should be as close as possible to their historic locations). 2) DDOT will consult further with DC SHPO to determine the need for phased archaeological investigations in previously unsurveyed areas where ground disturbing activities are proposed. • DDOT will use approved design measures which reduce the generation of noise and vibration; • DDOT will relocate the 42nd Street Stop to west side of the intersection. • DDOT will use context sensitive design measures at the TPSS

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
			and stop platforms. <ul style="list-style-type: none"> • DDOT will consider burying overhead utilities at select locations.
Aesthetics and Visual Quality	None	<ul style="list-style-type: none"> • Visual impacts would occur from the construction of new streetcar tracks, stops, the overhead electric power system, and the moving streetcar vehicles. • Visual impacts would occur at Fort Mahan Park and eastern Benning Road residential areas. 	<ul style="list-style-type: none"> • Streetcar stops will be similar in size and appearance to the existing DDOT bus stops. • Streetcar vehicles will be similar in visual appearance to the existing DDOT Circulator bus fleet. • The overhead wires will be constructed to be visually similar to existing utility wires in the corridor. • DDOT will construct streetscape improvements with elements including street paving, curb reconstruction, innovative storm-water management facilities, street lighting, sidewalk improvements, and street tree planting. • DDOT will include context sensitive design measures at the TPSS and stop platforms • DDOT will consider burying overhead utilities at select locations.
Surface Water Resources	None	<ul style="list-style-type: none"> • No impacts are anticipated. 	<ul style="list-style-type: none"> • Mitigation will not be required. • DDOT will coordinate with the federal and state agencies for required permits and approvals (USACE Section 404 Individual Permit, Section 401 Permit, Section 10 Permit, Section 9 Rivers and Harbors Act Permit, NPDES Permit). If any unavoidable project impacts to the Waters of the U.S. are identified during permit coordination, including wetlands, DDOT will follow the Federal Compensatory Mitigation Rule (33 Code of Federal Regulations [CFR] Parts 325 and 40 CFR Part 230), and District state compensatory mitigation guidelines, as well as other practicable recommendations from federal and state resource agencies.
Wildlife including Threatened and Endangered Species	None	<ul style="list-style-type: none"> • Endangered Species Act, Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's (NOAA) resulted in a no effect finding for Northern Long-eared bat (<i>Myotis septentrionalis</i>) and a not likely to adversely affect finding for the federally endangered Atlantic and 	<ul style="list-style-type: none"> • Mitigation will not be required.

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
		shortnose sturgeons (<i>Acipenser oxyrinchus oxyrinchus</i> and <i>Acipenser brevirostrum</i>). The DOEE Fish and Wildlife Division determined the project area does not harbor any listed species.	
Vegetation	None	<ul style="list-style-type: none"> Approximately 147 street trees will be removed. 	<ul style="list-style-type: none"> DDOT’s Urban Forestry Administration (UFA) will develop and implement a street tree management plan during project design. The plan will comply with District standards and regulations regarding planting, pruning, or removing a tree within the DDOT ROW. When trees must be removed and as reasonably feasible, DDOT will replace street trees removed within DDOT ROW as part of UFA’s Standard Specification 608.07 Tree Protection and Replacement.
Utilities	None	<ul style="list-style-type: none"> Temporary interruptions in services (several hours) could be experienced during relocation or rerouting of utilities during construction. No permanent impacts to utility service are anticipated. 	<ul style="list-style-type: none"> DDOT will remain in close coordination with the utility owners throughout the design and construction process. Proactive outreach effort will be made to notify businesses and residences of anticipated schedule of utility disruptions. DDOT will adhere to the planning and design guidelines outlined in Chapter 9 of the DDOT Design and Engineering Manual and DC Streetcar Utilities Standard of Practice 2015 (USP).
Hazardous Materials	None	<ul style="list-style-type: none"> No permanent impacts to Recognized Environmental Concerns (RECs) sites are anticipated. As the project progresses into next phase, further investigation, beginning with site-specific ASTM-compliant Phase I Environmental Site Assessments (ESA), would be conducted at all medium-risk and high-risk RECs rated properties along the Preferred Alternative prior to the construction of the proposed infrastructure improvements. If RECs are confirmed at these properties, subsurface soil and groundwater investigations and laboratory testing would need to be conducted as part of a Phase 2 ESA. 	<ul style="list-style-type: none"> Mitigation will not be required Preparation of Hazardous Materials Management Plan during construction. If any impact to medium or high risk RECs is confirmed, construction plans will then include notes advising contractors of the risk, general location, and type of tanks and/or contaminants (petroleum, lead, etc.) that may be found along the Preferred Alternative alignment. Contractors will be advised that, should suspected hazardous materials be found, further sampling, as well as required permitting, transport, and disposal of the material will be completed in accordance with the DDOT guidelines.
Noise and	None	<ul style="list-style-type: none"> Activities associated with construction would result 	<ul style="list-style-type: none"> DDOT will prepare and implement a Noise, Vibration and Air

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
Vibration		<p>in noise impacts if located in noise-sensitive areas.</p> <ul style="list-style-type: none"> • 8 residential noise impacts (4 moderate, 4 severe) at switches for the 26th St track to the DC Streetcar Car Barn Training Center • 5 residential noise impacts at southeast quadrant of Benning Road – 42nd Street Stop • Vibration Impacts: • 20 residential vibration impacts along Benning Road (FTA Category 2 Land Uses) • 1 vibration impact at Dorothy I. Height/Benning Neighborhood Library (FTA Category 2 Land Uses) 	<p>Quality Management Plan as part of the Construction Management Plan to mitigate noise and vibration impacts during construction.</p> <ul style="list-style-type: none"> • DDOT will relocate the 42nd Street stop to the west side of the street to avoid noise impacts on the residences evaluated during the Draft EA. • DDOT will install “spring frogs,” pointless switches or other controls (such as a “well-designed flange-bearing frog”, or a flange-lifter; • DDOT will increase the radius of the track curves, applying flange lubricators to “grease” the contact points between the steel wheels and the steel rail heads. • DDOT will procure streetcar vehicles that can operate effectively along tracks with radii less than 100 feet without causing wheel squeal to occur. • Reduce the volume of transit bell ringing as safety protocols allow. • Vibration impacts generated by steel wheel - steel rail interactions will be mitigated by implementing vibration control measures, such as ballast mats under the tracks, spring frogs, pointless switches, and flange-bearing frogs.
Air Quality	None	<ul style="list-style-type: none"> • No impacts are anticipated 	<ul style="list-style-type: none"> • Mitigation is not required.
Energy Use and Climate Change	None	<ul style="list-style-type: none"> • No impacts are anticipated 	<ul style="list-style-type: none"> • Mitigation is not required. <p>Preferred Alternative would result in several environmental benefits:</p> <ul style="list-style-type: none"> • Reduction in Fossil Fuel use • Reduction in Vehicle Emissions • The project would support roadway reconstruction using sustainable techniques • Protection and Preservation of Existing Trees • Tree Planting and Landscaping
Construction Impacts	None	<ul style="list-style-type: none"> • Impacts would occur from temporary ground disturbing impacts, construction-related congestion & detours, changes in pedestrian movement, presence of construction equipment in viewsheds, 	<ul style="list-style-type: none"> • DDOT will adhere to the conditions of construction access permits to determine site access requirements and restoration activities. • DDOT will develop MOT, Traffic and Access, and

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
		<p>increased transmission of sediment & construction debris into surface water bodies, incidental impacts to street trees not planned for removal, possible short-term interruptions of utility service, and generation of construction noise & vibrations.</p>	<p>Construction Management Plan prior to construction.</p> <ul style="list-style-type: none"> • DDOT will strictly adhere to erosion and sediment control requirements. • DDOT will prepare a Health and Safety Plan. • DDOT will coordinate with utility owners & operators. • DDOT will install tree protection measures as necessary. • DDOT will prepare and implement a Noise, Vibration and Air Quality Management Plan.
Indirect Impacts	<p>Benefits: Increase in employment and economic growth due to future development and population growth</p> <p>Impacts: Increased demand for transit Changes in property values</p>	<ul style="list-style-type: none"> • Property values are expected to increase • Community cohesion may be reduced • Demand for transit-based travel may grow 	<ul style="list-style-type: none"> • The District of Columbia administers a variety of affordable housing programs that can offset financial burdens caused by increase property values. • Design measures which reduce the generation of noise and vibration will help reduce the intrusiveness of streetcar operations. • Street tree replacement, streetscape improvements, and context sensitive design measures will help integrate the proposed project into the study area. • DDOT will consider burying overhead utilities at select locations
Cumulative Impacts	None	<p>Benefits:</p> <ul style="list-style-type: none"> • Incremental contribution to Metrorail and Metrobus system core capacity relief • Incremental enhancement to bicycle and pedestrian network and improved linkages. • Incremental air quality benefit <p>Impacts:</p> <ul style="list-style-type: none"> • Incremental increase in property values • Incremental increase to noise levels 	<ul style="list-style-type: none"> • Affordable housing programs administered by various elements of the District of Columbia’s local government • Usage of design measures which reduce the generation of noise and vibration
Environmental Justice	None	<ul style="list-style-type: none"> • The construction and operation of the improvements proposed under the Preferred Alternative would generate a variety of benefits and impacts. Since the proposed action is located 	<ul style="list-style-type: none"> • Preferred Alternative includes mitigation for Environmental Justice in the following resources: • Right of Way • Neighborhood and Community Facilities

Resources	Impacts		Mitigation
	No Build Alternative	Preferred Alternative	
		<p>entirely in a geographic area with high concentration of minority and low-income populations, both types of effects would affect EJ populations.</p> <ul style="list-style-type: none"> Considering the overall economic benefits being generated, along with the District wide mitigation measures being adopted, no net direct or indirect adverse effects are expected to occur on the environmental justice populations. 	<ul style="list-style-type: none"> Transportation and Traffic Operations Parklands Aesthetics and Visual Quality and Noise and Vibration DDOT has actively solicited public participation throughout the project planning process. Other District agencies like Department of Housing and Community Development and Department of Employment Services have been engaged in the public outreach process.
Section 4(f) Evaluation	None	<ul style="list-style-type: none"> Temporary Occupancy of six Section 4(f) properties would occur to Anacostia Park, Kingman and Heritage Islands Park, Kingman Park Historic District, Fire & Police Call Boxes, the Baltimore & Potomac Railroad (part of the CSX rail facility under the Whitlock Bridge), and the PEPCO powerplant (located within the Benning Service Center). No use or temporary occupancy would occur at Langston Golf Course Historic District as project impacts would only occur within the DDOT ROW. 	<ul style="list-style-type: none"> Mitigation for impacts to Section 4(f) resources will be provided through compliance with the required construction related permits from the National Park Service (NPS) (Special Use Permit) and Department of Parks and Recreation. Permit conditions will be implemented to guide the construction usage and restore the site features. Mitigation for historic or archeological resources will be implemented by adhering to the DC SHPO conditional concurrence to FHWA’s Section 106 “no adverse effect” finding.
Vehicles	None	<ul style="list-style-type: none"> Three streetcars for wired propulsion option will be acquired. Wireless vehicles are 25-35% per price per unit Systems infrastructure less costly for wireless 	Not applicable
Total Capital Costs	None	<ul style="list-style-type: none"> \$178.1 million wired \$178.1 million wireless 	Not applicable

ES-7 SECTION 4(F) EVALUATION

Chapter 5 assesses the effects of the Benning Road and Bridges Transportation Improvements project (the proposed action) on publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic properties (whether publicly or privately owned) eligible for protection under the provisions of Section 4(f) of the U.S. Department of Transportation Act of 1966 (commonly referred to as Section 4(f)). The Section 4(f) evaluation has been prepared in accordance with the joint Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) regulations for Section 4(f) compliance as codified in 23 CFR Part 774. Additional guidance has also been incorporated from FHWA's 2012 *Section 4(f) Policy Paper*.

Based on the current planning and design documents, DDOT has determined that the development of the Preferred Alternative would not require the permanent use of any resources protected by Section 4(f). Temporary construction-related areas would be required for the corridor of the Preferred Alternative located adjacent to Kingman and Heritage Island Park, Anacostia Park, the Baltimore & Potomac Railroad, and the Pepco Powerplant. The temporary easements are required to install temporary fencing, erosion and sediment control measures, and provide adequate space for construction activities. On December 5, 2019, the District of Columbia State Historic Preservation Office concurred with FHWA's determination that these temporary occupancies would not adversely affect historic properties.

ES-8 PUBLIC AND AGENCY COORDINATION

As part of the EA process, public and agency coordination was conducted in accordance with NEPA and Section 106. To help identify issues related to the Benning Road and Bridges Transportation Improvements project, key stakeholders including federal and local agencies and the public were invited to review and comment on the Purpose and Need described in **Chapter 1**. Stakeholders also had the opportunity to review and comment on preliminary build alternatives identified in **Chapter 2**. Public outreach activities also included the development of a project website, newsletter, and public meetings.

In evaluating the build alternatives and the No Build Alternative, DDOT is considering public and agency input. As described in **Chapter 6**, public and agency engagement have been important to the alternatives development and evaluation process. Two initial public meetings were held on April 22 and May 28, 2014 in the project study area. The project was coordinated with agencies through the regular DDOT interagency meeting. The first agency meeting was held on March 4, 2014 at DDOT.

Study area residents, other members of the public, and agency representatives expressed support but also noted concerns related to impact to circulation, access, viewsheds, stop design, and loss of trees. Key themes from the outreach program included safety, bicycle access, traffic circulation, parking, cost, visual impacts, and construction impacts

The project team held an additional public meeting in November 2017 to update stakeholders on the current status of the project. Smaller group meetings have also been held to provide updates

on the project to specific audiences. Additional open house public meetings were held in the Summer of 2019 and in February 2020.

All public and agency input was considered during alternatives development resulting in alignment and infrastructure refinement to avoid or minimize impacts and provide mitigation.

ES-9 IDENTIFICATION OF A PREFERRED ALTERNATIVE

Since the Draft EA, DDOT has selected a preferred alternative for the project. After thorough consideration of input received from the public and agencies after publication of the Draft EA and based on technical analyses and the evaluation of alternatives, DDOT has selected Build Alternative 2 - Median Streetcar Alignment with wired propulsion as the Preferred Alternative.

The FHWA has determined that the Preferred Alternative and associated options identified in this EA will not have a significant impact on the natural, human or built environment; and is issuing a Finding of No Significant Impact (FONSI) for the Benning Road and Bridges Transportation Improvements project. The FONSI is based on FHWA's review of the Final EA, from which FHWA determined that the Final EA adequately discussed the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. Additionally, FHWA determined that the Final EA provides sufficient evidence and analysis for determining that an environmental impact statement is not required. The issuance of the FONSI completes the NEPA process for the Benning Road and Bridges Transportation Improvements project.

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1 PURPOSE AND NEED

1.1 INTRODUCTION

The District Department of Transportation (DDOT), in conjunction with the Federal Highway Administration (FHWA), prepared this Final Environmental Assessment (EA) for the proposed Benning Road and Bridges Transportation Improvements project (the proposed action) in northeast Washington, DC. The proposed action would provide safety improvements, extend H/Benning Streetcar service, and enhance the roadway, pedestrian, and bicycle facilities to accommodate each transportation mode along Benning Road between Oklahoma Avenue and the Benning Road Metrorail Station. FHWA is the lead federal agency for the EA, with DDOT (the Applicant) as the local sponsor. The Federal Transit Administration (FTA), the National Capital Planning Commission (NCPC), and the National Park Service (NPS) are cooperating agencies.

The proposed action required FHWA approval allowing high occupancy vehicles used as part of a public mass transportation system within the highway right-of-way to facilitate an increase in traffic capacity of the Federal-aid system for the movement of persons.” The proposed action is included in the National Capital Region Transportation Planning Board’s adopted *2019-2024 Transportation Improvement Program (TIP)* and the *Visualize 2045 Financially Constrained Long-Range Plan for the National Capital Region (CLRP)*.

This EA is a Federal document prepared in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations (CFR) 1500-1508), FHWA’s Environmental Impact and Related Procedures (23 CFR 771), FHWA’s *Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents (T6640.8A)*, FHWA’s 2006 *SAFETEA-LU Environmental Review Process: Final Guidance*, Appendix A of 23 CFR part 450 titled *Linking Transportation Planning and NEPA Processes*, FTA’s 2006 *Transit Noise and Vibration Impact Assessment guidance*, and *DDOT’s Environmental Process Manual*. Additionally, this EA includes an evaluation of potential effects to historic sites and archeological resources in accordance with Section 106 of the National Historic Preservation Act (54 U.S.C. 300101 et seq.) as **Appendix F**. The EA also includes a Section 4(f) Evaluation prepared in accordance with FHWA regulations for Section 4(f) compliance (23 CFR 774) as **Chapter 5**.

1.2 STUDY AREA DESCRIPTION

The portion of Benning Road that is the subject of this EA is located within the northeast section of Washington, DC and is approximately two miles long (roadways referenced within this EA are in the northeast quadrant of the District unless otherwise specified). The western terminus for the proposed

action is the intersection of Benning Road and Oklahoma Avenue, and the eastern terminus is the Benning Road Metrorail Station. A study area was defined for the EA as the geographic area within $\frac{1}{4}$ mile of Benning Road between and around these termini. The study area is shown in **Figure 1-1**. The study area includes residential areas with retail and business activity around the intersection of Benning Road and Minnesota Avenue in Ward 7. The study area is also adjacent to Langston Golf Course, Anacostia Park and Fort Mahan Park. Within the study area, Metrorail travels over Benning Road. Other prominent features which intersect the study corridor include: Kingman Lake, Kingman and Heritage Islands Park, the Anacostia River, DC-295, and CSX railroad tracks.

Benning Road is a principal arterial that carries 26,000 vehicles in annual average daily traffic (AADT) in the existing condition. The roadway consists of three lanes of traffic in each direction between Oklahoma Avenue and Kingman Island, four lanes of traffic in each direction between Kingman Island and 36th Street, and two lanes of traffic in each direction between 36th Street and the Benning Road Metrorail Station. The study area's proposed improvements cross the Anacostia River, DC-295, and the CSX freight railroad corridor. The Ethel Kennedy Bridge traverses the Anacostia River, the Lorraine H. Whitlock Memorial Bridges (hereinafter "Whitlock Bridge") crosses over DC-295 and CSX facilities. Sidewalks and pedestrian ways are provided along Benning Road, though not in all locations. Existing mass transit in the study area includes Washington Metropolitan Area Transit Authority's (WMATA) Blue, Orange and Silver Lines serving two Metrorail stations (Benning Road and Minnesota Avenue), and WMATA's bus services. The intersection of Oklahoma Avenue and Benning Road (study corridor western terminus) is the location of the eastern terminus of the existing H St./Benning Streetcar Line.

The portion of Benning Road in the study area has been part of several transit enhancement and development studies and plans in the past including, the *DC Transit Future System Plan* (DDOT, 2010), *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013), and *Benning Road Corridor Redevelopment Framework Plan* (DC Office of Planning, 2008). Extension of streetcar service to the study area was specifically identified as the first element of DDOT's 22-mile priority streetcar system plan in the *DC Transit Future System Plan*. The needs to improve the portion of Benning Road in the study area was noted in these plans and studies to safely and efficiently accommodate all modes of transportation. The studies, and this EA identified specific conditions related to safety, bridge conditions, and mass transit challenges that are specific to the study area:

- **Safety:** The Benning Road and Minnesota Avenue intersection has a high volume of pedestrian and vehicular activity. This intersection presents safety challenges and is listed as one of the top ten intersections with both high crash severity and crash frequency within the District. Existing conditions of sidewalks and pedestrian routes also present safety challenges.
- **Bridge conditions:** Whitlock Bridge over DC-295 (Kenilworth Avenue) and the CSX railroad presents structural as well as functional challenges. The Whitlock Bridge consists of two parallel structures, one eastbound the other westbound, both structures need repair or rehabilitation and lack adequate sidewalks.
- **Mass Transit:** Roadway congestion affects the reliability of existing bus services in the study area. Existing buses are also crowded.

The study area encompasses the geographic area affected by the existing transportation conditions described in this EA. The intersection of Benning Road and Oklahoma Avenue and Benning Metrorail Station are logical project termini because they form a study area that is of enough length to address environmental matters related to the proposed action on a broad scope in accordance with 23 CFR 771.111(f).

Modifications are planned on the Benning Road/ DC-295 interchange to improve connectivity, to eliminate unsafe conditions, and to manage traffic demands. The interchange improvement project would mainly include: correcting turning radius deficiencies on existing ramps, lengthen merge and weave areas, increase deceleration/acceleration distance for on-/off-ramps, provide safe pedestrian/bicycle crossing, maintain structural integrity of bridges 104 and 104-1 that span over Kenilworth Ave; and increase number of movements at the interchange to provide connectivity to the communities located at the east of DC-295. DDOT is assessing the referenced Benning Road/DC-295 interchange improvements through a separate Interchange Modification Report (IMR) process. The associated Categorical Exclusion I and II is attached as **Appendix M**. It is expected that the proposed improvements will result in permanent changes to the overall traffic patterns on the Benning Road NE in the vicinity of DC-295 interchange. Therefore, in order to provide a full assessment of traffic scenarios in the study area, DDOT has prepared traffic analysis and Maintenance of Traffic (MOT) document which evaluates Benning Road infrastructure improvements proposed in this EA and DC-295 interchange improvements. This EA considers traffic impacts under the No Build and Build conditions for the Benning Road infrastructure improvements only.

1.3 PURPOSE FOR THE PROPOSED ACTION

The purpose of the Benning Road and Bridges Transportation Improvements proposed action is to address deficiencies in transportation infrastructure conditions, improve safety conditions and operations for both motorized and non-motorized access, and to provide increased mobility and accessibility between the intersection of Benning Road and Oklahoma Avenue and the Benning Road Metrorail Station.

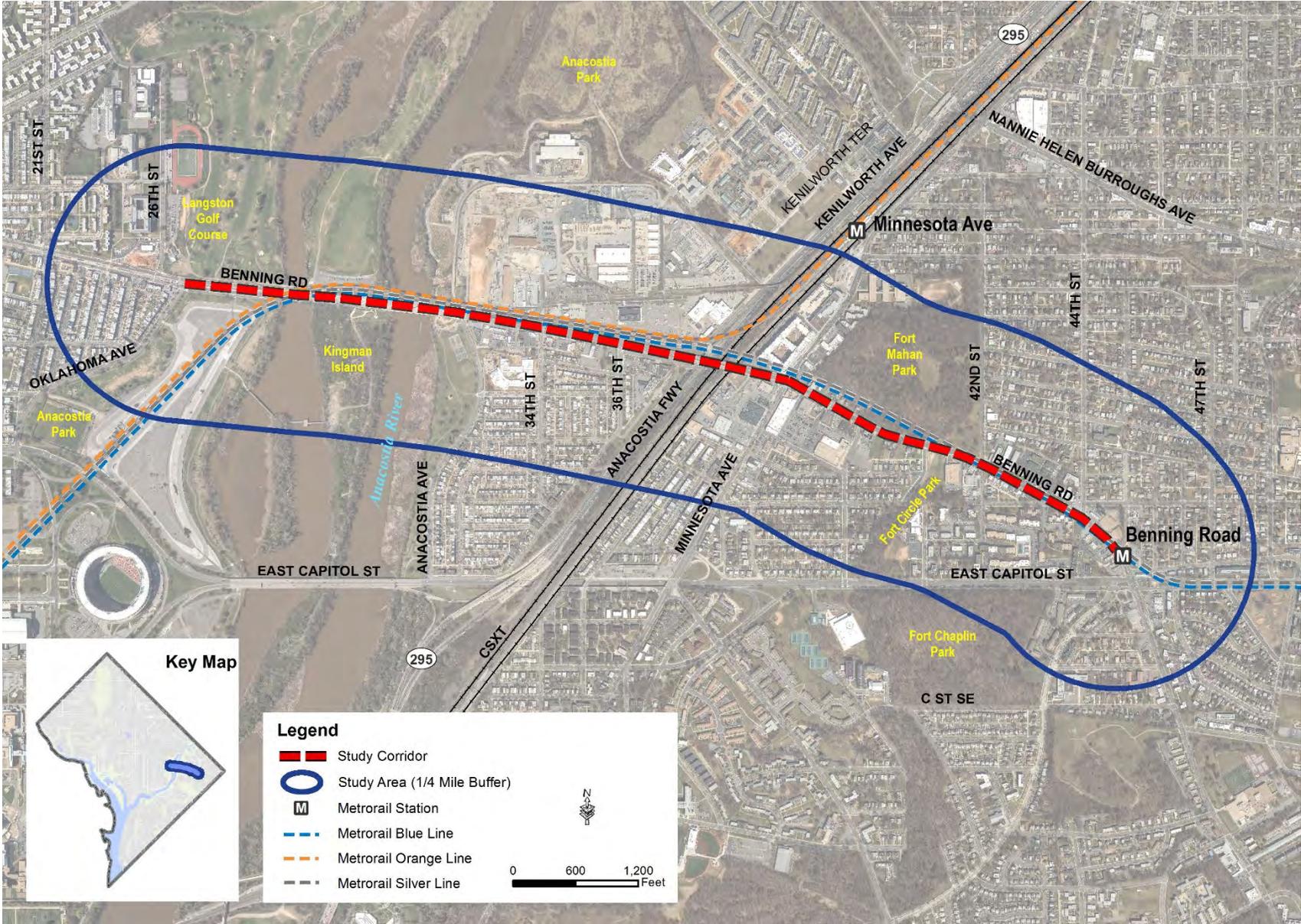
1.4 NEED FOR THE PROPOSED ACTION

The needs for the proposed action are the following:

- Improve transportation infrastructure conditions;
- Enhance safety and operations along the corridor and at key intersections;
- Enhance and install pedestrian and bicycle facilities; and
- Extend H/Benning Streetcar transit service.

Each of these needs are described in the following subsections.

Figure 1-1: Study Area



1.4.1 IMPROVE TRANSPORTATION INFRASTRUCTURE CONDITIONS

Some sections of the roadway in the study area need geometric improvements such as the Benning Road and 36th Street section and the intersection of Benning Road and Minnesota Avenue. The intersection of Benning Road and Minnesota Avenue needs to provide a safer crossing for pedestrians and safer vehicular turning movements as described in **Section 1.4.2**. Deficiencies in bicycle and pedestrian infrastructure are described in **Section 1.4.3**.

While the bridges that carry Benning Road over the Anacostia River are in good condition, the Whitlock Bridge structures over DC-295 and the CSX railroad tracks need replacement. The Whitlock Bridge consists of two parallel structures for the eastbound and westbound lanes of Benning Road. The eastbound structure was rebuilt in 1961, partially on top of the original piers, with a complete deck replacement in 1989. The westbound structure was rebuilt in 1982 on top of the existing 1946 plan foundations.

Eastbound and westbound Whitlock Bridge structures are currently adequate for their intended traffic loads; however, their condition and longevities are highly variable. The abutments, piers, joints, and wearing surfaces have areas that need repair or rehabilitation. Inspections by DDOT in 2012 and 2013 indicated that the structures:

- Have a fair to poor substructure condition: Superstructures are in overall good or satisfactory condition, but substructures have cracked and spalled concrete.
- Have exceeded their lifespan: The bridges have exceeded their calculated fatigue life.
- Do not meet current seismic criteria: The existing bearings are steel rocker type. The roadway pavement conditions of Benning Road also vary. There are several sections that are in good condition; however, there are some sections that need pavement work.

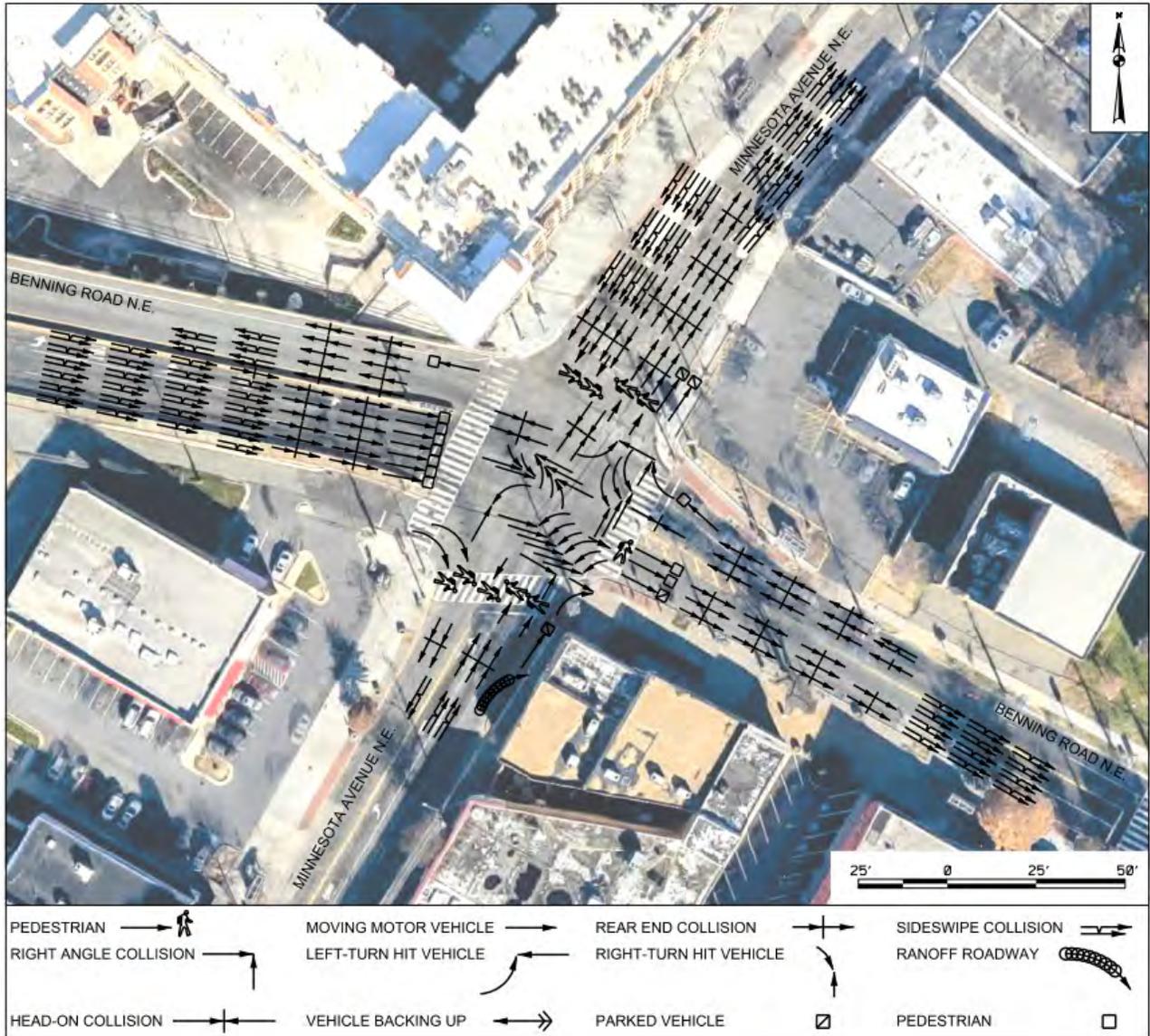
1.4.2 ENHANCE SAFETY AND OPERATIONS

The Benning Road and Minnesota Avenue intersection has historically been listed as one of the top ten intersections with both high crash severity and crash frequency within the District (see **Appendix A** for more detailed crash data and safety analysis). The Traffic Accident Reporting and Analysis System (TARAS2) shows that the Benning Road and Minnesota Avenue intersection recorded 202 crashes between 2016 and 2018 with 60 of those crashes resulting in injuries (see **Table 1-1**).

The Benning Road Streetcar Extension Feasibility Study (DDOT, 2013) showed that 443 vehicles turned left during the PM peak period from eastbound Benning Road to northbound Minnesota Avenue, and projected the number of vehicles to increase to 563 by 2040. The length of the left turn lane is inadequate to accommodate the number of buses and cars attempting to make this turn. Traffic attempting to clear the intersection within the allowed signal timings have experienced numerous left-turn swipes, rear-end vehicle collisions, and pedestrian collisions, as shown in **Figure 1-2** and **Figure 1-3**. Conflicts at this intersection affect safety for all transportation modes. An intersection reconfiguration is required to improve the overall service and geometry level for pedestrians, bicyclists, buses, and vehicles.

Safe pedestrian crossings are also needed at the intersection of 36th Street where pedestrians must cross the DC-295 expressway ramp to access the Whitlock Bridge. The pedestrian curb ramp at 36th Street is not aligned to the crossing and the curb ramp to access the Whitlock Bridge is not compliant with the Americans with Disabilities Act of 1990 (ADA).

Figure 1-2: Benning Road and Minnesota Avenue Intersection Crash Data



Source: TARAS2 (Traffic Accident Reporting and Analysis System 2)

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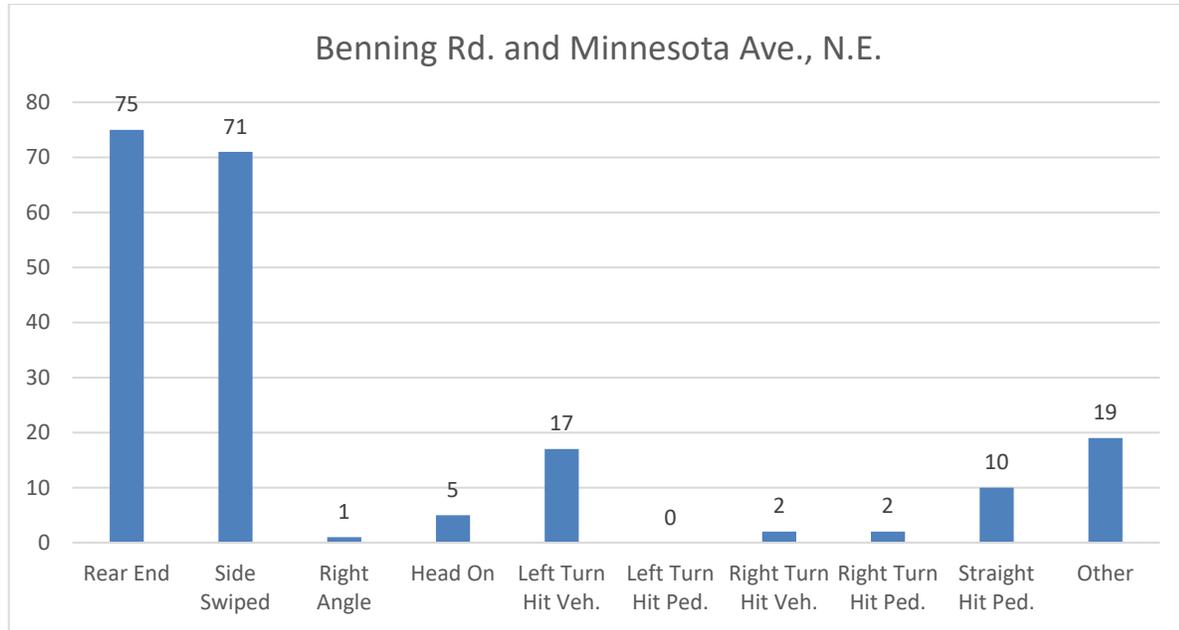
Table 1-1: Benning Road Corridor Crash Data

Intersection	Number of Crashes	Crash Rate (MEV1)	Collision Type (2016-2018)									Crashes Resulting in Injury
			Rear-end	Sideswipe	Right Angle	Head on	Left Turn Hit Veh	Left Turn Hit Ped	Right Turn Hit Veh	Right Turn Hit Ped	Straight Hit Ped	
Benning Road and Anacostia Avenue	35	0.70	43%	29%		6%	3%			6%		13
Benning Road and 34 th Street	14	0.27	36%	36%			14%		7%			5
Benning Road and 36 th Street	77	2.19	49%	34%	3%	1%			1%	1%	1%	24
Benning Road and Minnesota Avenue	202	4.17	37%	35%		2%	8%		1%	1%	5%	60
Benning Road and 45 th Street	59	2.41	27%	42%		2%	8%		5%	2%		13
Benning Road and Central Avenue	5	0.21	20%	20%			20%		20%			1
Benning Road and East Capitol Street	48	0.81	29%	31%	4%		13%		6%			15
Minnesota Avenue and Dix Street	27	1.08	37%	22%		4%	4%		7%	4%	7%	4
Minnesota Avenue and Grant Street	42	1.89	36%	31%	2%	2%	7%			5%	2%	11
Minnesota Avenue and Hayes Street	13	0.71	8%	38%		15%	15%					6
Minnesota Avenue and Gault Place	8	0.43	13%	38%			25%					2
Minnesota Avenue and NHB Avenue	80	2.27	40%	25%	4%		14%		3%	3%	5%	20

¹Accidents per Million Entering Vehicles

Source: TARAS2 (Traffic Accident Reporting and Analysis System 2)

Figure 1-3: Minnesota Avenue and Benning Road Intersection Crash Totals by Type



Source: TARAS2 (Traffic Accident Reporting and Analysis System 2)

1.4.3 ENHANCE AND INSTALL PEDESTRIAN AND BICYCLE FACILITIES

Many of the existing sidewalks located along Benning Road are narrow, not ADA compliant, in poor condition, and unwelcoming, as shown in **Figure 1-4**.

The Whitlock Bridge's original structures did not include facilities for pedestrians or bicycles. A sidewalk on the eastbound structure of the bridge was created by adding a Jersey barrier at the edge of the outside travel lane and using the shoulder area as a sidewalk, as shown in **Figure 1-5**. This sidewalk does not encourage a pleasant walking experience. The sidewalk also creates a confined space with the Jersey barrier on one side and a metal fence on the other side. The bridge needs to have appropriate and safe sidewalks on both sides to enhance pedestrian mobility and access.

Benning Road lacks adequate facilities for non-motorized access in the study area. There are no existing bicycle facilities or shared-use paths to provide safe bicycle access along, or across Benning Road. Benning Road is identified as in "poor" condition by the District's *Bicycle Master Plan* (DDOT, 2005). The *Bicycle Master Plan* and the bicycle element of the *moveDC Plan* (DDOT, 2014) also identified Benning Road across the Anacostia River as an off-street trail as part of the Anacostia River recreational facilities. With an increase in businesses, facilities, and population in the study area, the need to accommodate non-motorized modes such as bicycles is increasing. There is a need to improve the bicycle connections and access across the Anacostia River and the Whitlock Bridge because the area around the Benning Road and Minnesota Avenue intersection is an activity hub and a neighborhood destination, and Benning Road provides direct access to destinations such as H Street and the Anacostia River recreational facilities.

Figure 1-4: Existing Sidewalk on North Side of Benning Road near Oklahoma Avenue (looking West)



Figure 1-5: Existing Sidewalk on South Side of Benning Road Whitlock Bridge (looking East)



1.4.4 EXTEND STREETCAR TRANSIT SERVICES

The portion of Benning Road in the study area exhibits high passenger volumes on buses operated by WMATA (see **Figure 1-6**). The Minnesota Avenue and Benning Road Metrorail stations provide access to the Orange Line and Silver/Blue Lines, respectively. In 2012, on an average weekday, 3,257 passengers boarded at the Minnesota Avenue Metrorail Station, while 3,183 boarded at the Benning Road Metrorail Station.

The Metrobus Benning Road Line (Routes X1 and X3) operates in peak hours from the Minnesota Avenue Metrorail Station via Benning Road, continuing to Tenleytown and Foggy Bottom. The Metrobus Benning Road-H Street Line (Route X2) is a popular Metrobus service operating between the Minnesota Avenue Metrorail Station via H Street to McPherson Square. Current ridership for Routes X1, X2, and X3 is the fourth highest in the Metrobus system with almost

14,000 passengers per day and approximately 4,700 passengers using buses at the Minnesota Avenue Metrorail Station. MetroExtra Route X9 (Benning Road-H Street Limited Line) provides limited-stop rush-hour service from the Capitol Heights Metrorail Station via Benning Road and H Street to Metro Center. The Metrobus Benning Heights Line (Route U8) serves as a neighborhood circulator and feeder to the Minnesota Avenue, Benning Road, and Capitol Heights Metrorail Stations via Benning Road, Minnesota Avenue, and Nannie Helen Burroughs Avenue.

Figure 1-6: Crowded Bus Stop on Minnesota Avenue at Benning Road (looking South)



WMATA, in cooperation with DDOT, completed a transit assessment study in January 2010 and identified the H Street/Benning Road Metrobus corridor as part of the Metrobus Priority Corridor Network (PCN). The PCN includes 24 high-volume Metrobus corridors across the region. These high-volume corridors account for half of all bus ridership in the current Metrobus system. Key findings from the assessment revealed that study area buses:

- Experience passenger crowding: Despite very high combined frequencies of bus routes, buses are approaching or are at capacity not only during peak periods, but also at midday and in the evenings occasionally. The X lines (X1, X3, X2, and X9) have a combined frequency of 3.5 minutes during the morning peak hour (6:00–7:00 a.m.) between the Minnesota Avenue Metrorail Station and the H Street corridor. According to 2013 WMATA ridership data, maximum passenger loads on this segment approach the high 40s on standard 40-foot buses (39 seated load) and the high 60s (Route X2) on the articulated buses (60 seated load). WMATA service standards allow for 120% of the seated load during peak periods. The U8 runs every 15 minutes between the Benning Road Metrorail Station and the Minnesota Avenue Metrorail Station.

- Do not adhere to schedule: Schedule adherence is reported to be a problem, along with bus bunching, resulting from schedule non-adherence and delays caused by congestion. The frequency in which buses arrive is also reported to be a common issue for X line riders.

The current passenger crowding on these routes indicates the need for additional transit service capacity that can provide a direct connection to the H Street corridor, Union Station and the downtown area. Neither the Minnesota Avenue Metrorail Station on the Orange Line nor the Benning Road Metrorail Station on the Blue and Silver Lines provides a direct connection to the H Street corridor or Union Station.

The study area is experiencing an increase in businesses and population. Between 2000 and 2017, the population in the study area grew by 35 percent from 19,441 to 26,361 residents, according to the US. Census Bureau. The population is forecasted to grow by 46 percent between 2020 and 2040 to approximately 69,457 people, according to the Metropolitan Washington Council of Governments (MWCOG). This anticipated growth will create increased demand on the existing transportation network, and mobility improvements identified in land use plans will be essential to meet transportation needs.

The construction of new residential and commercial buildings in the study area in the past few years, particularly near the Benning Road and Minnesota Avenue intersection, is evidence of the growth trend. Population and business growth, along with existing crowded conditions on buses, suggests increased transit service within the study area and improved connections between Ward 7, the H Street corridor, and downtown.

Adjacent to the study area, DDOT recently began operation of its first streetcar line on H Street and Benning Road between Union Station and Oklahoma Avenue (H Street ends at 15th Street and continues as Benning Road eastward starting at 15th Street). The H/Benning Streetcar Line operates at 10 to 15-minute headways Monday through Thursday from 6:00 a.m. to midnight; Friday from 6:00 a.m. to 2:00 a.m.; Saturday from 8:00 a.m. to 2:00 a.m.; and Sunday from 8:00 a.m. to 10:00 p.m.

1.5 PROPOSED ACTION GOALS

Goals for the proposed action were developed by utilizing the Purpose and Need, agency/public comments, and study area constraints and opportunities. The goals for the proposed action include the following:

- Create a safe facility for all users of the roadway (motorists, transit, pedestrians, and bicyclists);
- Effectively manage stormwater runoff;
- Avoid and minimize use of any additional ROW outside the existing DDOT ROW to the extent possible;
- Preserve and protect environmental resources, both man-made and natural, and retain the current context of Benning Road in the study area (i.e., visual aesthetic, using context-sensitive solutions in the planning and design phases of the project);

- Provide improved access for transit users and pedestrians;
- Utilize environmentally sensitive materials and practices; and
- Support land use plans.

In addition to the goals of the proposed action, DDOT will consider the design criteria outlined in the American Association of State and Highway Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* (AASHTO, 1999); *DC Streetcar Design Criteria* (DDOT, 2012), *DDOT Design and Engineering Manual*, Chapter 28 (DDOT, 2009b); *DDOT Standard Specifications for Highways and Structures* (DDOT, 2009e); *DDOT Bicycle Master Plan* (DDOT, 2005b); *DDOT Bicycle Facility Design Guide* (DDOT, 2005a); *DDOT Environmental Policy and Process Manual* (DDOT, 2008); the *Manual on Uniform Traffic Control Devices* (MUTCD) *Traffic Controls for Bicycle Facilities, Part 9* (FHWA, 2009); *District of Columbia Pedestrian Master Plan* (DDOT, 2009d); *AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities* including 2010 Update of the AASHTO Guide (AASHTO, 2004; Toole, 2010); and other design guidance.

2

ALTERNATIVES CONSIDERED

2.1 INTRODUCTION

This chapter presents a discussion of the concepts and alternatives developed for the proposed action, including alternatives carried forward for detailed evaluation in the EA and the concepts and alternatives that were eliminated from further consideration. For an alternative to be carried forward into the EA, it must satisfy the proposed action's Purpose and Need (as described in **Chapter 1**). The ability of an alternative to meet this requirement is based on both its physical attributes (e.g. the number of lanes to be provided, the location of pedestrian facilities, and connections to existing transportation facilities) and operational characteristics (e.g. the speed and consistency with which passenger vehicles, transit services, cyclists, and pedestrians move through the study area). The purpose of Chapter 2 is to provide a foundation for the examination of these topics by providing a detailed review of the improvements proposed by each of the Alternatives. In addition to textual descriptions, this chapter includes maps, renderings, and other graphic aids that help capture important aesthetic and spatial characteristics.

Multiple concepts were developed and analyzed to address the Purpose and Need. Streetcar concepts from the previous *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013) were considered in the development of alternatives. The public was involved in an extensive public involvement process in 2012 as part of the *Benning Road Streetcar Extension Feasibility Study* and again beginning in 2014 as part of the EA (see **Chapter 6** for a more detailed discussion of public involvement). Fifteen concept designs were developed and screened as part of the EA process. **Figure 2-1** shows the steps in the screening process that were used to test each of the concept designs. The screening process generated three alternatives: The No-Build Alternative, Build Alternative 1, and Build Alternative 2.

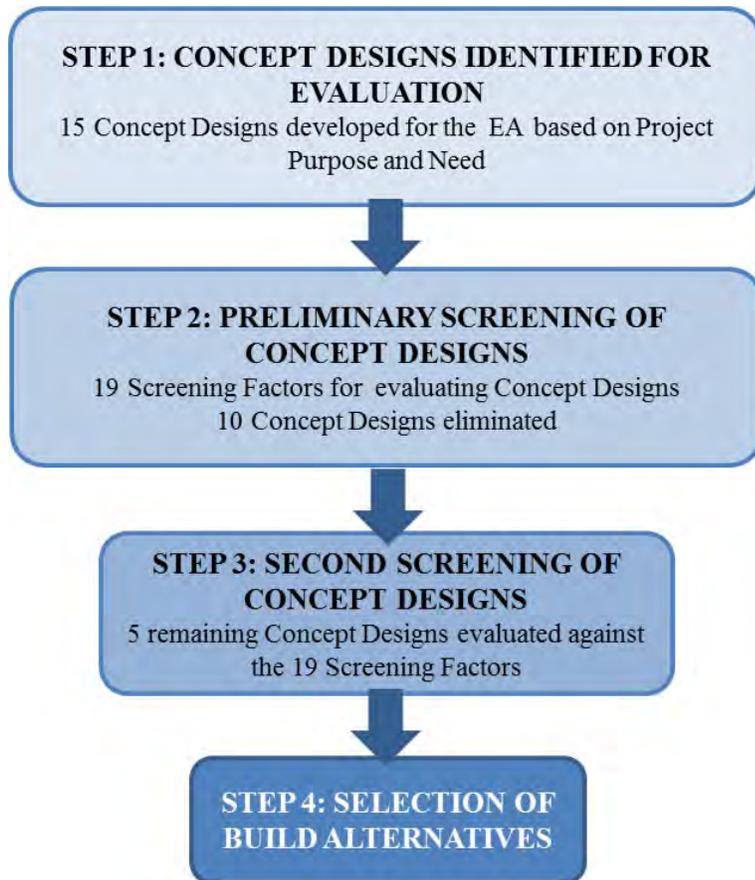
The No-Build Alternative represents the future condition of the study area if no proposed actions are taken. The No-Build Alternative's purpose is to provide a baseline for measuring the relative scale of operational changes (e.g. levels of traffic congestion) and environmental impacts. The design of the roadway and transit network presented under the No-Build Alternative is generally the same as the existing condition but does incorporate actions (proposed by DDOT and other entities) that are reasonably foreseeable and addresses the proposed action's purpose and need. A detailed discussion of the actions included under the No-Build Alternative is provided in Section 2.3.2.

Build Alternatives 1 and 2 both propose extending the DC Streetcar eastward along Benning Road towards the Benning Road Metrorail Station. Many of the actions required to complete Build Alternatives 1 and 2 are the same because of this shared characteristic. These common actions are discussed in detail in Section 2.3.3. What differentiates the two build alternatives is where the new

tracks would be placed on Benning Road. Under Build Alternative 1, the new tracks would run curb-side (i.e. along the outside lanes of Benning Road). Under Build Alternative 2, the new tracks would run along the median, utilizing the inside lanes of Benning Road. A detailed discussion of the actions included under Build Alternative 1 and 2 are provided in Section 2.3.5 and 2.3.4.

Based on the operational performance and environmental impacts associated with Build Alternative 1, DDOT selected Build Alternative 2 as its Preferred Alternative.

Figure 2-1: Screening and Identification of the Build Alternatives



2.2 CONCEPT DESIGNS IDENTIFIED FOR EVALUATION

NEPA requires federal agencies to rigorously explore and objectively evaluate all reasonable alternatives, and briefly discuss why alternatives were eliminated from detailed study or advanced for further study (40 CFR §1502.14(a)). This section summarizes the process that led to identifying the Build Alternatives for the EA.

2.2.1 CONCEPT DESIGNS - PRELIMINARY SCREENING

As part of the *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013), three streetcar concepts were considered during screening for the EA. The first streetcar concept would extend the H/Benning Streetcar Line from its eastern terminus at Oklahoma Avenue along Benning Road, then north along Minnesota Avenue to a new eastern terminus near the Minnesota Avenue

Metrorail Station. The second streetcar concept would begin at Oklahoma Avenue and terminate at the Benning Road Metrorail Station. A third streetcar would extend streetcar service to both the Minnesota Avenue Metrorail Station and the Benning Road Metrorail Station. These concepts are shown in **Figure 2-2**.

For each of the three streetcar concepts, four alignment options were developed for locating the streetcar track and platforms within the roadway ROW. Two options each (an exclusive streetcar-only lane and a shared travel lane for streetcars and other vehicles) were developed for curbside and median track alignments. An exclusive bike lane option was developed for each of the three streetcar corridor concepts in conjunction with the streetcar concepts.

Combining the three streetcar corridor concepts from the *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013) with the four streetcar alignment options and the exclusive bike option yielded 15 concepts for preliminary build alternatives (**Table 2-1**).

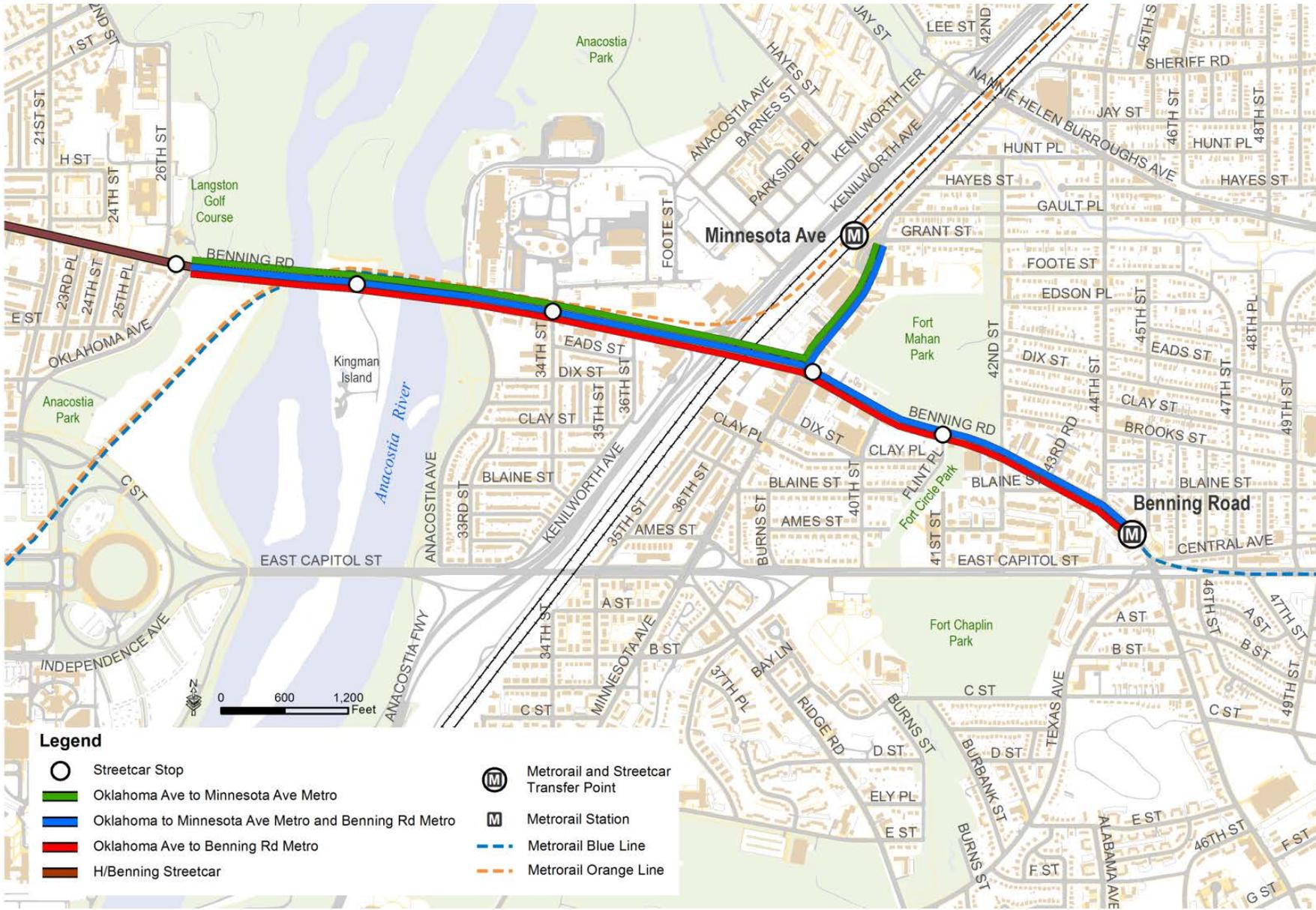
Table 2-1: Preliminary Build Alternative Concepts

	Option 1 Curb – Exclusive	Option 2 Curb – Shared	Option 3 Median – Exclusive	Option 4 Median – Shared	Option 5 Bike Lane
Oklahoma to Minnesota Avenue Metro	Concept 3	Concept 1	Concept 4	Concept 2	Concept 5
Oklahoma to Benning Road Metro	Concept 8	Concept 6	Concept 9	Concept 7	Concept 10
Oklahoma to Minnesota Avenue and Benning Road Metro	Concept 13	Concept 11	Concept 14	Concept 12	Concept 15

The screening process’ intent was to evaluate the ability of each concept to meet the Purpose and Need for the proposed action based on technical performance and input from stakeholders (summarized in **Chapter 6**) and to identify potential fatal flaws. The project team developed nineteen screening factors to measure performance and compare the concepts; the screening criteria are summarized in **Table 2-2**. The screening factors relate to streetcar performance and to the performance of other transportation elements, such as the structural condition of existing bridges, roadway and intersection operations, safety and access for all transportation modes.

The first screening factor, geometric deficiencies, eliminated all concepts with a terminus at the Minnesota Avenue Metrorail Station. Physical and geometric constraints related to grades, curves, and ROW at the Benning Road and Minnesota Avenue intersection complicate streetcar track and roadway construction. Track and platform accommodation near the intersection could negatively affect overall traffic operations or create new safety issues for pedestrians. Therefore, Concepts 1 through 5 (Oklahoma Avenue to Minnesota Avenue Metrorail) and Concepts 11 through 15 (Oklahoma to Minnesota Avenue and Benning Road Metrorail stations) were considered irrevocably flawed and eliminated from further consideration.

Figure 2-2: Streetcar Extension Concepts



Source: Benning Road Streetcar Extension Feasibility Study (DDOT, 2013)

Table 2-2: Preliminary Concepts Screening Factors

Screening Factor	Description
No Geometric Deficiencies	This metric considered whether the concept would encounter geometric deficiencies that would preclude the implementation of streetcar tracks and therefore streetcar operations.
Improves Structural Conditions	This metric considered whether the concept would remove structural deficiencies of the bridge over DC-295/CSX railroad tracks which is a project independently programmed into the region's CLRP.
Requires Bridge Reconstruction	This metric considered whether the concept would facilitate the reconstruction of the bridges over DC-295/CSX railroad tracks; both bridges are functionally obsolete for pedestrians and bicyclists, as well as clearance for CSX trains traveling beneath. Inspection reports prepared by DDOT in 2012 found the substructures of the bridges to be in fair to poor condition.
Improves Pavement Conditions	This metric considered whether the concept would improve pavement conditions in the corridor. Portions of Benning Road between Minnesota Avenue and 42 nd Street were recently improved through the reconstruction of Benning Road; however, east of 42 nd Street, Benning Road has not been repaved or repaired in several years. The segments of Minnesota Avenue located within the study area requires repair and repaving.
Improves Roadway Operations	This metric evaluated whether the concept would affect pedestrian safety and traffic operation issues along Benning Road and Minnesota Avenue.
Improves Operations of Benning/Minnesota Intersection	This metric assessed whether the concept would improve vehicular operations over current conditions. This intersection is a high accident location for vehicle collisions.
Improves Safety of Benning/Minnesota Intersection	This metric assessed whether the concept would enhance the safety of the intersection of Benning Road and Minnesota Avenue over current conditions. This intersection is a high accident location for collisions involving vehicles and pedestrians.
Offers Additional Transit	This metric considered whether the concept would provide new transit options in the corridor.
Provides Connectivity to Existing Streetcar Line	This metric considered whether the concept would provide a contiguous movement to the existing streetcar network and not require transfers or walking to a different location.
Improves Pedestrian Safety	This metric evaluated whether the concept would address cumulative pedestrian safety issues along the corridor including: sidewalks on both the north and south sides of the structures; enhancement of the pedestrian movements at 36 th Street, bringing sidewalks to current standards between 42 nd Street and the Benning Road Metrorail Station.
Improves Vehicular Safety	This metric considered whether the concept would enhance the safety of vehicles along the corridor.
Improves Bicycle Safety	This metric considered whether the concept would provide additional space and safety for bicyclists along the corridor between Oklahoma and Minnesota Avenues.

Screening Factor	Description
Improves Transit Safety	This metric considered whether the concept would enhance the safety of transit passengers boarding and alighting to/from transit vehicles.
Provides Pedestrian Access on Both Sides of Roadway	This metric evaluated whether the concept would bring sidewalks along the corridor to current standards.
Meets ADA Requirements	This metric evaluated whether the concept meets ADA requirements.
Provides Bicycle Access	This metric evaluated whether the concept provides bicycle access on the structures over DC-295/CSX railroad tracks.
Improves Access to Activity Hubs	This metric considered whether the concept provides improved access to activity hubs along Benning Road and Minnesota Avenue.
Within Existing ROW	This metric evaluated whether the concept could be constructed within existing ROW or whether additional ROW would be needed.
Keeps or Adds Parking	This metric evaluated whether the concept maintained or eliminated on-street parking.

2.2.2 CONCEPT DESIGNS – SECOND SCREENING

In the second screening, the No Build Alternative was introduced to enable comparison with a baseline future condition. This comparative analysis identified the best performing concepts and eliminated lower performing or redundant concepts. The factors used to assess performance during the second screening were the same as those used in the preliminary screening (see **Table 2-2**). The results of the second screening process are shown in **Table 2-3**.

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Table 2-3: Summary Evaluation Matrix

Screening Factor	No Build	Concept 6	Concept 7	Concept 8	Concept 9	Concept 10
	No Build	Oklahoma to Benning Road Metro – Curb – Shared	Oklahoma to Benning Road Metro – Median – Shared	Oklahoma to Benning Road Metro – Curb – Exclusive	Oklahoma to Benning Road Metro – Median – Exclusive	Oklahoma to Benning Road Metro – Bike Lane
No Geometric Deficiencies	N	Y	Y	Y	Y	Y
Improves Structural Conditions	N	Y	Y	Y	Y	Y
Requires Complete Bridge Reconstruction	N	Y	Y	Y	Y	Y
Improves Pavement Conditions	N	Y	Y	Y	Y	Y
Improves Roadway Operations	N	Y	Y	N	N	N
Improves Operations of Benning/Minnesota Intersection	N	Y	Y	N	N	N
Offers Additional Transit	N	Y	Y	Y	Y	Y
Provides Connectivity to Existing Streetcar Line	N	Y	Y	Y	Y	Y
Improves Safety of Benning/Minnesota Intersection	N	Y	Y	N	N	Y
Improves Pedestrian Safety	N	Y	Y	Y	Y	Y
Improves Vehicular Safety	N	Y	Y	N	N	N
Improves Bicycle Safety	N	Y	Y	N	N	Y
Improves Transit Safety	N	Y	Y	Y	Y	Y
Provides Pedestrian Access on Both Sides of Roadway	N	Y	Y	Y	Y	Y
Meets ADA Requirements	N	Y	Y	Y	Y	Y
Provides Bicycle Access	N	Y	Y	N	N	Y
Improves Access to Activity Hubs	N	Y	Y	Y	Y	Y
Within Existing ROW	Y	Y	Y	N	N	N
Keeps or Adds Parking	Y	N	Y	N	N	N
Total Positive Classifications	2	18	19	11	11	14
Screening Ranking	6	2	1	4	4	3

The project team carried Concepts 6 and 7 forward for detailed study in the EA; concept 6 became Build Alternative 1 and Concept 7 became Build Alternative 2. As noted in Section 2.1, Build Alternative 2 was selected to be DDOT's Preferred Alternative and will be referred to as such for the remainder of this and subsequent chapters. Concept 10 of exclusive bike lane was included as

a design option for proposed Build Alternatives 1 and 2.

The No Build Alternative is described in **Section 2.3.1**. **Section 2.3.2** provides an “at-a-glance” summary of the build alternatives with proposed actions common to the two build alternatives being described in detail in **Section 2.3.3**. The common components are organized as follows:

- Safety Improvements (including 36th Street, bridge improvements, and the Minnesota Avenue intersection)
- Streetcar Vehicles
- Stop Platforms
- Streetcar Propulsion
- Traction Power Substations (TPSS)
- DC Streetcar Car Barn Training Center

The Preferred Alternative and Build Alternative 1 are described in detail in **Sections 2.3.4** and **2.3.5**. Each Build Alternative description is organized into two parts. The first part is titled Typical Roadway Section and discusses how the physical characteristics of Benning Road would be modified. The second part is titled Stop Configuration and discusses the location and physical characteristics of the proposed streetcar stops.

2.3 ALTERNATIVES CONSIDERED IN THE EA

The following three alternatives are considered in the EA:

- No Build Alternative
- Build Alternative 1 – Curbside Alignment Streetcar
- Preferred Alternative – Median Alignment Streetcar

2.3.1 NO BUILD ALTERNATIVE

The No Build Alternative is the opening year (2018) transportation condition. This alternative assumes completion of currently programmed, committed, or funded transportation projects in the study area as identified in the CLRP for the National Capital Region and the TIP for the Washington Metropolitan Region, except for the proposed action. One committed project is part of the No Build Alternative:

- **The Minnesota Avenue Revitalization project** includes streetscape changes to Minnesota Avenue from A Street northward to 300 feet south of the Benning Road intersection (Phase I). Construction of Phase I of the Minnesota Avenue Revitalization project began in August 2015 and was completed in the fall of 2017. A new traffic signal is proposed as a future phase of the Minnesota Avenue Revitalization project. This signal would be located at the drive leading to the entrance to the parking garage behind the Department of Employment Services (DOES) Building on Minnesota Avenue. Other future phases of the Minnesota Avenue Revitalization project are dependent on the results of this study regarding the eastern streetcar terminus but will include roadway and streetscape improvements from Benning Road northward to Nannie Helen Burroughs Avenue.

Existing roadway, bicycle and pedestrian infrastructure, and transit services are assumed to be part of the No Build Alternative condition (**Figure 2-3**) with the exception of this committed project. For example, transit operations including Metrobus service, would continue as they currently exist. Scheduled service frequency and routing would remain the same as in the existing condition.

The No Build Alternative would not meet the Purpose and Need for the proposed action because it would not address deficiencies in transportation infrastructure conditions, improve safety conditions and operations for both motorized and non-motorized access, or provide for improved transit operations and options in the Benning Road study area. However, the No Build Alternative is retained to provide a baseline for comparing the environmental consequences of the Build Alternatives.

2.3.2 THE BUILD ALTERNATIVES AT-A-GLANCE

Completing either of the Build Alternatives would require reconstructing portions of the Benning Road roadway and structures between the Benning Road/Oklahoma Avenue intersection and the Benning Road Metrorail Station to enhance pedestrian, bicycle, and vehicular safety and operations. Actions common to both build alternatives include:

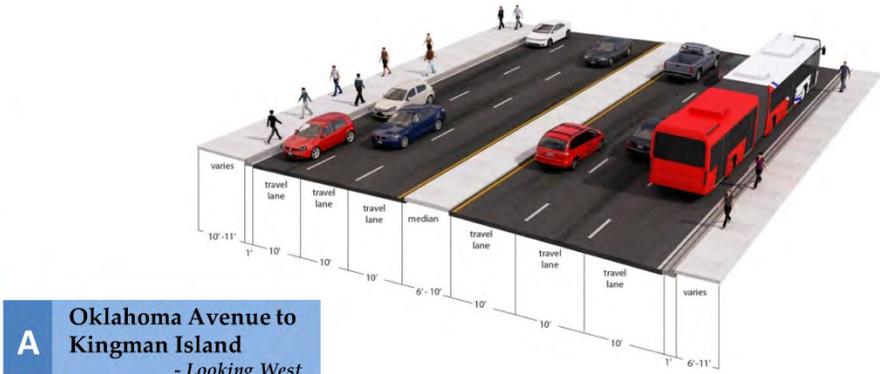
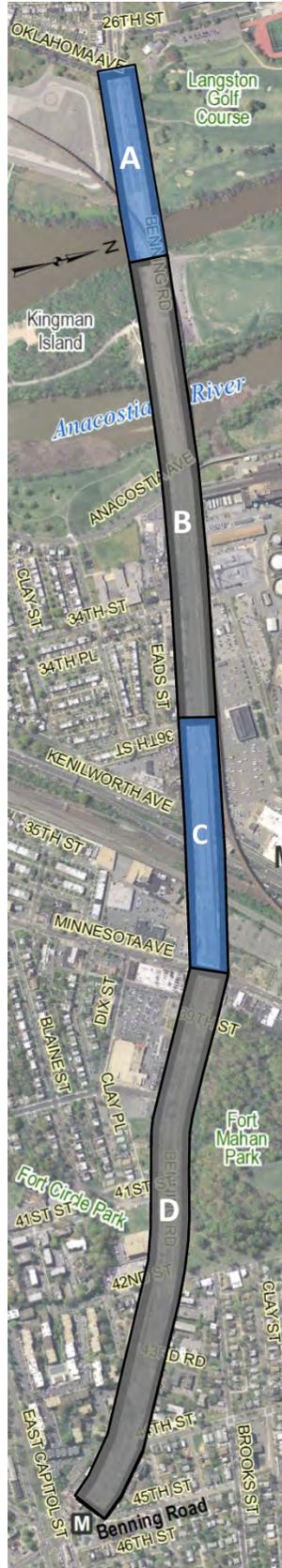
- extend the H/Benning Streetcar service to the Benning Road Metrorail Station;
- replacement of the Whitlock Bridge;
- modification of the Ethel Kennedy Memorial Bridge to support streetcar traffic;
- construction of a new rail connection to the D.C. Streetcar Can Barn;
- installation of streetcar stations and propulsion systems; and
- various safety improvements for motorists, pedestrians, and cyclists.

Table 2-4 summarizes the proposed elements of the Build Alternatives to achieve the Purpose and Need for the proposed action.

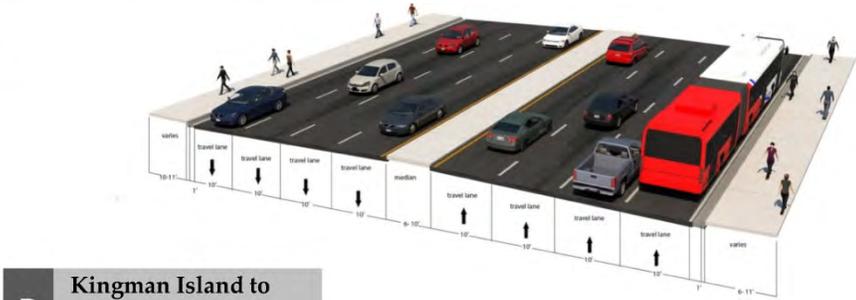
Table 2-4: Preferred Alternative and Build Alternative 1 – Proposed Infrastructure Changes

Needs for Proposed Action	Proposed Infrastructure Changes
Improve transportation infrastructure conditions	<ul style="list-style-type: none"> • Replacement of the Whitlock Bridge over DC-295 and CSX railroad tracks with a new bridge • Modification of the Ethel Kennedy Memorial Bridge to support streetcar traffic
Enhance safety and operations along the corridor and at key intersections	<ul style="list-style-type: none"> • Reconstruction of the intersection of Benning Road and Minnesota Avenue • Provision of a longer left-turn lane for eastbound Benning Road to northbound Minnesota Avenue • Provision of a second turn lane from northbound Minnesota Avenue to westbound Benning Road, and extending the right-turn pocket lane from southbound Minnesota Avenue to westbound Benning Road • Provision of ADA-compliant sidewalks on both sides of the bridge • Provision of pedestrian safety improvements at Benning Road and 36th Street
Enhance and install pedestrian and bicycle facilities	<ul style="list-style-type: none"> • Reconstruction of sidewalks, installation of new pedestrian crossings, and geometric improvements to existing crosswalks • Two-way on-street bicycle lane (optional)
Extend streetcar transit service	<ul style="list-style-type: none"> • Provision of shared streetcar lanes and ancillary facilities including platforms and propulsion and communication system elements; Build Alternative 1 proposes curbside streetcar tracks. The Preferred Alternative proposes median streetcar tracks

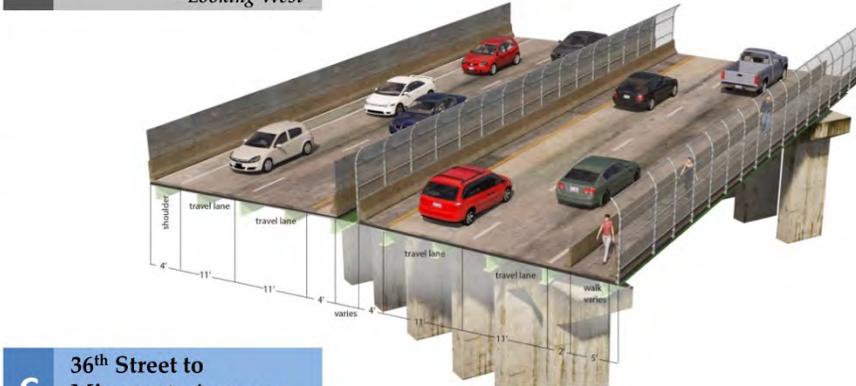
Figure 2-3: Existing/No Build Alternative Roadway Typical Sections



A Oklahoma Avenue to Kingman Island - Looking West



B Kingman Island to 36th Street - Looking West



C 36th Street to Minnesota Avenue - Looking West



D Minnesota Avenue to 45th Street - Looking West

*Grassy buffer area varies and is not shown in sections A and B above

The Preferred Alternative and Build Alternative 1 would extend the existing H/Benning Streetcar Line to the Benning Road Metrorail Station using a shared travel lane configuration. Supporting infrastructure for the streetcar in each Build Alternative would include an electric propulsion system and new track connections to the existing operation and maintenance facility (DC Streetcar Car Barn Training Center) located at 2550 Benning Road. Streetcar stops would be separate from stops for bus service. These infrastructure elements are described in more detail in **Section 2.3.3**.

2.3.3 ACTIONS COMMON TO EACH BUILD ALTERNATIVE

Safety Improvements

One component of each Build Alternative is safety improvements along Benning Road in the study area. The following subsections describe improvements to be made at the Benning Road and 36th Street intersection, on the bridges (including the Whitlock Bridge), and at the Benning Road and Minnesota Avenue intersection, respectively.

Pedestrian Improvements at Benning Road and 36th Street

Benning Road near the 36th Street intersection currently has multiple traffic operations all occurring in a confined space: a right turn onto 36th Street, an off-ramp to DC-295, and pedestrian movements (see **Figure 2-4**). Near 36th Street, Benning Road transitions from four lanes to two lanes in the eastbound direction. Benning Road's two outside lanes become the access ramps to northbound and southbound DC-295. The two interior lanes continue to be Benning Road and begin the approach slope to the Whitlock Bridge over DC-295 and the CSX railroad tracks. In the westbound direction, two lanes from the DC-295 ramp meet the two westbound lanes from the bridge at 36th Street.

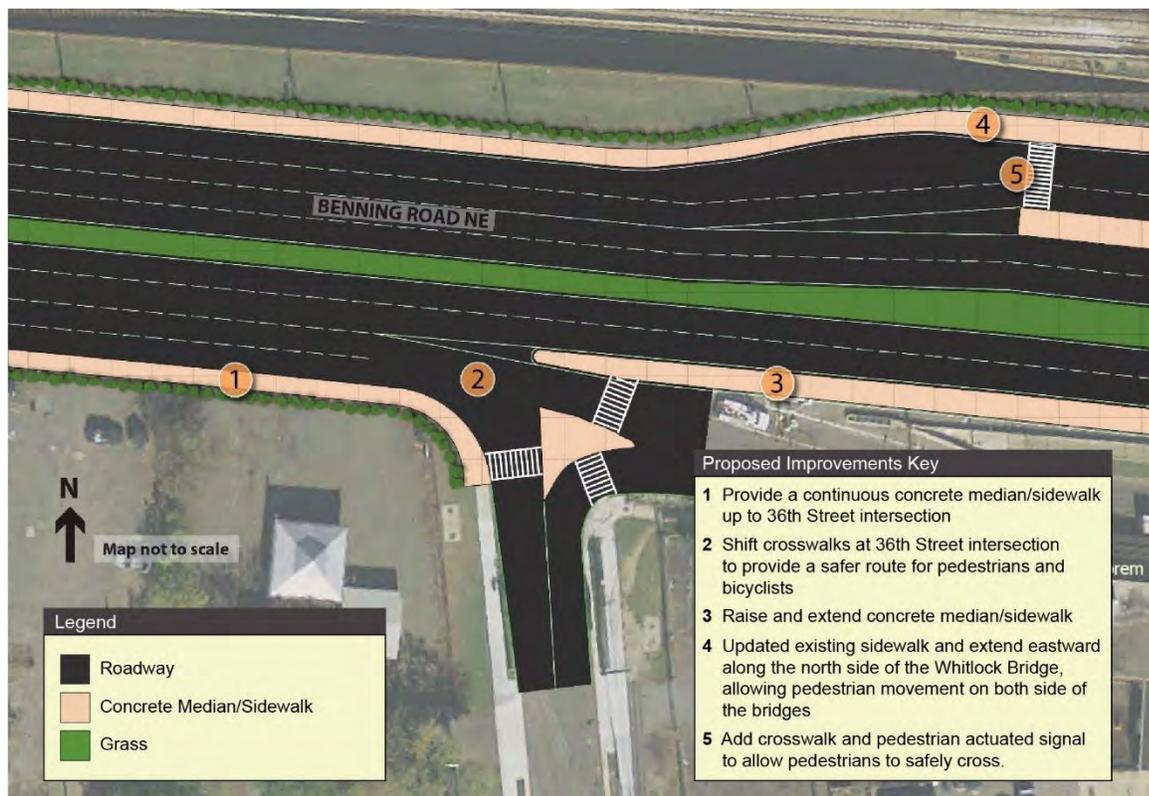
The pedestrian pathway to and from the Whitlock Bridge requires pedestrians to cross 36th Street and continue along the south side of the access ramp to a pedestrian crossing signal. Pedestrians are then directed to cross the two-lane access ramp to DC-295. The Preferred Alternative and Build Alternative 1 both propose to raise the concrete median/sidewalk along the south side of the bridge and extend it westward toward 36th Street (see **Figure 2-5**) to make them ADA compliant and enhance pedestrian safety. The pedestrian-actuated crossing signal and crosswalk would be moved west to the 36th Street intersection to provide pedestrians and bicyclists access to the extended concrete median/sidewalk. Additionally, a sidewalk would be added to the north side of the bridge to allow pedestrian movement on both sides of the structure. A crosswalk would be added where the off-ramp of DC-295 meets westbound Benning Road. This crosswalk would use a pedestrian-actuated signal to allow pedestrians to safely cross.

Figure 2-4: Existing Benning Road at 36th Street Intersection



Source: Google Maps, May 2014

Figure 2-5: Proposed Pedestrian Improvements at Benning Road and 36th Street



Bridge Improvements

The Benning Road/Ethel Kennedy Bridge would require modification of the deck and girders to accommodate embedded streetcar tracks.

The Whitlock Bridge is made of two separate eastbound and westbound structures (see **Figure 2-6**). Neither of these structures meets the minimum CSX vertical clearance requirement of 23 feet, nor do they meet current design standards for safe passage of pedestrians and bicyclists. Inspection reports prepared for the Whitlock Bridge by DDOT in 2012 found the substructure of the bridges to be in fair to poor condition. The condition of the existing structures and the changes needed to provide for an extended left-turn lane and widened pedestrian and bicycle paths would require the complete reconstruction of the two structures with a new structure(s) as part of each Build Alternative (see **Figure 2-7**).

The new structure(s) would replace the existing piers, abutments, superstructure, and deck. The new east abutment would be relocated approximately 45 feet east of its existing location. The new bridge would have longer spans than the current structures but could be constructed with two fewer piers within the DDOT ROW (see **Figure 2-8**). The vertical profile of the bridge will be between 5% at 7% at various locations. To meet ADA requirements, mitigations will be provided such as handrails where the slope is above 5%.

Figure 2-6 Existing Whitlock Bridge (looking east)

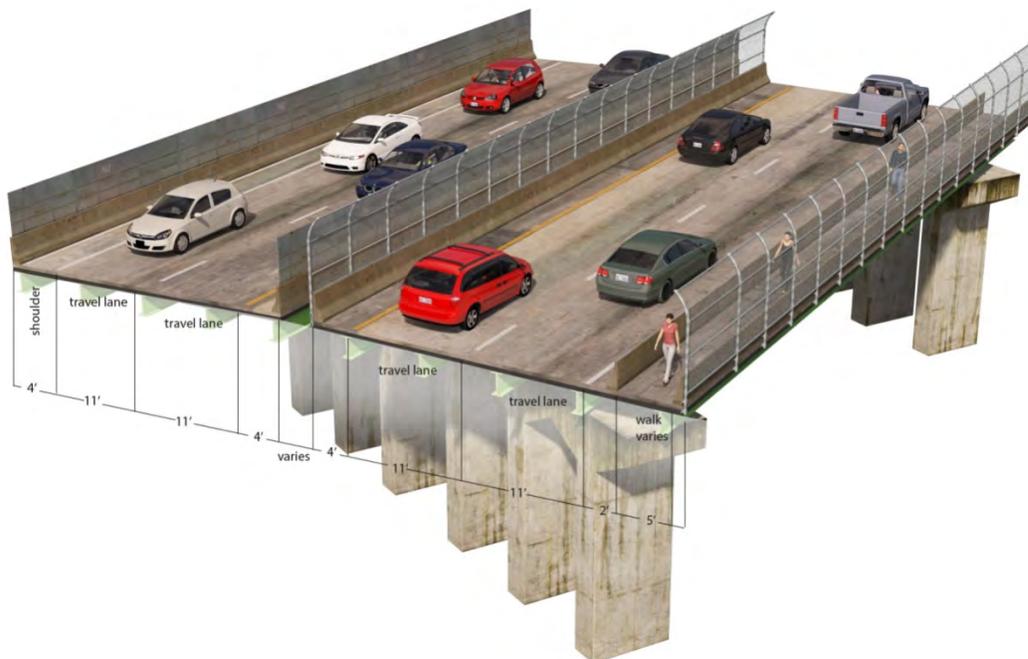
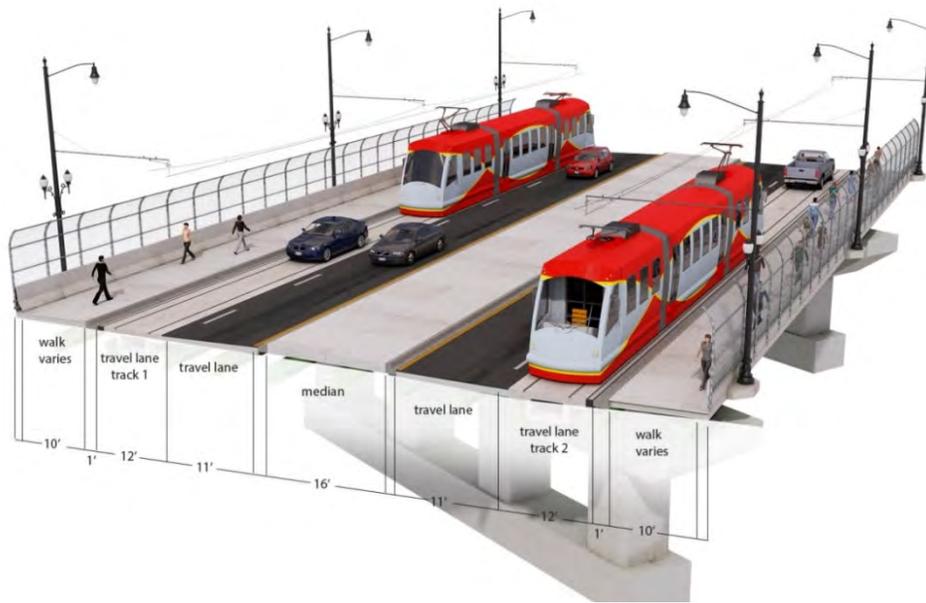
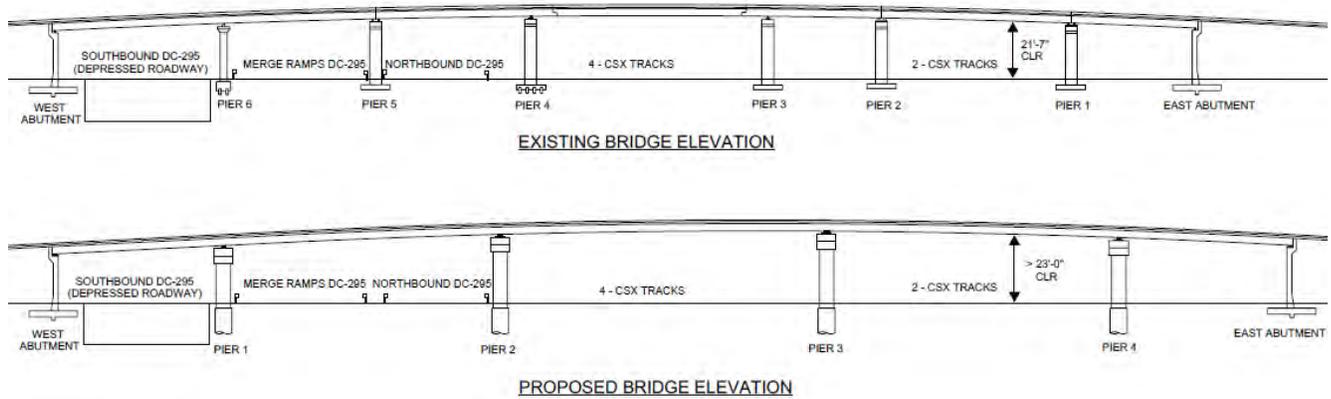


Figure 2-7: Proposed Whitlock Bridge Improvements (looking east)



*Details of the overhead propulsion system would be determined during final design. Renderings show only one possible treatment for overhead

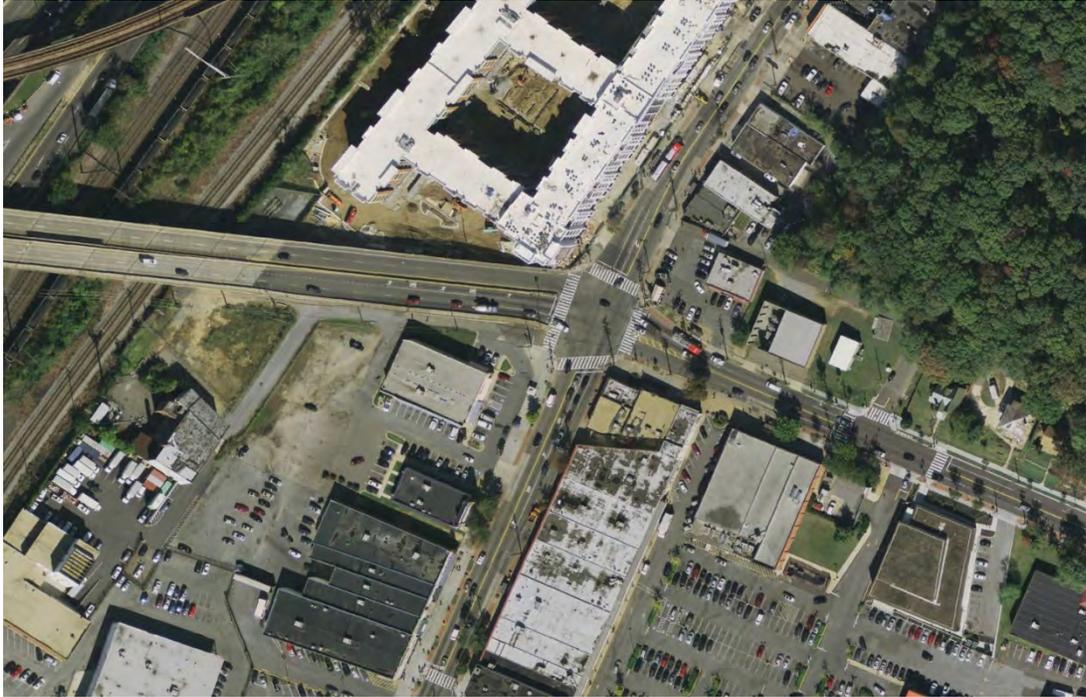
Figure 2-8: Profile View of Existing and Proposed Whitlock Bridge



Benning Road at Minnesota Avenue Intersection Improvements

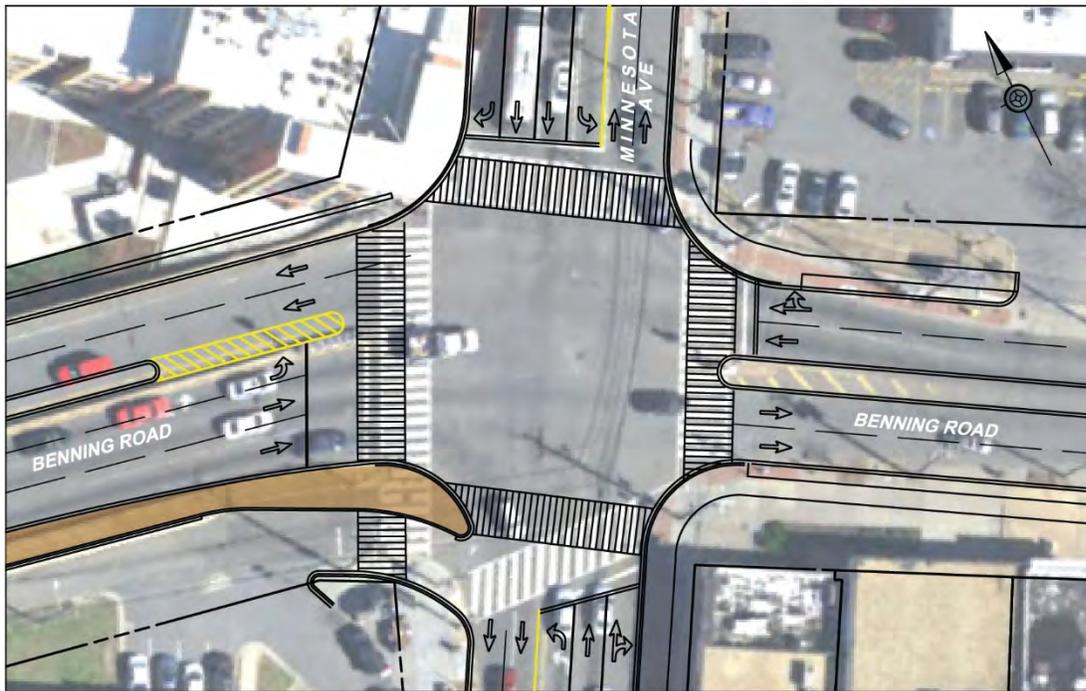
The traffic analysis conducted for this intersection found that the high volume of eastbound Benning Road to northbound Minnesota Avenue movements necessitates additional left-turn lane capacity. The current left-turn lane would be extended from 350 feet to 500 feet in length on the Whitlock Bridge over DC-295/CSX railroad tracks. Existing and proposed lane configurations at Benning Road and Minnesota Avenue are shown in **Figure 2-9** and **Figure 2-10**. Other proposed improvements as part of each Build Alternative include widening the northern leg of the intersection to accommodate a second thru lane and a dedicated right turn lane and restricting the Benning Road westbound left turn lane.

Figure 2-9: Existing Lane Configuration of Benning Road at Minnesota Avenue



Source: Google Maps, May 2014

Figure 2-10: Proposed Lane Configuration of Benning Road at Minnesota Avenue



Streetcar Vehicles

Three new streetcars would be required to provide the ten-minute service frequency on the extension, bells would be used to signal movements, and new vehicles would be the same size as existing streetcars (see **Figure 2-11**). Proposed streetcar dimensions are summarized as follows:

- Length: 66 feet
- Width: 8 feet
- Height: 11.3 feet

The *APTA Modern Streetcar Vehicle Guideline* document provides guidelines to support specification and procurement of modern streetcar vehicles by identifying and describing important technical and operating principles relating to their application (APTA 2019). DDOT is coordinating with the vehicle manufacturers to provide streetcar models and associated infrastructure that best integrates into the urban setting of Benning Road corridor, consistent with the APTA Guideline.

Figure 2-11: Example of Existing Streetcar



New streetcars would contain the same electrical components as current vehicles and would receive electric power from an overhead wire via a roof-mounted pantograph.

Stop Platform Locations and Dimensions

Stop platforms would be located approximately a quarter-mile apart as shown in **Figure 2-12**. DDOT determined stop platform locations based on operational needs, current and proposed geometry, accessibility, safety, and land use along Benning Road in the study area. Platforms

would be provided for eastbound and westbound service along Benning Road at the following five locations:

- Kingman Island
- 34th Street
- 39th Street
- 42nd Street
- Benning Road Metrorail Station

DDOT determines stop platform locations based on the operational needs, current and proposed geometry, accessibility, safety, and land use along Benning Road, per DDOT's DC Streetcar Design Criteria. The quarter-mile distance between the stop platforms would enhance mobility within the project corridor by providing an additional mass transit option. The half- mile and quarter- mile distance between stops platform is recommended in the design criteria to make transit faster and reduce customer journey times. In addition, this ideal stop spacing promotes better efficiencies and performance for streetcar operations. The extension of H/Benning streetcar service would provide the riders with direct and more focused transit access and connectivity.

Each stop platform would be designed according to the DDOT design criteria and APTA Modern Streetcar Vehicle Guideline guidance. It would be approximately 70 feet long, 10 to 12 feet wide and 14 inches high at the boarding location to accommodate the double articulated, 66-foot partially low floor streetcar vehicle.

The streetcar platform height would transition from sidewalk level to 14 inches above sidewalk level to allow level boarding at the center passenger doors of the low-floor portion of the streetcar. Platforms will be built in accordance with 49 CFR 37 – Appendix A: Modifications to Standards for Accessible Transportation Facilities and 36 CFR Part 1191 – Appendix D. Each platform would include benches, transit information, and a shelter. For wireless propulsion, stop infrastructure would include a rigid overhead power source suspended over each track for vehicle charging. For wired propulsion, Overhead Contact System (OCS) catenary or trolley wire would be suspended over the track.

Because WMATA buses require a lower height at bus stops, bus and streetcar stops cannot be shared entirely. In accordance with 49 CFR § 37.42 - Service in an Integrated Setting to Passengers at Intercity, Commuter, and High-Speed Rail Station Platforms Constructed or Altered After February 1, 2012, DDOT continues to coordinate with WMATA throughout the project development process to ensure that the proposed streetcar stop locations are compatible with their existing services.

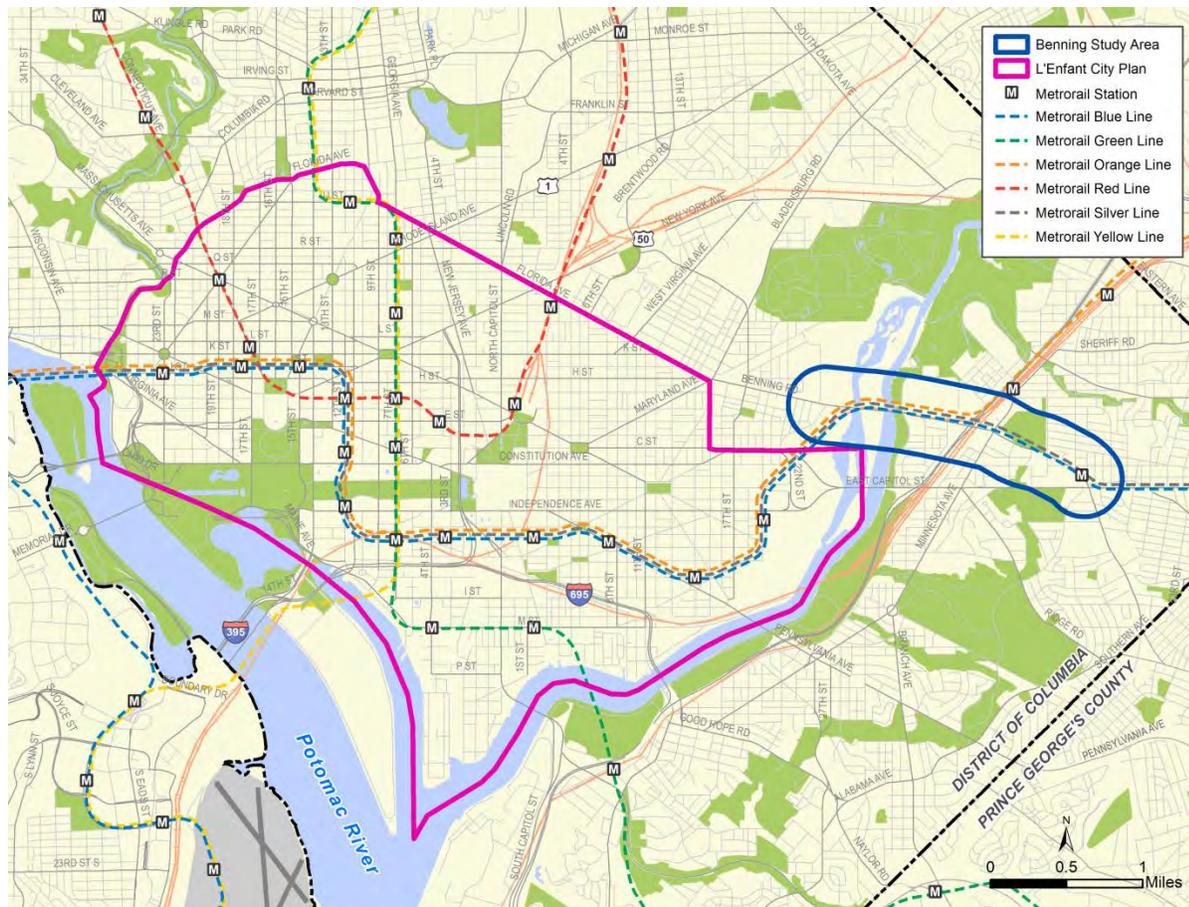
Figure 2-12: Stop Locations



Streetcar Propulsion

The source of propulsion power for the streetcars in the study area would be electricity. Overhead wires are prohibited in the portion of the District of Columbia identified as the L’Enfant City. Related DC codes further identify specific wire-free zones and conditions where the Mayor may authorize the use of aerial wires beyond the H Street/Benning Road Streetcar Line. As shown in Error! Reference source not found., the study area is outside the L’Enfant City boundaries. In consideration of existing codes that would affect system interoperability, this EA reviews the nature and viability of both wired and wireless propulsion systems. Based on this review, the DDOT’s Preferred Alternative proposes that wired propulsion be used throughout the limits of work.

Figure 2-13: L’Enfant City Boundaries



Wired and wireless propulsion would be supported by TPSS facilities that supply electricity at intervals along an electrically powered transit system. The use of TPSS facilities in Build Alternatives 1 and 2 is described in **Section 2.3.3**.

Information used in the assessment of the two propulsion options is derived from the *Union Station to Georgetown Alternatives Analysis for Premium Transit Service Propulsion Study* (DDOT, 2013), *Comprehensive Assessment on Streetcar Propulsion Technology* (DDOT, 2014) and *Assessment of Streetcar Propulsion Technology* (DDOT, 2017). The information in these documents is

supplemented by transit industry information available from the American Public Transportation Association (APTA) and from transit system operators.

Wired Propulsion Technologies

OCS or “wired” is the most common streetcar propulsion technology. APTA defines OCS as: *“a traction electrification system comprising the overhead conductors (or single contact wire), aerial feeders, overhead contact system supports, foundations, balance weights and other equipment, and assemblies, which deliver electrical power to non-self-powered electric vehicles.”* An example of OCS single contact (trolley) wire is shown in **Figure 2-14**. OCS is the propulsion method being used on the existing H/Benning Streetcar Line; the wired option would extend the existing OCS into the study area with either the Preferred Alternative or Build Alternative 1. Typically, one or more overhead wires are supported by poles installed at intervals along the streetcar alignment. Under the Preferred Alternative, a set of support poles and overhead wire would be placed in the median of Benning Road. In Build Alternative 1, a set of support poles and overhead wire would be required along the curb of Benning Road in each direction of streetcar track.

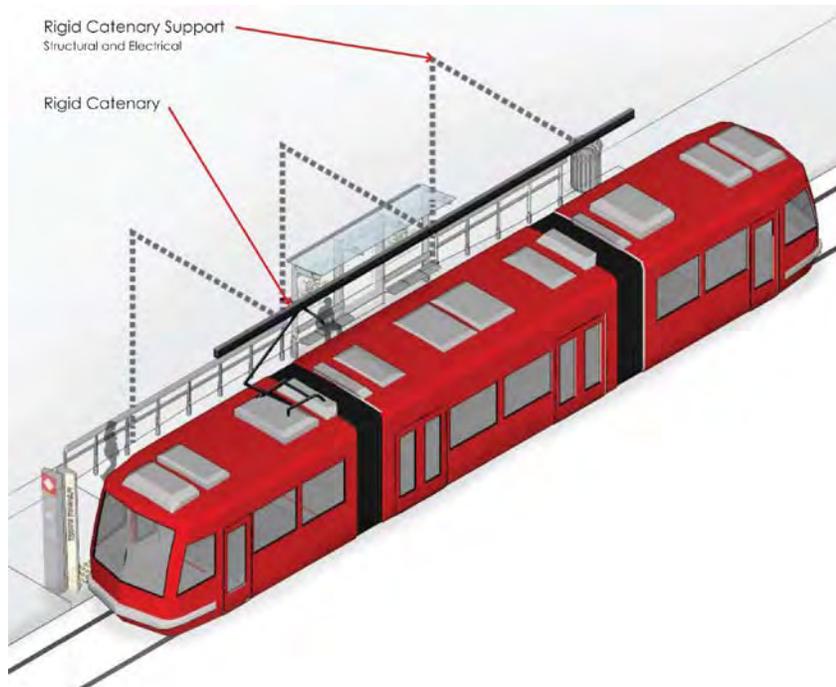
Figure 2-14: Single Contact Wire



Wireless Propulsion Technologies

“Wireless” propulsion technology options were evaluated by DDOT for areas of the District of Columbia where overhead wires are prohibited by ordinance. Wireless systems can be grouped into two broad categories: Energy Storage Systems (ESS) and Ground Level Continuous Power Supply Systems (GLCPSS). A brief description of each technology is provided below along with a hybrid approach.

- **Energy Storage Systems.** ESS use power sources installed on a transit vehicle to allow for wire free operation. Vehicles using this technology can be powered by batteries, supercapacitors, flywheels, fuel cells, diesel and/or alternative fuel sources, or a combination of these power storage devices. Batteries and supercapacitors are the two primary technologies in the ESS group. Batteries can be charged during operation by capturing the energy generated during the vehicle’s braking cycle and while the vehicle is operating in a wired condition. Supercapacitors charge and discharge more quickly than batteries and require charging at more frequent intervals, typically at passenger stops.
- **Ground Level Continuous Power Supply Systems.** GLCPSS are external to the vehicle and require specialized infrastructure and vehicle equipment. These systems use a ground level power rail or induction coil, instead of an OCS. As with OCS, ground level systems require TPSS facilities and power distribution conduits. Ground level power systems that are currently in operation are proprietary. Vehicles for a GLCPSS system are equipped with power pickup shoes to convey electricity from the power rail to the vehicle. The power rail is divided into segments which are energized only when the rail vehicle is on the rail segment. A contactless GLCPSS based on induction requires both a special trackway and vehicles. Buried cables along the trackway are connected to a power source that, when energized, creates a magnetic field; vehicles are equipped with coils that change this magnetic field into electric power for the vehicle.
- **Hybrid Approach.** A hybrid approach involves vehicles equipped to operate under wire and without wire. Streetcars with hybrid operation would be equipped with batteries and supercapacitors for wireless operation and rooftop pantographs for operation under wire and for charging at stops. **Figure 2-15:** shows a rendering of a stop with rigid catenary for overhead charging. This approach comprises conventional OCS with wireless capability provided by ESS or GLCPSS. Batteries and supercapacitors are the technologies with the broadest application in transit. Other ESS technologies include fuel cells and diesel, but these have not been widely used and currently are not under consideration. Vehicles using GLCPSS are assured continuous electrical power; however, these proprietary systems require a greater investment in infrastructure and vehicles.

Figure 2-15: Hybrid Vehicle - Overhead Charging

Source: Union Station to Georgetown Streetcar Transportation Improvements Environmental Assessment, Public Meeting #4, DDOT, November 2016.

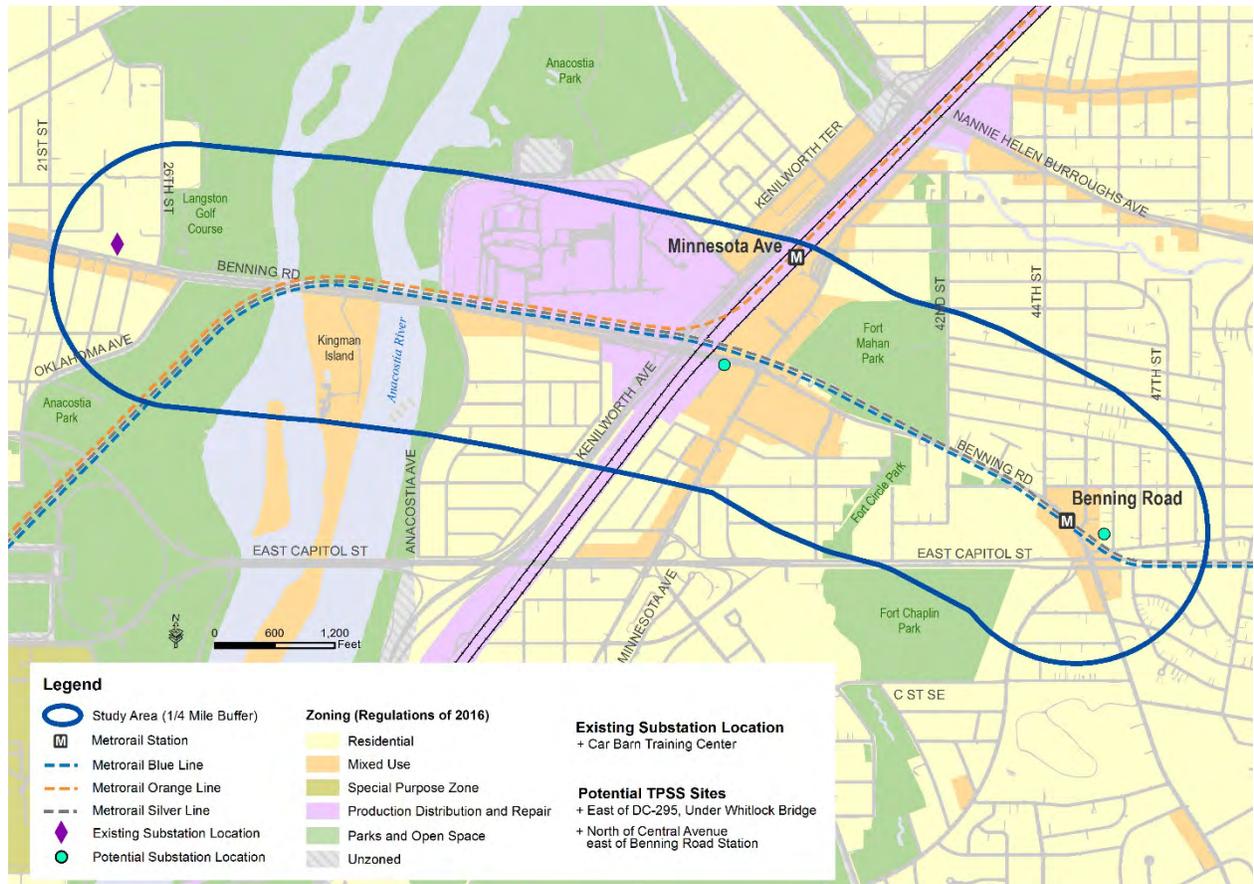
The hybrid approach is compatible with operating assumptions for streetcar service in areas of the District of Columbia where overhead wire is prohibited.

Traction Power Substations

Electrically powered streetcar operations, whether wired or wireless, would require TPSS facilities to supply electricity at intervals along Benning Road in the study area. A TPSS consists of a fenced area approximately 30 feet by 60 feet within which is a structure that houses electrical equipment. For maintenance access, adjacent parking for two vehicles is required. Under DDOT's Preferred Alternative or Build Alternative 1, two TPSS facilities would be required. The locations of the proposed TPSS facilities are shown in **Figure 2-16**. One location is on the east side of DC-295 and the CSX railroad tracks under the bridge structure on DDOT owned property; the second location is on WMATA's Benning Road Metrorail Station property.

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Figure 2-16: TPSS Locations



These locations were selected after considering several sites based on the following criteria:

- Optimize TPSS spacing
- Use footprint of TPSS at the DC Streetcar Car Barn Training Center
- Focus on sites within DDOT ROW
- Avoid floodplains
- Avoid known environmental impacts
- Evaluate sites outside viewsheds
- Minimize impacts to adjacent community and existing infrastructure

The TPSS facilities can be designed to be compatible with adjacent uses as depicted by **Figure 2-17**, **Figure 2-18**, and **Figure 2-20**. DDOT will conduct a load flow analysis during final design that considers the power requirements of different operating conditions with respect to speed, geometry, grades, weight, and equipment needs. DDOT will continue to coordinate with applicable stakeholders during the design process.

Figure 2-17: TPSS design to complement adjacent building



Source: *Google Maps, July 2017*

Figure 2-18 : TPSS design to complement residential location



Source: Wong (2017) Traction power substation SSTSE at Gold Coast Highway and Surfers Paradise Boulevard. Retrieved from <https://railgallery.wongm.com/>

Figure 2-19: TPSS design to complement a mixed-use area



Source: Henderson (2010) Traction Power Substation, Retrieved from https://commons.wikimedia.org/wiki/File:B4_Traction_Power_Substation_jeh.jpg

DC Streetcar Car Barn Training Center

The proposed action does not include an additional storage and maintenance facility since the existing operation and maintenance facility (DC Streetcar Car Barn Training Center) at 2550 Benning Road, constructed as part of the initial H/Benning Streetcar Line, would accommodate existing vehicles and new streetcars storage for the proposed action. Maintenance activities for the streetcar component of the proposed action would also be conducted at this facility. A new, two-track connection to the DC Streetcar Car Barn Training Center would be required for the proposed action as shown in **Appendix B**. The two new tracks would be provided along 26th Street and would connect the DC Streetcar Car Barn Training Center to the existing eastbound and westbound streetcar tracks on Benning Road. The new tracks would be fitted with a new switch on the eastbound track; a track crossing of the westbound track would be provided at the intersection of Benning Road and 26th Street. The new connecting tracks would merge into a single track upon entry to the DC Streetcar Car Barn Training Center. A new switch would be provided where the tracks merge. The new tracks connecting to the DC Street Car Barn Training Center would be located within the existing DDOT ROW on 26th Street. The tracks would require changes to on-street parking on 26th Street adjacent to DC Street Car Barn Training Center. The parking is primarily used by DC Streetcar employees who can park within the facility. In the proposed action, the streetcars would use the connecting tracks primarily at service start-up in the early morning (shortly before 6 AM) and service end in late nights (after midnight). Infrequent midday use of these access tracks would occur for emergency use only. Based on this schedule, streetcar operations on the new track spur would not interfere with access to Langston Golf Course, Spingarn High School, or any other public facilities located on 26th Street north of Benning Road.

2.3.4 PREFERRED ALTERNATIVE

In addition to the elements described in **Section 2.3.3** that are common to both alternatives, the Preferred Alternative would provide specific elements for the median streetcar alignment as well as roadway, pedestrian, bicycle, and safety elements. These elements are described in the following sections.

Typical Roadway Section

The Preferred Alternative would provide an 11-foot to 12-foot median shared streetcar lane for the length of the Benning Road corridor and new pedestrian, bicycle, and safety improvements. Streetcar tracks would be provided in the inside lane adjacent to the median. Typical roadway cross sections are shown in **Figure 2-20** (wired propulsion). General Plans for the Preferred Alternative are provided in **Appendix B. Table 2-5** provides a summary of physical improvements for the Preferred Alternative, Build Alternative 1, and the No Build Alternative. The Preferred Alternative would include all facilities and infrastructure needed for the streetcar operations including tracks, signals, propulsion system, TPSS, stops and connection to the existing DC Streetcar Car Barn Training Center as discussed in Section 2.3.1.

The Benning Road corridor is divided into four typical segments from west to east. Segments are based on transitions in the lane configuration and width of the ROW:

- **Oklahoma Avenue to Kingman Island:** The segment of Benning Road between Oklahoma Avenue and Kingman Island would contain three traffic lanes both in the eastbound and westbound directions, separated by a median. ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **Kingman Island to 36th Street:** The segment of Benning Road between Kingman Island and 36th Street would contain four traffic lanes in both the eastbound as well as westbound directions, separated by a median. ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **36th Street to Minnesota Avenue:** The segment of Benning Road between 36th Street and Minnesota Avenue would contain three westbound travel lanes and two eastbound travel lanes, separated by a median. ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **Minnesota Avenue to 45th Street:** The segment of Benning Road between Minnesota Avenue and 45th Street would contain two traffic lanes in both the eastbound as well as westbound directions. ADA-compliant sidewalks would be maintained in the eastbound and westbound directions

Kingman Island to 36th Street Two-Way Bike Lane Option

The two-way bike lane option between Kingman Island and 36th Street would provide more space for pedestrians and cyclists between the Anacostia Riverwalk Trail and pedestrian walkway on the south side of the Whitlock Bridge.

Under this design option, the westbound lane configuration of Benning Road would remain as shown in **Figure 2-20**. However, in the eastbound direction, Benning Road would retain three

lanes from the western terminus at Oklahoma Avenue to 36th Street as shown in **Figure 2-21**. The lanes adjacent to the roadway median would be 11-foot wide shared streetcar lanes. The center lanes would be 10-foot wide general-purpose lanes. The eastbound outer lane, adjacent to the bike lane, would be an 11-foot wide general-purpose lane. The westbound curb lane would be an 11-foot wide general-purpose lane. The fourth travel lane eastbound, the curb lane, would be converted to a two-way bicycle lane between the Metrorail overpass pier and 36th Street. The 9.5-foot wide two-way bicycle lane would be at the same elevation as the adjacent roadway lane and would be separated from the shared streetcar lane with a six-inch wide parking stop barrier. West of 34th Street the bicycle lane would be adjacent to the buildings to accommodate the curbside bus stop and sidewalk as shown in **Figure 2-22**.

Stop Configuration

The Preferred Alternative calls for the construction of five streetcar stops (see stop locations in **Figure 2-12**). Moving from west to east, the proposed stops are:

- Kingman Island
- 34th Street
- 39th Street
- 42nd Street
- Benning Road Metrorail Station

The stops proposed under the Preferred Alternative would provide a single median platform between the eastbound and westbound streetcar tracks (see Figure 2-23). Pedestrians would access one or both ends of the center platform from crosswalks with pedestrian signals. Platform heights would slope to meet street level at crosswalks.

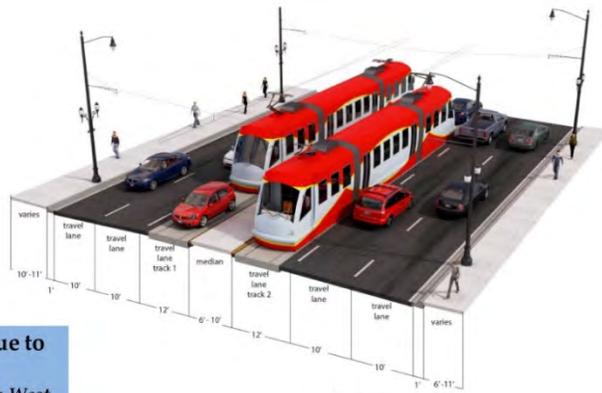
Table 2-5: Physical Improvements Summary

Component	No Build Alternative	Preferred Alternative	Build Alternative 1
General Purpose Lanes			
Oklahoma Avenue to Kingman Island	6	4	4
Kingman Island to 36 th Street	8	6	6
36 th Street to Minnesota Avenue	2 through lanes with 1 left turn lane at Minnesota Ave	2 through lanes with 1 left turn lane at Minnesota Ave	2 through lanes with 1 left turn lane at Minnesota Ave
Minnesota Avenue to 45 th Street	4	2	2
Lane Width (feet)	10'	10'-11'	10'-11'
Shared Streetcar Lanes			
Oklahoma Avenue to Kingman Island	0	2	2
Kingman Island to 36 th Street	0	2	2
36 th Street to Minnesota Avenue	0	2	2
Minnesota Avenue to 45 th Street	0	2	2
Lane Width (feet)	N/A	11'	11'
Number of Streetcar Stops			
Oklahoma Avenue to Kingman Island	0	1	1
Kingman Island to 36 th Street	0	1	1
36 th Street to Minnesota Avenue	0	0	0
Minnesota Avenue to 45 th Street	0	3	3
Width	N/A	12'	10'

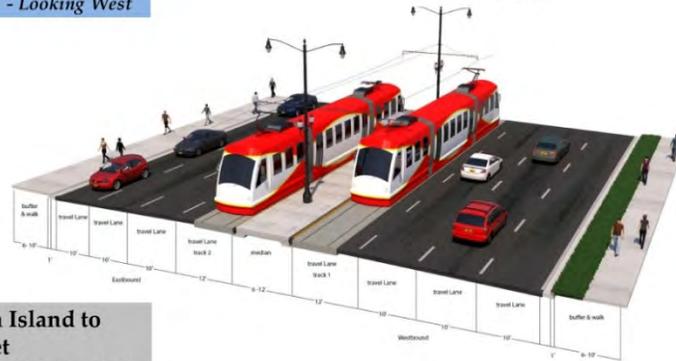
Component	No Build Alternative	Preferred Alternative	Build Alternative 1
Sidewalks			
Oklahoma Avenue to Kingman Island	Eastbound: 10' Westbound: 4-5'	Eastbound: 10' Westbound: 6'	Eastbound: 10' Westbound: 6'
Kingman Island to 36 th Street	Eastbound: 4-10' Westbound: 4-10'	Eastbound: 6-10' Westbound: 6'	Eastbound: 6-10' Westbound: 6'
36 th Street to Minnesota Avenue	Eastbound: 6'	Eastbound: 6-10' Westbound: 6'	Eastbound: 6-10' Westbound: 6.3'
Minnesota Avenue to 45 th Street	Eastbound: 4-6' Westbound: 4-6'	Eastbound: 6' Westbound: 6'	Eastbound: 6' Westbound: 6'
Bicycle Facilities			
Oklahoma Avenue to Kingman Island	None	None	None
Kingman Island to 36 th Street	None	None	None
36 th Street to Minnesota Avenue	None	None	None
Minnesota Avenue to 45 th Street	None	None	None
On-Street Parking			
Oklahoma Avenue to Kingman Island	None	None	None
Kingman Island to 36 th Street	None: Kingman Island to 34 th Street; Yes (with some restrictions): 34 th to 36 th Street	None: Kingman Island to 34 th Street; Yes (with some restrictions): 34 th to 36 th Street	None: Kingman Island to 34 th Street; Yes (with some restrictions): 34 th to 36 th Street
36 th Street to Minnesota Avenue	None	None	None
Minnesota Avenue to 45 th Street	Yes (with some restrictions)	Yes (with some restrictions)	No

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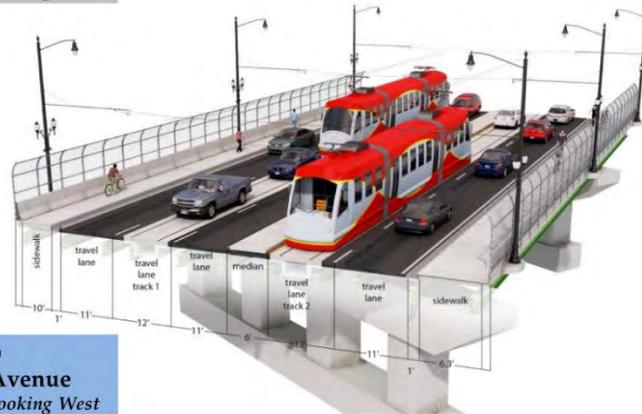
Figure 2-20: Preferred Alternative Typical Sections (Wired Propulsion)



A Oklahoma Avenue to Kingman Island - Looking West



B Kingman Island to 36th Street - Looking West



C 36th Street to Minnesota Avenue - Looking West



D Minnesota Avenue to 45th Street - Looking West

*Details of the overhead propulsion system would be determined during final design. Renderings show only one possible treatment for overhead wiring.

Figure 2-21: Kingman Island to 36th Street Two-Way Bike Lane Option, Preferred Alternative

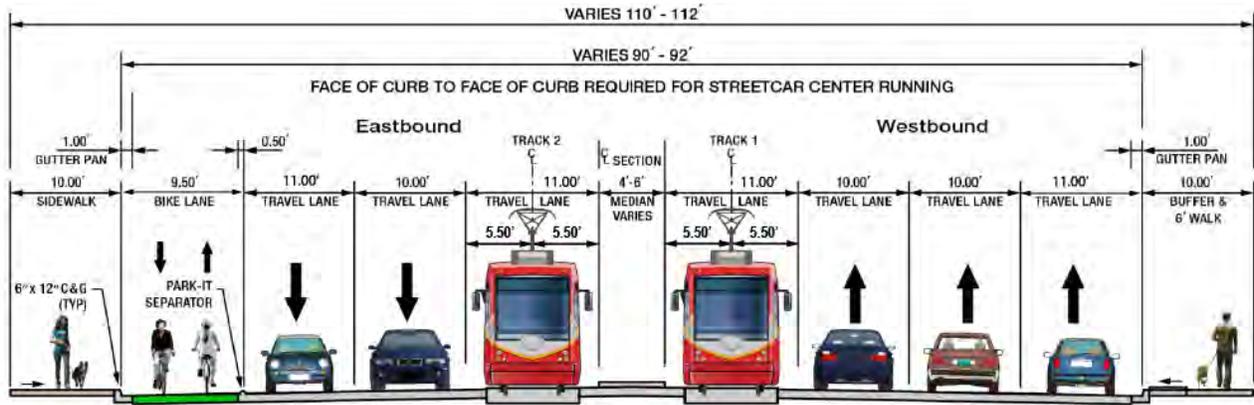


Figure 2-22: Two-way Bike Lane Option at Benning Road and 34th Street

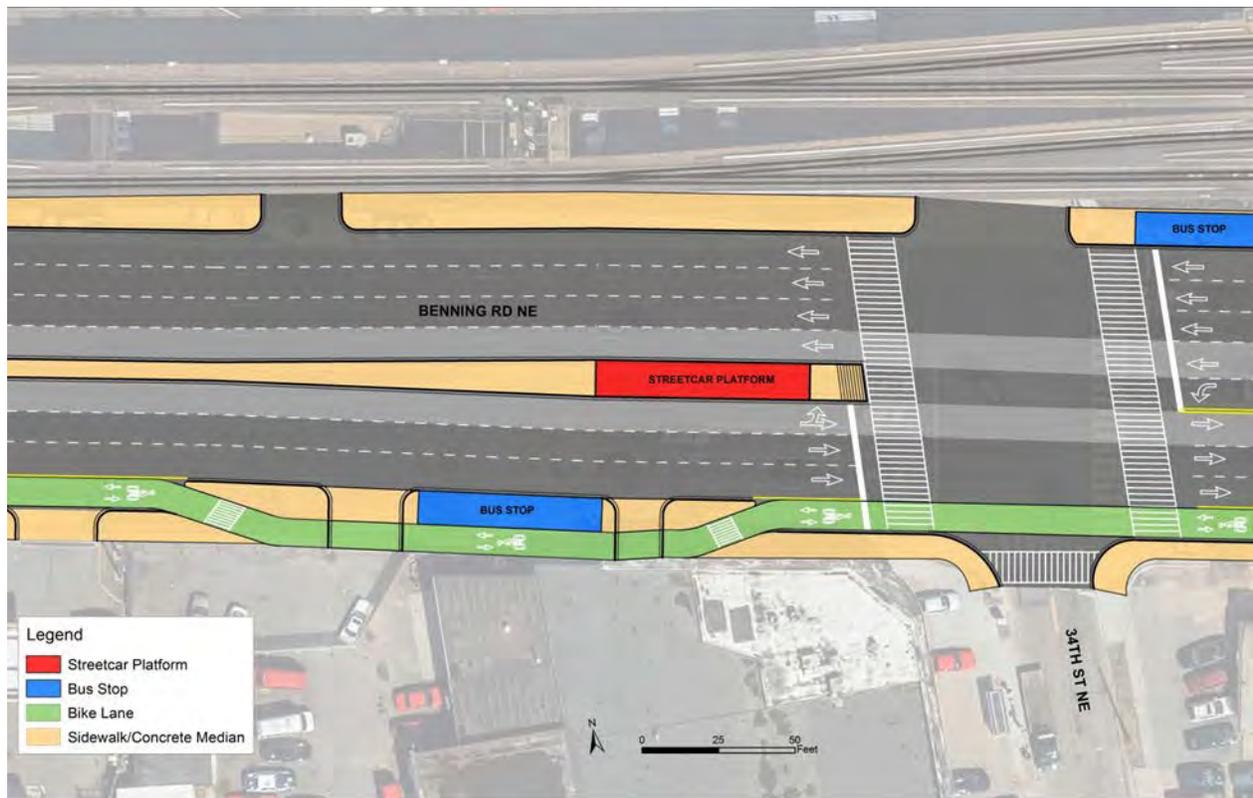


Figure 2-23: Preferred Alternative Stop View



2.3.5 BUILD ALTERNATIVE 1 – CURBSIDE STREETCAR

In addition to the proposed action elements described in **Section 2.3.3**, Build Alternative 1 has specific elements for the curbside streetcar alignment as well as roadway, pedestrian, bicycle, and safety elements. These elements are described in the following sections

Typical Roadway Section

Build Alternative 1 would provide an 11-foot to 12-foot wide, curbside shared streetcar lane for the length of Benning Road in the study area and new pedestrian, bicycle, and safety improvements. Streetcar tracks would be provided in the lane adjacent to the outside curb and pedestrian facilities. Typical roadway cross sections are shown in. General plans for Build Alternative 1 are provided in **Appendix B**. **Table 2-5** provides a summary of physical elements for Build Alternative 1. Build Alternative 1 would include all facilities and infrastructure needed for streetcar operations including tracks, signals, propulsion system, TPSS, stops, and connection to the existing DC Streetcar Car Barn Training Center as discussed in **Section 2.3.3**.

For ease of description, the Benning Road corridor is divided into four typical segments from west to east. Segments are based on transitions in the lane configuration and width of the ROW:

- **Oklahoma Avenue to Kingman Island:** The segment of Benning Road between Oklahoma Avenue and Kingman Island would provide three traffic lanes in the eastbound as well as westbound directions (separated by a median). ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **Kingman Island to 36th Street:** The segment of Benning Road between Kingman Island and 36th Street would provide four traffic lanes in the eastbound as well as westbound directions (separated by a median). ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **36th Street to Minnesota Avenue:** The segment of Benning Road between 36th Street and Minnesota Avenue would provide three westbound travel lanes and two eastbound travel lanes (separated by a median). ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.
- **Minnesota Avenue to 45th Street:** The segment of Benning Road between Minnesota

Avenue and 45th Street would provide two traffic lanes in the eastbound as well as westbound directions. Sidewalks outside the roadway would be separated from the roadway by a vegetated buffer. ADA-compliant sidewalks would be maintained in the eastbound and westbound directions.

As part of Build Alternative 1, the traffic signal at the westbound ramp from DC-295 would be modified to allow the westbound streetcar to transition from the curb lane of the Whitlock Bridge to the curb lane of westbound Benning Road. A crosswalk with a pedestrian actuated signal would be added to allow pedestrians to safely cross the ramp from the Whitlock Bridge and continue westbound on Benning Road. For the eastbound streetcar to cross the Whitlock Bridge in the curb lane, the streetcar tracks would transition from the curb at 34th Street to the second interior lane of Benning Road immediately east of the intersection. The traffic signal at Benning Road and 34th Street would be re-timed for this transition.

Kingman Island to 36th Street Two-Way Bike Lane Option

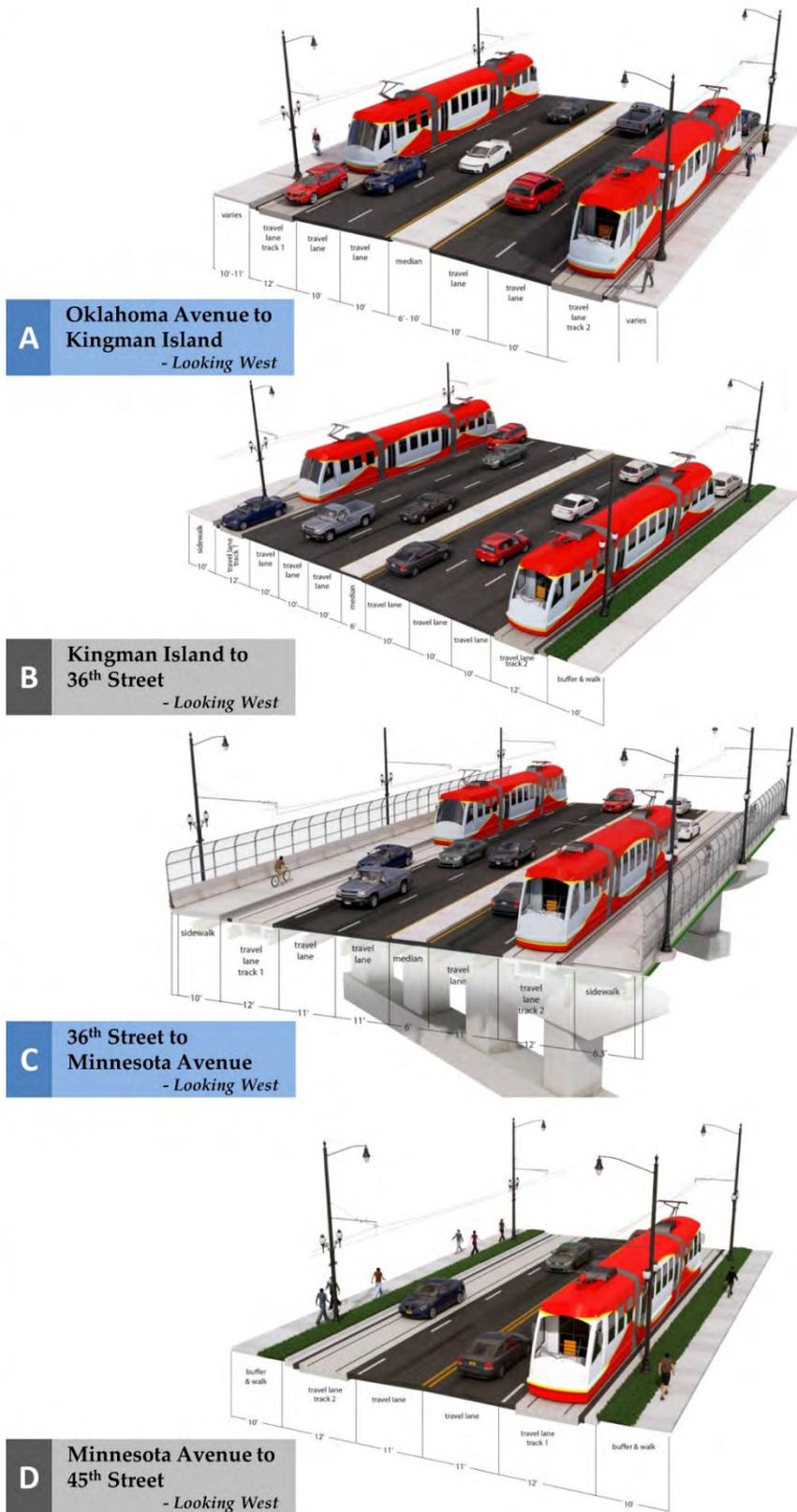
The two-way bike lane between Kingman Island and 36th Street is a design option being considered for Build Alternative 1 that would provide more room for pedestrians and bicyclists between the Anacostia Riverwalk Trail and pedestrian walkway on the south side of the Whitlock Bridge over DC-295/CSX railroad tracks.

Under this exclusive bike lane option, the westbound lane configuration of Benning Road would remain in its current configuration as shown in **Figure 2-24**. However, the eastbound direction of Benning Road would retain three lanes from Oklahoma Avenue to 36th Street as shown in **Figure 2-25**. The two interior lanes closest to the median would be 10-foot wide general-purpose travel lanes. The third lane from the median would be an 11-foot wide shared lane for vehicles and the streetcar. The curb lane would be converted to a two-way bicycle lane between the Metrorail bridge pier and 36th Street. The 9.5-foot wide two-way bicycle lane would be at the same elevation as the roadway and would be separated from the adjacent shared streetcar lane with six-inch wide parking stop barriers.

West of 34th Street, the bicycle lane would be adjacent to buildings and the ROW line to accommodate the walk path, curbside bus stops, and curbside streetcar stops as shown in **Figure 2-26**.

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Figure 2-24: Build Alternative 1 Typical Sections (Wired Propulsion)



*Details of the overhead propulsion system would be determined during final design. Renderings show only one possible treatment for overhead wiring.

Figure 2-25: Kingman Island to 36th Street Two-Way Bike Lane Option, Build Alternative 1

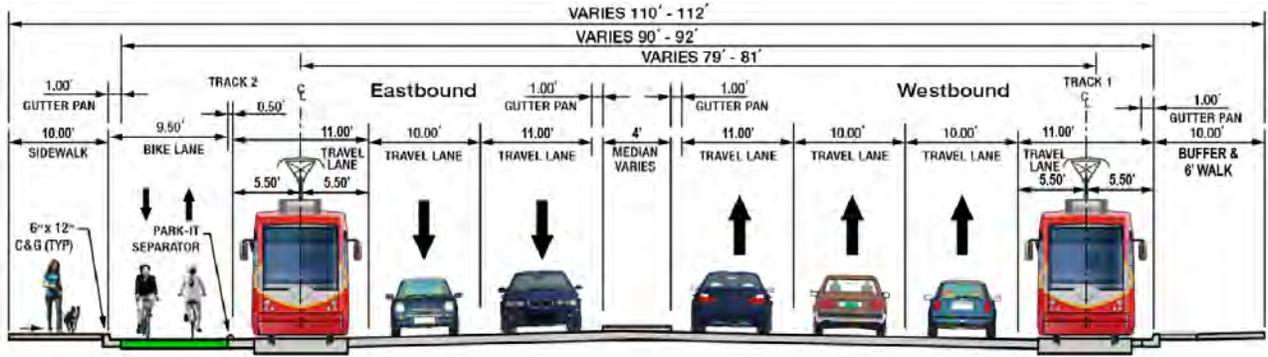
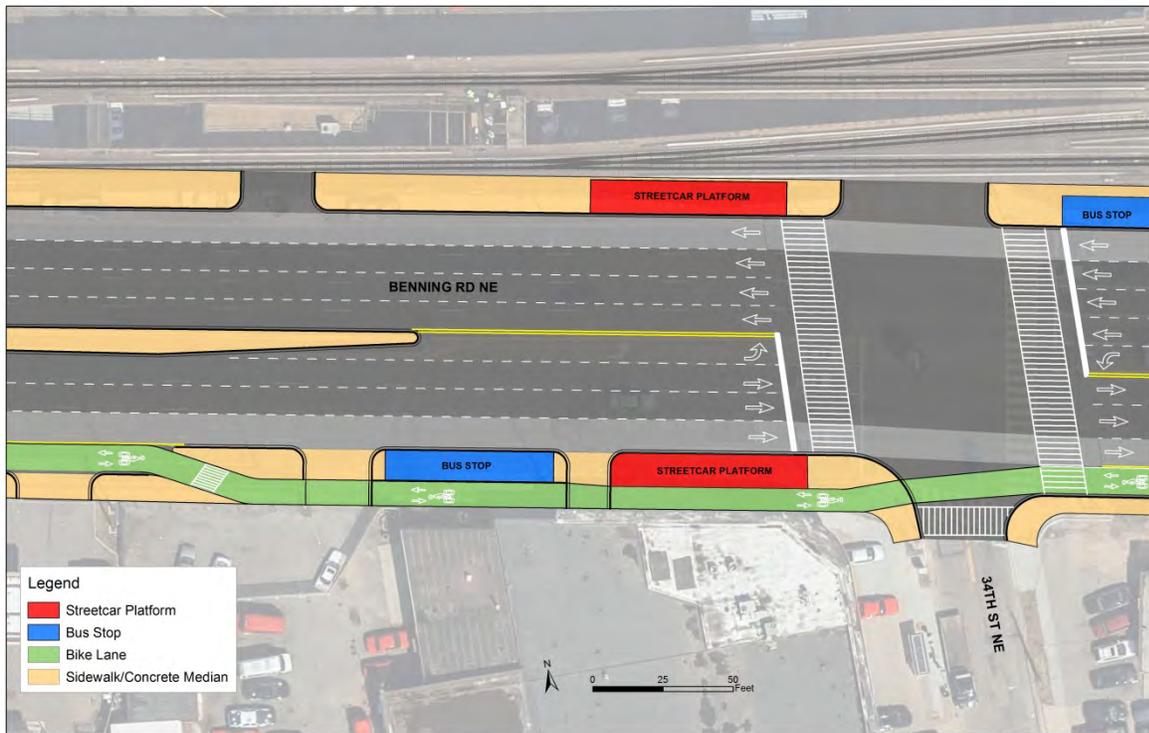


Figure 2-26: Two-Way Bike Lane Option at Benning Road and 34th Street, Build Alternative 1



Stop Configuration

Build Alternative 1 stops would provide separate curbside platforms for eastbound and westbound travel. Platforms would be adjacent to sidewalks and would slope to meet sidewalk height at each end. **Figure 2-27** show curbside stop concepts for wired and wireless propulsion.

Figure 2-27: Build Alternative 1 Stop View – Wired Propulsion Option



2.4 PRELIMINARY COST ESTIMATES

The project team developed preliminary budget-level cost estimates for the Preferred Alternative and Build Alternative 1. These estimates include capital costs for roadway, bridge and streetcar elements/infrastructure, as well as operations and maintenance (O&M) costs for streetcar and contingencies for design and construction management and inspection. Costs were based on available DDOT construction pricing, similar construction projects, and engineering judgment. To ensure accuracy, quantities were derived directly from the conceptual designs for each build alternative. Costs associated with utility impacts and relocation and for ROW acquisition were not included. The cost estimates are preliminary and subject to change as the design of the proposed action is refined. A cost estimate summary is presented in **Table 2-6** for wired and wireless options. Detailed cost estimates for the build alternatives are presented in **Appendix C**.

The Preferred Alternative is estimated at approximately \$178.1 million for the wired option and \$178.1 for the wireless option. The capital cost of roadway, bridge, and streetcar elements/infrastructure for Build Alternative 1 is estimated at approximately \$178.2 million for the wired option and \$176.9 million for the wireless option. The duration of construction for each build alternative would be approximately 36 months (see **Appendix D** for a Maintenance of Traffic Concept Plan). The annual streetcar O&M cost for each build alternative is approximately \$4.6 million. The operating plan assumes 10-minute headways, seven days a week, with hours of operation consistent with the existing DC Streetcar program.

Table 2-6: Cost Estimate for the Preferred Alternative and Build Alternative 1

Item	Preferred Alternative		Build Alternative 1	
	(wired)	(wireless)	(wired)	(wireless)
Roadway and Bridge Capital Costs	\$118,275,137	\$118,275,137	\$115,947,498	\$115,947,498
Streetcar Capital Costs	\$59,810,357	\$59,803,018	\$62,215,918	\$60,970,410
Total Capital Costs	\$178,085,494	\$178,078,155	\$178,163,415	\$176,917,907
Annual Operations and Maintenance	\$4,584,600	\$4,584,600	\$4,584,600	\$4,584,600

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3 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter is a compilation and summarization of information collected to reflect the existing social, economic, and natural resources within the proposed action study area. Unless otherwise specified, a quarter-mile radius around Benning Road, the typical walking distance to a transit station, was determined to be the appropriate study area boundary for the proposed action.

This chapter evaluates existing conditions for the following resources:

- Zoning and Land Use;
- Neighborhoods, Demographics, and Community Facilities;
- Transportation and Traffic Operations, including the roadway network, mass transit, pedestrian and bicycle facilities and freight rail service;
- Parklands;
- Historic Properties and Archaeological Resources;
- Aesthetics and Visual Quality;
- Natural Resources, including surface waters, wetlands, regulated floodplains, habitat, threatened and endangered species;
- Utilities;
- Hazardous Materials;
- Noise and Vibration;
- Air Quality;
- Energy Use and Climate Change; and
- Environmental Justice.

Each section provides an introduction and regulatory setting of the environmental resource, and the methodology for documenting existing conditions, including data sources, and findings within the study area. Each section follows a standard organization:

- Introduction
- Methodology
- Existing Conditions

3.2 SOCIOECONOMIC RESOURCES

3.2.1 ZONING AND LAND USE

This section describes the existing zoning, existing land use, and planned future land use.

3.2.1.1 Methodology

Existing conditions information is based on site visits, aerial photographs, studies by the District of Columbia's Office of Planning, and Geographic Information Systems GIS data obtained from the District of Columbia Office of the Chief Technology Officer (OCTO).

Zoning Information

Zoning information is based on GIS data obtained from OCTO. Zoning of parcels in the study area is regulated by the District of Columbia's Office of Zoning. Refer to Title 11 of the *District of Columbia Municipal Regulations* for a detailed description of zoning districts. Sites under construction or with redevelopment plans in the near term, medium term, and long term were identified from information obtained from the DC Office of Planning and the Washington, DC Economic Partnership.

Land Use Information

Existing land use information is derived from GIS data obtained from OCTO showing an approximate rendering of land use as it existed in 2005. This source information has been updated to indicate land uses as they currently exist based on site observations. The study area is composed of public and private properties; the transportation infrastructure is within ROWs owned and operated by the various entities. The Comprehensive Plan Future Land Use Map shows land use as envisioned in the District's 2006 revised Comprehensive Plan. The future land use information uses GIS data updated in January 2013. The categories used in the existing and future land use maps are similar, but not identical.

3.2.1.2 Existing Conditions

Zoning

Table 3-1 provides a summary of the zoning classifications found within the study area. The properties found within the study area, each fall within one of four zoning classifications:

- residential;
- mixed-use;
- production, distribution, and repair; and
- un-zoned.

Residential zones are designed to provide for the development and preservation of areas suitable for family life and supporting uses (e.g. schools and libraries). Residential zones are found in all sections of the Study Area (see **Figure 3-1**) and range from low density zones designed to permit the construction of semi-detached dwellings and rowhouses (zones R-2, R-3, and RF-1) to

moderate and medium density apartment complexes (zones RA-1 and RA-2). The apartment-related zones tend to occupy Benning Road's frontage, while the low-density residential zones tend to be set back.

Mixed-use zones are designed to allow the development of a wide variety of facilities which satisfy the need for multiple uses (e.g. housing, retail, and office space) within a single structure or campus. Mixed-use zoning can be found occupying most of the frontage along Benning Road and Minnesota Avenue. They range from low-density zones (zone MU-3) designed to permit the development of neighborhood services to moderate and medium-density zones (zones MU-4, 5, and 7) designed to permit the development of facilities which meet the shopping, housing, and commercial needs of large segments of the District of Columbia outside of the central core. In addition, the portion of Kingman Island south of Benning Road is zoned for mixed-use. The zoning classification applied (zone MU-11) is designed specifically to support the development of waterfront-oriented retail and art uses.

Production, Distribution and Repair (PDR) zones are designed to permit the development and operation of heavy commercial and industrial facilities. These areas often serve as major employment centers and may include compatible office and retail uses. Within the Study Area, there are two PDR zones. Both are located north of Benning Road between the Anacostia River and Minnesota Avenue, and are occupied by the Potomac Electrical Company (Pepco). The larger of the two zones occupies the portion of the site from 34th Street to the CSX rail lines. This zone is classified as PDR-1, which is designed to permit the development of moderately dense facilities that employ a large workforce and require the use of some heavy machinery. The remainder of the site is zoned PDR-4, which is designed to permit the development of high-density facilities which employ a large workforce and require the use of some heavy machinery.

Within the Study Area, there is one large un-zoned area. Management of un-zoned areas extend beyond the District's zoning authority. This area covers the Anacostia River, the northern portion of Kingman Island, and the four properties which occupy the River's banks.

Existing Land Use

The Study Area contains seven basic land use types: Commercial, Industrial, Parks & Open Spaces, Public & Institutional, Residential, Transportation and Utilities, and Undetermined (see **Figure 3-2**). Each of these types contain sub-classifications designed to represent various facility types, levels of density, and specialized uses.

Table 3-2 provides a brief description of each of the land uses found within the Study Area. Detailed descriptions of the requirements of each use can be found in the **Chapter 2** (pgs. 2-33 through 2-36) of the District of Columbia's *2006 Comprehensive Plan Zoning Handbook* (<https://planning.dc.gov/page/2006-comprehensive-plan>).

Commercial uses occupy a relatively small portion of the Study Area (6.31%) and abut Benning Road and Minnesota Avenue. Most of these properties are small format retail facilities (e.g. convenience stores, gas stations, and fast food restaurants) that have off street parking accessed through either Benning Road or Minnesota Avenue. There are two large commercial developments in the Study Area: The East River Park (a shopping center located in the southeast

quadrant of the Benning Road-Minnesota Avenue intersection) and a mixed-use development located in the northwest quadrant of the same intersection. East River Park is the Study Area's largest commercial center and contains a Safeway supermarket (the Study Area's only full-service grocer), a CVS pharmacy, the Benning Station U.S. Post Office, the Dorothy I Height/Benning Neighborhood Library, Marshall Heights Community Development Organization, and several small retailers. East River Park's primary access point is located on Benning Road just east of 39th Street but has secondary access points on 40th Street and Dix Street. The mixed-use development that occupies the northwestern quadrant of the Benning Road-Minnesota Avenue intersection includes apartments, small-scale retail, and fast-food restaurants. Although it qualifies as a public facility, the Department of Employment of Services located directly to the north, is also classified as a commercial land use in the 2006 mapping. Both sites have off -street parking and are accessed through Minnesota Avenue.

The existing Land Use Map identifies seven industrial properties, which collectively cover less than one percent of the Study Area. Five of the seven properties are located just east of the CSX rail line and south of Benning Road. Two of these properties, the D.C. Eagle Nightclub and North America Telecommunications, are accessed only through a service road which originates in the southwestern quadrant of the Benning Road-Minnesota Avenue intersection. The other three properties are accessed through driveways located on Minnesota Avenue. The sixth property was located on Minnesota Avenue approximately 275 feet north of Benning Road but was demolished during the construction of the mixed-use development which currently occupies the site. The seventh property is owned by Verizon Communications and is located on Benning Road just west of 21st Street. The facility's parking lot can be accessed from Benning Road and 23rd Place.

Parks and Open Spaces are the study area's second most expansive land use, covering approximately 31.5% of its total area. The category's footprint includes two municipal parks and six federal properties. The two municipal parks are Kingman and Heritage Islands and a subsection of Fort Chaplin Park. The six federal parks are: Anacostia Park (which includes Langston Golf Course), Fort Mahan Park, Fort Circle Park, Fort Chaplin Park, and two un-named properties (located between Blaine Street and Benning Road). Kingman and Heritage Islands and Anacostia Park and situated in the western portion of the study area and occupy the land abutting the Anacostia River. The remaining parks are located east of Minnesota Avenue and are part of a larger park which stretches through southeast D.C. associated with the District's civil war defenses. The characteristics and functions of each of these parks is discussed in detail in **Section 3.3**. In addition to parklands, the Parks and Open Spaces category also includes the Anacostia River and other surface water bodies. The characteristics and function of these natural areas are discussed in detail in **Section 3.6**.

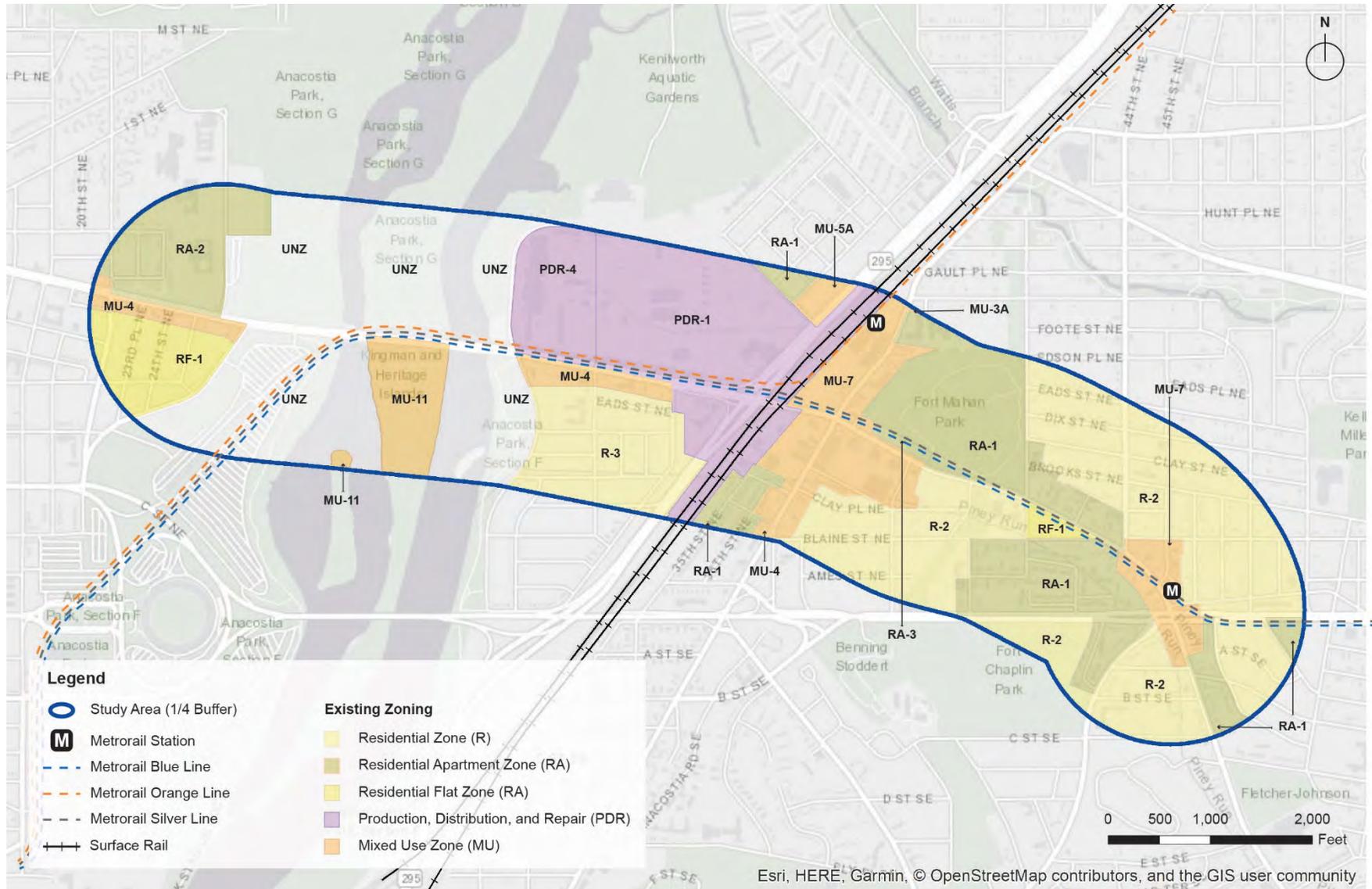
Public and Institutional land uses are relatively well distributed throughout the Study Area and occupy approximately 4.5% of its total footprint. The Land Use Map identifies three classes of public and land use: local; quasi-public and institutional; and federal. The local public includes the study area's six schools and is by far the most extensive. The quasi-public and institutional category is the next most extensive and includes the study area's eight places of worship, a funeral home, and a Boys & Girls Club. The federal public category contains only a small sliver of land between the west side of Plummer Elementary School and Texas Avenue. The characteristics and function of these properties and community facilities are discussed in detail in **Section 3.2.2**.

Table 3-1: Existing Zoning Classifications

Class	Zone	Target Develop	Area (Acres)	% of Study Area
Residential	R-2	Semi-detached houses on moderately sized lots that also contain some detached dwellings	152.99	24.46%
	R-3	Attached rowhouses on small lots and row dwellings mingled with detached, semi-detached, and groupings of three or more row dwellings	45.41	7.26%
	RA-1	Low-density to moderate-density development, including detached dwellings, rowhouses, and low-rise apartments	0.55	0.09%
	RA-2	Moderate-density and medium-density rowhouses and apartments	31.71	5.07%
	RA-3	Moderate-density to medium-density apartments	1.53	0.24%
	RF-1	Development of attached rowhouses on small lots	25.39	4.06%
Mixed-Use	MU-3A	Low-density mixed-use development	0.13	0.02%
	MU-4	Moderate-density mixed use development	14.60	2.33%
	MU-5A	Medium-density, compact mixed-use development with an emphasis on residential use	3.76	0.60%
	MU-7	Medium-density mixed-use development	56.89	9.10%
	MU-11	Open space, park, and low-density and low-height waterfront-oriented retail and arts uses	20.43	3.27%
Production, Distribution, and Repair	PDR-1	Moderate-density commercial and production, distribution, and repair activities requiring some heavy machinery	87.14	13.93%
	PDR-4	High-density commercial and production, distribution, and repair activities requiring some heavy machinery, minimizing non-industrial uses	23.37	3.74%
Un-zoned	-		162.81	26.03%

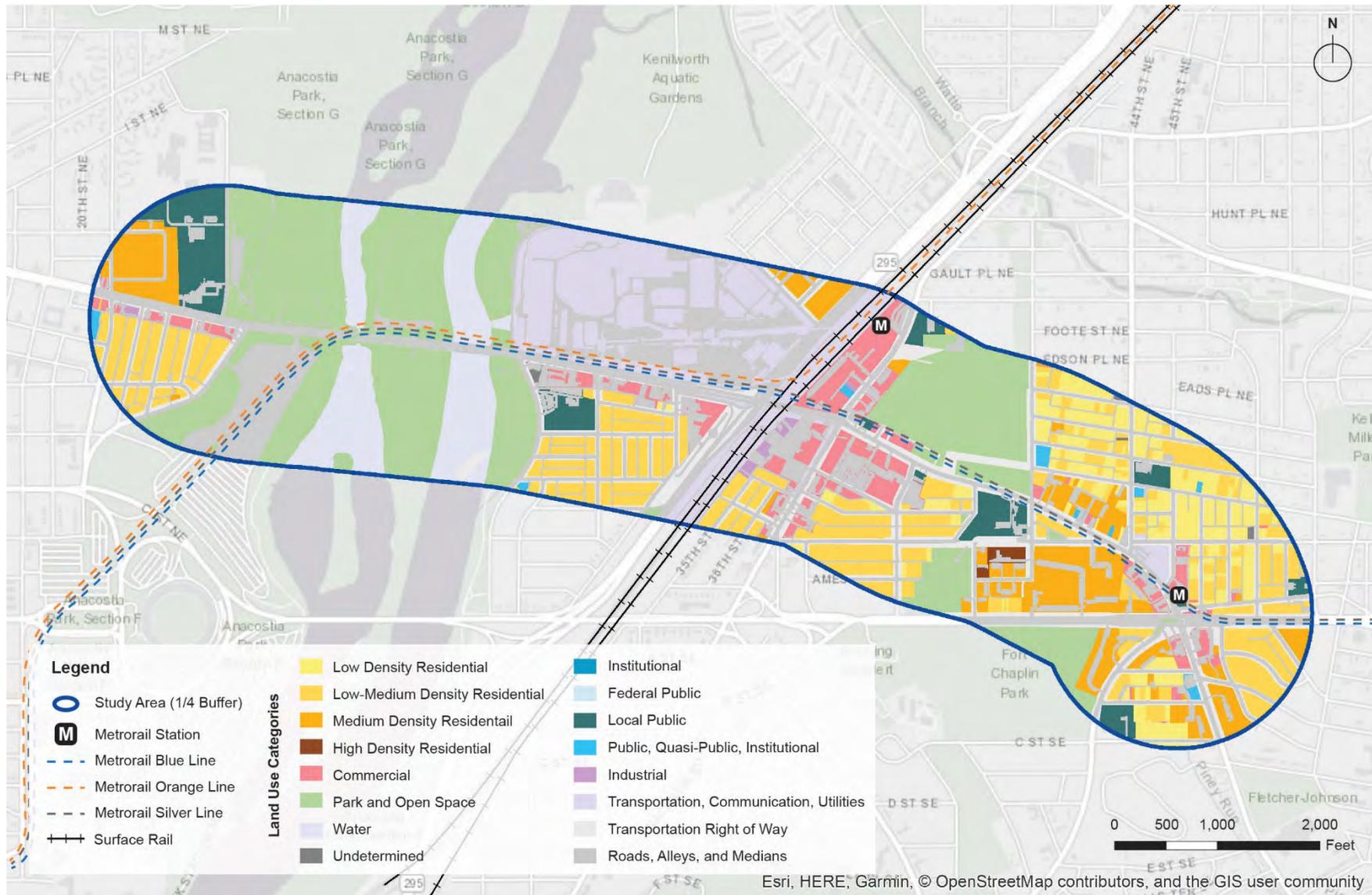
Source: District of Columbia Zoning Handbook (<http://handbook.dcoz.dc.gov/>). Retrieved April 2019

Figure 3-1: Study Area Zoning



Source: DC OCTO; District of Columbia Zoning Handbook (<http://handbook.dcoz.dc.gov/>).

Figure 3-2: Existing Land Use



Source: DC OCTO, Retrieved August 2019

Table 3-2: Existing Lane Use Categories

Class	Category	Predominant Uses	Area (Acres)	% of Study Area
Commercial	Commercial	Retail, office, and service businesses	46.10	6.31%
Industrial	Industrial	Manufacturing, warehousing, wholesale and distribution centers, transportations services, food processing, and similar activities	2.66	0.36%
Parks & Open Spaces	Parks and Open Spaces	District and Federal parks, settings for significant commemorative works, certain federal buildings (e.g. the White House), museums, and public recreation centers	184.78	25.29%
	River	Recreation and wildlife habitat	44.46	6.09%
	Lake	Recreation and wildlife habitat	0.50	0.07%
Public & Institutional	Local Public	Facilities occupied and used by the District of Columbia government and other local agencies	30.33	4.15%
	Public, Quasi-Public, Institutional	Facilities occupied and used by colleges, universities, large private schools, hospitals, religious organizations, and similar institutions.	2.94	0.40%
	Federal Public	Facilities owned, occupied, and used by the federal government	0.04	0.01%
Residential	Low Density Residential	Single-family and semi-detached housing units with front, back, and side yards	35.29	4.83%
	Low-Medium Density Residential	Rowhouses and low-rise (two to three stories) garden apartment complexes	85.98	11.77%
	Medium Density Residential	Mid-rise (four to seven stories) apartment buildings and taller residential buildings surrounded by open space	50.40	6.90%
	High Density Residential	High-rise (eight stories or more) apartment buildings	1.68	0.23%
Transportation & Utilities	Transport, Communication, & Utilities	metro stations, railways, electrical substations, and similar facilities associated with the maintenance and provision of utility services.	95.94	13.13%
	Roads, Alleys, and Medians	Components of the surface and elevated roadway system	92.94	12.72%
	Transportation ROW	Lands where the District has reserved easements for the purposes of building or maintaining roads, sidewalks, alleys and similar elements of the public roadway network.	55.31	7.57%
Undetermined	Undetermined	No land use information provided in 2006 Mapping	1.17	0.16%

Source: *The Comprehensive Plan for the National Capital (Amended April 8, 2011)*, DC Office of Planning,

Residential land uses occupy approximately 23.7% of the Study Area and tend to aggregate in large blocks setback from Benning Road and Minnesota Avenue. The 2006 Land Use map identifies four different categories of residential land use, each reflecting a different level of housing density: low, low-medium, medium, and high. The low and low-medium density classifications refer to areas where single family homes (detached, semi-detached, and rowhouses) are the dominant form of development. Collectively, these two classifications are the most extensive form of residential land use (16.6% of the Study Area) and are most often setback from Benning Road and Minnesota Avenue by at least one row of buildings. Parking is provided in low and low-medium residential areas through parking lanes and rear parking pads (accessed through the alleys); private driveways are uncommon. The medium and high-density classifications refer to areas where apartment buildings and condominiums are the dominant form of development. Collectively, these two classifications occupy approximately 7.1 % of the Study Area, and most often abut Benning Road or Minnesota Avenue. Most of the Study Area's apartment buildings maintain off-street parking lots.

The Transportation & Utility classification is a diverse collection of land uses that includes both public and private properties developed to provide or support a variety of public service activities. For example, the Pepco Benning Service Facility provides a publicly regulated electrical service, but the facility itself is private. The 2006 Land Use Map identified three different classes of Transportation & Utility land use within the Study Area: Transport, Communication, and Utilities; Roads, Alleys, and Medians; and Transportation ROW. Collectively, these three classes occupy 33.4% of the Study Area. The Transport, Communication, and Utilities classification is applicable to properties which were developed to house utility infrastructure (e.g. electrical transmission equipment and radio towers) and rail facilities (e.g. metro stations and railyards). The 2006 Existing Land Use Map identifies three areas which fall under this classification: the Pepco Benning Service Center (north of Benning Road and east of the Anacostia River); the CSX-Amtrak rail corridor which runs parallel with Minnesota Avenue; and the Benning Road Metro Station. Pepco's Benning Service Center's main access point is located at the intersection of Benning Road and 34th Street. Secondary access points exist on Foote Place and Anacostia Avenue. The CSX-Amtrak rail corridor supports freight and passenger rail, as well as a portion of the Orange Line. The CSX rail lines themselves have no vehicular access points within the Study Area, but there is a spur that leads directly into the Benning Service Center. The Study Area also includes the southern portion of the Minnesota Avenue Metro Station and the entirety of the Station's off-street bus transfer center. The Benning Road Metro Station, located at the intersection of Benning Road and Central Avenue, provides access to the Blue and Silver metro lines. The Station's entrance is surrounded by a small plaza that can be entered from Benning Road, Central Avenue, or 45th Street. Short term parking is available in a small lot (6 bays) to north of the Station's entrance. On-street parking in front of the Station on Benning Road is currently prohibited.

The Roads, Alleys, and Medians classification is applicable to properties which were developed to support the existing local road and interstate network. The Transportation ROW classification, conversely, is applied to areas where the District of Columbia has retained easements which allow it to expand or construct new elements of the roadway system. In most cases, sidewalk, bus shelters, and other elements of the roadway system which are located beyond the curb fall within the footprint of the Transportation ROW classification.

Future Land Use

The future land use mapping used in this EA is taken from the Comprehensive Plan Amendment Act of 2010 (see **Figure 3-3**). In general, the projected land use patterns mirror the existing condition and shows the future land use within the study area (see **Table 3-3**). Key anticipated land use changes are listed from west to east below:

- The open space that currently exists between Minnesota Avenue and the moderate-density new Parkside residential development is slated for a mix of high-density residential and medium-density commercial uses.
- Medium-density commercial use and a mix of moderate-density residential use and medium-density commercial use are proposed east of Anacostia Avenue (south of Benning Road) and between Anacostia Freeway and 40th Street on both sides of Benning Road.
- A mix of moderate-density residential and recreational use is proposed south of Benning Road between 41st and 42nd Streets.
- A mix of moderate-density residential use and moderate-density commercial use is proposed for the area around the Benning Road Metrorail Station.

The proposed future land use generally corresponds to the local zoning categories; for example, where mixed uses are proposed along Minnesota Avenue, the underlying zone allows office and residential uses in addition to retail uses.

Development Projects

Benning Road and Minnesota Avenue are designated as Great Streets by the District government and, as funds become available, existing small businesses and new businesses can apply for up to \$50,000 in reimbursable grants for capital expenditures. Redevelopment is already occurring along the corridors, as evidenced by the recent Minnesota-Benning Government Center, which has 450 employees of the DOES. In addition, **Figure 3-4** shows sites recently developed in the study area and sites currently under construction or that have proposals for redevelopment. Key projects and sites are numbered from west to east and described in **Table 3-4**.

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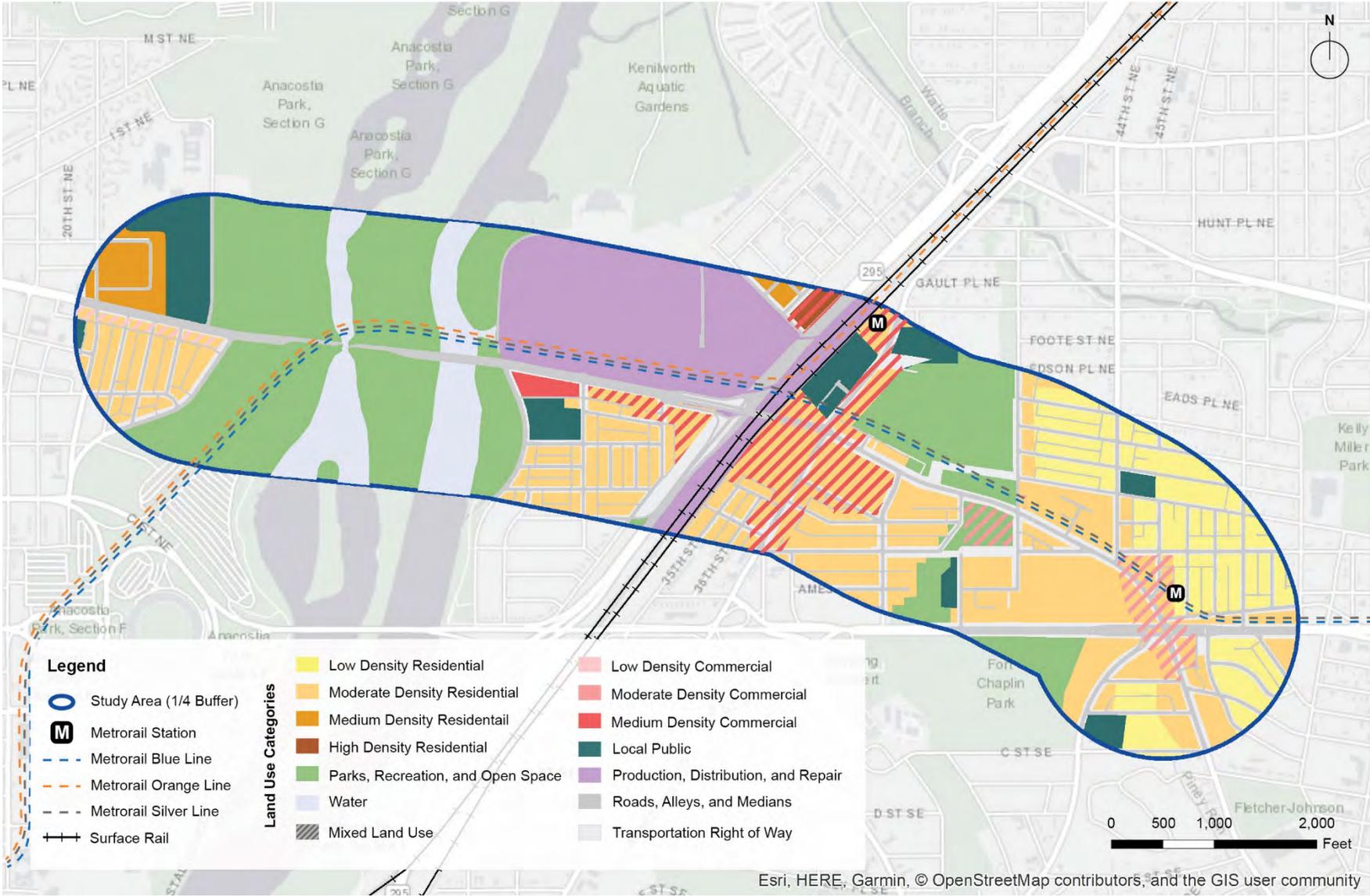
Table 3-3: Future Land Use

Class	Category	Predominate Uses	Area (Acres)	% of Study Area
Residential	Low-Density Residential	Single-family and semi-detached housing units with front, back, and side yards.	55.52	10.29%
	Moderate-Density Residential	Row houses neighborhoods, garden apartment areas, and some single-family homes.	155.96	28.90%
	Medium-Density Residential	Midrise (typically four to seven story) and high-rise apartments buildings (eight stories or more stories), with some row houses.	11.75	2.18%
	High-Density Residential	Highrise apartment buildings with some less dense forms of housing	2.15	0.40%
Commercial	Low-Density Commercial	Commercial development characterized by one-story and two-story buildings, often with off-street surface parking lots.	NA1	
	Moderate-Density Commercial	Retail, office, and service uses generally three to five stories in height.	NA1	
	Medium-Density Commercial	Retail, office, and service businesses that generally do not exceed five stories in height. These properties may draw primarily from surrounding neighborhoods to larger business districts uses that draw from a broader market area.	2.54	0.47%
Public & Institutional	Local Public Facility	Any building used to deliver local government services, such as a police or fire station, a school, a senior center, a library, city hall, or a wastewater treatment plant.	33.75	6.25%
Parks & Open Spaces	Parks, Recreation, and Open Space	District and Federal parks, settings for significant commemorative works, certain federal buildings (e.g. the White House), museums, and public recreation centers	186.43	34.55%
Industrial	Production, Distribution, and Repair	Light industrial facilities, warehouses, distribution facilities, research and development sites, automotive services facilities, and similar uses.	91.57	16.97%

¹This land use is included only as part of a mixed-use zones.

Source: *The Comprehensive Plan for the National Capital (Amended April 8, 2011)*, DC Office of Planning. Retrieved August 2019

Figure 3-3: Future Land Use

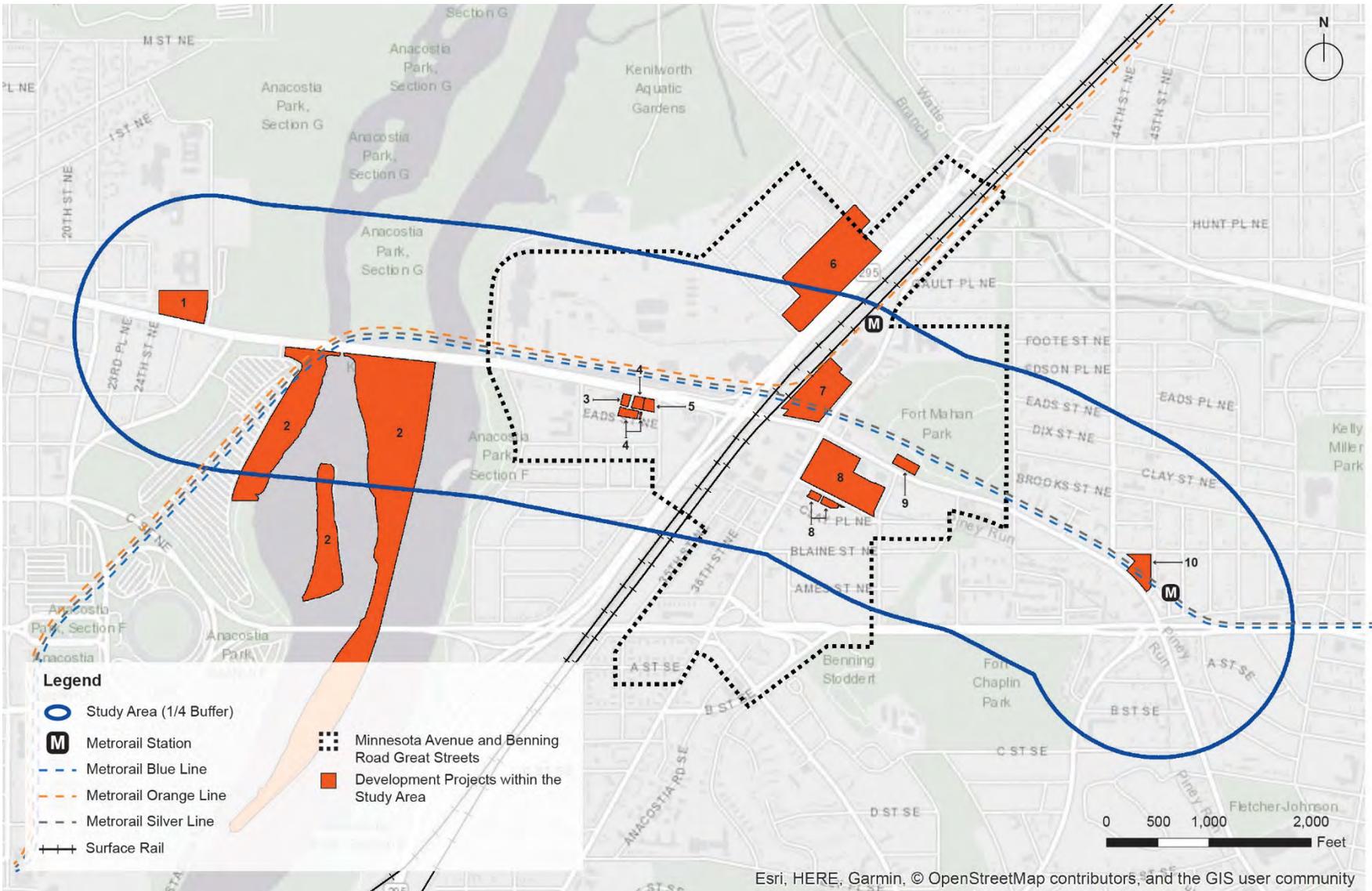


Source: DC OCTO. Retrieved August 2019

Table 3-4: Development Projects in Study Area

No.	Name	Description	Status
1	DC Streetcar Car Barn & Training Center	The first phase of DDOT's DC Streetcar Car Barn Training Center, which comprises the yard and temporary streetcar vehicle storage facility, is located to the west of 26 th Street. The permanent DC Streetcar Car Barn Training Center will serve as the maintenance facility for the DC Streetcar system and a training center.	Completed
2	Kingman Island and Heritage Island	In July 2017, The District of Columbia released a planning and feasibility study to improve the recreation and educational facilities located on Kingman Island, Heritage Island, and the section of Anacostia Park immediately to the west. Some of the proposed improvements include: a nature center, a ranger station, a pavilion, and a floating laboratory. In June of 2019, the District released bid documents for a design-build project involving the provision of design and construction services for a Master Park Plan for the development of Kingman and Heritage Islands.	Proposed
3	3443 Benning Road	The Neighborhood Development Company is proposing to convert a parking lot into an 8,400 square foot office and retail space. The facility is projected to be constructed in 2020	Proposed
4	3450 Eads Street	The Neighborhood Development Company is proposing to convert two parking lots and a vacant lot into a 67,500 square foot apartment building. The building will hold 70 one-bedroom units, restricted to senior housings aged 55 and over, earning 30% and 50% of metropolitan area median income, or less. Construction is scheduled to begin in the fall of 2019.	Proposed
5	Benning Market	The Neighborhood Development Company is proposing to convert a vacant lot into a 13,200 square foot open format food stall and retail space. The Market is projected to be constructed in 2020.	Proposed
6	Kenilworth- Parkside Neighborhood	City Interests is the master developer for a 2.8 million square foot mixed-use development on a 26-acre site located off Kenilworth Avenue across from the Minnesota Avenue Metrorail Station. Plans call for 1,500–2,000 residential units, 30,000–50,000 square feet of retail space and 500,000–750,000 square feet of office space and a one-acre park. An \$8 million pedestrian bridge crossing DC-295 is also planned to link the neighborhood with the Minnesota Avenue Metrorail Station.	Under Construction
7	Park 7	Donatelli Development and Blue Skye Development delivered their Park 7 project in 2014 which offers 22,000 square feet of retail space and 376 apartments adjacent to the Minnesota Avenue Metrorail Station.	Completed
8	East River Park Shopping Center	Katz Properties purchased the East River Park Shopping Center in 2012 for \$33.6 million; the developer plans to upgrade the property and add new restaurants and neighborhood-serving stores around the existing anchors, Safeway and CVS.	Proposed
9	St. Stephens Apartments	Washington Metropolitan Community Development Corporation, the Warrenton Group and Pennrose Properties, LLC are constructing 71 apartments that will serve DC Department of Behavioral Health clients who earn 30% or less of area median income (AMI) and those whose incomes are at or below 50% of AMI. The Latin American Youth Center will provide education services on-site.	Completed
10	Benning and East Capitol Gateway	So Others Might Eat (SOME) proposes to develop 202 units of affordable, workforce and senior housing (all drug and alcohol free), a sit-down deli, a seven-classroom expansion of SOME's Center for Employment Training, a 36,000 square foot medical and dental clinic, and administrative offices on the three properties adjacent to the Benning Road Metrorail Station.	Completed

Figure 3-4: Development Projects in the Study Area



Source: DC Office of Planning and DC Economic Partnership. Retrieved August 2019

3.2.2 NEIGHBORHOODS, COMMUNITY RESOURCES AND DEMOGRAPHICS

This section identifies existing study area neighborhoods, community resources, and current and projected demographics.

3.2.2.1 Methodology

Existing information on neighborhoods and community resources was gathered through site visits, examination of recent aerial photographs, other studies undertaken by DDOT, including the *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013), and GIS data layers obtained from OCTO.

Current and projected demographic information through the year 2045 is based on 2013-2017 American Community Survey 5-Year Estimates and MWCOC population and employment Round 9.1 Forecasts, published in July 2013. Projected population and employment growth are analyzed by Transportation Analysis Zone (TAZ) using GIS. TAZs are geographic units that are commonly used in transportation models and regional forecasts to analyze demographic data and trip generation. The 2013-2017 American Community Survey 5-Year Estimates are used to identify the existing minority, low-income, and transit-dependent populations within the study area.

3.2.2.2 Existing Conditions

Neighborhoods

The study area is primarily comprised of neighborhoods in Ward 7. The neighborhoods within the study area are described in **Table 3-5** and identified in **Figure 3-5**.

Community Facilities

Community facilities within the study area include schools, churches, a public library, post offices, police and fire stations, and medical facilities. **Table 3-6** lists community facilities and **Figure 3-5** shows their locations. Several parks and recreation areas also exist within the study area; these facilities are described in **Section 3.3**.

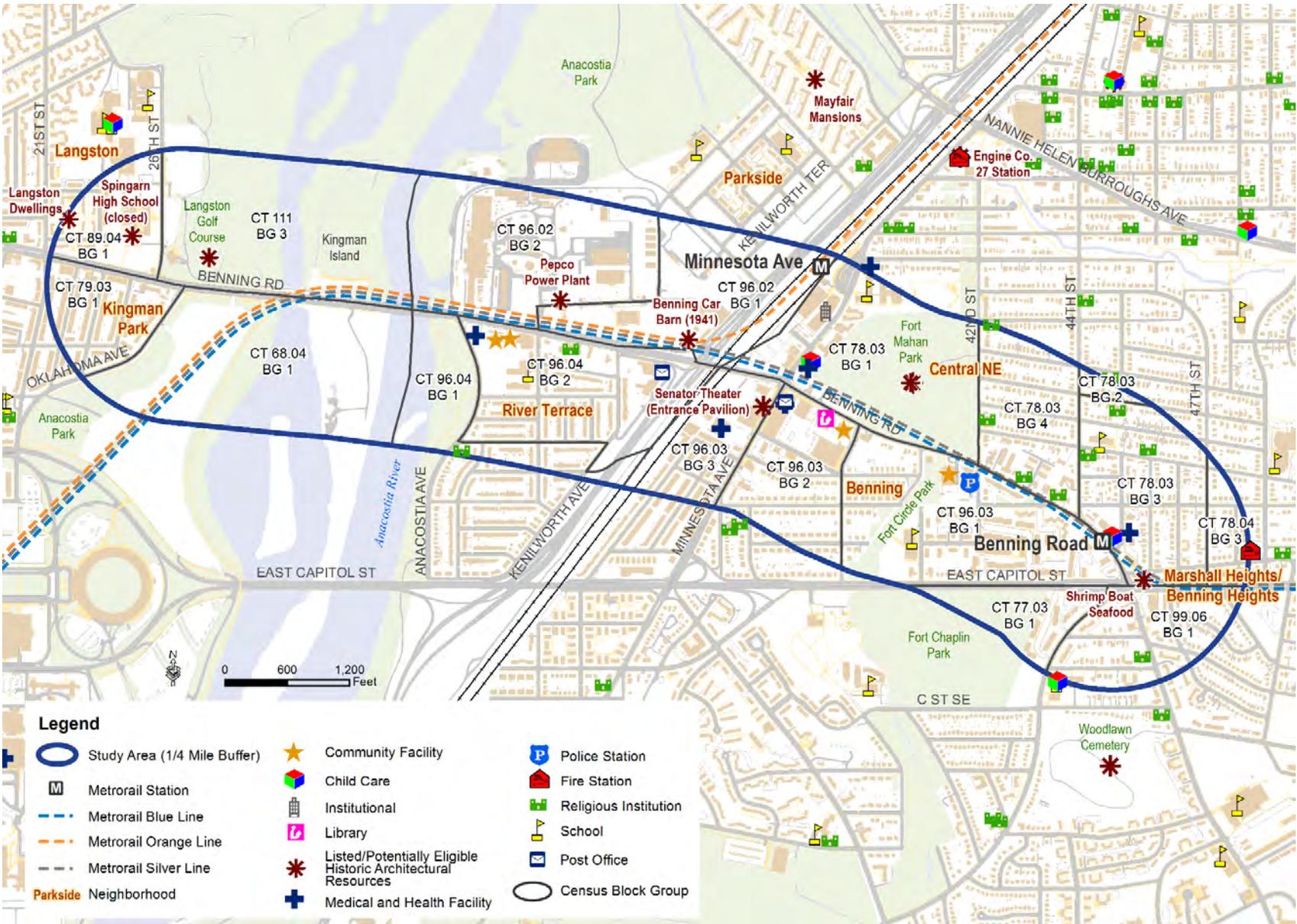
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Table 3-5: Neighborhoods

Location	Development Characteristics	Population Characteristics
Langston		
Census Tract 89.04 Block Group 1	Medium-Density Residential. Listed on the National Register of Historic Places (NRHP), Langston Terrace was the first federally funded housing project in DC and the second in the nation. Directly east of the neighborhood is the Langston Golf Course, which is also listed on the NRHP as the first golf facility to serve African Americans.	Nearly 90.2% of the population is minority and 27.8% are low-income.
Kingman Park		
Census Tract 79.03 Block Group 1	Mostly low-density residential with some commercial storefronts along Benning Road. The neighborhood is characterized by brick façade row houses and mature tree-lined streets in neighborhoods along 21 st Street and eastward including Oklahoma Avenue.	Nearly 79.9% of the population is minority and 16.2% are low-income.
Parkside		
Census Tract 96.02 Block Group 1	A portion of the study area is within the Parkside neighborhood, which is currently being redeveloped. Parkside offers a variety of housing options, with more than 1,500 new residential units. Housing includes affordable elderly apartments, for-sale market-rate and for-sale affordable townhomes, and apartments for households of all income levels.	99.9% of the population is minority and roughly 36.7% are low-income.
River Terrace		
Census Tract 96.04 Block Group 1 Census Tract 96.04 Block Group 2	Mostly low-density residential with some commercial storefronts along Benning Road. Adjacent to the neighborhood is River Terrace Park, a national park made up of a section of the eastern bank of the Anacostia River. The Pepco Power Plant and a trash transfer station are two major industrial uses located directly north of the neighborhood.	97.6% of the population is minority and 12.1% are low-income
Central Northeast (also known as Mahaning Heights)		
Census Tract 78.03 Block Group 1 Census Tract 78.03 Block Group 4	Mixed-use. Fort Mahan Park is located at the center of the neighborhood, with low-density residential to the north and west of the park. Commercial, office, and institutional uses are clustered along Minnesota Avenue, including the DC DOES and Friendship Collegiate Academy.	96.5% of the population is minority and 29.2% are low-income.
Benning		
Census Tract 96.03 Block Group 1 Census Tract 96.03 Block Group 2 Census Tract 96.03 Block Group 3	Mixed-use. Commercial use clustered around Benning Road and Minnesota Avenue intersection and the Benning Road Metrorail Station. Mixture of low-density residential and medium density residential, with parkland in the center of the neighborhood.	100% of the population is minority and 11.3% are low-income
Marshall Heights/Benning Heights		
Census Tract 77.03 Block Group 1 Census Tract 78.03 Block Group 2 Census Tract 78.03 Block Group 3 Census Tract 78.04 Block Group 3 Census Tract 99.06 Block Group 1	Mixed-use. Majority low-density residential but some medium-density residential developments are present. Commercial use clustered along Benning Road. Parts of Fort Chaplin Park are also within the study area.	99.4% of the population is minority and 16.3% are low-income.

Sources: U.S. Census Bureau, American Community Survey 5-Year Estimates (2013-2017); DC Data Catalog (<http://data.dc.gov/>)

Figure 3-5: Neighborhoods and Community Facilities



Sources: US Census Bureau, retrieved August 2019; DC OCTO

Table 3-6: Community Facilities in Study Area

Facility	Location	Ownership
Schools		
Friendship Public Charter Schools – Collegiate Academy	4095 Minnesota Avenue	District of Columbia
DC Prep Public Charter Schools – Benning Elementary and Middle Schools	100 41 st Street	District of Columbia
Smothers Elementary School	4400 Brooks Street	District of Columbia
River Terrace Education Campus	420 34 th Street	District of Columbia
Spingarn High School (closed)	2500 Benning Road	District of Columbia
Places of Worship		
Varick Memorial AME Zion	255 Anacostia Avenue	Private
Beyond the Veil Worship Center, Inc.	3433 Benning Road	Private
Crusaders Baptist*	4203 Edson Place	Private
Upper Room Baptist Church*	60 Burns Street	Private
Ward Memorial AME	241 42 nd Street	Private
New Grove Baptist Church	4242 Benning Road	Private
New Mount Calvary Baptist	4720 Benning Road	Private
East Friendship Baptist	4401 Brooks Street	Private
Morningstar Pentecostal*	4409 Eads Street	Private
Grace Apostolic Church	4417 Dix Street	Private
Glorious Church of God	4510 Brooks Street	Private
Gospel Ark Temple Bible	4551 Benning Road	Private
Public Facilities		
Dorothy I Height/Benning Neighborhood Library	3935 Benning Road	District of Columbia
DOES/ American Job Center	4058 Minnesota Avenue	District of Columbia
Metropolitan Police Department Sixth District Station	100 42 nd Street	District of Columbia
DC Fire Department Engine 30 Station	50 49 th Street	District of Columbia
Community Facilities		
Northeast Performing Arts Group, Inc./ Northeast 'Outreach' Youth Center, Inc.	3431 Benning Road	Private
NOW (Neighborhood, Organized, Workforce), Inc.	3435 Benning Road	Private
Marshall Heights Community Development Organization, Inc.	3939 Benning Road	Private
Boys and Girls Club Headquarters/ Richard England Clubhouse #14	4103 Benning Road	Private
Childcare Facilities		
Community Child Development Center	4021 Minnesota Avenue	Private
Kids Universe Child Development Center	4430 Benning Road	Private
DPR Plummer Before and After School*	4601 Texas Avenue	Private
Hospital, Medical and Health Facilities		
Family Preservation Services of DC	3341 Benning Road	Private
Unity - Minnesota Avenue Health Center	3924 Minnesota Avenue	Private
Planned Parenthood - Ophelia Egypt Health Center	3937 Minnesota Avenue	Private
MBI Health Services	4017 Minnesota Avenue	Private
Northside Medical Services Corporation*	4121 Minnesota Avenue	Private
Unity - East of the River Health Center	123 45 th Street	Private
Post Offices		
River Terrace Location	3621 Benning Road	U.S. Postal Service (USPS)
Benning Location	3937 1/2 Minnesota Avenue	USPS

*Facility located immediately outside of ¼-mile study area.

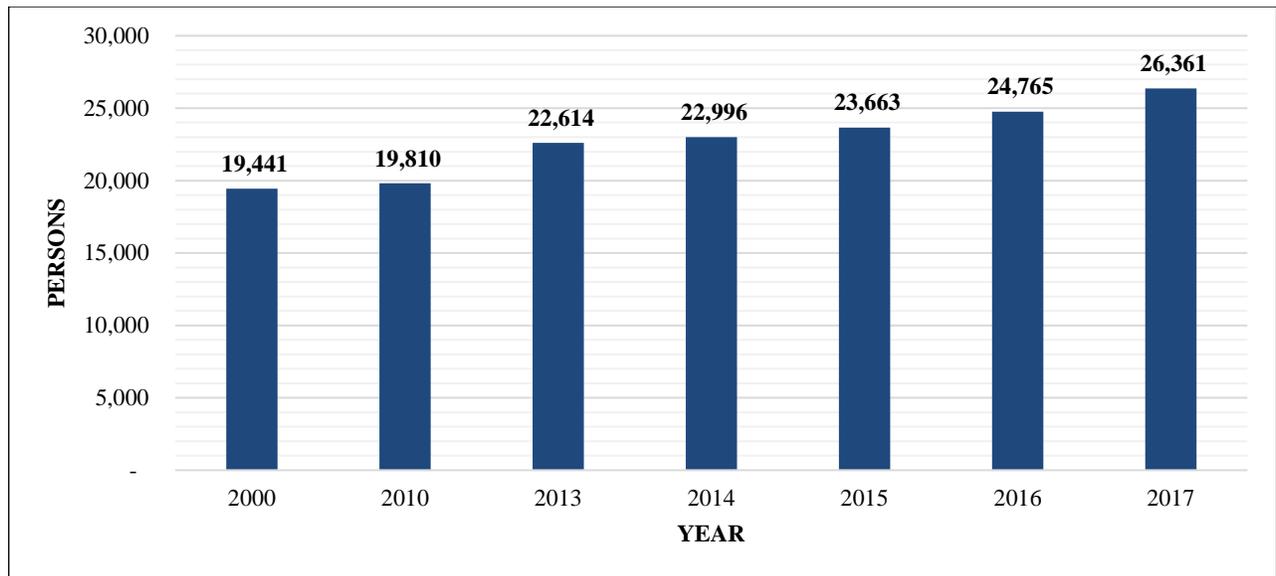
Sources: DC Data Catalog (<http://data.dc.gov/>)

General Demographics

Since 2000, the population within the study area has been steadily increasing (see **Figure 3-6**). From 2000 to 2010, the annual growth was very small (approximately 0.2%). From 2010 to 2017, the annual growth rate ranged between 1.7% in 2014 and 6.4% in 2017. MWCOG forecasts that the study area population will continue to grow at an average rate of 1.6% annually through 2045 (see

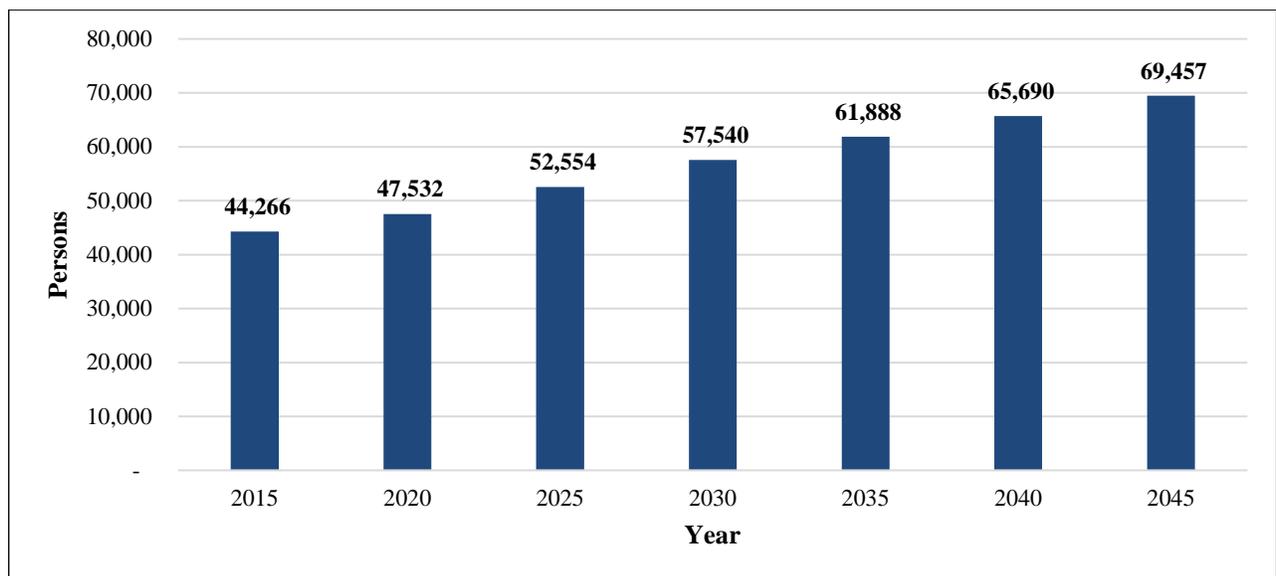
Figure 3-7). Using the population totals provided by the 2013-2017 American Community Survey 5-Year Estimates as a baseline, this growth rate would increase the population residing in the study area to approximately 37,977 (a 44% increase over the 2017 estimate).

Figure 3-6: Recent Population Growth in the Study Area



Source: 2000 and 2010 Decennial Census Tables and 2013-2017 American Community Survey 5 YR Estimates, U.S. Census Bureau

Figure 3-7 : Future Population Growth in the Traffic Analysis Study Area



Source: Round 9.1 Cooperative Forecasting by Transportation Analysis Zone, Metropolitan Washington Council of Governments. Retrieved August 2019

Figure 3-8 shows population densities based on the Round 9.1 Cooperative Forecasting data released by the MWCOG. In the Draft EA, the assessment of population density was restricted to only those TAZs located within a quarter mile of the proposed improvements. In this document, the assessment has been expanded to match the extent of the revised traffic analysis network. The areas of highest population densities in this dataset are located east of Minnesota Avenue between Benning Road and East Capitol Street and the areas surrounding the Benning Road Metrorail Station.

Racial and Ethnic Characteristics

The American Community Survey categorizes persons into five primary racial groups: Black or African American, White, Asian, American Indian and Alaskan Native, and Native Hawaiian and Pacific Islander. In addition to these, the Survey also includes an “Other Race” category and categories for individuals whom identify with more than one racial group. Overall, the 2013-2017 American Community Survey 5-Year Estimates found that 26,361 individuals reside within the 18 block groups which intersect the study area (see **Table 3-7**). Within this population, 89.46% of individuals identify as Black or African American. The next largest racial group is White (5.03% of individuals) and persons who identify with two or more racial groups (1.32% of individuals). The study area has lower than average presence of Asian individuals. In the District of Columbia, Asian individuals account for 3.80% of the total population, but account for only 0.23% within the study area.

Table 3-7: Study Area Populations

Classification	Study Area		District of Columbia	
	Count	% of Total	Count	% of Total
Black or African American Alone	23,582	89.46	321,062	47.75%
White Alone	1,325	5.03	273,471	40.67%
Asian Alone	60	0.23	25,558	3.80%
American Indian and Alaskan Native Alone	59	0.22	1,757	0.26%
Native Hawaiian and Pacific Islander Alone	0	0.00	289	0.04%
Other Race Alone	988	3.75	30,961	4.60
Two or More Races	347	1.32	19,293	2.87%
Total	26,361	100.00	672,391	100.00

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017. Retrieved August 2019

In addition to grouping individuals by race, the American Community Survey also classifies persons based on whether a person is of Latino or Hispanic origin or not. Since this classification applies to persons of all racial backgrounds, this statistic applies to the study area’s overall population. Out of this population, the 2013-2017 American Community Survey 5-Year Estimates found that approximately 5.7% of individuals (1,507 persons) are of Latino or Hispanic origin (See **Table 3-8**).

The study area’s total minority population is calculated by adding together all those individuals who are not classified as White or having Latino-Hispanic origin. Based on the statistics collected by the 2013-2017 American Community Survey 5-Year Estimates, this sum is 24,407 persons or

92.58% of the study area's total population. During the same survey period, approximately 64% of the District of Columbia's total population belonged to a racial or ethnic minority group.

Table 3-8: Persons of Latino or Hispanic Origin by Race

Latino-Hispanic persons by Racial Groups	Study Area			District of Columbia		
	Count	% of Latino-Hispanic Community	% of Racial group	Count	% of Latino-Hispanic Community	% of Racial group
Black Alone	184	12.23	0.78	5903	8.22	1.84
White Alone	371	24.67	28.00	31,570	43.95	11.54
Asian Alone	0	0.00	0.00	495	.69	1.94
American Indian and Alaskan Native Alone	4	0.27	6.78	617	.86	35.12
Native Hawaiian and Pacific Islander Alone	0	0.00	0.00	48	.07	16.61
Other Race Alone	910	60.51	92.11	28,767	40.05	92.91
Two or More Races	35	2.33	5.65	4,429	6.17	22.96
All Racial Groups	1,504	100.00	5.71	71,829	100	10.68

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017. Retrieved August 2019

Transit-Dependent Populations

A “transit-dependent” person is someone who does not have access to a personal automobile and relies on mass transit. For this analysis, transit-dependent population percentages were identified using 2013-2017 American Community Survey 5-Year Estimates for: populations without private transportation (zero-car households), populations under age 18 or over age 65, and low-income populations (population below the federally designated poverty level by family size).

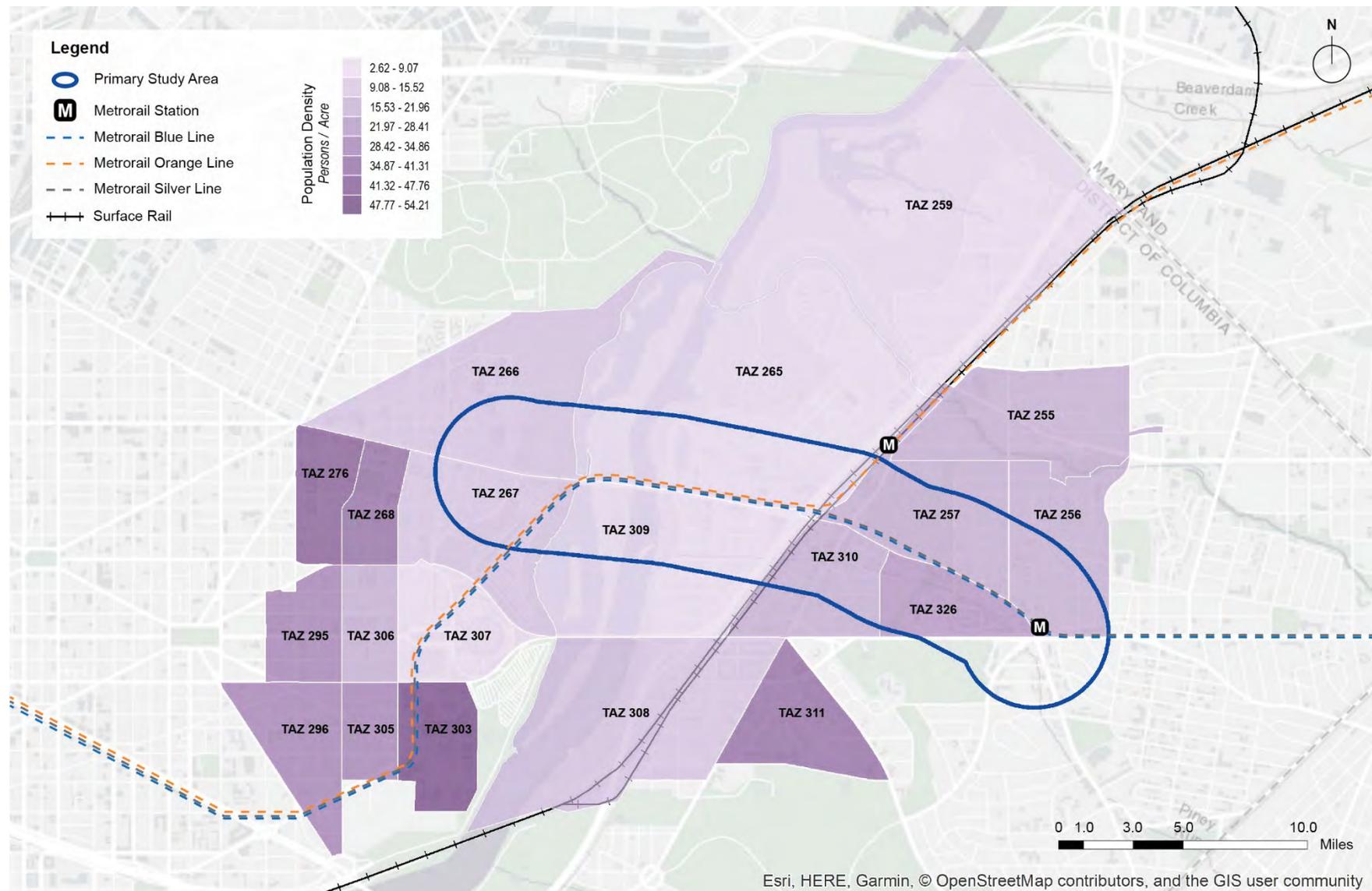
The study area has several concentrations of transit-dependent populations, clustered around the Benning Road and Minnesota Avenue Metrorail stations. **Table 3-9** lists transit dependency using 2013-2017 American Community Survey 5-Year Estimate data within the study area and compares these percentages with total transit-dependent percentages in the District of Columbia. The study area has higher rates of zero-car households, populations under 18 or over 65, and populations below the poverty level, compared with those of the District of Columbia.

Table 3-9: Transit Dependent Populations in Study Area

Transit Dependency Indicator	Study Area Population		District of Columbia	
	Count	% of Total Population	Count	% of Total Population
Zero-Car Households	4,352	43.55	99,368	35.75
Population Under 18 and Over 65	8,742	33.16	197,827	29.42
Population below Poverty Level	5,578	23.67	111,025	17.39

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017.

Figure 3-8: 2015 Population Density



Source: Round 9.1 Cooperative Forecasting by Transportation Analysis Zone, Metropolitan Washington Council of Governments.

Employment

As part of the cooperative forecasting process, MWCOG includes employment projections for each of the TAZs in its jurisdiction. **Table 3-10** provides a summary of this projection for the 11 TAZs that fall within the study area. The forecasts show employment within the study area growing at about 13% from 2015 to 2020. From 2020 to 2035, the rate of growth ranges between 22.25% and 27.64%. By 2040, the number of employees working within the study area is expected to reach nearly 11,000, representing a 150% increase over 2015 levels.

Table 3-10: Employment Growth in Traffic Analysis Study Area

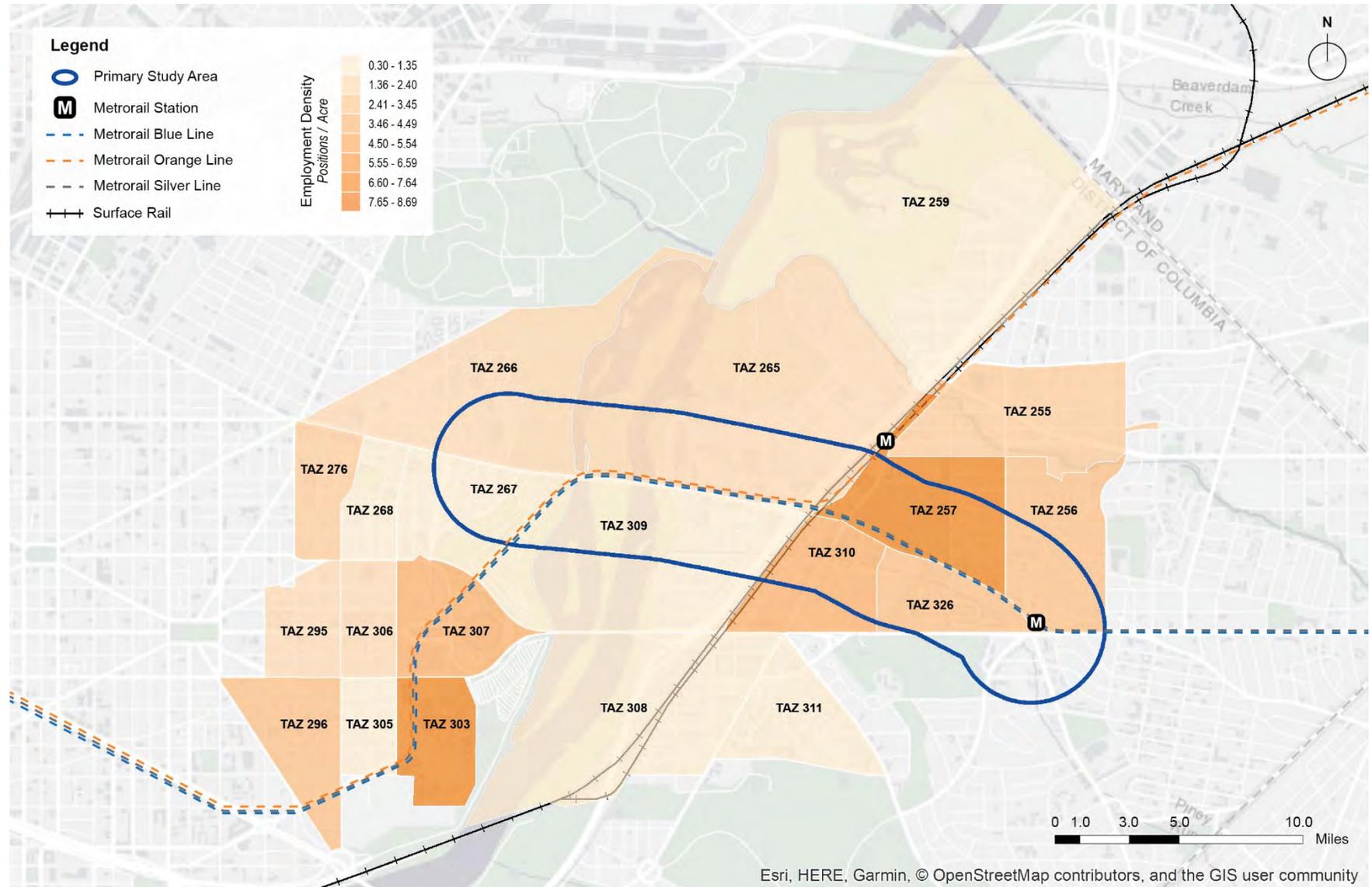
Statistic	2015	2020	2025	2030	2035	2040	2045
<i>Number of Positions</i>	6,327	6,899	7,561	9,081	11,143	13,262	15,381
<i>Percentage Increase</i>	-	9.0%	9.6%	20.1%	22.7%	19.0%	16.0%

Source: Round 9.1 Cooperative Forecasting by Transportation Analysis Zone, Metropolitan Washington Council of Governments.

Figure 3-9 shows the 2015 employment density (positions per acre) within the traffic analysis study area by TAZ. In the Draft EA, the assessment of population density was restricted to only those TAZs located within a quarter mile of the proposed improvements. In this document, the assessment has been expanded to match the extent of the revised traffic analysis network. The highest concentration of employment exists south of the Minnesota Avenue/Benning Road intersection where a commercial and light manufacturing cluster is located.

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Figure 3-9: 2015 Employment Density



3.3 TRANSPORTATION AND TRAFFIC OPERATIONS

This section describes the existing transportation network in the study area including the roadway network, mass transit, pedestrian and bicycle facilities, and freight rail service.

3.3.1 METHODOLOGY

Information on the existing transportation network was provided by multiple sources including WMATA, DDOT, field observations, and previous transportation studies completed in the study area.

A traffic operations analysis was performed for the study roadways and intersections using VISSIM, a microscopic simulation software. See **Appendix E** for more detail on the methodology of the traffic operations analysis. MWCOG Version 2.3.75 regional travel demand model and *Round 9.1 Cooperative Land Use Forecasts* were used for the opening year and for design year 2045 for forecasting traffic conditions and Simplified Trip-on-Project Software (STOPS) (version 2.5) were used to generate streetcar and transit ridership. The MWCOG *Round 9.1 Cooperative Land Use Forecasts* were the most current at the start of developing the EA and were used as the basis for all land use calculations for the Benning Road model.

3.3.2 EXISTING CONDITIONS

Roadway Network

Figure 3-10 shows the study area used to conduct the traffic analysis. The freeway portion of the study network includes approximately three miles of DC-295, from just north of Pennsylvania Avenue SE to just south of US 50, and three interchanges: Nannie Helen Burroughs Avenue NE, Benning Road NE, and East Capitol Street. This area is larger than the traffic analysis study area shown in the Draft EA. DDOT expanded the boundary to reflect concerns expressed by stakeholders regarding effects on traffic operations on neighboring facilities.

The arterial portion of the study network includes shorter segments of Deane Avenue NE, Nannie Helen Burroughs Avenue NE, Minnesota Avenue NE, and East Capitol Street, with a focus on the segment of Benning Road NE from 26th Street NE to East Capitol Street. In all, 18 signalized intersections and seven unsignalized intersections were included in the analysis. **Table 3-11** summarizes selected characteristics for the major roadways.

Intersections and Interchanges

There are 18 signalized and seven unsignalized intersections along Benning Road that fall within the study area (see **Table 3-12**). Existing morning and evening peak period intersection traffic volumes are shown in **Figure 3-11** and **Figure 3-12**. Existing intersection levels of service (LOS) at study intersections based on VISSIM simulations are shown in **Figure 3-13** and **Figure 3-14**.

Table 3-11: Major Roadways

Road Name	Functional Classification	Annual Average Daily Volume	Posted Speed Limit (mph)	Major Interchanges Or Intersections
Benning Road	Principal Arterial	36,150 (West of Minnesota Avenue) 20,545 (East of Minnesota Avenue)	30	Northbound Kenilworth Avenue (DC-295) Southbound Kenilworth Avenue (DC-295) Minnesota Avenue East Capitol Street
Minnesota Avenue	Minor Arterial	20,105 (north of Benning Road)	30	East Capitol Street Benning Road Nannie Helen Burroughs Avenue
DC-295	Other Freeway and Expressway	125,090 (north of Benning Road)	45	Pennsylvania Avenue East Capitol Street Westbound Benning Road Nannie Helen Burroughs Avenue Eastern Avenue
East Capitol Street	Principal Arterial	29,016 (east of Benning Road)	30	Benning Road

Source: DDOT Traffic Volume Map 2016.

Table 3-12: Signalized and Unsignalized Intersections

Signalized Intersections	Unsignalized Intersections
Benning Road at Anacostia Avenue Benning Road at 34 th Street Benning Road at Minnesota Avenue Benning Road at 39 th Street Benning Road at 42 nd Street Benning Road at 26 th Street Benning Road at Oklahoma Avenue Minnesota Avenue at Dix Street Minnesota Avenue at Bus Exit South Minnesota Avenue at Grant Street Benning Road at 44 th Street Benning Road at East Capitol Street East Capitol Street at Texas Avenue Deane Avenue at Kenilworth Terrace Deane Avenue at Kenilworth Avenue Nannie Helen Burroughs Avenue at Kenilworth Avenue Nannie Helen Burroughs Avenue at Minnesota Avenue	Benning Road to DC-295 at 36 th Street Benning Road at 40 th Street Benning Road at 41 st Street Benning Road at Blaine Street Benning Road at 45 th Street Benning Road at Central Avenue Kenilworth Avenue at Foote Street

Parking and Access

On-street parking is generally restricted to off-peak travel periods as Benning Road is an arterial and commuter route into and out of downtown DC (see **Figure 3-15**). The curb lanes between Oklahoma Avenue and the Whitlock Bridge are generally signed as “No Standing or Parking” with restricted times during the peak driving periods. Assuming 18 feet for each on-street parking space, there are approximately 653 existing on-street parking spaces along the length of Benning Road in the study area from Oklahoma Avenue to Central Avenue.

Off-street parking is generally accommodated at the major activity centers along Benning Road and Minnesota Avenue. At the Minnesota Avenue Metrorail Station and DOES building, there is a large paid parking garage. Other retail centers have smaller surface parking lots.

Mass Transit

WMATA provides Metrorail and Metrobus services, and DDOT operates DDOT the DC Streetcar to the study area. These transit services provide connections to regional activity centers such as downtown DC, the H Street corridor, historic Anacostia, and the greater metropolitan DC area via Metrorail. **Figure 3-16** shows the existing transit service within the study area.

Metrorail

The Orange, Blue, and Silver Metrorail lines operate within the study area serving the Minnesota Avenue and Benning Road Metrorail stations. The Orange and Silver Metrorail lines provide six-minute peak and 12-minute off-peak service frequencies. The Blue Metrorail Line provides 12-minute frequency for both peak and off-peak service. The stations are served directly by the network of Metrobus routes operating within the study area.

The Minnesota Avenue Metrorail Station is located approximately one-quarter mile north of the Minnesota Avenue and Benning Road intersection, adjacent to the CSX railroad corridor between Minnesota Avenue and Kenilworth Avenue. The Orange Line provides service from Vienna/Fairfax-GMU in Fairfax County, Virginia to New Carrollton in Prince George's County, Maryland. Approximately 20 metered daily and short-term parking spaces are available at the station. Bus connections are accommodated with an off-street bus bay facility. Metrobus routes U2, U4, U5, U6, U8, V7, V8, X1, X2, X3, and X9 directly serve the station.

The Benning Road Metrorail Station is located north of the Benning Road and East Capitol Street intersection. The Blue and Silver Lines serve the Benning Road Metrorail Station and run four-minute peak and six-minute off-peak frequencies. The Blue Line provides service from Franconia/Springfield in Fairfax County, Virginia to the Largo Town Center in Prince George's County, Maryland. The Silver Line opened in summer 2014 and currently provides service from the Wiehle-Reston East Station in Reston, Virginia to the Largo Town Center. Phase II of the Silver Line will extend west connecting to Dulles Airport and into Loudoun County, Virginia. Metrobus routes 96, 97, U5, U6, U8, W4, and E32 serve the bus stops located adjacent to the Metrorail Station entrance. A few short-term Kiss & Ride parking spaces are available at the station; the station does not provide longer term parking.

Figure 3-10: Existing Roadway and Lane Configuration

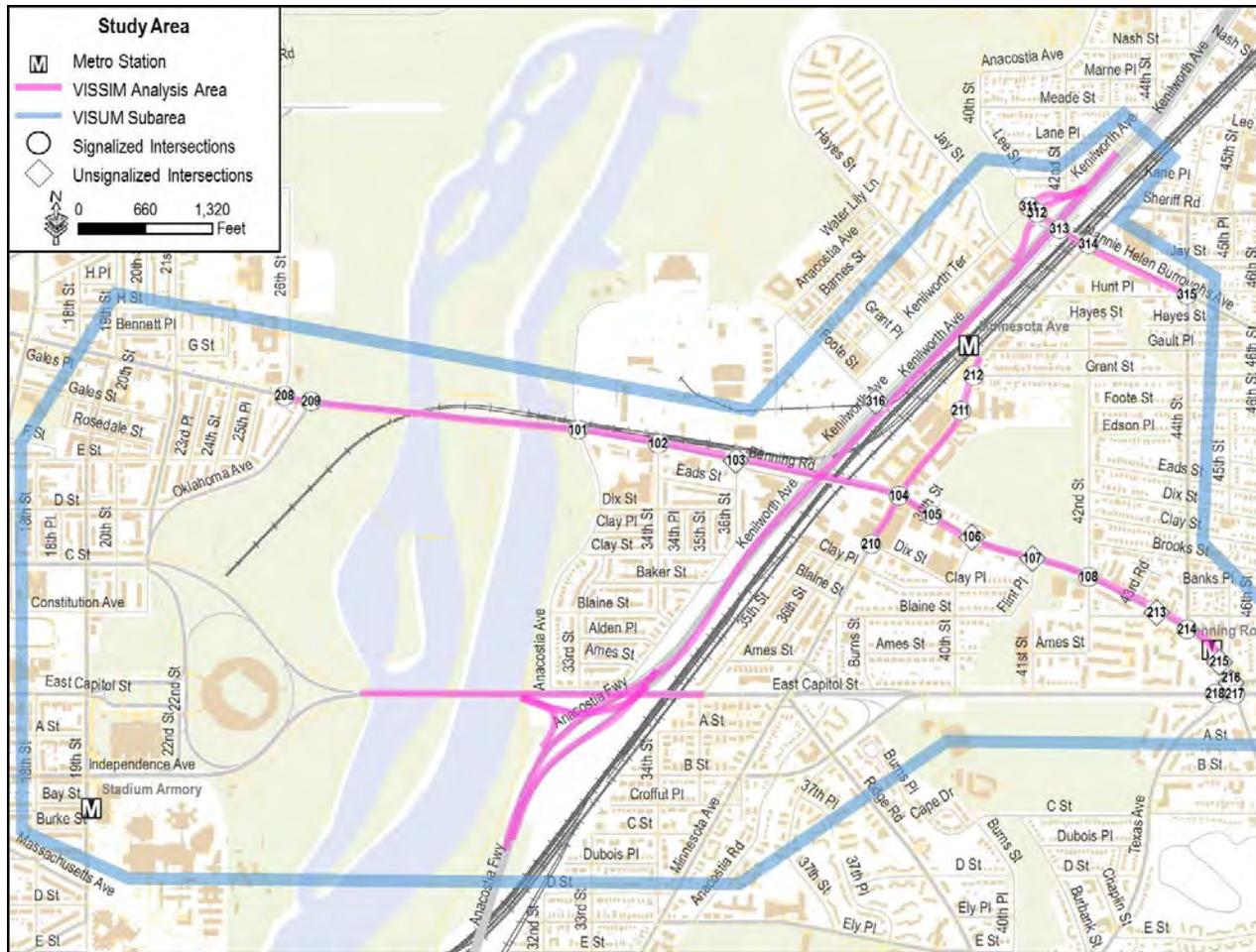


Figure Key

- I-101: Benning Road at Anacostia Avenue
- I-102: Benning Road at 34th Street
- I-103: Benning Road to DC-295 at 36th Street
- I-104: Benning Road at Minnesota Avenue
- I-105: Benning Road at 39th Street
- I-106: Benning Road at 40th Street
- I-107: Benning Road at 41st Street
- I-108: Benning Road at 42nd Street
- I-208: Benning Road at 26th Street
- I-209: Benning Road at Oklahoma Avenue
- I-210: Minnesota Avenue at Dix Street
- I-211: Minnesota Avenue at Bus Exit South
- I-212: Minnesota Avenue at Grant Street
- I-213: Benning Road at Blaine Street
- I-214: Benning Road at 44th Street
- I-215: Benning Road at 45th Street
- I-216: Benning Road at Central Avenue
- I-217: Benning Road at East Capitol Street
- I-218: East Capitol Street at Texas Avenue
- I-311: Deane Avenue at Kenilworth Terrace Avenue
- I-312: Deane Avenue at Kenilworth Avenue
- I-313: Nannie Helen Burroughs Avenue at Kenilworth Avenue
- I-314: Nannie Helen Burroughs Avenue at Minnesota Avenue
- I-315: Nannie Helen Burroughs Avenue at 44th Street
- I-316: Kenilworth Avenue at Foote Street

Figure 3-11: Existing (2019) Morning and Evening Peak Period Intersection Traffic Volumes (Sheet 1 of 2)

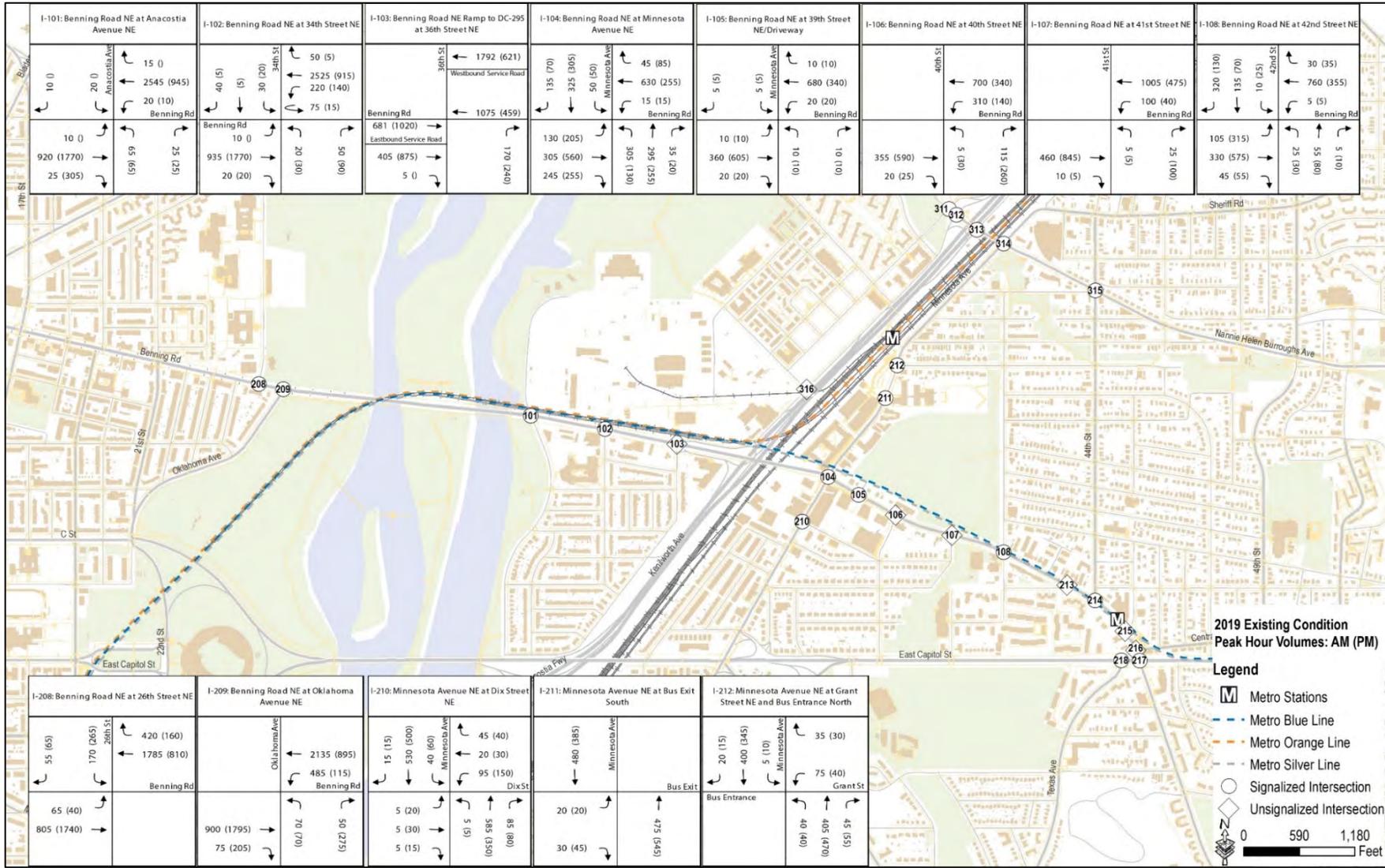


Figure 3-12: Existing (2019) Morning and Evening Peak Period Intersection Traffic Volumes (Sheet 2 of 2)

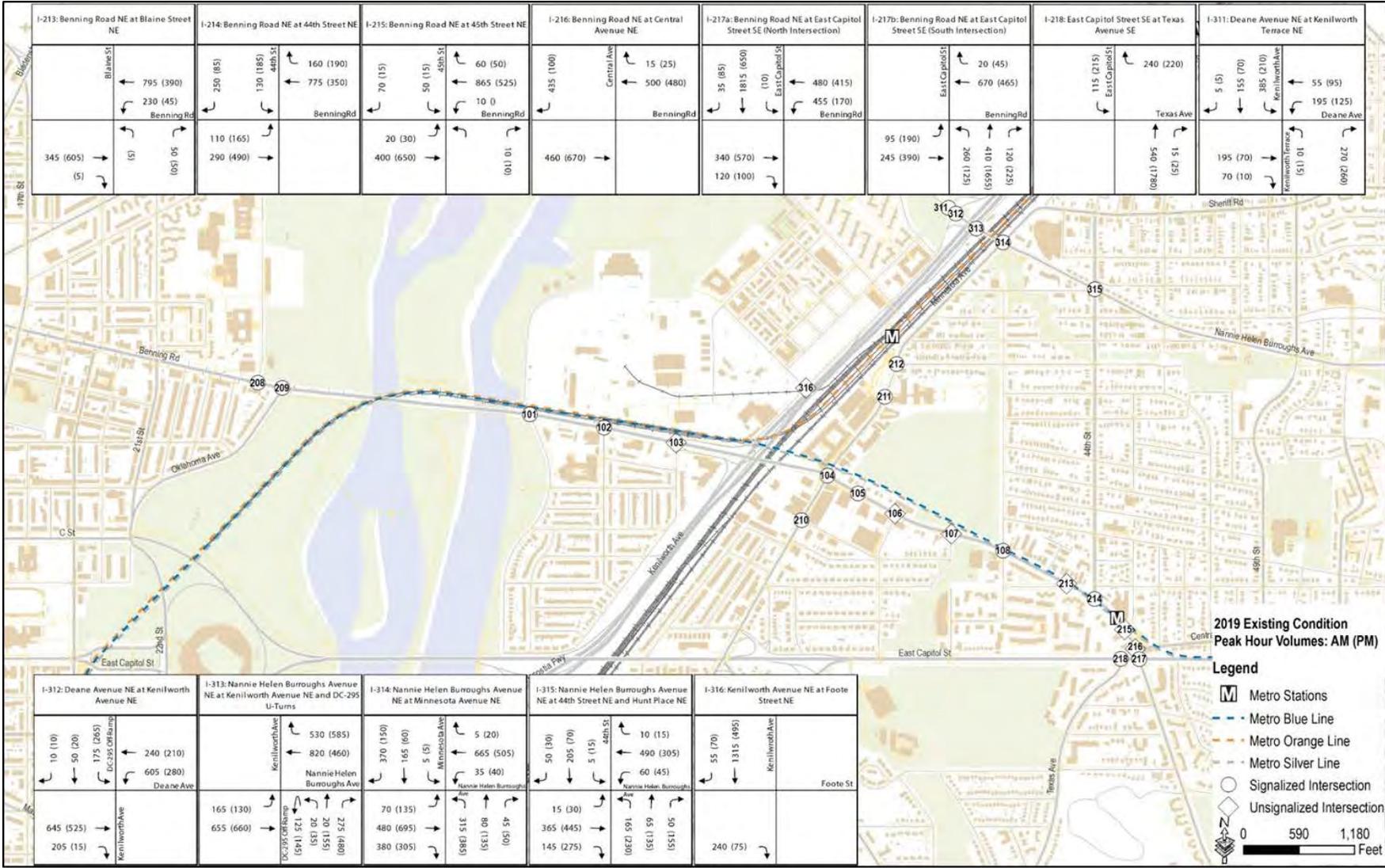


Figure 3-13: Existing Morning and Evening Peak Period Intersection Levels of Service (LOS) (Sheet 1 of 2)

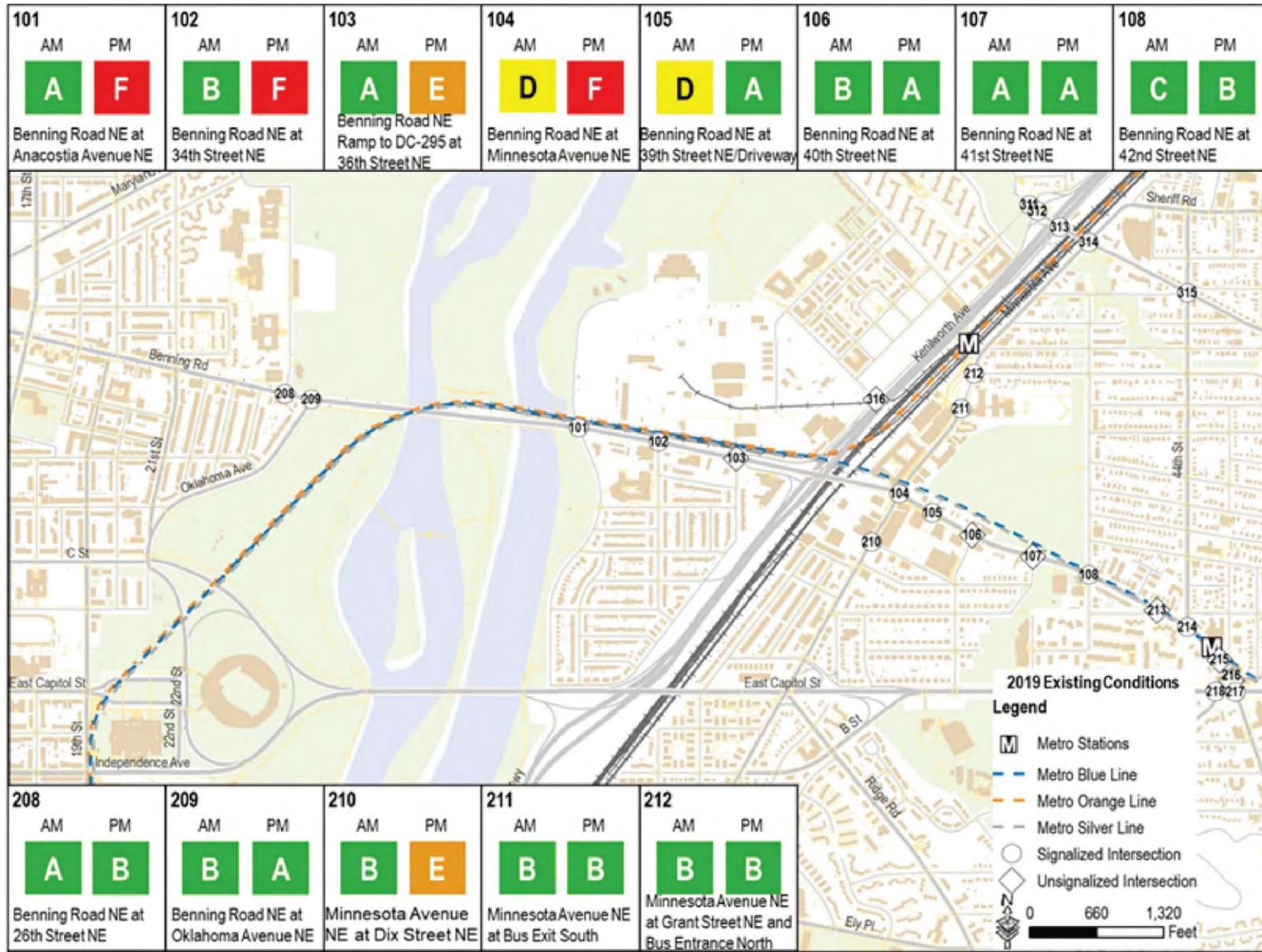


Figure 3-14: Existing Morning and Evening Peak Period Intersection Levels of Service (LOS) (Sheet 2 of 2)

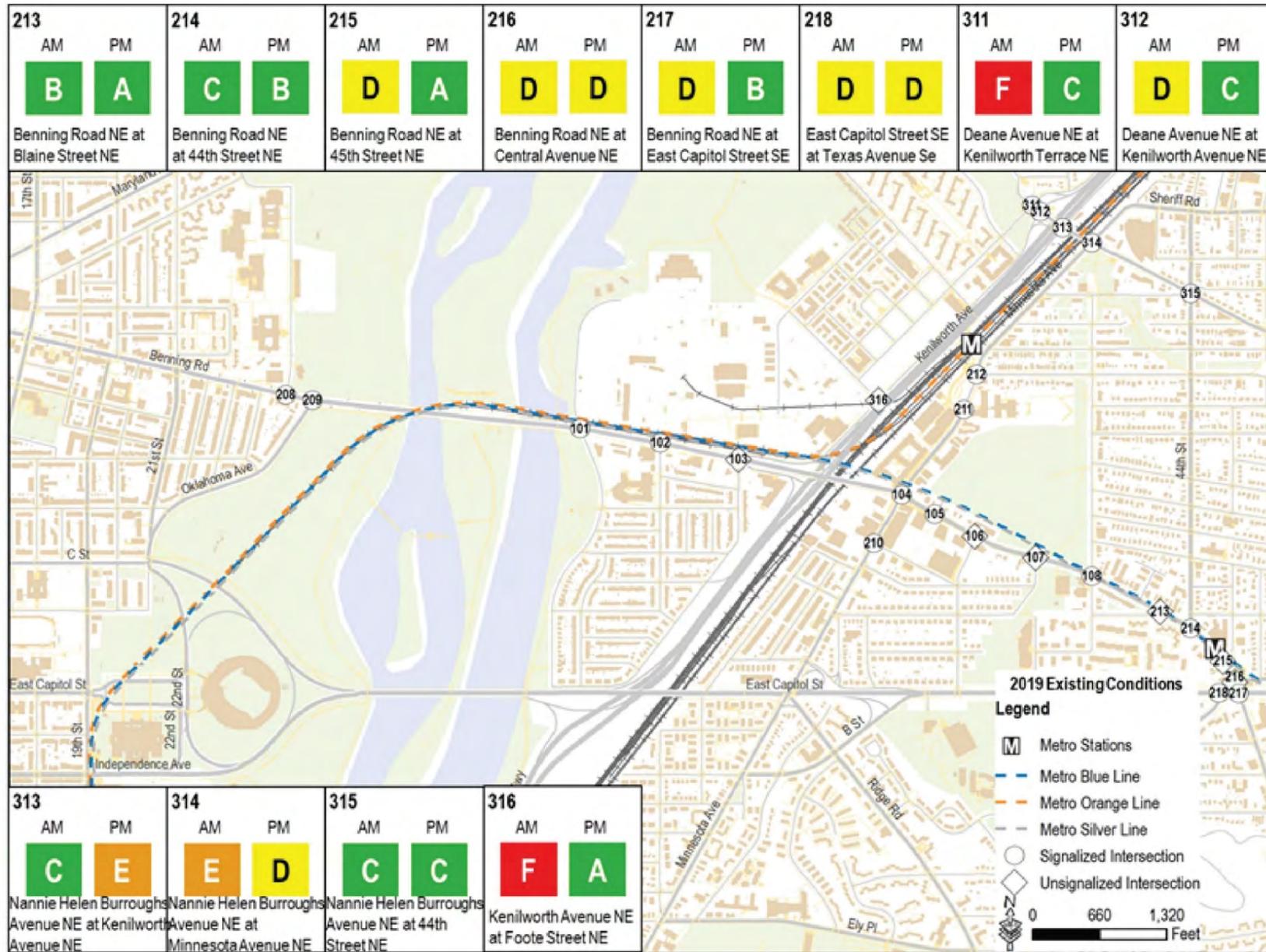


Figure 3-15: Existing On-Street Parking

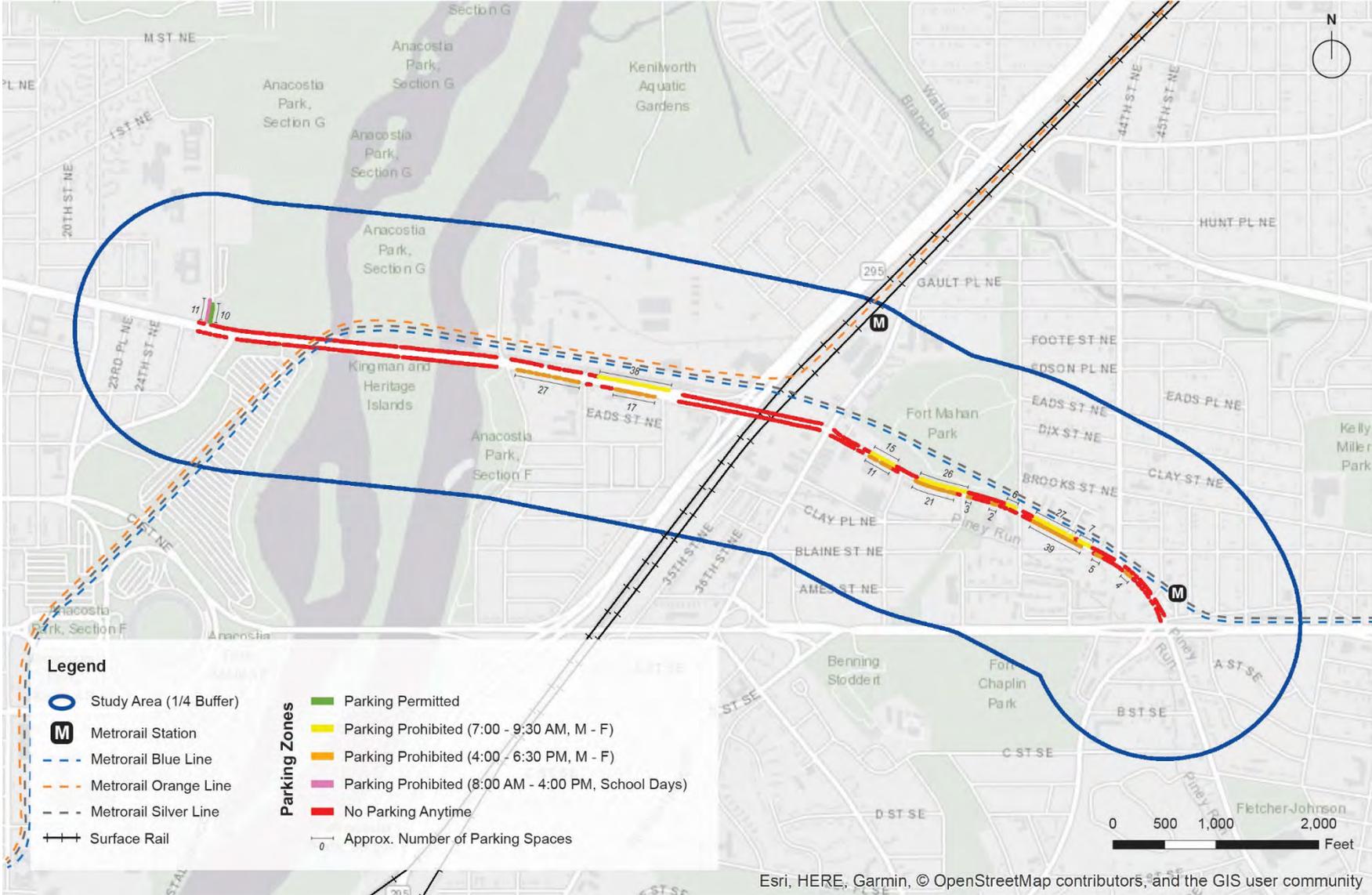
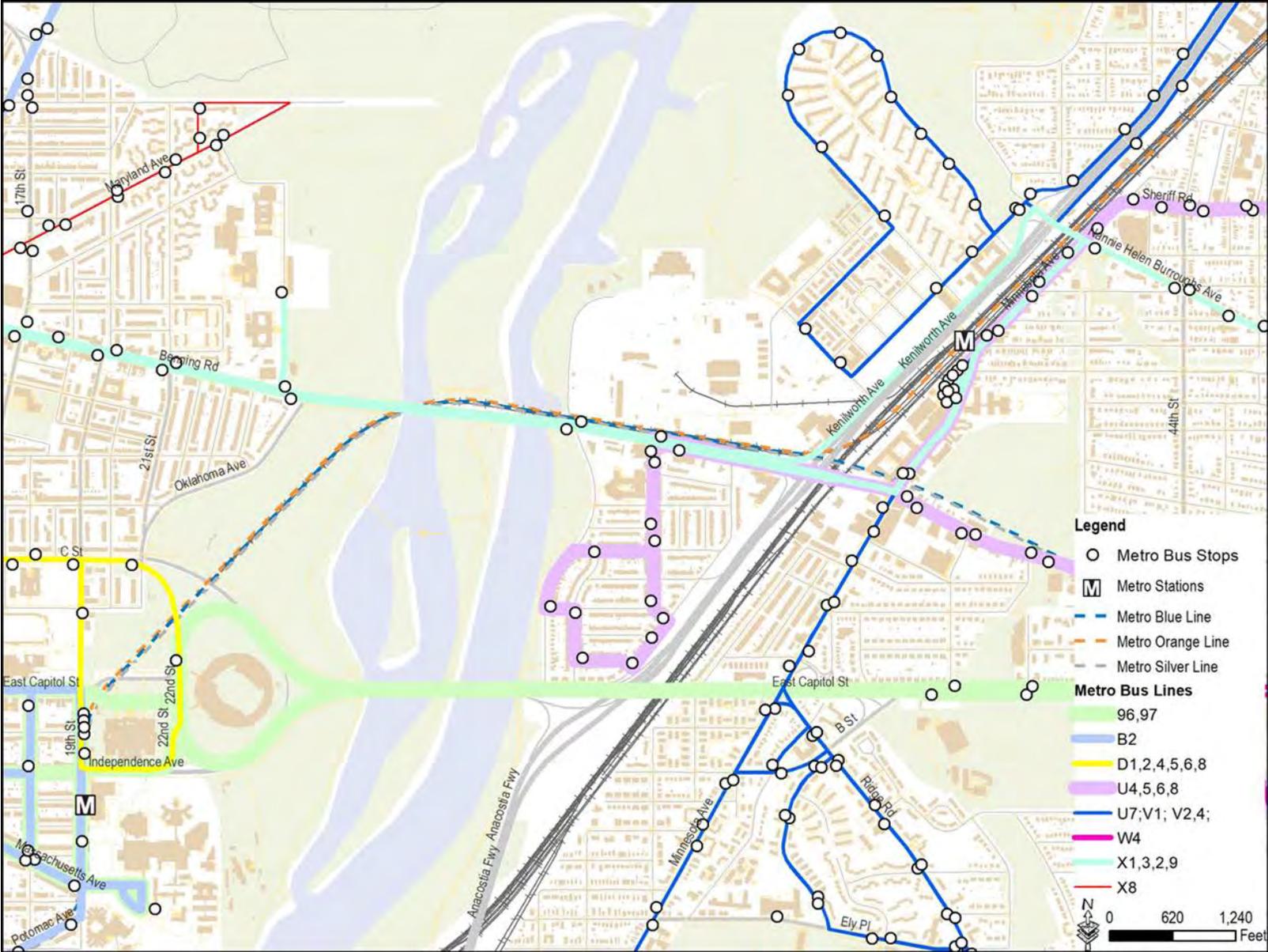


Figure 3-16: Existing Transit Services



Source: WMATA, December 2019

Metrobus

WMATA operates seventeen Metrobus routes within the study area, two of which only operate during public school arrivals and departures. The Metrobus routes provide neighborhood access to the Metrorail system as well as to downtown and cross-town connections. **Table 3-13** provides route and service characteristics information on the existing bus routes in the study area, including service span, peak and off-peak frequency, and average daily ridership.

DC Streetcar

DDOT operates the H/Benning Streetcar Line on H Street and Benning Road between Union Station and Oklahoma Avenue (H Street ends at 15th Street and continues as Benning Road eastward starting at 15th Street). The H/Benning Streetcar Line operates at 10-minute to 15-minute headways Monday through Thursday from 6:00 a.m. to midnight; Friday from 6:00 a.m. to 2:00 a.m.; Saturday from 8:00 a.m. to 2:00 a.m.; and Sunday from 8:00 a.m. to 10:00 p.m. This streetcar initiative is the first element of DDOT's 22-mile priority streetcar system plan identified in the DC's Transit Future System Plan (DDOT, 2010). Extension of streetcar service to the study area was identified as part of this system plan.

3.3.2.1 Pedestrian and Bicycle Network

Bicycle and pedestrian facilities consist of sidewalks, marked crosswalks, and recreational shared-use paths or trails.

Figure 3-17 shows the existing pedestrian and bicycle network within the study area.

Pedestrian Facilities

Streets within the study area include continuous sidewalks along both sides of the streets, except for the north side of the Whitlock Bridge where no north side sidewalk exists. The existing sidewalks vary in width within the study area. Most of the existing facilities achieve ADA requirements or DDOT design standards. However, the physical conditions of the sidewalks are deficient with substantial cracking and deformation at various locations that create hazards for pedestrians. Although ADA-compliant ramps at pedestrian crossings were observed at most intersections and mid-block crosswalks, some of the ramps did not appear to meet current standards for placement and slope.

Bicycle Facilities

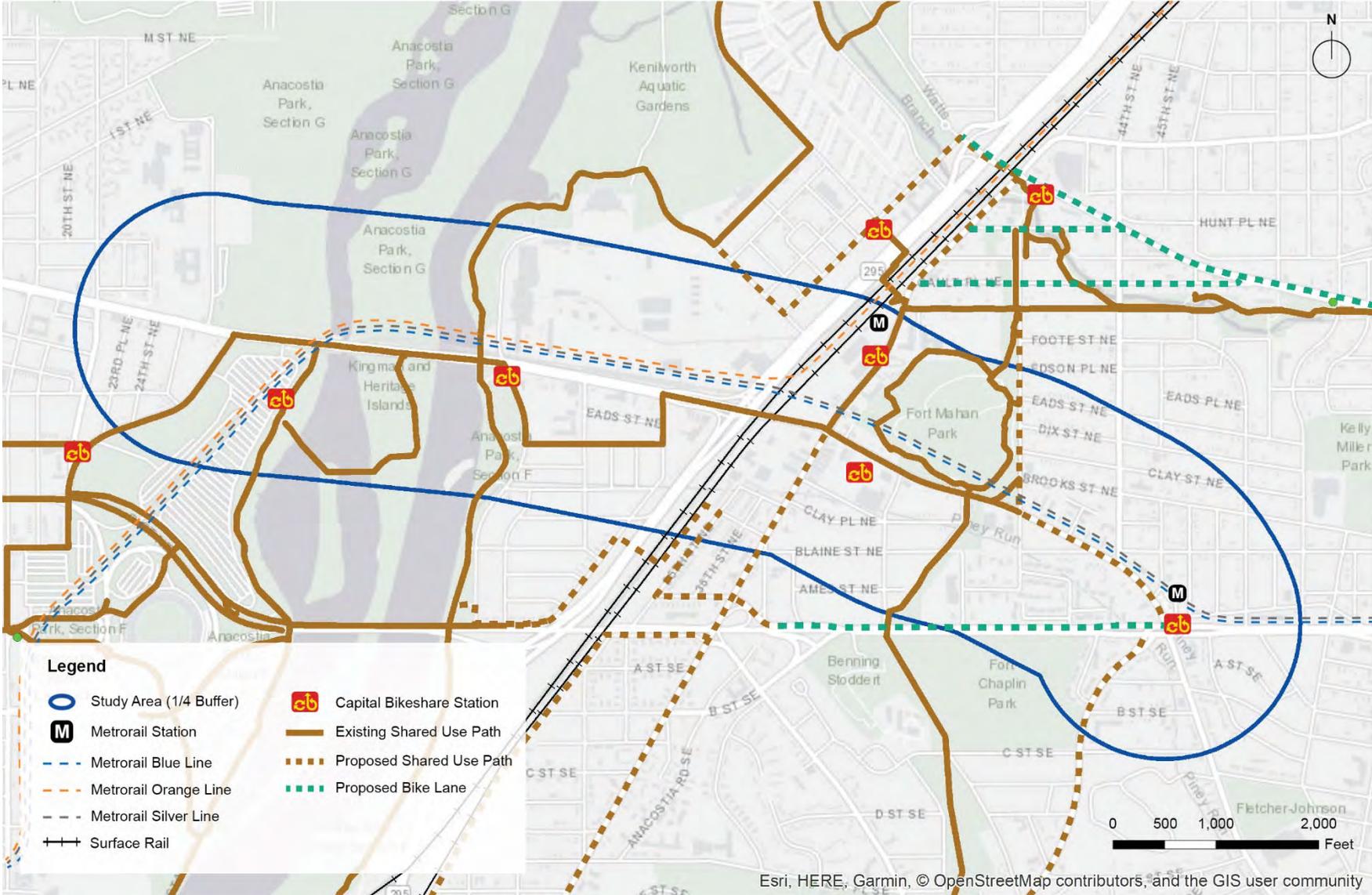
Figure 3-17 shows the distribution of bicycle facilities throughout the study area. Conditions described in this section are based on observation of bicycle facilities in the study area as of June 2015. While the study area does not currently include any on-street bicycle facilities, Benning Road is signed as an on-street bicycle route. However, DDOT rates the traffic conditions for bicycling on this section of Benning Road as "poor." In addition, there are on-street bicycle lanes proposed for East Capitol Street, Grant Street, and Nannie Helen Burroughs Avenue.

Table 3-13: Existing Bus Routes and Service Characteristics

Route	Terminals	Hours of Service	Peak Frequency	Off-Peak Frequency	December 2013 Average Daily Ridership
X1, X3	Minnesota Avenue Station – Foggy Bottom-GWU Station (X1); Tenleytown-AU Station (X3)	AM Service – WB Only 6:00 AM – 9:30 AM (M-F) PM Service – EB Only 3:30 – 7:00 PM (M-F)	X1: 15 X3: 20	N/A	1,501
X2	Minnesota Avenue Station – Lafayette Square	4:15 AM – 3:20 AM	6	Off-Peak: 12 After Midnight: 30	15,683
X9	Capitol Heights Station – Metro Center	AM Service 6:15 – 9:00 AM PM Service 3:30 – 7:15 PM	15	N/A	1,901
U4	Sheriff Road – River Terrace	4:45 AM – 1:30 AM	10	Off-Peak: 30 After Midnight: 30	1,542
U5, U6	Mayfair – Lincoln Heights	4:45 AM – 2:50 AM	20	Off-Peak: 20 After Midnight: 30	4,697
96, 97	Capitol Heights Station – Tenleytown-AU Station	4:52 AM – 2:48 AM	10	Off-Peak: 20 After Midnight: 30-40	7,025
V7, V8,	Deanwood Station – Benning Heights –Bureau of Engraving	4:38 AM – 2:00 AM	20	Off-Peak: 30 After Midnight: 35	5,114
W4	Deanwood Station – Anacostia Station	5:00 AM – 2:54 AM	10	Off-Peak: 20 After Midnight: 30	7,614
A31	Minnesota Avenue Station – Anacostia High School	3:20 PM - Trip operates only when public school is open.	N/A	N/A	21

Source: WMATA, August 2019

Figure 3-17: Existing Pedestrian and Bicycle Network



Source: DCGIS & DDOT, November 2019

The availability of bicycle parking varies in the study area. WMATA provides bicycle parking at both Minnesota Avenue and Benning Road Metrorail stations with eight bike racks and four lockers at Minnesota Avenue and four bike racks at Benning Road. Additionally, bicycle parking is available at the Benning Neighborhood Library and other major public and retail buildings in the study area. Capital Bikeshare operates the District's bicycle sharing program. As of June 26, 2015, Capital Bikeshare operated five Bikeshare stations within the study area.

Shared-Use Paths (Multi-Use Trails)

Three shared-use paths (trails) are located within the study area. These trails provide hiking and bicycle connections and recreational access to public parks.

Kingman and Heritage Islands Park: Kingman and Heritage Islands Park contains over 1.5 miles of trails. Biking and hiking are permitted on the main trail and boardwalk trail.

Anacostia Riverwalk Trail: The Anacostia Riverwalk Trail is a planned 20-mile multi-use trail along the east and west banks of the Anacostia River that will connect residents and visitors to the Anacostia River and provides recreational opportunities such as walking, running, and bicycling. The trail will also connect waterfront neighborhoods and attractions including the Tidal Basin and National Mall, the Fish Market, Nationals Park, Historic Anacostia, Robert F. Kennedy Memorial (RFK) Stadium, Benning Road, the Kenilworth Aquatic Gardens, and points into Prince George's County, Maryland. The planned trail will also connect to other local and regional hiking and biking trails. A completed portion of the Anacostia Riverwalk Trail is adjacent to Benning Road (along the bridge over Kingman Island/Anacostia River) and is owned and maintained by DDOT as a transportation facility. This portion of the trail was completed in 2016.

Fort Circle Trail: The Fort Circle Trail is a seven-mile, unpaved hiking and biking trail that links the District's historic Civil War era forts. The trail, owned by NPS, runs from Fort Stanton to Fort Mahan in the southeastern portion of DC. The two historic forts are in the study area (Fort Mahan and Fort Chaplin) and are connected by the trail. The trail crosses Benning Road at Fort Mahan Park. Since the trail is unpaved, it is a recreational facility.

Proposed Multi-Use Trails: The 2005 DC Bicycle Master Plan calls for a series of multi-use trails along Minnesota Avenue, Benning Road, East Capitol Street, Texas Avenue and through the Kenilworth Terrace community, connecting to the regional recreational shared-use paths. The Plan indicates that facilities for future multi-use trails are determined by specific roadway conditions and may be aligned in a roadway ROW, in a separate ROW, or a combination of both. Wide sidewalk facilities can also be designated as multi-use trails.

3.3.2.2 Rail Service

The CSX railroad freight corridor operates north-south through the study area between Kenilworth Avenue (DC-295) and Minnesota Avenue. CSX operates this line as a freight bypass of Washington Union Station. The Benning Road Yard is located to the immediate south of the study area, north of Anacostia Park as the CSX railroad crosses the Anacostia River. The Metrorail Orange Line shares the CSX railroad tracks north of Benning Road.

3.4 PARKLANDS

This section identifies existing publicly owned parks, recreation areas and trails.

3.4.1 METHODOLOGY

Existing information was gathered through site visits, recent aerial photographs, and GIS data provided by OCTO. The potential for facilities and properties protected by Section 6(f) of the US Land and Water Conservation Fund (LWCF) Act to occur in the study area was determined by reviewing the Detailed Listing of Grants, maintained by the NPS.¹ Public parklands identified through this assessment are also protected by the U.S. Department of Transportation Act of 1966 (commonly referred to as Section 4(f)) (**Chapter 5**).

3.4.2 EXISTING CONDITIONS

Figure 3-18 shows parks, recreational areas and trails in the study area. These resources are listed in **Table 3-14**. No properties acquired or developed with LWCF Act monies are within the study area.

3.5 HISTORIC PROPERTIES AND ARCHAEOLOGICAL RESOURCES

This section provides an evaluation of historic properties and archaeological resources. Historical property and archaeological resource investigations were completed for the proposed action in accordance with federal and local laws and regulations, including Section 106 of the National Historic Preservation Act (54 U.S.C. 300101 et seq.).

DDOT initiated Section 106 consultation with the District of Columbia State Historic Preservation Office (DC SHPO) in March of 2014. Subsequent activities are described in this section and include identification of area of potential effects (APE) and identification of the properties listed in or previously determined eligible for listing in the National Register of Historic Places (NRHP) within the APE; potentially eligible properties were also evaluated. In addition, as a part of the Section 106 process, efforts were made to identify the consulting parties interested to participate in the process. In their letter dated December 5th, 2019, DC SHPO has concurred with FHWA's no adverse effect finding for the Preferred Alternative conditioned upon relocating the call boxes close to the original locations within the study area.

At the time of the evaluation of historic properties during the Draft EA, the proposed action was determined to occur within the previously disturbed land. As a result, an archaeological survey was deferred until the proposed locations and dimensions of project-related ground disturbances are refined. Since the Preferred Alternative follows established roads and bridges, it has been identified that no previously undisturbed ground would be impacted during construction. Therefore, no archeological survey was needed for the Preferred Alternative at this time. In their letter dated December 5th, 2019, DC SHPO has indicated that DDOT continues to consult further with DC SHPO to determine the need for phased archaeological investigations in previously unsurveyed areas where ground disturbing activities are proposed for the Preferred Alternative (see **Appendix F**).

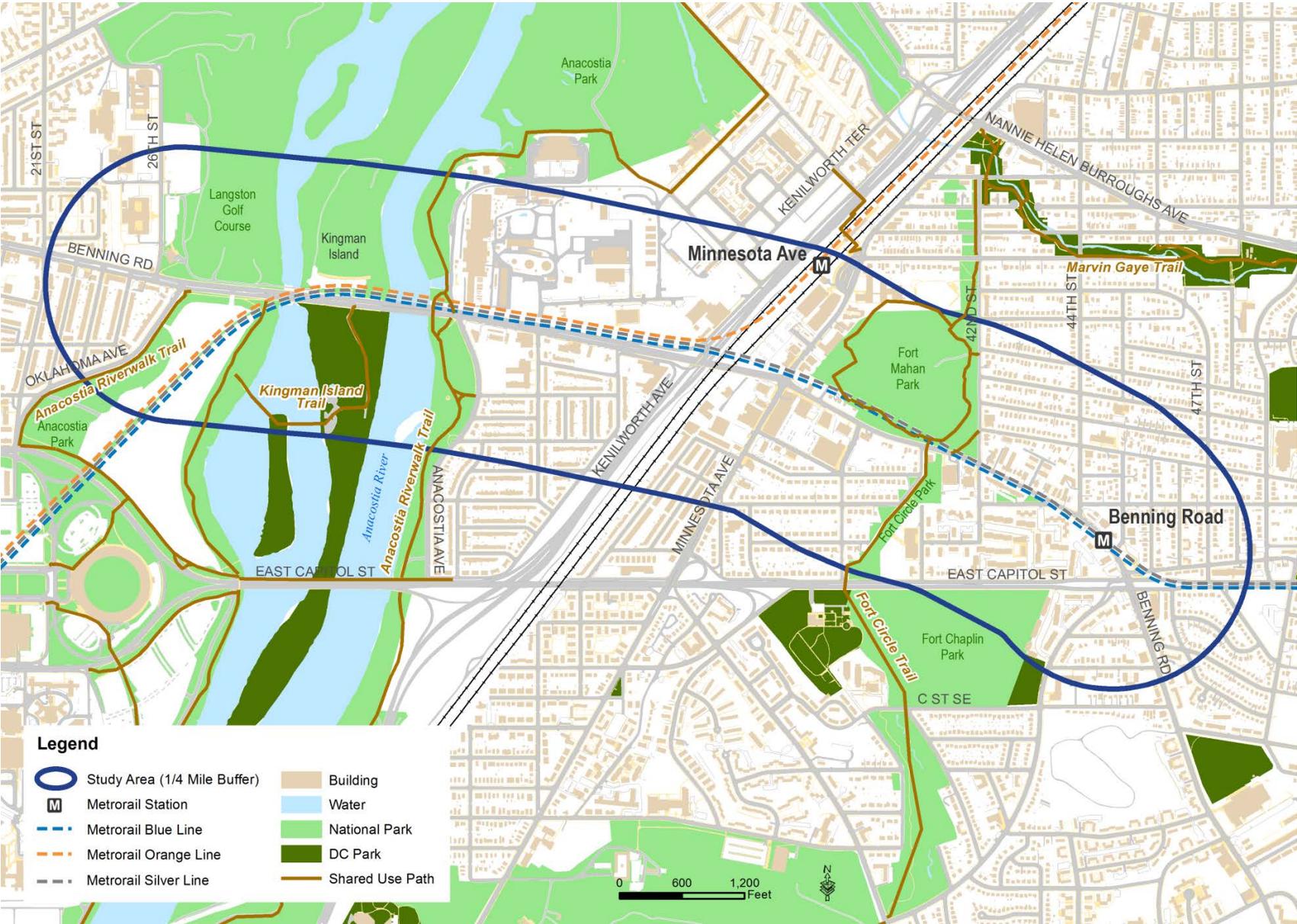
¹ The LWCF Act Grant List maintained by InvestigateWest was used: <http://invw.org/2012/06/11/lwcf-grants-database-1283/>.

Table 3-14: Parks, Recreational Resources and Trails in the Study Area

Resource	Location	Jurisdiction	Size	Description
Kingman and Heritage Islands Park	Anacostia River between Benning Road and Kingman Lake Bridge	District of Columbia	19.7 acres out of 50.6 total park acreage	Active and passive recreational uses. Originally created by the United States Army Corps of Engineers (USACE) in 1916, Kingman and Heritage Islands were transformed into a recreational area for people of all ages to learn about the natural environment in DC. Managed by Living Classrooms under contract of the Office of Deputy Mayor for Planning and Economic Development.
Anacostia Park	Anacostia River (both banks) between DC Line and Railroad Bridges	National Park Service	105.0 acres out of 1062.1 total park acreage	Active and passive recreational uses. The park has shoreline access, a swimming pool, ball fields, trails, picnic facilities and the Anacostia Park Pavilion with public space for roller skating and special events. Langston Golf Course offers an 18-hole course as well as driving range.
Fort Mahan Park	Benning Road between 42 nd Street and Grant Street	National Park Service	36.8 acres out of 39.0 total park acreage	Open space and woodlands.
Fort Circle Park	Anacostia Park to Fort Mahan Park; Fort Mahan Park to Fort Dupont Park	National Park Service	6.4 acres out of 454.6 total park acreage	Trail (and proposed greenway) network connecting the Civil War Defenses of Washington.
Fort Chaplin Park	South of East Capitol Street between Chaplin Street and T Street	National Park Service	8.3 acres out of 34.7 total park acreage	Mostly woodlands.
Fort Chaplin Park – Park site	Texas Avenue and C Street	District of Columbia	0.3 acres out of 2.7 total park acreage	Open space and woodlands.

Source: DC Data Catalog (<http://data.dc.gov/>) and NPS

Figure 3-18: Parks, Recreational Resources and Trails in the Study Area



Source: DC Data Catalog (<http://data.dc.gov/>) and NPS

3.5.1 METHODOLOGY

Under 36 CFR 800.16(d), APEs for historic properties and for archaeology were defined for each Build Alternative in 2014. An APE is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” Development of the APEs took into consideration the potential for effects from construction and operational activities related to the proposed action (see **Figure 3-19**). The APE for archaeological resources was defined as the proposed action limits of disturbance (LOD) under the current conceptual design; the APE for historic properties includes the archaeological APE as well as areas within visible and/or audible range of the LOD.

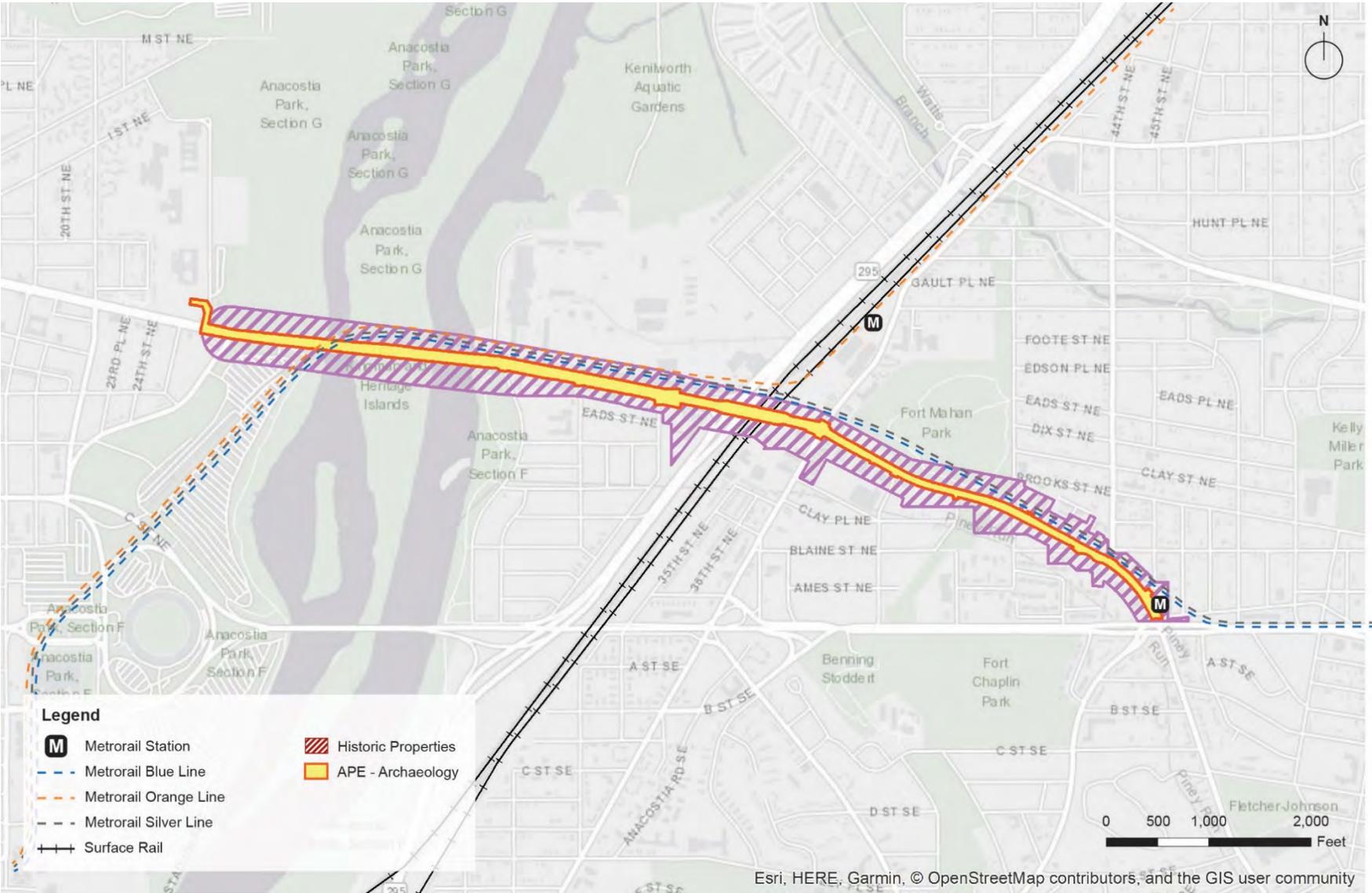
Historic properties and archaeological sites within the APEs were identified according to two criteria:

- Current listing on the NHRP, and properties previously determined eligible for listing in the NRHP; and
- Meeting the criteria for listing in NRHP but not previously listed or determined eligible. Properties listed in the District of Columbia Inventory of Historic Sites (DCIHS) are considered to meet NRHP eligibility criteria and, thus, are historic properties.

A historic properties survey, including research, was conducted in the APE; research was only completed for archaeological resources. The background research effort consisted of internet research of local newspaper articles, library research at Kiplinger Research Library of the Historical Society of Washington, DC, and the Washingtonian collection at the Martin Luther King, Jr. Library, analysis of historic maps and aerial photographs, nominations for properties and sites listed in the NRHP and DCIHS, the DC Office of Planning online mapping of historic properties, and previous studies in the APEs. A complete list of these sources is provided in **Chapter 9**.

Information gathered during the background research and historic property field survey was used to prepare a DC SHPO Determination of Eligibility (DOE) Form for each property. This section summarizes the findings of the survey; additional detail on the survey and Section 106 process is provided in the *Benning Road and Bridges Transportation Improvements Section 106 Technical Memorandum* (see **Appendix F**). Historic properties identified through this survey are also protected by the U.S. Department of Transportation Act of 1966 (commonly referred to as Section 4(f)) (**Chapter 5**).

Figure 3-19: APEs for Historic Properties and Archaeology



3.5.2 EXISTING CONDITIONS

3.5.2.1 Previously Identified Historic Properties

Seven previously identified historic properties are within the APE. Two NPS parks are listed in the NRHP: Civil War Defenses of Washington (Fort Mahan and Fort Circle Parks) and the Langston Golf Course Historic District. NPS and DC SHPO consider Anacostia Park (which includes Kingman and Heritage Islands Park) to be eligible for listing in the NRHP and the DCIHS. The Browne, Phelps, Spingarn, and Young Educational Campus Historic District at 2500 Benning Road is listed in the NRHP and DCIHS; the Spingarn Senior High School is also individually listed. In 2018, Kingman Park became the area’s newest NRHP-listed historic district. Its boundary includes the Langston Golf Course and the Browne, Phelps, Spingarn, and Young Educational Campus Historic District. The entrance pavilion and marquee of the former Senator Theater on Minnesota Avenue, south of Benning Road is listed in the DCIHS; however, the auditorium itself has been demolished. These properties are summarized in **Table 3-15**.

NRHP Multiple Property Listings record groups of thematically related properties that are historically significant. Apartment buildings within the APE may meet the criteria for the previously approved “Apartment Buildings of Washington DC 1870-1945” Multiple Property Documentation Forms (MPDF).

The previously identified properties are summarized in **Table 3-15** and shown in **Figure 3-20**.

Table 3-15: Previously Identified Historic Properties

Property Name	Designation	Status	NRHP#
Civil War Defenses of Washington	NRHP	Listed	74000274
Langston Golf Course Historic District	NRHP	Listed	19911015
Anacostia Park	NRHP DCIHS	Eligible Listed	n/a
Senator Theater Entrance Pavilion	DCIHS	Listed	n/a
Spingarn School	NRHP DCIHS	Listed Listed	14000198
Browne, Phelps, Spingarn, and Young Educational Campus Historic District	NRHP DCIHS	Listed Listed	15000743
Apartment Buildings of Washington DC 1870-1945	NRHP	Listed	64500083
Kingman Park Historic District	NRHP DCIHS	Listed Listed	100002960

Sources: DC SHPO; DC Inventory of Historic Sites and Pending Historic Landmark and Historic District Nominations; National Capital Parks – East, Environmental Assessment, Anacostia Riverwalk Trail Section 3 Realignment, Anacostia Park; NPS, NRHP Database and Research Page

3.5.2.2 Potentially Eligible Historic Properties

In letters dated March 25, 2014 and August 20, 2014, the DC SHPO identified an additional 29 properties in the APE that warranted a DOE evaluation (see **Figure 3-21**). Recommendations of NRHP eligibility of these properties were formulated and are included in **Table 3-16**, which incorporates recommendations on NRHP eligibility made by DC SHPO on April 15, 2015.

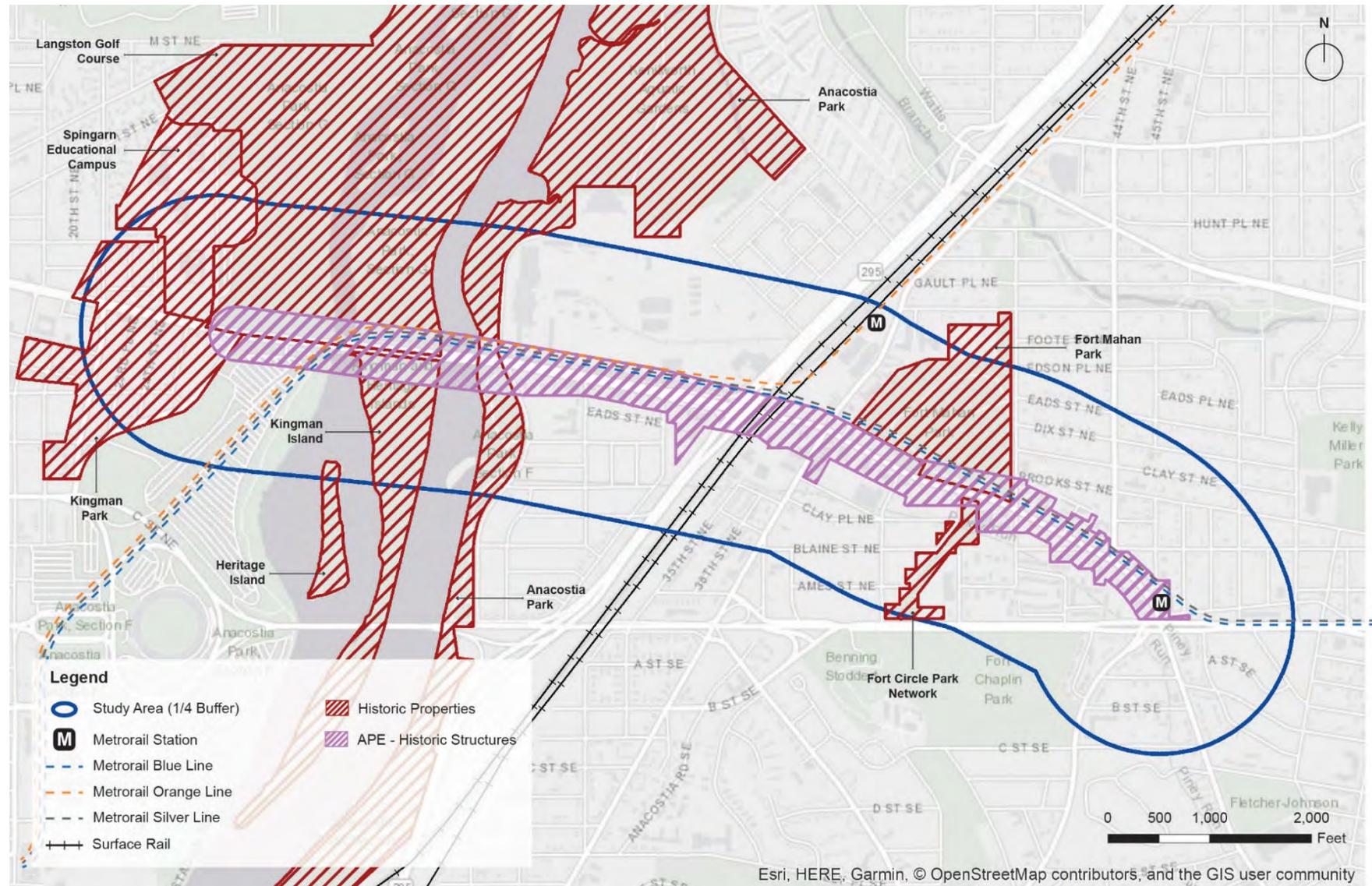
3.5.2.3 Potential Archaeological Resources

The Anacostia River floodplain and adjacent upland bluffs were favorable for human occupation throughout the prehistoric, contact, and historic periods. Given the topographic setting of the archaeology APE and historic activities carried out in the vicinity, the area of the APE most likely had a high prehistoric and historic archaeological potential prior to the extensive landfilling of the turn of the 20th century.

Multiple archaeological surveys were conducted within a quarter-mile of the APE (see **Appendix F**). Those surveys, as well as professional and/or avocational archaeologists canvassing the area since the late nineteenth century, reported thirteen archaeological sites within a quarter-mile of the APE (**Table 3-17**). Four of the thirteen sites are reported to be present within or adjacent to the APE but given the imprecision of site recordation over the past 100+ years, their presence within the APE requires archaeological confirmation. An assessment for the potential for archaeological resources is summarized as follows:

- The western portion of the APE around Anacostia Park, including Kingman and Heritage Islands Park – This area appears to be the least disturbed portion of the APE; however, historic documents indicate that this area around the Anacostia River was substantially modified by an early twentieth century program of dredging, channelization, wetland-reclamation, and island-building that created both islands and Kingman Lake (re. Wagner 2015).
- The existing rights-of-way of Benning Road and Minnesota Avenue – No intact archaeological deposits are anticipated because the area has been subject to decades of utility, roadway and transit infrastructure construction and maintenance activities that disturbed surface and subsoils (e.g. installation and resurfacing). The most disruptive and well-documented impact to naturally occurring land surfaces within the APE for archaeology resulted from construction of WMATA’s Blue Line in the mid-1970s. As shown in **Figure 3-22**, the alignment of the Blue Line encompasses the APE for archaeology from a point west of 42nd Street to the eastern end of the APE. The subway was constructed using the cut-and-cover method. Consequently, no intact archaeological deposits are expected to occur in this section of the APE.
- Fort Mahan area — There is a potential for intact archaeological resources dating to the late nineteenth through early twentieth centuries or earlier in previously undisturbed portions of the Fort Mahan area, adjacent to Fort Mahan Park, a Civil-War era fort constructed for the defense of Washington, DC and listed in the NRHP as part of the Defenses of Washington (Civil War Fort Sites) District. However, the Preferred Alternative does not propose any earth-moving activities related to construction and operation in the Fort Mahan area that could disturb intact ground and result in new ground disturbance. Refer to **Appendix F** for more details.

Figure 3-20: Previously Identified Historic Properties



Sources: DC SHPO; DC Inventory of Historic Sites and Pending Historic Landmark and Historic District Nominations; National Capital Parks – East, Environmental Assessment, Anacostia Riverwalk Trail Section 3 Realignment, Anacostia Park; NPS, NRHP Database and Research Page

Table 3-16: Properties in the APE Requiring Determination of Eligibility Evaluation

Ref. No.	Address	Description	Recommended NRHP Status
1	Benning Road	Fire and Police Call Boxes	Eligible
2	3300 Benning Road	Pepco Power Plant, 1906 (most of plant demolished, this structure remains standing)	Eligible
3	3341 Benning Road	1948 commercial building obscured by large c. 1990 addition	Not Eligible
4	3399 Benning Road	Mid-20 th -century auto sales and service building, now D&C Cab	Not Eligible
5	3423-39 Benning Road	River Terrace Shopping Complex, c. 1940, designed by George T. Santmyers. Not individually eligible but contributes to a potential River Terrace Historic District.	Not Eligible
6	3445 Benning Road	19 th -century house, now "Benning Liquors;" substantially altered	Not Eligible
7	Vicinity of 3700 Benning Road	Baltimore & Potomac Railroad	Eligible
8	Vicinity of 3700 Benning Road	Baltimore & Ohio Railroad, Alexandria Branch	Not Eligible
9	3701 Benning Road	A. Loffler Provision Co., 1916. Adjacent to the principal slaughterhouse and livestock facility for DC.	Not Eligible
10	3938 Benning Road	1931 residence designed by African-American Architect Lewis Giles	Eligible
11	3940 Benning Road	1940 Colonial Revival residence designed by African-American Architect Gus Bull	Not Eligible
12	4001 Benning Road	Stewart Funeral Home, 1964. Designed by Donald H. Roberts for an African-American family-owned and operated business founded in 1900.	Eligible
13	4053 Benning Road	c. 1930 residence	Not Eligible
14	4145 Benning Road	No. 14 Police Precinct, 1948; Metropolitan Police Department Sixth District Headquarters, 1978 extension	Not Eligible
15	4201-4243 Benning Road	Block of row houses, c. 1940	Eligible
16	4202 Benning Road	Commercial building, now Mike's Market	Not Eligible
17	4208 Benning Road	Designed by African-American architect Cyril Bow in 1939. Eligible under "Apartment Buildings in Washington D.C. 1880-1945" MPDF	Eligible
18	4228 Benning Road	1945-46 apartment building designed by African-American Architect R. C. Archer	Eligible
19	4234 Benning Road	c. 1930 residence	Not Eligible
20	4236 Benning Road	1941 apartment building designed by African-American Architect Cyril Bow. Eligible under "Apartment Buildings in Washington D.C. 1880-1945" MPDF	Eligible
21	4248 Benning Road	Commercial building, now Jamahri's Hair Studio	Not Eligible
22	4254 Benning Road	c. 1930 residence	Not Eligible
23	4256-4264 Benning Road	c. 1950 apartment buildings	Not Eligible
24	4270 Benning Road	Jones Memorial Methodist Episcopal Church, now New Mount Calvary Baptist Church, designed by Woodson & Vaughn, built in 1923	Eligible
25	4274 Benning Road	1942 apartment building designed by George T. Santmyers. Eligible under "Apartment Buildings in Washington D.C. 1880-1945" MPDF	Eligible
26	4212 East Capitol Street	Fort Chaplin Park Apartments & Townhomes	Not Eligible
27	4510 East Capitol Street	The "Shrimp Boat," take-out restaurant, constructed c. 1953	Not Eligible
28	217-223 42 nd Street	Mid-20 th -century duplexes	Not Eligible
29	227 and 231 42 nd Street	Mid-20 th -century apartments, currently a pre-school	Not Eligible

Sources: DC SHPO

Table 3-17: Recorded Archaeological Sites within a quarter mile of the APE

Site #	Location	Report No.	Site Name	Project	Site Type	NRHP Status	Time Period
51NE008	East Bank of Anacostia River above Benning Bridge	203	BP15		P	Not evaluated	2 paleo points; Unidentified (UID) prehistoric
51NE009*	River Terrace Playground, BP 16. NW of school	581	River Terrace; BP16	River Terrace School Expansion	P	Eligible under D	Late Archaic, Early and Middle Woodland
51NE010	East of Anacostia River; between Anacostia Avenue & 34 th Street, near Blaine	203	BP17		HP	Not evaluated	UID prehistoric; Contact; Not relocated.
51NE013*	East bank of Anacostia River; South of Benning Bridge				P	Not evaluated	UID prehistoric. Not relocated.
51NE015*	East of Anacostia; South of Benning Bridge		S34; S47; S33		P	Not evaluated	Woodland and UID prehistoric; Not relocated.
51NE018	South of Benning Road, 300 yds from Pepco Power House		S341		P	Not evaluated	Early, Middle, Late Woodland, and UID prehistoric; Not relocated.
51NE023	1100 ft northwest of Benning/ Kenilworth intersection Pepco Railroad spurs	203	PE 242-312	WSSC Force Main	P	Not evaluated	UID prehistoric. Not relocated.
51NE025	Intersection of Kenilworth and Benning	150		Barney, Circle Phase I & II	P	Not eligible	UID prehistoric
51NE036	Sq. 5053, portion lot 38, Minnesota Avenue adjacent to Metro Station	274	DC DOES	Phase 1 DC DOES	HP	Not eligible. Destroyed by construction	UID prehistoric and domestic/ farm/ church/ school
GWU5	Prehistoric secondary deposit in fill, no site # given	203	GWU5	WSSC Force Maine	P	Not a site	Secondary deposit of prehistoric (mixed age) in fill
H101*	Near Benning Road and Anacostia Avenue, NE		Benning's Bridge Battery		Civil War	Not relocated	

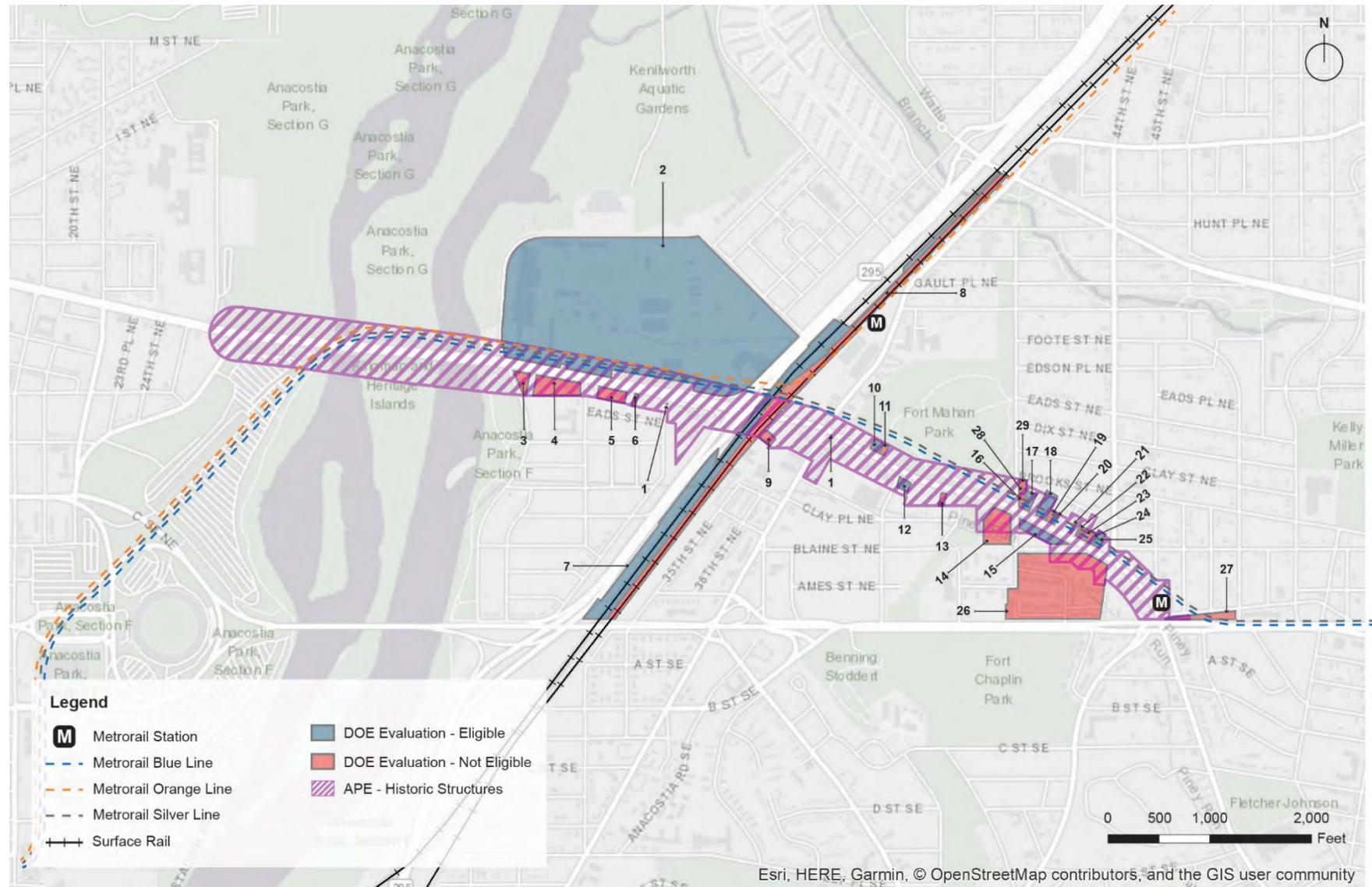
Site #	Location	Report No.	Site Name	Project	Site Type	NRHP Status	Time Period
P29	SI 243 Cat 155082 Scagg Far; originally lumped with 51NE17	203	Scagg Farm	PRAS	P	Not relocated, unevaluat ed	Woodland; UID prehistoric ceramics
51NE050*	4000 Benning Road, NE	627		HUD – Multi-Family Housing	H	Not eligible	Early 20 th century industrial

Source: DCHPO 2016.

*Reported within or adjacent to the APE.

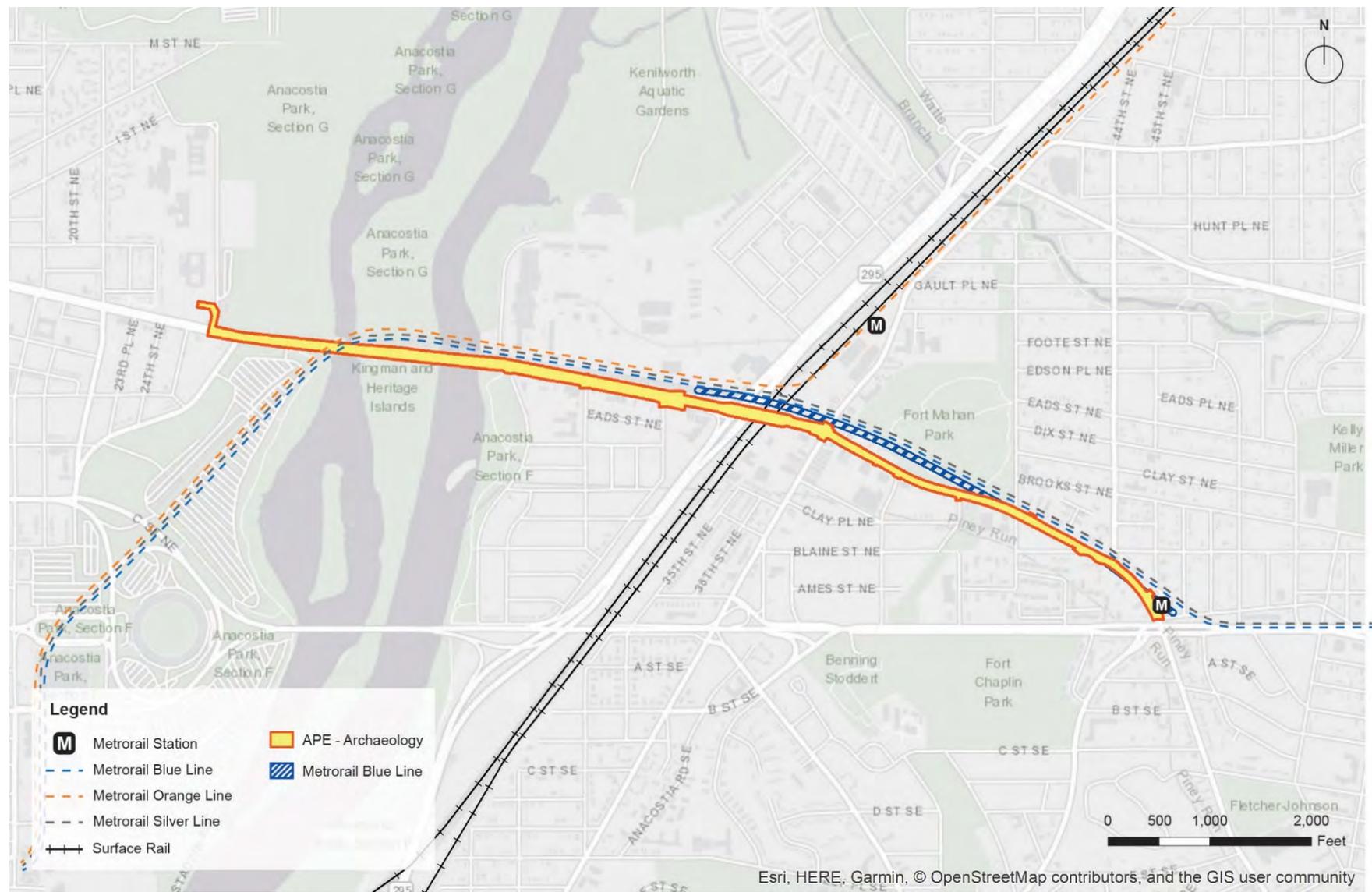
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Figure 3-21: Properties Requiring Determination of Eligibility Evaluation



Sources: DC SHPO

Figure 3-22: Areas of Recorded Disturbances in the APE



Sources: DC SHPO

3.6 AESTHETICS AND VISUAL QUALITY

This section describes the visual character and quality of the study area.

3.6.1 METHODOLOGY

Documentation of existing visual quality and viewsheds was based on the FHWA's *Guidelines for Visual Impact Assessment for Highway Projects* (FHWA, 2015). A visual impact assessment (VIA) established an area of visual effect (AVE), based on landscape constraints and the physiological limits of human sight. This VIA organizes the AVE into viewsheds using the concepts of visual character, visual quality, and viewer preferences. These concepts are described in more detail in the following sections. The inventory was developed through field observations and photography and information gathered from published planning documents.

Viewshed Identification – The analysis identified six existing landscape units and associated key views where the transportation improvements in the AVE would be visible to visitors, pedestrians, drivers, and residents. The viewshed locations were selected due to their proximity to Benning Road and are intended to be representative of views within the AVE.

Visual Character – Visual character describes the physical attributes of the AVE. These attributes are elements of the natural and cultural environments. Visual character is value-neutral in that character is qualified as neither good nor bad.

Visual Quality – Visual quality is what viewers like and dislike about the visual character of the AVE. The FHWA VIA guidelines recognize three types of visual perception that determine visual quality:

- When viewing the components of a scene's natural environment, viewers inherently evaluate the natural harmony of the existing scene, determining if the composition is harmonious or inharmonious.
- When viewing the components of the cultural environment, viewers evaluate the scene's cultural order, determining if the composition is orderly or disorderly.
- When viewing the project environment, viewers evaluate the coherence of the project components, determining if the project's composition is coherent or incoherent.

Viewer Sensitivity – Viewer sensitivity is the consequence of viewer exposure and viewer awareness. Viewer sensitivity is strongly influenced by a viewer's activity, awareness of their surroundings and the frequency and length of time using a resource. Viewer exposure is based on proximity, extent, and duration. The greater the exposure, the more viewers will be concerned about visual impacts. Viewer awareness is based on attention, focus, and expected level of protection of the view.

3.6.2 Existing Conditions

The AVE contains numerous visual conditions encompassing areas that are primarily transportation infrastructure, parkland, residential, and commercial in character. The following key views are representative of these varying conditions. Locations and direction of the key views

are shown in **Figure 3-23**. The AVE does not include any planned views or vistas that are associated with the Plan of the City of Washington (L'Enfant Plan).

Key View 1- 26th Street

Key View 1 is in the western portion of the AVE and is represented by the view at 26th Street looking south (see Figure 3-24).

Figure 3-24: Key View 1 – 26th Street (looking south)



This view is characterized by a narrow two-lane roadway framed by parking, utility poles, fencing, and low-rise to medium-rise buildings; the left (east) side also includes a line of mature street trees. To the south, the view terminates with views of man-made development.

Multiple elements within the view compete for the viewer's attention, resulting in an overall lack of order. The streetlights and trees contribute to a defined pattern, while the driveways and fencing add visual distractions. The visual elements combine to form an overall view with a lack of unity, with multiple elements disrupting visual lines.

Because this area of the AVE functions as a neighborhood street, viewers are primarily travelers, including neighborhood residents. Travelers have a short period of exposure to the area and routinized, resulting in a low level of awareness in Key View 1.

Key View 2- Western Benning Road

Key View 2 is in the western portion of the AVE and is represented by the view along Benning Road looking east (see **Figure 3-25**). This view is characterized by a broad, six lane roadway separated by a concrete median. Streetlights, numerous fencing types, and intermittently planted trees line the street. Elevated Metrorail tracks, utility poles, a communications antenna, commercial signage, and trees from adjacent parklands are also visible. To the east, the view terminates with views of man-made development and higher-elevation, vegetated parkland in the background.

Multiple elements within the view compete for the viewer's attention, resulting in an overall lack of order. The streetlights, trees, and median contribute to a defined pattern, while the power lines, commercial development, and fencing add visual distractions. The visual elements combine to form an overall view with a lack of unity, with multiple elements disrupting visual lines.

Because this area of the AVE functions as a heavily used transportation corridor, viewers are primarily travelers. Travelers have a short period of exposure to the area and are focused on navigation, resulting in a low level of awareness in Key View 2.

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Figure 3-23: Location and Direction of Key Views

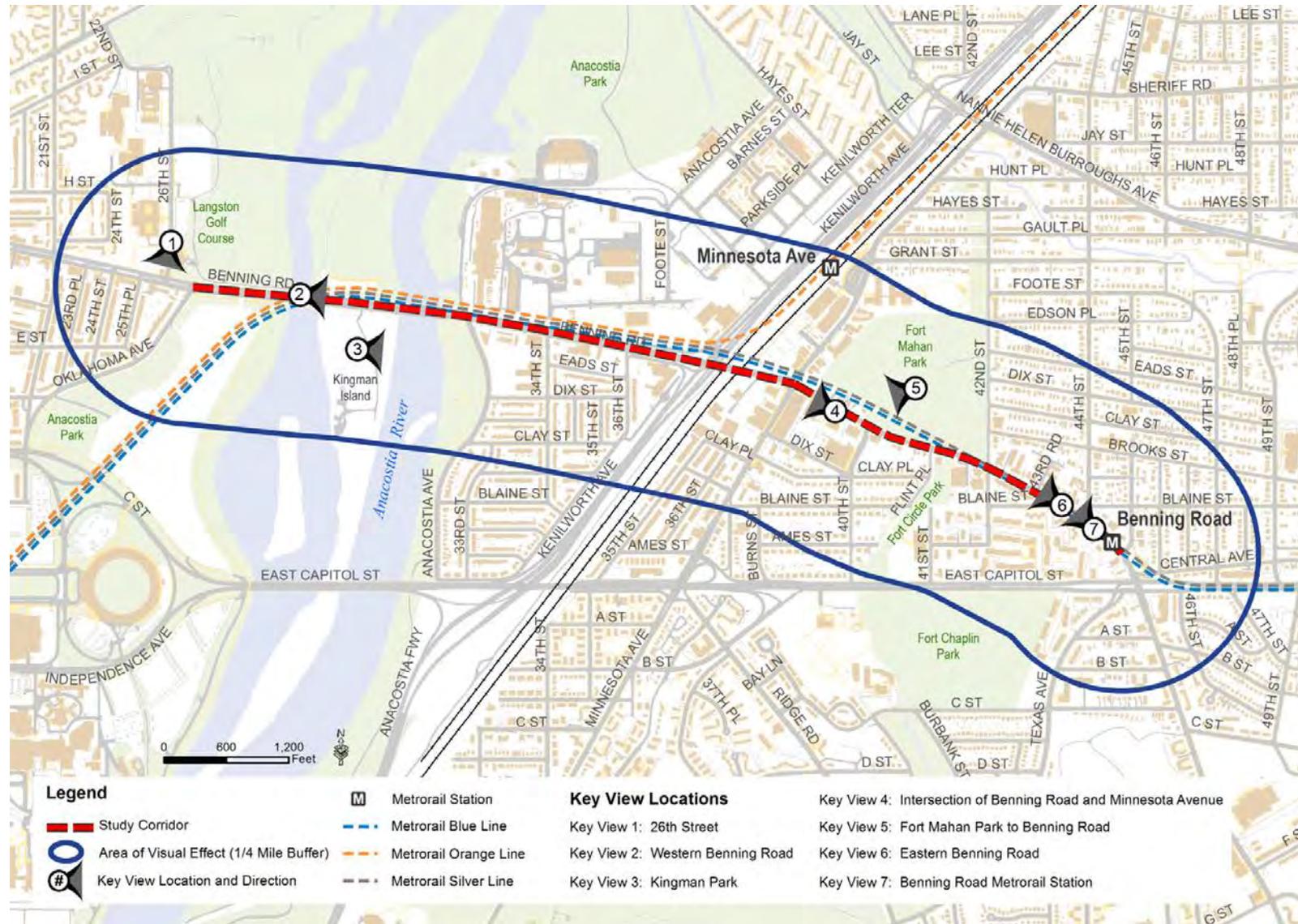


Figure 3-24: Key View 1 – 26th Street (looking south)



Figure 3-25: Key View 2 - Western Benning Road (looking east)



Key View 3 – Benning Road Bridge from Kingman and Heritage Islands Park

Key View 3 is in the western portion of the AVE along Benning Road at the Kingman and Heritage Islands Park entry plaza, facing northeast. The foreground is comprised primarily of natural vegetation along the banks of the Anacostia River, which is also visible (see **Figure 3-26**). The Benning Road bridge over the Anacostia River and the elevated Metrorail tracks are prominent horizontal elements in the view, while numerous vertical elements from industrial and commercial operations punctuate the view. In the periphery of the view, man-made development and the elevated topography of parkland are also visible.

The overall view exhibits a level of order due to the horizontal and vertical elements of the bridge, the Metrorail tracks, and the smokestacks. The primary viewers are travelers on Benning Road; for nearby park users, the visual focus is primarily interior to the park and secondarily to the nearby transportation and industrial infrastructure. As a result, park viewer awareness of visual changes would be low. Benning Road traveler awareness would be low given the visual character of Key View 3 and the focus of travelers on navigation.

Figure 3-26: Key View 3 – Benning Road Bridge from Kingman and Heritage Islands Park (looking east)



Key View 4 - Intersection of Benning Road and Minnesota Avenue

Key View 4 is located in the central portion of the AVE at the intersection of Benning Road and Minnesota Avenue, and is represented by the view facing west (see **Figure 3-27**). The view is primarily composed of an ascending six lane roadway lined with concrete guard rails, chain link fencing, and a separated sidewalk. An access road adjacent to Benning Road also adds to the width of the roadway at the at-grade intersection. Medium-scale development frames the roadway at the northwest corner of the intersection, while low-scale development and clusters of utility poles frame the southern portion of the viewshed. Streetlights, utility poles, and smokestacks are also visible from this vantage point.

Key View 4 contains multiple elements that appear independent of one another and do not form a cohesive order. The primary view is of roadway and utility infrastructure with several buildings having variable heights and masses. These visual components are inconsistently arrayed. This area primarily functions as a transportation corridor; roadway travelers have limited exposure and viewer awareness is low as the focus is on navigation. Adjacent residential and business viewers have a longer duration of viewer awareness but given the limited visual character of Key View 4, that awareness is low.

Figure 3-27: Key View 4 - Intersection of Benning Road and Minnesota Avenue (looking west)



Key View 5 – Fort Mahan Park to Benning Road

Key View 5 is in the north-central portion of the AVE at Fort Mahan Park and is represented by the view facing south (see **Figure 3-28**). Two different views are present at this location. Travelers along Benning Road have roadside views of the wooded parkland to the north and apartment uses on grassy areas to the south. Young street trees and utility poles frame the roadway edge. Roadway travelers experience more vegetated area in this view than elsewhere in the AVE; awareness of the visual environment is moderate because of the relatively different visual environment (longer views, larger amount of green area, and less development) compared to other areas along Benning Road.

Park users and adjacent residents are also viewers in Key View 5. The view from the park and residential areas encompasses Benning Road as well as the open vegetation and trees that characterize the area. For example, a park user would have the view in **Figure 3-28**. Awareness of the visual environment is moderate for the same reasons as described for travelers on Benning Road.

Figure 3-28: Key View 5 - Fort Mahan Park to Benning Road (looking south)



Key View 6 - Eastern Benning Road

Key View 6 is of Benning Road passing through a primarily residential area located in the eastern portion of the AVE. The tree-lined, four lane roadway (including on-street parking during off-peak hours) characterizes this viewshed, which is flanked by low-scale residential buildings with consistent setbacks (see **Figure 3-29**). Landscaped yards and grass strips also line the roadway. Views of the utility poles are largely filtered by street trees; whose branches extend across much of the roadway.

The landscape and built elements combine to establish order within the view. The street trees largely hide the visual intrusions of the utility poles. Because this area contains numerous residences that face the roadway and serves as a transportation corridor, viewers include both residents and travelers. Roadway travelers and residents experience more density of older street trees and building orderliness in this view than elsewhere in the AVE; awareness of the visual environment is moderate because of the neighborhood feel of Key View 6 and the mature street trees compared to the more urban feel of other areas of Benning Road.

Figure 3-29: Key View 6 - Eastern Benning Road (looking west)



Key View 7 - Benning Road Metrorail Station

Key View 7 is located near the eastern edge of the AVE, just west of the Benning Road Metrorail Station, in a primarily commercial area, and is represented by the view in **Figure 3-30**. A four-lane roadway bordered by sidewalks; standalone, low-rise commercial buildings and signs; and inconsistent street trees characterize Key View 7. Utility poles with streetlights appear prominently along Benning Road. The roadway, buildings, utility poles, and buildings do not combine to create cultural order, but instead retain their individuality. The varying heights, depths and placement of structures, poles, trees and signs in relation to the roadway limit visual order. As a result, visual awareness by roadway travelers and adjacent businesses is low.

Figure 3-30: Key View 7 - Benning Road Metrorail Station (looking West)



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3.7 NATURAL RESOURCES

3.7.1 SURFACE WATER RESOURCES

Surface water resources include rivers, streams, lakes, ponds, wetlands and floodplains. Surface water resources are protected by federal and local laws and regulations, including the following: Clean Water Act of 1972; Presidential Executive Order 11990, Protection of Wetlands; Presidential Executive Order 11988 and 13690, Floodplain Management; NPS, Director's Order #77-1: Wetland Protection; NPS, Director's Order #77-2: Floodplain Management; Rivers and Harbors Appropriations Act of 1899 (33 USC 401, 403, 407); and Navigation and Navigable Waterways (33 CFR Part 114).

3.7.1.1 Methodology

Surface waters were identified by research of available data on water resources and by visual observation in the study area. Waters of the U.S. (WOUS), as defined by 40 CFR 230.3(s), were identified using GIS data provided by the District of Columbia in 2013 and by the National Wetlands Inventory (NWI). The NWI is maintained by the US Fish and Wildlife Service (USFWS) as a nationwide inventory of wetlands for use by biologists and environmental scientists for the purpose of wetland conservation. Additionally, US Geological Survey (USGS) topographic maps of the study area (Washington East Quadrangle) were reviewed to identify named water bodies. Regulated floodplains were identified using the Federal Emergency Management Agency (FEMA) Digital Flood Insurance Rate Maps (DFIRM) obtained from the District of Columbia in 2013.

3.7.1.2 Existing Conditions

Surface water resources are depicted in **Figure 3-31**. The Anacostia River is considered a WOUS, regulated under both the Clean Water Act and the Rivers and Harbors Act, as a navigable waterway. Navigable waterways of the United States are defined in 33 CFR 2.36. The segment of the Anacostia River in the study area is tidally influenced and considered navigable by the definition provided in 33 CFR 2.36(a)(2) "internal waters of the United States that are subject to tidal influence." The National Oceanic and Atmospheric Administration (NOAA) reports tidal conditions from a monitoring station on Kingman Island, and as far north as Bladensburg, Maryland outside of the study area.

Adjacent to and west of Kingman Island and the Anacostia River, is a body of water named Kingman Lake. Piney Run is a stream that courses immediately south of Benning Road roughly paralleling the road's alignment. Piney Run connects to the Anacostia River and has been channelized in sections through the study area. No other named bodies of water were identified on the USGS quadrangle or are observed to occur in the study area.

Wetlands

NWI-identified wetlands are concentrated around the Anacostia River and consist of four wetland classifications: Riverine, Open Water Tidal, Riverine Tidal, and Palustrine Emergent. The Anacostia River is defined by the NWI as a "Riverine Open Water Tidal wetland." The NWI does not identify any other wetlands in the study area beyond the vicinity of the Anacostia River.

Regulated Floodplains

Figure 3-31 shows 100-year and 500-year floodplains. The 100-year floodplain zones are located around the Anacostia River. The Base Flood Elevation for 100-year floodplain zones is 14 feet as identified on the DFIRM. The 500-year floodplain zones are also located along the east and west shores of the Anacostia River. Besides the locations around the Anacostia River and Kingman Lake, no other portions of the study area are within 100-year or 500-year floodplains.

3.7.2 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

This section describes terrestrial species observed in the study area. The Endangered Species Act (ESA) of 1973 provides for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of the ESA requires that federal agencies aid the conservation of listed species and ensure that their activities do not jeopardize the continued existence of listed species or adversely modify designated critical habitat. The USFWS and NOAA Fisheries share responsibility for implementing the ESA. Generally, USFWS manages land and freshwater species, while NOAA Fisheries is responsible for marine and anadromous species.

3.7.2.1 Methodology

Threatened and Endangered Species

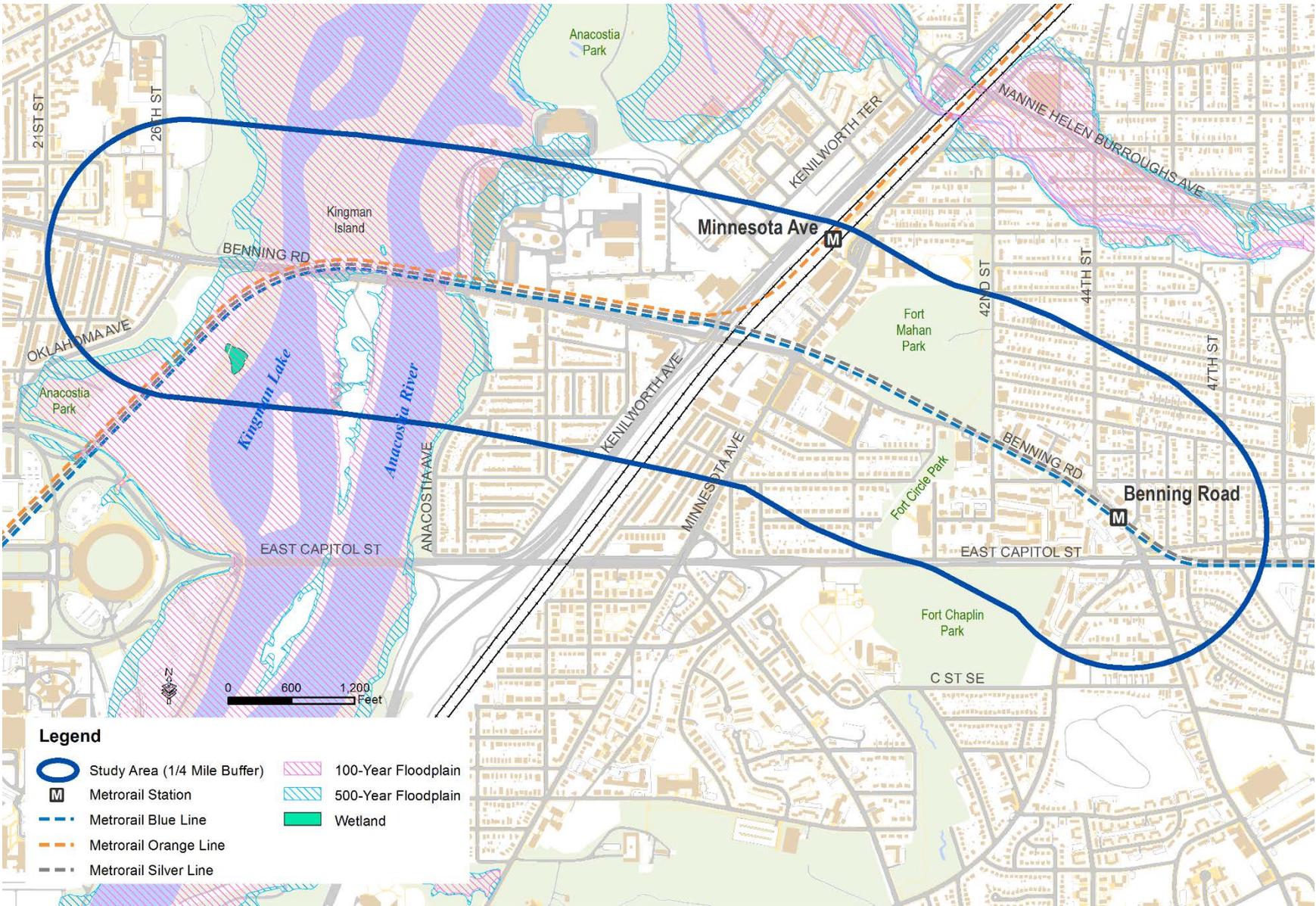
The USFWS Chesapeake Bay Preservation Office Information, Planning and Consultation system (IPaC) was queried in August 2017 and again in October 2019 to determine if any listed, proposed or candidate species may be present within the study area. In July 2020, the NOAA Section 7 Mapper was used determine if any federally threatened or endangered aquatic species were likely to inhabit the study area.

Wildlife

NPS completed an Environmental Assessment for the implementation of Section 3 of the Anacostia Riverwalk Trail in August 2011. Due to the proximity and overlapping study area of the Anacostia Riverwalk Trail, the biological assessments and observations in that EA serve as the primary research source for the identification of wildlife in the study area. This source was supplemented by visual observation during field investigations for the proposed action. In July 2020, DDOT submitted a project coordination letter to the District Department of Energy and the Environment (DOEE) Fish and Wildlife Division regarding potential impacts to habitats and Species of Greatest Conservation Need (SGCN) that may be present within the study area (see **Appendix G**).

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Figure 3-31: Surface Water Resources



Source: DCGIS, USFWS, and FEMA, February 2014

3.7.2.2 Existing Conditions

Threatened and Endangered Species

In 2017, the USFWS IPaC database did not identify any federally-listed threatened or endangered species or habitat, bald or golden eagles, federally-designated critical habitat, or wildlife refuges within the study area. In 2019, the USFWS IPaC database review indicated that the federally threatened northern long-eared bat (*Myotis septentrionalis*) could be found within the study area (see **Appendix G**).

The Section 7 ESA Mapper was used to generate a list of federally listed aquatic species that may be inhabiting the portions of the Anacostia River and Kingman Lake within the project study area. The Mapper identified two species: Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and shortnose sturgeon (*Acipenser brevirostrum*) potentially inhabiting the project area. According to the Atlantic Sturgeon Critical Habitat Federal Register Final Rule (82 FR 39160), the sections of Kingman Lake and the Anacostia River which fall within the project study area are not classified as critical habitat.

Wildlife

NPS Anacostia Riverwalk Trail EA identified the presence of a riparian floodplain, emergent, and forested wetland in the general study area which serves as wildlife habitat. NPS documented 191 bird, 50 butterfly, 23 fish, 20 reptile, 18 amphibian, and 17 mammal species as either residents in or migrants passing through Anacostia Park. Local predators include red and gray foxes (*Vulpes vulpes* and *Urocyon cinereoargenteus*), raccoons (*Procyon lotor*), ospreys (*Pandion haliaetus*), red-tailed hawks (*Buteo jamaicensis*), and transitory bald eagles (*Haliaeetus leucocephalus*). Other species identified by NPS were opossums (*Didelphis marsupialis*), gray squirrels (*Sciurus carolinensis*), and various species of bats, butterflies, dragonflies, snakes, turtles, migratory songbirds, and waterfowl. In prior studies, NPS identified additional species in the area:

- Various species of amphibians, including marbled salamander (*Ambystoma opacum*), red-spotted newt (*Notophthalmus viridescens*), and spring peeper (*Pseudacris crucifer*), in both emergent and forested wetlands;
- Eastern box turtle (*Terrapene carolina*) in forested uplands;
- Eastern tiger swallowtail butterfly (*Papilio glaucus*) in upland fields;
- Red-winged blackbird (*Agelaius phoeniceus*) in emergent wetlands and floodplain fields;
- Egret species in open water of the Anacostia River;
- Northern mockingbird (*Mimus polyglottos*) and American crow (*Corvus brachyrhynchos*);
- Black-crowned night heron (*Nycticorax nycticorax*) in the Anacostia River riparian buffer; and
- Great blue heron (*Ardea herodias Linnaeus*) and double-crested cormorant (*Phalacrocorax auritus*).

In their letter dated August 5, 2020, DOEE Fish and Wildlife Division determined that according to current observations, surveys, and data derived from the District's Wildlife Action Plan, the proposed project area does not harbor any listed species (see **Appendix G**).

3.7.3 VEGETATION

This section describes native and planted vegetation and invasive species there were observed in the study area through field investigation for the proposed action or by NPS. The District Urban Forestry Administration (UFA) regulates the planting, pruning, or removal of trees within public ROW.

3.7.3.1 Methodology

NPS completed vegetation surveys for the Anacostia Riverwalk Trail EA in 2011. Due to the proximity and overlapping study area of the Anacostia Riverwalk Trail, the NPS analysis serves as the primary source for this discussion. In addition to the EA, field reviews were conducted to observe vegetation conditions. The UFA maintains a GIS database of trees within DDOT ROW. These street trees are under the maintenance, responsibility and administration of the UFA. The database was used to analyze the existing tree coverage on study area streets. The District of Columbia identifies invasive plants using a publication developed by NPS titled *Plant Invaders of Mid-Atlantic Natural Areas* (NPS, 2010). This list identifies invasive plants found in the District as well as in the Mid-Atlantic region.

3.7.3.2 Existing Conditions

Tracts of natural vegetation occur along the banks of the Anacostia River and in Fort Mahan Park. Along the Anacostia River, the NPS analysis found mid-successional Sycamore/Green Ash/Box Elder/Silver Maple forest association is the dominant plant community, consisting of common species: American sycamore (*Platanus occidentalis*), silver maple (*Acer saccharinum*), box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanica*), black cherry (*Prunus serotina*), and red maple (*Acer rubrum*), with occurrences of elm (*Ulmus* sp.), hickory (*Carya* sp.), oaks (*Quercus* spp.), tree of heaven (*Ailanthus altissima*), tulip poplar, (*Liriodendron tulipifera*), persimmon (*Diospyros virginiana*) and Eastern cottonwood (*Populus deltoides*) and white mulberry (*Morus alba*). Areas of upland forest are dominated by plant species including red mulberry (*Morus rubra*), black locust (*Robinia pseudoacacia*), willow oak (*Quercus phellos*), princess tree (*Paulownia tomentosa*), northern catalpa (*Catalpa speciosa*), silk tree (*Albizia julibrissin*), and slippery elm (*Ulmus rubra*). Invasive vegetative species identified by NPS (and in the NPS invasive plant species publication) include poison ivy (*Toxicodendron radicans*), bush honeysuckle (*Lonicera* sp.), tree of heaven (*Ailanthus altissima*), white mulberry (*Morus alba*), Japanese Knotweed (*Fallopia japonica*), princess tree (*Paulownia tomentosa*), silk tree (*Albizia julibrissin*), and Japanese honeysuckle (*Lonicera japonica*).

The UFA database has inventoried 2,480 street trees within the study area, including approximately 199 street trees within the Benning Road LOD. Street trees along Benning Road include the American elm (*Ulmus americana*), Cherry tree (*Prunus* sp.), Katsura tree (*Cercidiphyllum japonicum*), Littleleaf linden (*Tilia cordata*), Pin Oak (*Quercus palustris*), Princeton elm (*Ulmus americana* 'Princeton'), Red maple (*Acer rubrum*), Sawtooth oak (*Quercus acutissima*), Sweetgum (*Liquidambar styraciflua*), and Thornless honeylocust (*Gleditsia triacanthos* var. *inermis*).

3.8 UTILITIES

This section describes existing utilities in the study area. Utilities are defined as infrastructure that delivers services such as electric, gas, water, sewer, telephone, cable television, and fiber optic. Utilities can be owned and maintained by public or private companies and may be located above or below ground.

3.8.1 METHODOLOGY

An analysis of existing utilities was conducted based upon available data, visual observation, and Quality Level C field verification of surface utility features, and records from utility companies.

3.8.2 EXISTING CONDITIONS

Both overhead and underground utilities—including gas, water, electric, communications, storm sewer, sanitary sewer, and street lighting and traffic signals—are present in the study area. **Table 3-18** describes existing utilities. The decommissioned Pepco Power Plant introduces potentially major underground electric transmission and distribution utilities in the study area. Additionally, there are overhead utility lines at the intersections along Benning Road in the study area, particularly the intersection of Benning Road and Minnesota Avenue. Throughout the study area, various utility structures are within the sidewalk and buffer strips. DC Water also has large stormwater structures in the proposed action vicinity.

Table 3-18: Utilities

Utility Type	Utility Owner	Description
Gas	Washington Gas	Underground distribution lines and service connections; size and locations vary.
Water	DC Water (WASA)	Underground distribution lines and service connections; size and locations vary (4" to 30"). Fire hydrants are located throughout the study area.
Electric	Pepco	<p>Aerial – Overhead wires mounted typically to wooden poles are found throughout the study area along both sides of the roadways; size and type unknown.</p> <p>Subsurface – Underground facilities throughout the study area. Extensive underground transmission and distribution facilities from the western study area limit to the Whitlock Bridge, typically in the westbound roadway, including twin 69kv electric cable pipes and several multi-way duct banks ranging in size from 4-way (W) to 24W duct banks. Although information is not available for the eastern study area, it is believed that transmission lines are present in and around East Capitol Street. Along Minnesota Avenue, underground electric is typically beneath the southbound lanes except for limited areas between Grant and Hayes Streets.</p>
Telephone	Verizon Communications	<p>Aerial – Overhead wires mounted typically to wooden poles are found throughout the study area along both sides of the roadways; size and type unknown.</p> <p>Subsurface – Underground facilities present throughout the study area. Along Benning Road, west of Minnesota Avenue, underground facilities are typically found beneath the eastbound roadway. East of Minnesota Avenue, underground telephone facilities are typically beneath the westbound lane of Benning Road. For the area along Minnesota Avenue, underground facilities are beneath the northbound lanes.</p>

Utility Type	Utility Owner	Description
Communication/ CATV	TBD	Aerial – Overhead communication wires mounted typically to wooden poles are observed throughout the study area along both sides of the roadways; size and type unknown.
Sanitary Sewer	DC Water (WASA)	Underground service connections and trunk lines located throughout the study area limits, primarily along Minnesota Avenue and along Benning Road east of Minnesota Avenue; size and locations vary.
Street Lighting	DDOT	Street lighting is found throughout the study area limits including bridge mounted lights. Luminaires are typically cobra-head style mounted on aluminum poles or wooden utility poles. Along Benning Road and Minnesota Avenue, lighting mounted to wooden poles are fed from an overhead power source, whereas bridge-mounted street lights are on dedicated aluminum poles and fed via underground service.
Traffic Signals/ Enforcement	DDOT and Metropolitan Police Department (MPD)	DDOT standard traffic signals, control cabinets, and cameras and devices are throughout the study area and are typically surface mounted on a standalone pole or foundation. DDOT cameras are typically for traffic surveillance while the MPD-owned facilities are for red light and speed enforcement. Underground facilities including manholes, hand holes, and conduit are also present to services the aboveground equipment. Size and location of underground facilities are unknown.
Storm Drainage	DC Water (WASA)	Storm runoff is conveyed by gutters to catch basins; size and location of drainage piping varies.

3.9 HAZARDOUS MATERIALS

The section summarizes the results of a contaminated and hazardous material survey of existing conditions in the study area. The components of the survey include a historical records search and a public agency file review of the study area.

3.9.1 METHODOLOGY

The survey of existing contaminated and hazardous material conditions includes reviews of federal and state database record searches provided by Environmental Data Resources, Inc. (EDR). The EDR search identified the presence of potential areas of concern, the possible presence of contaminated substances, and determined potential “Recognized Environmental Conditions” (RECs) in the study area. The term REC indicates the presence or likely presence of hazardous substances or petroleum products on a property, such as a past release, or a material threat of a release of a hazardous substance or petroleum product into structures or into the ground, groundwater, or surface water of the property. The term includes hazardous substances or petroleum products even under conditions in compliance with federal, state, and local laws and regulations. RECs were evaluated as presenting high-risk, moderate-risk or minimal-risk based on the REC’s proximity to the study area LOD and information on the nature of the REC. RECs were identified as high-risk or moderate-risk based on the information below:

- **High-Risk** – Any properties within proximity to the LOD of the proposed action where there are known and documented releases of contamination to soil and/or groundwater. These include Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites, Resource Conservation and Recovery Act (RCRA) corrective action sites, RCRA transportation, storage, or disposal sites identified as hazardous waste sites. Properties were determined to be high-risk by examiners when

evidence of hazardous materials was observed during field reviews.

- **Moderate-Risk** – Any properties within proximity to the LOD of the proposed action where examiners observed the potential for hazardous materials during document review or site visit. Moderate-risk sites are those where contamination has been documented, but there is no longer a high-risk concern because site cleanup activities occurred.

3.9.2 EXISTING CONDITIONS

The survey identified a total of 97 hazardous and contaminated material REC sites within one quarter mile (660 feet) of the existing Benning Road centerline. Descriptions of the categories of RECs are provided in **Table 3-19**. These include sites regulated under RCRA, Leaking Underground Storage Tanks (LUSTs), and Underground Storage Tanks (USTs) (See **Appendix H**). Many RECs listed in **Table 3-19** are located close to each other and, in some cases, are at the same physical address associated with past regulatory reporting. High-risk RECs and moderate-risk RECs are shown on **Figure 3-32**.

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Table 3-19: High-Risk and Moderate-Risk REC Sites in Study Area

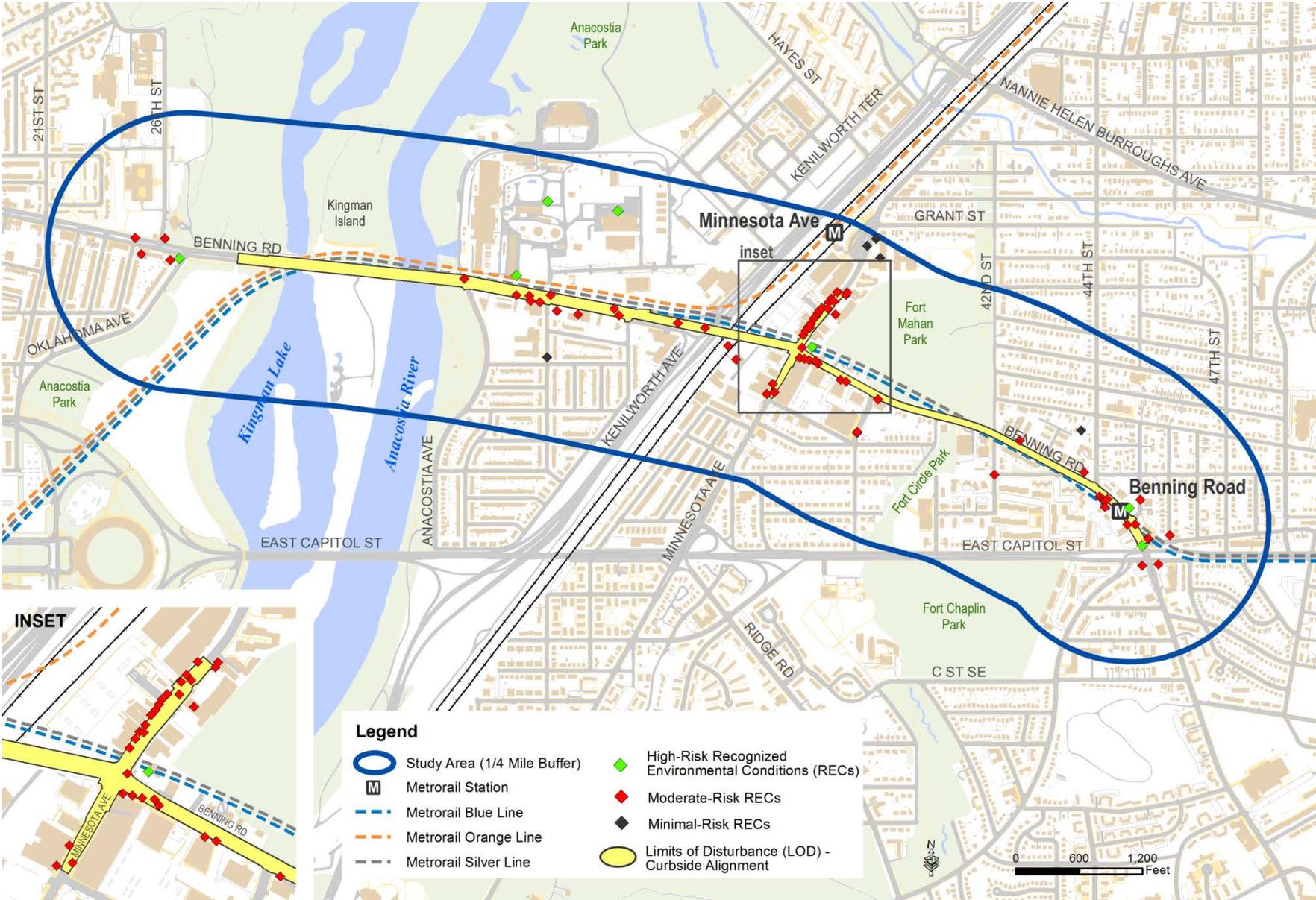
REC Category	Acronym	Description	Number of Sites in the Study Area
RCRA Large Quantity Generators (LQGs)	RCRA-LQG	Sites which generate, transport, store, treat and/or dispose of hazardous waste regulated under RCRA. LQGs generate over 1,000 kg of hazardous waste, or over 1 kg of acutely hazardous waste per month.	2
RCRA Conditionally exempt small quantity generators (CESQGs)	RCRA-CESQG	Sites which generate, transport, store, treat and/or dispose of hazardous waste regulated under RCRA. CESQGs generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.	11
CRA Non-Generators	RCRA NonGen/ No Longer Regulated (NLR)	Sites which generate, transport, store, treat and/or dispose of hazardous waste regulated by RCRA. RCRA NonGen sites do not presently generate hazardous waste.	12
Emergency Response Notification System (ERNS)	ERNS	Sites listed in Environmental Protection Agency's (EPA's) ERNS database which records and stores information on reported releases of oil and hazardous substances.	9
Facility Index System	FINDS	Sites listed in EPA's FINDS database contains facility information and "pointers" to other sources of information that contain more detail on permitted activities and enforcement.	22
Aerometric Information Retrieval System (AIRS)	US AIRS	Sites listed in an EPA-maintained database containing compliance data on air pollution point sources regulated by the EPA, state, and local air regulatory agencies. The database is used to track emissions and compliance data from industrial plants.	7
EPA Watch List		Sites on the EPA-maintained "Watch List" used to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority.	2
Polychlorinated Biphenyl (PCB) Activity Database (PADS)	PADS	Sites listed in the EPA-maintained PCB Activity Database identifies generators, transporters, commercial storage providers and/or brokers and disposers of PCBs who are required to notify the EPA of such activities.	1
Hazardous Materials Incident Report System (HMIRS)	HMIRS	Sites listed in an EPA-maintained database which contains hazardous material spill incidents reported to the Department of Transportation.	2
Integrated Compliance Information System	ICIS	Sites listed in the Integrated Compliance Information System (ICIS) used by the EPA for national enforcement and compliance program as well as NPDES program.	6
DC Brownfields		Sites listed as potential brownfields by the District of Columbia	11
Solid Waste Facility Listing (SWF/LF)	DC SWF/LF	Sites listed as a solid waste facility. Since the District does not have landfills, collected waste is deposited at two solid waste transfer stations and then taken out of the District by contractor vehicles to a waste-to-energy plant and landfill in Virginia.	1
Leaking Underground Storage Tanks (LUST)	DC LUST	Sites with a reported LUST incident identified by the District of Columbia Department of Consumer and Regulatory Affairs (DCRA).	13
Underground Storage Tanks (UST)	DC UST	Sites with an UST regulated under the RCRA. The database is provided by the DCRA.	25

REC Category	Acronym	Description	Number of Sites in the Study Area
Historic Underground Storage Tanks	DC HIST UST	During the process of the database upgrade, all facilities that the UST Program was unable to confirm their existence were removed from the working revelation UST Database before the conversion and recorded in an excel spreadsheet.	15
EDR Recovered Government Archive LUSTs	DC RGA LUST	Sites listed in an EDR Recovered Government Archive (RGA) for LUSTs database provides a list of LUST incidents derived from historical databases and other records that no longer appear in current government lists.	13
US Historic Cleaners		Proprietary EDR database of potential dry cleaner sites including historic dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash and dry etc. This database falls within a category of information EDR classifies as High-Risk Historical Records (HRHR).	9
US Historic Auto Stations		Proprietary EDR database of potential of potential historic gas station/filling station/service station sites, including gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as HRHR.	17

Source: Environmental Data Resources, Inc.

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Figure 3-32: High-Risk and Moderate-Risk RECs in Study Area



3.10 NOISE AND VIBRATION

This section describes existing noise and vibration conditions in the study area. The project team conducted a comprehensive noise and vibration assessment to assess the existing conditions and potential impacts of the proposed action. The complete analysis is provided in **Appendix I**.

3.10.1 METHODOLOGY

The noise assessment of the proposed streetcar service was prepared to comply with NEPA requirements (23 CFR 772) and the guidelines set forth by FTA's *Transit Noise and Vibration Impact Assessment* (May 2006). The assessment of traffic-related noise was prepared in accordance with FHWA's guidance *FHWA's Highway Traffic Noise: Analysis and Abatement Guidance* (December 2011).

The operational noise and vibration analyses examine Build Alternative 1 and the Preferred Alternative, including streetcar operations (travel on the tracks in Benning Road, vehicle stops to pick up or discharge passengers, and travel on the connecting track to the DC Streetcar Car Barn Training Center). Other streetcar infrastructure elements, including the traction powered substations and propulsion system (wired or wireless) would not be sources of noise or vibration and, therefore, are not analyzed. Noise and vibration from traffic on Benning Road is also analyzed.

Noise Analysis Methodology

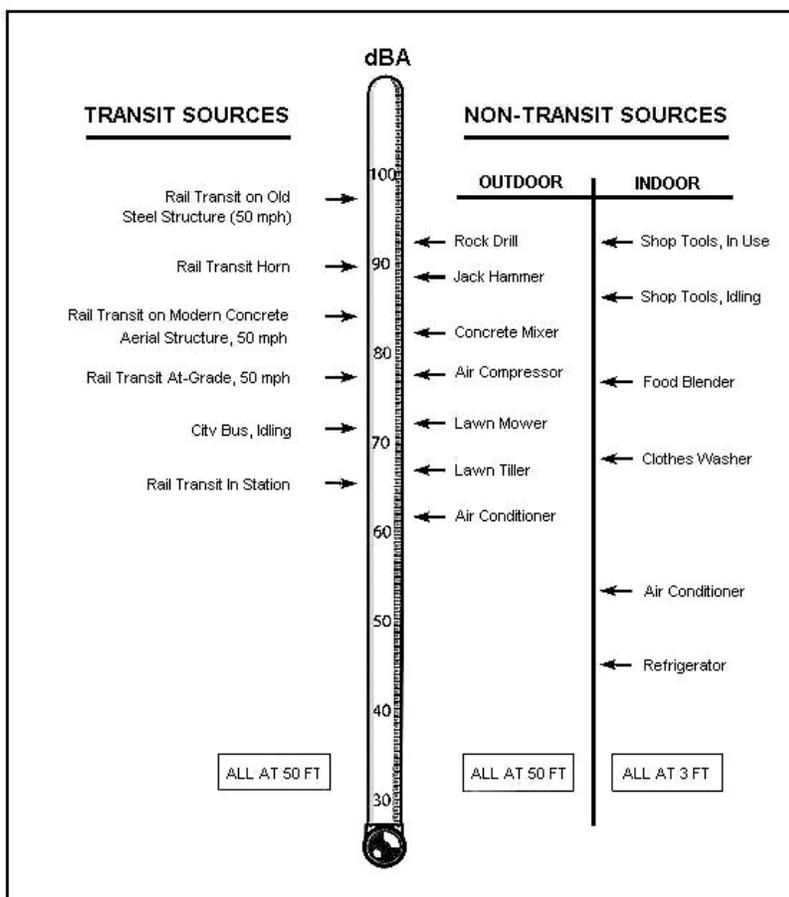
Noise is "unwanted sound" and, by this definition, the perception of noise is a subjective process. Several factors affect the actual level and quality of sound as perceived by the human ear and can generally be described in terms of loudness, pitch (or frequency), and time variation. The loudness or magnitude of noise determines its intensity and is measured in decibels (dB) that can range from below 40 dB (the rustling of leaves) to over 100 dB (a rock concert). Pitch describes the character and frequency content of noise, such as the very low "rumbling" noise of stereo subwoofers or the very high-pitched noise of a piercing whistle. Finally, the time variation of noise sources can be characterized as continuous, such as with a building ventilation fan; intermittent, such as for trains passing by; or impulsive, such as pile-driving activities during construction.

Various sound qualities are used to quantify noise from transit sources, including a sound's loudness, duration, and tonal character. For example, the A-weighted decibel (dBA) is commonly used to describe the overall noise level because it more closely matches the human ear's response to audible frequencies. Because the A-weighted decibel scale is logarithmic, a 10 dBA increase in a noise level is generally perceived as a doubling of loudness, while a 3 dBA increase in a noise level is just barely perceptible to the human ear. Typical A-weighted sound levels from transit and other common sources are shown in **Figure 3-33**.

Several A-weighted noise descriptors are used to determine impacts from stationary and transit-related sources including the L_{max} , which represents the maximum noise level that occurs during an event such as a bus or train pass-by; the L_{eq} , which represents a level of constant noise with the same acoustical energy as the fluctuating noise levels observed during a given time interval; the L_{90} , which represents the noise level exceeded 90% of the time and is used to establish the background ambient level; and the

L_{dn} , or the 24-hour day-night noise level, which includes a 10-decibel penalty for all nighttime activity between 10 PM and 7 AM.

Figure 3-33: Typical A-Weighted Noise Levels

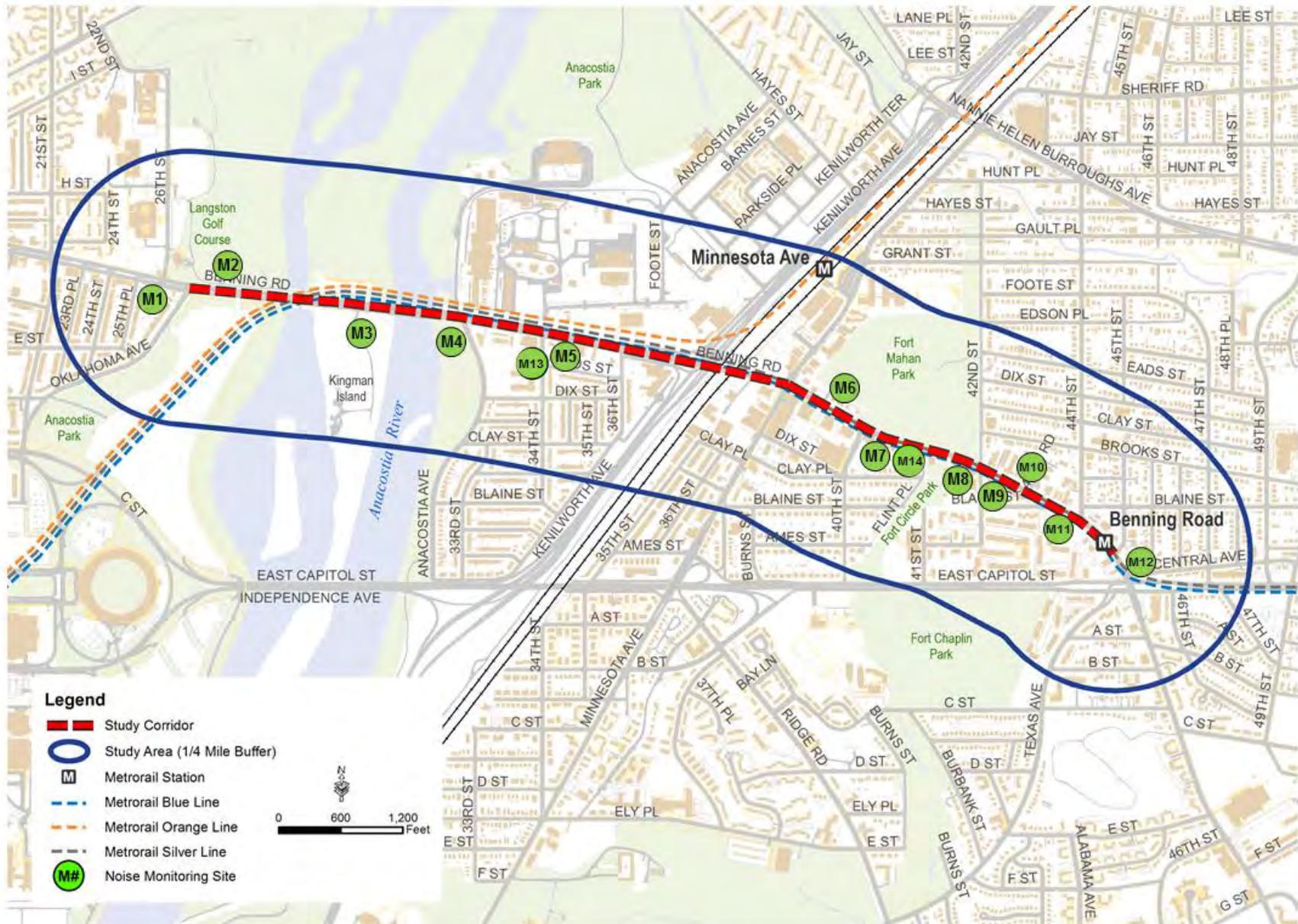


Source: *Transit Noise and Vibration Impact Assessment, FTA, Washington, DC, May 2006*

Noise Monitoring

To determine the existing background noise levels at a sensitive receiver near Benning Road, a noise-monitoring program was conducted at 14 representative locations shown in **Figure 3-34**. The sound-level meters that were used to measure noise conditions (Brüel & Kjær Model 2236 and Larson Davis Model 820) meet or exceed the American National Standards Institute (ANSI) standards for Type I accuracy and quality. The sound-level meters were calibrated using a Brüel & Kjær Model 4231 before and after each measurement. All measurements were conducted according to *ANSI Standard S1.13-2005, Measurement of Sound Pressure Levels in Air* (March 5, 2010). All noise levels are reported in dBA, which best approximates the sensitivity of human hearing. Short-term noise measurements were obtained at Sites M1 to M12 from July 18 to July 20, 2017 during peak noise hours of the day. The selected measurement sites are representative of larger clusters of residences with similar noise exposures. Additionally, long-term 24-hour noise levels were measured at Sites M13 and M14 from April 9 to April 10, 2014 during various periods of the day in accordance with FTA's guidelines to determine the average noise conditions on a typical weekday. The long-term noise measurements were used to develop the impact criteria used to assess streetcar noise impacts in FTA's procedure.

Figure 3-34: Noise Monitoring Locations



Noise Impact Analysis

The proposed action includes adjusting the travel lane configuration along Benning Road in the study area to accommodate roadway traffic, the proposed streetcar service, the proposed safety improvements and bicycle and pedestrian facility improvements. For these reasons, the proposed action would be classified as an FHWA Type 1 noise project. This classification means that a project would cause impacts if it increases existing noise levels by at least six decibels, or if the predicted traffic noise approaches or exceeds the operational noise abatement criteria (NAC). Any sensitive receiver that would experience one or both impacts is eligible for consideration of noise abatement. DDOT's noise abatement criteria for highway projects are land use categories and are at least as stringent as those of FTA and FHWA; the criteria are summarized in **Table 3-20**. Each NAC for which there is an activity criterion is a sensitive receiver.

Table 3-20: DDOT Land Use Categories and Noise Metrics

Activity Category	Activity Criteria Leq(h) ¹	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purposes
B ²	67	Exterior	Residential
C ²	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E ²	72	Exterior	Hotels; motels; offices; restaurants/bars; and other developed lands, properties, or activities not included in A-D or F
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

Source: Noise Policy, DDOT, Washington, DC, January 10, 2011.

¹ The Leq(h) Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.

² Includes undeveloped lands permitted for this activity category.

Vibration Analysis Methodology

Unlike noise, which travels in air, vibration typically travels along the surface of the ground. Depending on the geological properties of the surrounding terrain and the type of building structure exposed to transit vibration, vibration may or may not occur. Human responses and responses by monitoring instruments and other objects to vibration are most accurately described

by velocity. Therefore, the vibration velocity level is used to assess vibration impacts from transportation projects.

To describe the human response to vibration, the average vibration amplitude (called the root mean square, or RMS, amplitude) is used to assess impacts. The RMS velocity level is expressed in inches per second (ips) or vibration velocity levels in decibels (VdB). All VdB vibration levels are referenced to one micro-inch per second (μ ips). Like noise decibels, vibration decibels are dimensionless because they are referenced to (i.e., divided by) a standard level (such as 1×10^{-6} ips in the United States). This convention allows compression of the scale over which vibration occurs, such as 40 to 100 VdB rather than 0.0001 ips to 0.1 ips. Typical RMS vibration levels from transit and other common sources are documented in FTA's guidance manual on *Transit Noise and Vibration Impact Assessment* (May 2006).

3.10.2 Noise Existing Conditions

As summarized below in **Table 3-21** peak-period noise levels measured at receptors along the study area range from 63 dBA at Site M12 (residence at 26 46th Street NE) to 74 dBA at Site M1 (residence at 2531 Benning Road NE). All these peak-period noise levels are representative of active downtown urban land uses.

Table 3-21: Baseline Short-term Noise Monitoring and Validation Results (Leq in dBA)

ID	Receptor Description	Measure	Model	Difference
M1	2531 Benning Road	74	74	0
M2	Langston Golf Course Historic District	73	72	-1
M3	Kingman And Heritage Islands Park	71	69	-2
M4	3341 Benning Road	68	67	-1
M5	505 34 th Street	70	68	-2
M6	3940 Benning Road	71	69	-2
M7	4043 Benning Road	70	69	-1
M8	4103 Benning Road	69	67	-2
M9	4201 Benning Road	71	69	-2
M10	4242 Benning Road	71	70	-1
M11	4365 Benning Road	65	67	2
M12	26 46 th Street	63	65	2

As shown in **Table 3-22**, long-term day-night noise levels (or L_{dn}) range from 64-65 dBA in the vicinity of Receptor M13 (residences adjacent to the River Terrace Elementary School along 34th Street) to 65-73 dBA at Receptor M14 (residences along Benning Road opposite Fort Mahan). In

general, the measured noise levels are representative of heavy traffic along downtown urban streets.

Table 3-22: Baseline Long-term Noise Monitoring Results (L_{dn} in dBA)

ID	Receptor Description	Measure
M13	Residences near River Terrace Elementary School, 34 th Street	64 - 65
M14	Residences, Benning Road at 41 st Street opposite Fort Mahan Park	65 - 73

DDOT's noise abatement criteria for highway projects was used to characterize the impact traffic noise has on adjacent land uses. A comparison of the noise measurement results with the DDOT's noise abatement criteria indicates that existing traffic noise along Benning Road is the primary noise source and that the measured noise levels approach or exceed the criteria at some measurement sites.

3.10.3 Vibration Existing Conditions

Land uses adjacent to Benning Road are an urban mix of low-medium density residential, commercial and public uses including several parks as described in more detail in **Section 3.2.1**. Although some residential properties have small front yards, buildings are close to the existing roadway. The primary source of vibration in the study area is roadway traffic on Benning Road. Vibration from traffic impacts adjacent properties in the existing condition when trucks or buses travel over discontinuous pavement causing a vibration event.

3.11 AIR QUALITY

An air quality analysis was conducted to characterize existing conditions and determine the potential for air quality impacts by the proposed action. The complete air quality analysis is provided in **Appendix J**.

The Clean Air Act (CAA), as amended, is the basis for most federal air pollution control programs. Under the CAA, EPA regulates air quality nationally. The EPA delegates authority to the DOEE for monitoring and enforcing air quality regulations in the District of Columbia. The Washington, DC-MD-VA Region State Implementation Plan (SIP) (2004), developed in accordance with the CAA, contains the major state-level requirements with respect to transportation in general. The MWCOG is responsible for preparing the SIP and submitting it to the EPA for approval. The following SIPs for ozone, particulate matter sized 2.5 micrometers or less (PM_{2.5}), and carbon monoxide (CO) were approved by EPA because they adequately demonstrate how the District plans to attain or maintain each National Ambient Air Quality Standard (NAAQS):

- 1997 8-Hour Ozone SIP
- 1997 Fine Particulate Matter (PM_{2.5}) Maintenance Plan
- 1994 Carbon Monoxide (CO) Maintenance Plan – effective through March 2016

Under the authority of the CAA, the EPA established a set of NAAQS for various “criteria” air pollutants. lists the NAAQS for the seven criteria pollutants: ozone (O₃), CO, nitrogen dioxide

(NO₂), sulfur dioxide (SO₂), particulate matter sized 10 micrometers or less (PM₁₀), PM_{2.5}, and lead (Pb). Any project constructed in the District of Columbia must achieve compliance with these standards.

Table 3-23: National Ambient Air Quality Standards

Pollutant	Standard Type	Averaging Period	Standard Value ^a
Carbon Monoxide (CO)	Primary ^b	8-Hour average	9 parts per million (ppm) (10 mg/m ³) ^c
	Primary	1-Hour average	35 ppm (40 mg/m ³)
Nitrogen Dioxide (NO ₂)	Primary and Secondary	Annual arithmetic mean	53 ppb ^d
	Primary	1-Hour average	100 ppb
Ozone (O ₃)	Primary and Secondary	8-Hour average	0.075 ppm (155 µg/m ³) ^e
Sulfur Dioxide (SO ₂)	Primary	Annual arithmetic mean	0.03 ppm (80 µg/m ³)
	Primary	24-Hour average	0.14 ppm (365 µg/m ³)
	Secondary	3-Hour average	0.5 ppm (1300 µg/m ³)
	Primary	1-Hour average	75 ppb (0.075 ppm)
Particulate Matter (PM ₁₀)	Primary and Secondary	24-Hour average	150 µg/m ³ ^f
Particulate Matter (PM _{2.5})	Primary and Secondary	Annual arithmetic mean	12 µg/m ³
		24-Hour average	35 µg/m ³
Lead (Pb)	Primary and Secondary	3-month rolling average	0.15 µg/m ³

NOTES:

- Short-term standards (1 to 24 hours) are not to be exceeded more than once per calendar year.
- Former national secondary standards for carbon monoxide were repealed.
- Concentrations are shown in parts per million (ppm), milligrams per cubic meter (mg/m³) or micrograms per cubic meter (µg/m³).
- The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.
- Maximum daily one-hour (eight-hour) average. The ozone standard is attained when the expected number of days with maximum hourly (eight-hourly) average concentrations above the value of the standard, averaged over a three-year period, is less than or equal to one. The O₃ criterion was updated by the EPA on May 27, 2008 from 0.08 to 0.075 ppm.
- For each particle size, the annual PM standard is met when the three-year average of the annual mean concentration is less than or equal to the value of the standard. The 24-hour PM₁₀ (PM_{2.5}) standard is met when the three-year average of the annual 99th (98th) percentile values of the daily average concentrations is less than or equal to the value of the standard.
- National standards are block averages rather than moving averages.
- Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.
- CO, NO₂, O₃, and PM are transportation related pollutants.

Source: 40 CFR 50, National Primary and Secondary Ambient Air Quality Standards

In 2004, in accordance with Section 175A(b) of CAA, the Metropolitan Washington DC-MD-VA Region submitted a second maintenance plan, which provided for maintenance of the CO standard for 20 years after attainment (i.e., through March 16, 2016). The region has achieved compliance with (i.e., attain) the eight-hour CO standard for 20 years, since 1995 as required under Section 175A(b) of CAA; therefore, in accordance with Section 176(c) of the CAA [see 40 CFR 93.102(b)], conformity requirement for CO is no longer applicable or required.

Areas where ambient concentrations of a criteria pollutant are below the corresponding NAAQS are designated as being in "attainment." Areas where a criteria pollutant level exceeds the NAAQS are designated as being in "nonattainment." A maintenance area is one that has been re-designated from nonattainment status and has an approved maintenance plan under Section 175 of the CAA. Where insufficient data exist to determine an area's attainment status, the area is designated unclassifiable or in attainment.

3.11.1 METHODOLOGY

Ambient air quality conditions were identified by reviewing data from existing air quality monitoring stations operated by the DDOE². Specifically, the DDOE monitors concentrations of multiple air pollutants (CO, NO₂, SO₂, PM_{2.5}, PM₁₀ and O₃) at designated locations, known as stations, within Washington DC. The monitoring station closest to the study area is the River Terrace Site located at 34th and Dix Streets.

3.11.2 EXISTING CONDITIONS

Existing air quality conditions in the study area are reflected through the current status of NAAQS attainment and the recent ambient air monitoring data collected by DOEE and published by EPA.

The District of Columbia, within which the study area lies, has been designated as:

- Nonattainment area for the O₃ standard
- Maintenance area for PM_{2.5} and CO standards
- Attainment area for all other criteria pollutant standards

The published data for the most recent three years (2013, 2014, and 2015) for the monitoring stations nearest to the study area are used to describe existing ambient air quality in the study area (see **Table 3-24**). The measured ambient air concentrations closest to the study area were all below the corresponding NAAQS, except for exceedances of the eight-hour ozone standard in one of three years. These results are consistent with the attainment and nonattainment area designations of the district area as discussed previously.

3.12 ENERGY USE AND CLIMATE CHANGE

This section describes the baseline conditions to assess the risks to transportation systems and services from climate change.

3.12.1 METHODOLOGY

Existing conditions information is based on studies by EPA, U.S. DOT's Center for Climate Change and Environmental Forecasting, and the District of Columbia's Climate Action Plan, A Climate of Opportunity.

²The CAA requires every state to establish a network of air-monitoring stations for criteria pollutants, using specified methods and procedures for their location and operation as set by the EPA. The ambient air quality monitoring network was typically established to monitor potential statewide or citywide air quality problems based on a variety of considerations, such as SIP conformance requirements, hot spots (localized locations with potential high pollutant concentrations) for a specific critical pollutant, potential downwind high concentrations near major emitting sources, high population densities with high levels of community activities, and the state's or city's geography. Therefore, the state network was installed by focusing on potential worst-case areas for a specific pollutant.

Table 3-24: Ambient Monitored Air Concentrations

Pollutants	Average Time	Station	2015	2014	2013	NAAQS	Unit
CO	1-hr	3600 Benning Road	2.2	2.5	2.2	35	ppm
	8-hr	3600 Benning Road	2	2	1.9	9	ppm
NO ₂	1-hr	3600 Benning Road	47	63	48	100	ppb
	Annual	3600 Benning Road	17.79	16.13	11.66	53	ppb
SO ₂	1-hr	2500 1 st Street, N.W. Washington DC	13	13	10	75	ppb
PM _{2.5}	24-hr	3600 Benning Road	28	25	23	35	µg/m ³
	Annual	3600 Benning Road	11.3	10.2	9.3	12	µg/m ³
PM ₁₀	24-hr	2500 1 st Street, NW Washington DC	42	43	40	150	µg/m ³
O ₃	8-hr	2500 1 st Street, NW Washington DC	0.072	0.047	0.062	0.070	ppm

3.12.2 EXISTING CONDITIONS

The transportation sector is the second largest source of total greenhouse gases in the United States and the largest source of CO₂ emissions, the predominant greenhouse gas. In 2013, the transportation sector was responsible for 27% of all CO₂ emissions produced in the United States (EPA, 2013). Compared to other cities, the District's per capita emissions are relatively high at 18%. A leading trigger of these high emissions is the swelling of the District's daytime population by 400,000 workers every weekday, which is the largest percentage increase in daytime population of any large city in the nation (Sustainable DC, 2013).

Recognizing this concern, FTA and FHWA are working with other agencies through the U.S. DOT's Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to greenhouse gases—particularly CO₂ emissions—and to assess the risks to transportation systems and services from climate changes. In addition, in 2010 the District released their Climate Action Plan, A Climate of Opportunity. The Climate Action Plan indicates that the District is making good progress toward limiting transportation related emissions.

In 2010, 39% of residents commuted by mass transit and more than a third of households (37%) do not own cars. Car-sharing and fleet-sharing by the District Government, and bike sharing are all expanding and would allow the District to be less reliant on fossil fuel and further decrease greenhouse gas emissions. The District Government is committed to reducing its greenhouse gas emissions by 30% (below 2006 levels) by 2020 and by 80% by 2050 (Climate Action Plan 2010). The Sustainability DC Plan calls for a 50% reduction in overall energy use with a 50% increase in renewable energy use by 2032. A reduction in fossil fuel-based energy is identified as an action to meet this goal.

3.13 ENVIRONMENTAL JUSTICE

As part of the Environmental Justice (EJ) assessment for the proposed action, this section identifies minority and low-income populations (collectively "EJ populations") in the study area.

Environmental Justice is defined by Executive Order 12898 (EO 12898), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. EO 12898 requires that

federal agencies identify and address disproportionately high and adverse impacts on minority and low-income populations. The U.S. Department of Transportation (USDOT) is committed to the principles of EJ, which include:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations;
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process; and
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The EJ analysis was prepared in accordance with the following federal guidance documents:

- USDOT Order 5610.2(a), Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, May 10, 2012;
- Federal Transit Administration Circular 4703.1, Environmental Justice Policy Guidance for Federal Transit Administration Recipients, August 15, 2012;
- Federal Highway Administration Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-income Populations, June 14, 2012; and
- Council on Environmental Quality (CEQ), Environmental Justice – Guidance under the National Environmental Policy Act (NEPA) of 1969, December 10, 1997.

The USDOT Order on Environmental Justice (5610.2a) defines minority and low-income populations as follows:

- **Minority Populations:** Minority populations include persons who are American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, Black (not of Hispanic Origin), and Hispanic or Latino.
- **Low-Income Populations:** Any readily identifiable group of low-income persons whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.

3.13.1 Methodology

Minority and low-income statistics were analyzed at the US Census block group level using the 2013-2017 American Community Survey 5-Year Estimate population and income data. The study area intersects 18 Census block groups. All Census block groups within the study area were reviewed to identify potentially affected minority and low-income populations.

The identification of environmental justice populations primarily relied on the use of thresholds based on CEQ guidance provided in *Environmental Justice Guidance under NEPA* (CEQ, 1997). An EJ population was defined to include any Census block group in which the minority or low-income population meets or exceeds the following thresholds:

- Minority or low-income population in the Census block group exceeds 50%; or
- Percentage of a minority or low-income population in the affected area is meaningfully

greater than the lowest percentage in either the county (for the proposed action, the District of Columbia was used for comparison purposes since there is not a county for DC) or study area.

The CEQ guidance does not define the specific percentage that should be used for determining if the minority or low-income population is “meaningfully greater” than the average in the surrounding jurisdiction. However, it is consistent with the CEQ guidance to set a threshold that is higher than (not the same as) the average of the low-income or minority population in the surrounding jurisdictions. For this EA, the minority or low-income population was considered “meaningfully greater” than the average in the surrounding jurisdictions if it was 10% higher than the average for the District of Columbia.

Other data sources used to confirm the location of minority and low-income populations included information from the District of Columbia, field visits, and public meetings.

3.13.2 Existing Conditions

Overall Study Area

Table 3-25 lists the percentages of minority and low-income residents in the study area and within the entire jurisdiction of the District of Columbia to use as a comparison for identifying minority and low-income populations. Approximately 99% of the study area population belongs to a minority group. In comparison to the District of Columbia, whose minority population comprises 65% of the total population, the study area has a higher percentage of minorities. Additionally, 33% of the study area population is low-income, which is also a higher percentage than the District of Columbia (25.9%).

Table 3-25: Minority and Low-Income Populations

Population Type	Study Area Population	District of Columbia
Total Population	26,361	672,391
Minority	25,407 (96.4%)	398,920 (59.3%)
Population for whom poverty status is determined*	23,567	638,362
Low-Income	5,578 (23.7%)	111,025 (17.4%)

* The population for whom poverty is determined is determined by the U.S. Census Bureau. For the ACS 5-Year Estimates (2013-2017), poverty status was determined for all people except for unrelated individuals under 15 years old, and people in institutional group quarters, college dormitories, military barracks, and living situations without conventional housing.
Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017

Neighborhoods with Environmental Justice Populations

By following the methodology outlined above, the project team found that 18 block groups met the thresholds for high concentration of minority populations and seven block groups met the thresholds for high concentration of low-income populations. Neighborhoods with EJ populations are identified in **Table 3-26** and shown in **Figure 3-35**.

Approximately 99% of the total study area population belongs to a minority group. All 18 block groups in the study area have high concentrations of minority population (more than 50%). These areas include parts of residential neighborhoods such as Carver and Langston Terrace, River

Terrace, Parkside, Upper Central Northeast, Lower Central Northeast, Marshall Heights and Benning Heights.

Many block groups within the study area exceed the percentage of low-income populations within the District of Columbia (more than 25.9%); however, seven block groups exceed the District's percentage by 10% or more. Three of the seven block groups (Census Tract 68.04 Block Group 1, Census Tract 96.02 Block Group 2, and Census Tract 111 Block Group 3) that exceed the District's percentage by 10% contain neighborhoods outside of the study area. Therefore, these block groups were not included in the low-income analysis. The three block groups include Kingman Island and the former Pepco Power Plant property, in which no residential populations exist. The area comprising the Parkside neighborhood to the west of Minnesota Avenue and the Lower Central Northeast neighborhood contain the highest percentages of low-income individuals in the study area.

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Table 3-26: Neighborhoods with Minority and/or Low-Income Populations

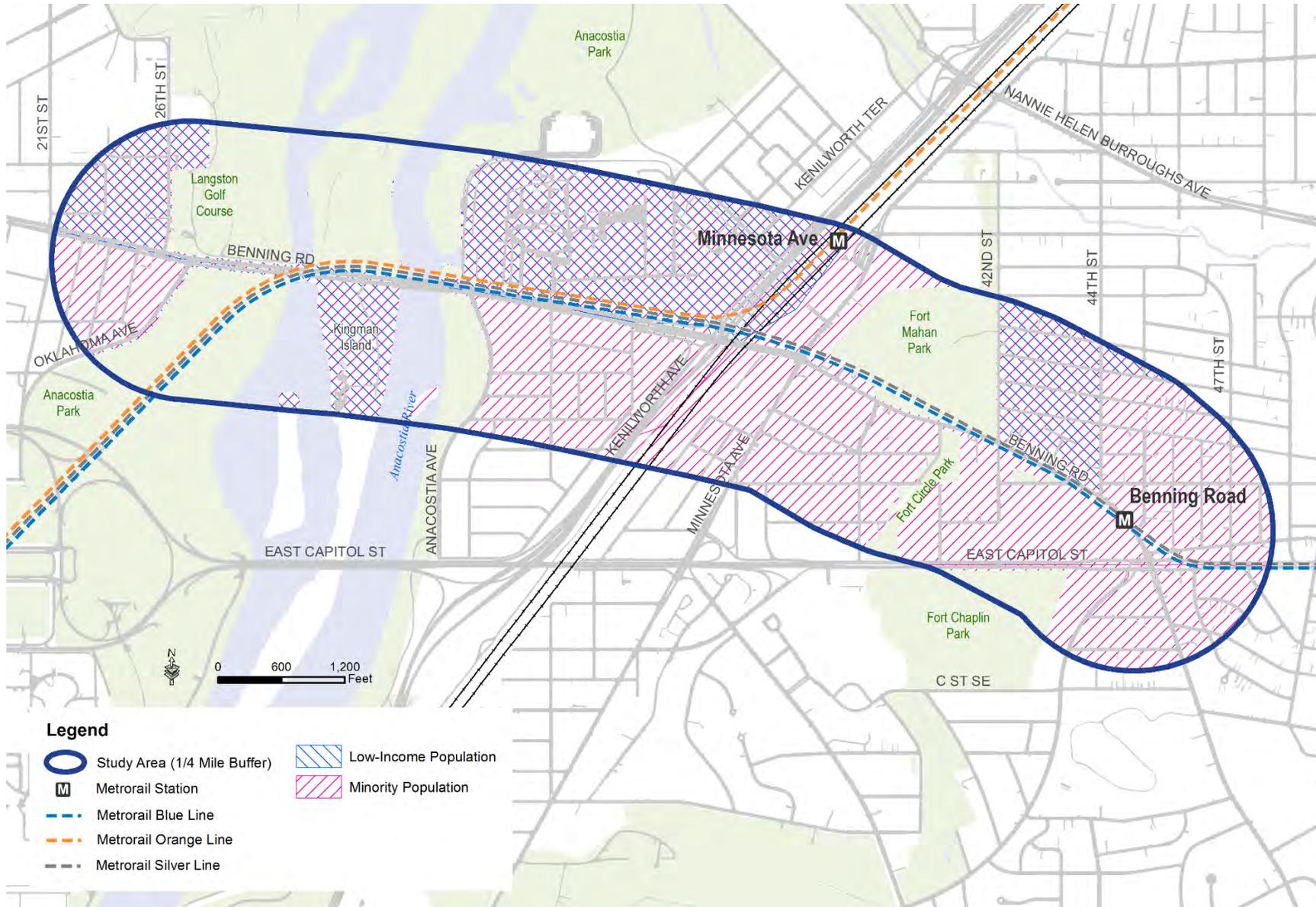
Tract	Block Group	Neighborhood	Minority			Low-Income			Environmental Justice Population*	
			Total Population	Minority Population	Percent	Total Population**	Low-Income Population	Percent	Minority	Low-Income
68.04	1	Kingman Island	2,733	2,574	94.2%	247	116	47.0%	X	X
77.03	1	Marshall Heights/ Benning Heights	798	798	100.0%	798	158	19.8%	X	
78.03	1	Central Northeast	1,177	1,113	94.6%	1,177	390	33.1%	X	X
78.03	2	Marshall Heights/ Benning Heights	637	637	100.0%	637	184	28.9%	X	X
78.03	3	Marshall Heights/ Benning Heights	809	780	96.4%	809	0	0.0%	X	
78.03	4	Central Northeast	1,488	1,460	98.1%	1,447	375	25.9%	X	
78.04	3	Marshall Heights/ Benning Heights	1,242	1,242	100.0%	1,233	118	9.6%	X	
79.03	1	Kingman Park	1,971	1,574	79.9%	1,971	321	16.3%	X	
89.04	1	Langston	2,683	2,582	96.2%	2,683	748	27.9%	X	X
96.02	1	Parkside	1,496	1,489	99.5%	1,496	549	36.7%	X	X
96.02	2	Pepco Power Plant	2,179	2,179	100.0%	2,179	990	45.4%	X	X
96.03	1	Benning	1,885	1,885	100.0%	1,885	230	12.2%	X	
96.03	2	Benning	706	706	100.0%	706	33	4.7%	X	
96.03	3	Benning	939	939	100.0%	1,034	147	14.2%	X	
96.04	1	River Terrace	1,289	1,289	100.0%	1,274	138	10.8%	X	
96.04	2	River Terrace	915	915	100.0%	915	126	13.8%	X	
99.06	1	Marshall Heights/ Benning Heights	1,623	1,621	99.9%	1,623	371	22.9%	X	
111	3	Kingman Island	1,686	1,570	93.1%	1,453	584	40.2%	X	X

*Minority population exceeds 50%, or low-income population exceeds 27.4% (10% greater than city-average).

**The population for whom poverty is determined is determined by the U.S. Census Bureau. For the ACS 5-Year Estimates (2013-2017), poverty status was determined for all people except for unrelated individuals under 15 years old, and people in institutional group quarters, college dormitories, military barracks, and living situations without conventional housing.

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017

Figure 3-35: Minority and/or Low-Income Populations



Source: U.S. Census Bureau, American Community Survey 5-Year Estimates, 2013-2017

4

ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

With DDOT's selection of Build Alternative 2 as the Preferred Alternative (referred to from this point as the Preferred Alternative), this section discusses how the actions included in the No-Build Alternative and the Preferred Alternative (including the proposed TPSS sites; propulsion systems; and the connection to the DC Streetcar Car Barn Training Center) would affect the resources discussed in **Chapter 3**. To help capture the full scope of potential impacts, DDOT reviewed four different types of effects: direct operation effects, direct construction effects, indirect effects, and cumulative effects. Direct operational effects are consequences that would occur because of the use of the proposed facilities. Changes in ambient noise levels and traffic conditions caused by the movement of streetcars are examples of this type of effect. Direct construction effects are consequences that would occur because of the construction of the proposed improvements. The temporary closure of sidewalks and utility relocations are examples of this type of effect. Indirect effects are consequences that occur because of actions related to a direct effect. Changes in traffic operations that occur because drivers are altering their commutes to avoid work zones, is an example of an indirect effect. Cumulative effects are consequences that occur because of the combined influence of the proposed action and past, present, and reasonably foreseeable actions. Long-term changes in land use that are likely to be influenced by the proposed action is an example of a cumulative effect.

When these effects constitute an impact, this section also discusses reasonable and feasible mitigation measures (40 CFR 1508.20). Unless otherwise specified, a quarter-mile radius, the typical walking distance to mass transit service, was determined to be the appropriate study area boundary for the Benning Road and Bridges Transportation Improvements EA.

4.2 SOCIOECONOMIC RESOURCES

This section assesses the potential impacts of the No-Build Alternative and the Preferred Alternative regarding the following topic areas:

- Zoning and Land Use;
- ROW and Relocation impacts; and
- Neighborhoods and Community Resources

4.2.1 ZONING AND LAND USE

This section describes the environmental consequences associated with the No-Build Alternative and the Preferred Alternative on existing and future land use and zoning.

No-Build Alternative

Substantial development is planned along the Benning Road - Anacostia River Corridor. This development would result in changes to the areas on both sides of Benning Road. The proposed Benning Road transportation improvements project is independent of this development and is proposed to provide roadway infrastructure rehabilitation and an additional transit option in the corridor. Under the No-Build Alternative, other planned developments in the study area would continue to be implemented which might modify the existing zoning and land use patterns.

Preferred Alternative – Median Alignment

The District and DDOT supports the overall development goals in the corridor without changing the broad patterns of zoning or land use by the implementation of District zoning regulations and its various supporting programs. During development of the design concepts for the roadway typical sections and stop platforms, DDOT applied minimum design standards to avoid any ROW acquisition along Benning Road.

Streetcar operations under the Preferred Alternative would require permanent acquisition of a WMATA owned parcel located within the boundary of the Benning Road Metro Station. The acquisition of this parcel would slightly modify the site operations, but not to the point where the Metro Station would cease to be viable (for more information see **Section 4.3.2**). Moreover, the proposed improvements to the acquired ROW would be used to support transportation activity and therefore would be consistent with the existing land use.

Recent and proposed developments in the study area described in **Section 3.1.1** would benefit from the increased multi-modal access and transportation safety provided by the Preferred Alternative. Citywide and neighborhood plans have identified the need for transit options in the study area to support medium-density to high-density mixed-use developments. The proposed action would improve mobility and connectivity and thereby accommodate forecasted growth and support projects that are currently under construction or have proposals for redevelopment pending. The proposed action would provide better access options to the properties where development is planned. As a result, based on the CEQ regulations related to context and intensity, the Preferred Alternative would neither change nor negatively impact the broad patterns of land use and zoning in the study area nor would they alter existing planned development. However, it could provide transit support to the planned developments that are being built within the context of the existing zoning regulations.

Traction Power Substations

The Preferred Alternative includes the operation of TPSS sites. These sites are enclosed facilities that would not generate nuisances (i.e. noise, traffic, air pollution, etc.) that would disturb sensitive land uses. Activities required for periodic maintenance would be contained within the boundaries of the properties slated for acquisition. The site of the proposed TPSS facility beneath the Whitlock Bridge is currently zoned PDR-1. This zone permits moderate-density commercial and PDR activities employing a large workforce and requiring some heavy machinery. Based on this classification, the single-story masonry structure typically used to house TPSS facilities would be compatible with the surrounding built environment. The site of the proposed TPSS facility adjacent to the Benning Road Metro Station is currently zoned R-2. The purpose of this zone is to provide areas for the development and preservation of semi-detached dwellings on moderately sized lots. In this area, structures must meet the following standards:

- be no taller than three stories tall;
- preserve eight ft side-yards;
- preserve 20 ft rear yards; and
- occupy no more than 40% of the overall lot.

Based on the proposed exterior dimension 30 ft by 60 ft floorplan, the TPSS facility meets all these requirements and is therefore functionally compatible with existing zoning and land use. To ensure aesthetic compatibility, DDOT would adapt the exterior treatments (e.g. brick color and style) to be consistent with the nearby structures. With these minimization measures in place, the installation and operation of the proposed TPSS facilities would have no impact on zoning and land use in the study area or alter existing planned development.

Propulsion System

The siting of the wired propulsion system proposed under the Preferred Alternative would be within the existing transportation facility. Therefore, the installation and operation of the proposed propulsion systems would have no impact on the existing zoning and land use in the study area nor would they alter existing planned development.

DC Streetcar Car Barn Training Center

The operation and maintenance of the roadway improvements, track improvements, and modification to the DC Streetcar Barn Training Center proposed under the Preferred Alternative would not require the permanent or temporary use of property outside of DDOT's existing ROW. The DC Streetcar Car Barn Training Center would be used for streetcar maintenance and storage for the Preferred Alternative as an extension of the current streetcar service. Moreover, the siting of the proposed improvements within the existing transportation facility makes them compatible with the existing zoning and land use. Therefore, the installation and operation of the proposed DC Streetcar Barn Training Center would have no impact on zoning and land use in the study area nor would they alter existing planned development. No changes to the broad patterns of zoning or land use would occur due to implementation of this new extension.

Mitigation Summary

During development of the design concepts for the roadway typical sections, stop platforms and TPSS, DDOT applied minimum design standards to locate streetcar facilities within the Benning Road transportation corridor to avoid any change to the existing land use.

4.2.2 ROW IMPACTS AND RELOCATIONS

No-Build Alternative

The No-Build Alternative would not require additional ROW in the study area. No impacts on adjacent properties and no relocation impacts would occur.

Preferred Alternative – Median Alignment

The Preferred Alternative would not require acquisition of any residential buildings or any other private property. No residences and businesses, owned or rented, would be permanently taken; nor would the construction require whole or partial demolition of any of the residences or businesses. Streetcar operations under the Preferred Alternative would require permanent acquisition of a parcel along the southwestern corner of the Benning Road Metro Station owned by WMATA (see **Figure 4-1**). The acquisition is required to construct the track that would convey the streetcar to its terminal platform. Currently, the section to be impacted contains sidewalks (with stairs and ramps), landscaping, overhead lights, fencing, and similar site features. The proposed acquisition would require removal of these features and installation of a streetcar stop. DDOT has been coordinating with WMATA since the conception of the proposed action. All alternatives have been examined jointly with WMATA. Negotiations between WMATA and DDOT are ongoing on the parcel of land required at Benning Road Metro Station for the installation of a streetcar stop. See **Section 4.3.2** for a detailed discussion of the operational impact and proposed mitigation measures.

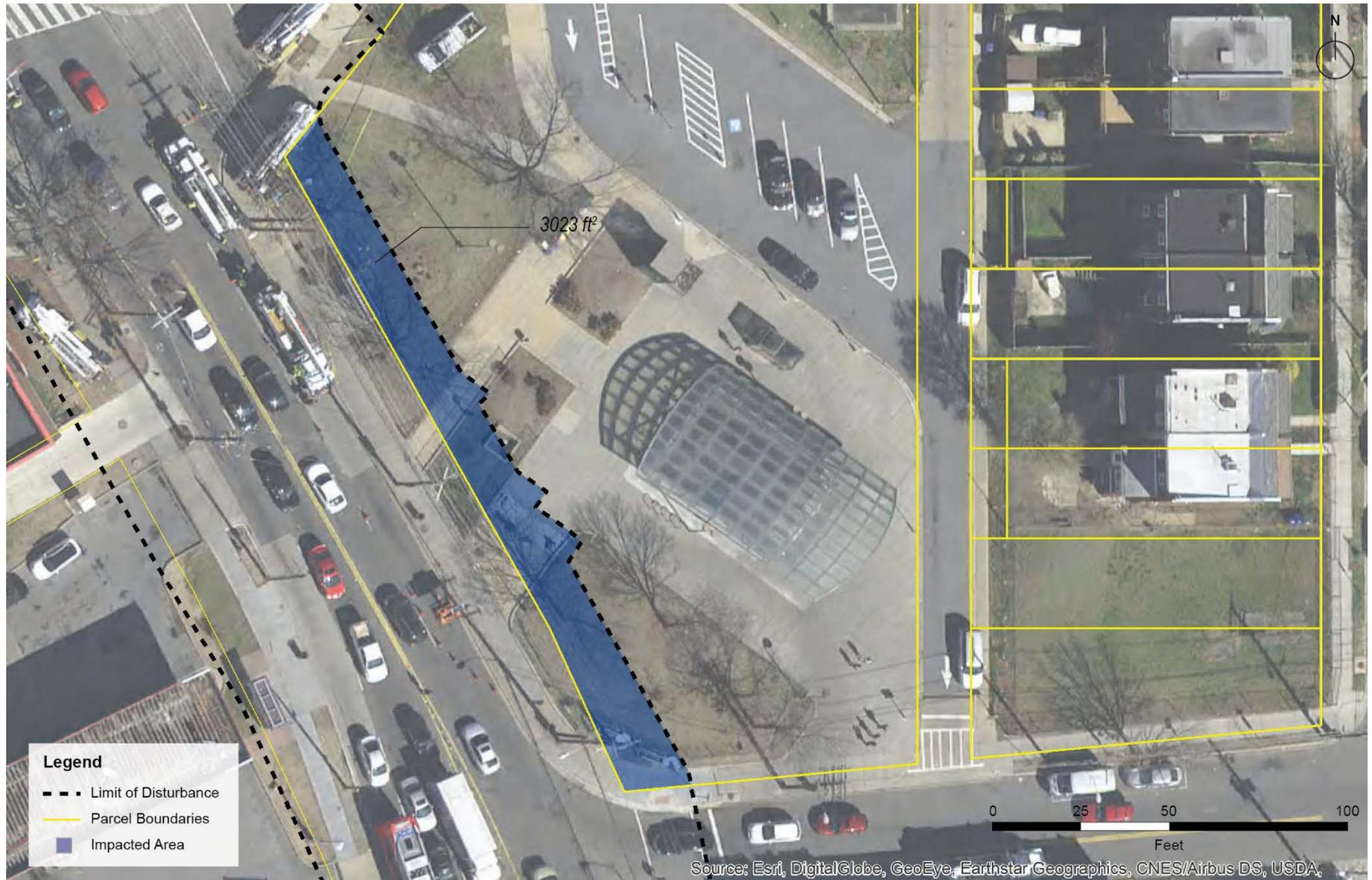
Propulsion System

The operation of the wired propulsion system as described under the Preferred Alternative would not require the acquisition of additional ROW. Therefore, no direct operational impact ROW is anticipated.

TPSS

Of the two TPSS sites proposed under the Preferred Alternative, the one adjacent to the Benning Road Metro Station would need additional ROW from WMATA. DDOT is considering this site for a TPSS facility because the affected parcel is vacant, neighbors an existing transportation facility, and is owned by a transportation agency i.e. WMATA. Coordination between WMATA and DDOT is ongoing for locating a streetcar TPSS facility next to the Benning Road Metro Station. The second TPSS facility would be located beneath the Whitlock Bridge on a vacant parcel owned by DDOT.

Figure 4-1: Preferred Alternative – Benning Road Metrorail Station ROW Impact



DC Streetcar Car Barn Training Center

The Preferred Alternative would require new track infrastructure to connect existing streetcar tracks with the DC Streetcar Car Barn Training Center. The new track infrastructure would be located within the existing DDOT ROW. No additional ROW would be required to implement this new connection and no relocations would occur.

Mitigation Summary

The Preferred Alternative would not displace or relocate any residence, business, or community facility in the study area. DDOT is in coordination with WMATA regarding ROW needs at the Benning Road Metrorail Station for the streetcar stop and the TPSS facility location. WMATA is a part of the inter-agency and stakeholders committee for this project and provides feedback throughout the project process.

4.2.3 NEIGHBORHOODS AND COMMUNITY FACILITIES

This section describes the effect of the No-Build Alternative and the Preferred Alternative on the area's neighborhoods and community facilities.

No-Build Alternative

Under the No-Build Alternative, existing conditions would remain unchanged. The benefits of the Preferred Alternative to residents, workers, and visitors, including provision of an additional transit option to enhance connectivity between activity centers east and west of the Anacostia River, facilitate intermodal transfer opportunities, and relieve currently crowded Metrorail and Metrobus lines, would not occur. No direct impacts to neighborhoods or community facilities would occur.

Preferred Alternative – Median Alignment

Neighborhood and community facilities would benefit from the improved safety measures for all modes of travel and enhanced public transportation services provided by the Preferred Alternative. Specifically, the Preferred Alternative would:

- provide the benefit of an additional transit service, thereby increasing transit mobility options for residents to include streetcar in addition to Metrobus and Metrorail;
- connect Ward 7 neighborhoods east of the Anacostia River with employment and activity centers located west of the river, improving an important transit corridor for District residents, workers, and visitors;
- provide intermodal connections to the regional Metrorail system as well as commuter rail and intercity rail at Union Station via the H/Benning Streetcar Line; and
- improve bicycle and pedestrian connections among neighborhoods and to community facilities along and across Benning Road in the study area by accommodating sidewalks within the roadway typical section.

Collectively, these actions would enhance the ability of residents to access local and regional community facilities. Moreover, by using the existing DDOT ROW and enhancing multi-modal access along and across Benning Road, the proposed action would not introduce a barrier between or within existing neighborhoods, would not fragment neighborhoods or degrade community cohesion, and would not reduce or eliminate access to neighborhoods or community facilities.

The improvements proposed under the Preferred Alternative would slightly increase travel times on Benning Road (relative to the No-Build condition), particularly during the PM peak demand period. This change would increase the time required to reach nearby community facilities by bus or automobile by approximately 15 seconds in the AM peak demand period, and 60 seconds during the PM peak demand period. Please see **Appendix E** for detailed traffic information. DDOT would implement measures like systemic signal optimization to reduce traffic congestion and projected delays due to streetcar operation.

The Draft EA identified noise impacts at five residences near the 42nd St stop due to warning bell use on the streetcars. The Final EA proposes relocating the 42nd St stop to the west side of 42nd St to reduce potential noise impacts at the residential locations (see **Figure 4-2**). Noise impacts are discussed in detail in **Section 4.10**. The Preferred Alternative would also introduce new source of vibration in the study area associated with the steel wheel on steel rail interactions at speeds in excess of 25 mph. The change in vibrations would generate 21 impacts: 12 in Benning, eight in Kingman Park, and one in Central Northeast (aka Mahaning Heights). The vibration analysis developed for the project indicates that the streetcar operations would affect Dorothy I. Height/Benning Neighborhood Library. Increase in vibrations could cause unnecessary annoyance to the nearby residences and occupants by: rattling windows; shaking items on shelves or hanging on walls; and generating low-frequency noise. These effects could, in turn, disrupt sensitive activities like instruction and sleep. During project design, DDOT would identify and implement vibration control measures (such as ballast mats under the tracks, spring frogs, pointless switches, and flange-bearing frogs). Such control measures would reduce vibration levels by approximately 10 VdB and reduce the vibrations to below perceptible levels. Detailed Noise and Vibration Analysis is presented in **Appendix I**.

The Draft EA identified potential direct and permanent impacts to 19 on-street parking spaces along Benning Road. Five of the spaces were impacted by the relocation of the Metrobus stop located on the westbound side of Benning Road just east of 42nd St, to the west of the intersection. The remaining 14 spaces were impacted by the reconfiguration of Benning Road around the originally proposed streetcar platform at 42nd St. However, with the Preferred Alternative of median-running alignment and proposed relocation of the streetcar stop to the west of 42nd St, there would be no net loss of parking. Therefore, there would be no parking impacts generated by the roadway improvements under the Preferred Alternative.

Figure 4-2: Conceptual Drawing of 42nd St Streetcar Stop and Roadway Configuration



To accommodate a median stop at 42nd Street, the Preferred Alternative would shift the eastbound and westbound lanes of Benning Road to the north and south, respectively, in the area surrounding the stop. Although the lane shift would occur within DDOT ROW, it would place the roadway and sidewalks approximately 10 feet closer to adjacent properties (see **Figure 4-3** through **Figure 4-6**). A visual impact would occur due to this shift because the existing street trees within DDOT's ROW would be removed in this location. DDOT's Urban Forestry Division will manage planting of replacement trees within the project ROW following the completion of construction (see **Section 4.13**).

TPSS

The Preferred Alternative includes the development of two TPSS facilities: one located at the eastern terminus of the Whitlock Bridge and one abutting the Benning Road Metro Station. Neither facility would create a barrier in study area neighborhoods or change travel patterns and accessibility or require additional ROW from a residential area or community facility or require relocation of residences or community facilities. The proposed TPSS location beneath the Whitlock Bridge is surrounded by industrial and commercial land uses. Its operation would not cause visual, noise, or vibration-based impacts to any residences or community facilities. DDOT selected the proposed TPSS location abutting the Benning Road Metro Station to minimize any potential impacts to residences. To further reduce the influence of this facility, DDOT will use context-sensitive design solutions that will adapt the exterior treatments (e.g. brick color and style) to complement nearby structures. DDOT will continue to engage the public on the design aesthetics and incorporate the public's feedback into the design solution. No noise or vibration-related impacts to residences or community facilities are expected to occur because of the operations of the proposed TPSS facilities.

Propulsion System

The OCS poles and overhead wires with the wired propulsion system would be added to the visual context of Benning Road. The visual effect, however, would be consistent with the existing character of the corridor since power and utility lines exist throughout the study area (**Figure 4-3** and **Figure 4-4**).

DC Streetcar Car Barn Training Center

Under the Preferred Alternative, no additional ROW would be required for the proposed new tracks and switches connecting the existing streetcar alignment along Benning Road near 26th Street with the DC Streetcar Car Barn Training Center. The operation of the track switches near the DC Streetcar Barn would introduce new sources of noise in the study area. Nearby community facilities located in the vicinity of DC Streetcar Car barn Training Center like Anacostia Community Outreach Center, Langston Golf Course and Spingarn High School would be subjected to additional noise. As shown in **Section 4.10** (Noise and Vibration), noise levels from streetcar operations under the Preferred Alternative are predicted to range from 49 dBA at Site M4 (Anacostia Park at 3341 Benning Road) to 69 dBA at Site M1 (a residence at 2531 Benning Road opposite the DC Streetcar Car Barn Training Center).

Figure 4-3: Looking West on Benning Road at 42nd Street - Existing



Source: Google Streetview

Figure 4-4: Looking East on Benning Road at 42nd Street - Existing



Source: Google Streetview

Figure 4-5: Looking West on Benning Road at 42nd Street – Preferred Alternative



Figure 4-6: Looking East on Benning Road at 42nd Street – Preferred Alternative



Exceedances of FTA's severe impact criteria are predicted at four residences (or FTA Category 2 land uses) in the vicinity of the track switches at the curve for the DC Streetcar Car Barn Training Center. Additionally, exceedances of FTA's moderate impact criteria are predicted at five other residences under the Preferred Alternative (four at the DC Streetcar Car Barn Training Center switches and one near the 42nd Street stop due to rail transit bell ringing). The occurrence of these potential residential impacts could interfere with the utilization of private outdoor spaces (e.g. front and side yards) and therefore indirectly affect community cohesion (see **Section 4.14** for more information on this indirect effect). Since the movement of the streetcar in and out of the Car Barn would occur only once or twice a day, the neighboring receptors would hear additional noise generated from the track switches only periodically. Most potential noise impacts would be caused by streetcar operations on the tight-radius curves. These effects would be mitigated through the use of wheel/rail lubrication, friction modifiers, larger radius for turning movements, rubber boots, and optimized wheel and rail profiles. See Section 4.9 for the noise mitigation summary.

OCS poles/wires along 26th Street would be required to support the proposed streetcar tracks leading from Benning Road to the DC Streetcar Car Barn Training Center. The existing visual environment in this location has a lack of visual order due to multiple elements (utility poles, parking lots, fencing, and roadway elements) disrupting visual lines and competing for viewer attention. Viewers of and from Benning Road would be relatively insensitive to the proposed change due to the short duration of exposure and generally limited focus of attention. For these reasons, the degree of visual impact by the DC Streetcar Car Barn Training Center in Key View 1 would be neutral for all viewers. Please see Section 0 for more information on the potential direct impacts on aesthetics and visual quality.

Mitigation Summary

With the Preferred Alternative, DDOT has reduced potential impacts on neighborhoods and community facilities by aligning the proposed action towards the median of the road and within the existing DDOT ROW. However, potential impacts related to the loss of street trees, and general changes to the visual, noise and vibration environments are expected to occur. Included with the proposed transportation improvement project is a set of related streetscape improvements along the Benning Road. These improvements would include several elements like street paving, curb reconstruction, innovative storm-water management facilities, street lighting, sidewalk improvements, and street tree planting. These standard streetscape improvements would enhance the user experiences for Benning Road in the study area. Below are some measures that DDOT will take to reduce any potential impacts on the neighborhood and community facilities:

- optimize and coordinate traffic signals;
- improve the availability and connectivity of mass transit services;
- employ streetcar and track equipment that reduce the generation of noise and vibration;
- replace street trees impacted during construction;
- adopt context sensitive design adaptations for the TPSS facilities next to the Benning Road Metrorail Station; and

- continue to engage the public on the design aesthetics and incorporate public's feedback into the design solution, wherever feasible.

Construction-related impacts would be limited primarily to local street detours that might be necessary in the immediate area of project construction. Access to businesses and community areas will be maintained while construction occurs in the vicinity. For more information, see **Section 4.13**.

4.3 TRANSPORTATION AND TRAFFIC OPERATIONS

This section discusses future transportation and traffic operation conditions in the study area and assesses the potential transportation impacts of the No-Build and Preferred Alternatives. This section summarizes the transportation technical memo (see **Appendix E**) prepared for the proposed action. Areas of transportation service and performance evaluated include:

- Roadway Network;
- Access and Parking;
- Mass Transit;
- Pedestrian and Bicycle Network; and
- Freight Rail Service

4.3.1 ROADWAY NETWORK

The VISSIM simulation software was used to assess traffic operations along Benning Road in the study area. The years evaluated were 2019 (existing) and 2045 (No-Build and Preferred Alternatives). The data used for traffic forecasting and analysis include the following:

- Traffic volumes (intersections, freeway/arterial mainlines, ramps);
- Street Light O-D data;
- Travel time data (field collected and Google crowdsourced data);
- Observed queue data; and
- Multimodal data (pedestrian/bicycle volumes, transit operations)

DDOT Collected traffic count data Tuesday through Thursday over the course of two weeks, from April 2nd - 4th and April 9th - 11th, 2019. The traffic count data collected included peak period intersection turning movement counts (TMCs) and 72-hour classification counts for arterial segments, DC-295 ramps, and DC-295 mainline segments (see Section 2.0 in **Appendix E**)

DDOT also prepared Metropolitan Washington Council of Governments (MWCOG) Regional Travel demand forecasts for the project area that reflect both the regional context and localized land use and transportation characteristics. These forecasts are used to test the general capacity and connectivity of the existing and planned transportation networks and serve as inputs to the detailed traffic simulation model. The travel demand forecasting process used the most currently adopted version of the travel demand model (Version 2.3.75) produced and distributed by MWCOG and extracted a subarea model in VISUM (Version 18).

The transportation network for the 2045 No-Build scenario includes the changes proposed in the DDOT’s Constrained Long Range Plan (CLRP). DDOT’s CLRP includes a range of planned improvements to the roadway and transit networks throughout the metropolitan region. Within the project area, CLRP identifies the removal of one of the three lanes in each direction along East Capitol Street between 40th Street and Southern Avenue and DC-295 interchange improvements.

No-Build Alternative

Table 4-1 provides delay and level of service (LOS) by movement for the critical intersections for the 2045 No-Build Alternative for the AM and PM peak periods (7:00-9:00 AM and 4:30-5:30 PM). Compared to the existing condition, implementing the No-Build Alternative would result in changes in the LOS experienced at 22 intersections. Eleven intersections are expected to see operations improve and 16 intersections would see operations decline (four intersections are expected to experience both).

Table 4-1: 2045 No-Build Peak Period (AM and PM) Delay and LOS at the Critical Intersections

Intersection	Peak Period	Intersection		Northbound		Southbound		Westbound		Eastbound	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>Unsignalized Intersections</i>											
Benning Road Ramp to DC-295 at 36 th Street	PM	46	E	7	A					59	F
Deane Avenue at Lee St	AM	177	F			227	F	1	A	271	F
Kenilworth Avenue at Foote Street	AM	158	F			183	F			17	B
<i>Signalized Intersections</i>											
Benning Road at Anacostia Avenue	PM	127	F	44	D	59	E	3	A	191	F
Benning Road at 34 th Street	PM	107	F	19	B	45	D	26	C	166	F
Benning Road at Minnesota Avenue	PM	213	F	139	F	39	D	82	E	387	F
Minnesota Avenue at Dix Street	PM	58	E	87	F	12	B	98	F	38	D
Deane Avenue at Kenilworth Terrace	AM	113	F	34	C	228	F	3	A	59	E
Nannie Helen Burroughs Avenue at Kenilworth Avenue and DC-295 U-turns	PM	63	E	161	F			30	C	17	B
Nannie Helen Burroughs Avenue at Minnesota Avenue	AM	75	E	44	D	212	F	62	E	22	C

The 11 intersections projected to improve (relative to the existing condition) are:

- Benning Road at 39th Street - During the AM peak period, operations would improve from LOS D to B. This improvement is the result of reduced delays for northbound, southbound, and westbound vehicles.
- Benning Road at 40th Street - During the AM peak period, operations would improve from LOS B to A. This improvement is the result of reduced delays for northbound and westbound vehicles.
- Benning Road at Blaine Street – During the AM peak period, operations would improve from LOS B to A. This improvement is the result of reduced delays for eastbound vehicles.
- East Capitol Street at Texas Avenue – During the AM peak period, operations would improve from LOS D to C. This improvement is the result of reduced delays for eastbound vehicles.
- Benning Road at Anacostia Avenue – During the PM peak period, operations would improve from LOS F to C. This improvement is the result of reduced delays for northbound, southbound, and eastbound vehicles.
- Benning Road at 34th Street - During the PM peak period, operations would improve from LOS F to D. This improvement is the result of reduced delays for eastbound and westbound vehicles.
- Benning Road at Minnesota Avenue - During the AM peak period, operations would improve from LOS F to C. This improvement is the result of reduced delays for all vehicles.
- Benning Road at 26th Street - During the PM peak period, operations would improve from LOS B to A. This improvement is the result of reduced delays for southbound and eastbound vehicles.
- Minnesota Avenue at Dix Street - During the PM peak period, operations would improve from LOS E to D. This improvement is the result of reduced delays for northbound vehicles.
- Minnesota Avenue at Bus Exit South - During the PM peak period, operations would improve from LOS B to A. This improvement is the result of reduced delays for northbound and eastbound vehicles.
- Benning Road at Central Avenue - During the PM peak period, operations would improve from LOS D to C. This improvement is the result of reduced delays for eastbound vehicles.

The 16 intersections projected to decline (relative to existing conditions) are:

- Benning Road at 34th Street – During the AM peak period, operation would drop from LOS B to C. This disparity is the result of increased delays for eastbound vehicles
- Benning Road at 42nd Street - During the AM peak period, operations would drop from LOS C to D. This disparity is the result of increased delays for southbound vehicles. During the PM peak period, operations would drop from LOS B to C. This disparity is the result of increased delays for south-, east-, and westbound vehicles.
- Benning Road at 26th Street - During the AM peak period, operations would drop from LOS A to B. This disparity is the result of increased delays for southbound vehicles.
- Benning Road at Oklahoma Avenue – During the AM peak period, operations would drop from LOS B to E. This disparity is the result of increased delays for all vehicles.

- Minnesota Avenue at Dix Street - During the AM peak period, operations would drop from LOS B to D. This disparity is the result of increased delays for north-, east-, and westbound vehicles.
- Minnesota Avenue at Grant Street – During the AM peak period, operations would drop from LOS B to C. This disparity is the result of increased delays for northbound vehicles.
- Benning Road at 44th Street - During the AM peak period, operations would drop from LOS C to D. This disparity is the result of increased delays for eastbound vehicles.
- Benning Road at East Capitol Street - During the AM peak period, operations would drop from LOS D to F. This disparity is the result of increased delays for eastbound vehicles. During the PM peak hour, operations would drop from LOS B to C. This disparity is the result of increased delays for eastbound vehicles.
- Deane Avenue at Kenilworth Avenue - During the AM peak period, operations would drop from LOS D to E. This disparity is the result of increased delays for eastbound and northbound vehicles.
- Nannie Helen Burroughs Avenue at Kenilworth Avenue – During the AM peak period, operations would drop from LOS C to D. This disparity is the result of increased delays for all vehicles. During the PM peak hour, operations would drop from LOS E to F. This disparity is the result of increased delays for all vehicles.
- Nannie Helen Burroughs Avenue at Minnesota Avenue - During the AM peak period, operations would drop from LOS C to F. This disparity is the result of increased delays for north-, south-, and eastbound vehicles. During the PM peak hour, operations would drop from LOS D to F. This disparity is the result of increased delays for north-, south-, and westbound vehicles.
- Nannie Helen Burroughs Avenue at 44th Street - During the AM peak period, operations would drop from LOS C to D. This disparity is the result of increased delays for eastbound and westbound vehicles. During the PM peak hour, operations would drop from LOS D to F. This disparity is the result of increased delays for all vehicles.
- Benning Road to DC-295 at 36th Street - During the PM peak period, operations would drop from LOS C to F. This disparity is the result of increased delays for northbound and eastbound vehicles.
- Benning Road and 39th Street - During the PM peak period, operations would drop from LOS A to B. This disparity is the result of increased delays for north-, south-, and westbound vehicles.
- East Capitol Street at Texas Avenue - During the PM peak period, operations would drop from LOS D to E. This disparity is the result of increased delays for eastbound vehicles.
- Deane Avenue at Kenilworth Terrace – During the PM peak period, operations would drop from LOS C to D. This disparity is the result of increased delays for northbound vehicles.

For more information on intersection performance under the No-Build Alternative, please see the Intersection Measure of Efficiency (MOE) Tables at the end of **Appendix E**.

The traffic models indicate that AM travel times under the No-Build Condition would be very like those experienced under the existing condition (see **Table 4-2**). The model predicts decreased

travel times (60-64 seconds) in on Benning Road between East Capitol Street and Minnesota Avenue, in both the eastbound and westbound directions.

Table 4-2: AM Peak Period Travel Times

Route	Existing Condition	No-Build Alternative	Preferred Alternative
NB DC-295 from East Capitol Street to Benning Road	00:37	00:37	00:37
NB DC-295 from Benning Road to Nannie Helen Burroughs Avenue	00:44	00:44	00:44
NB DC-295 from Nannie Helen Burroughs Avenue to Polk Street	00:45	00:45	00:45
NB DC-295 from Nelson Place to East Capitol Street Bridge	01:15	01:16	01:16
NB DC-295	03:20	03:22	03:22
SB DC-295 from Polk Street to Lane Place	03:11	03:10	03:04
SB DC-295 from Lane Place to Nannie Helen Burroughs Avenue	01:28	01:29	01:27
SB DC-295 from Nannie Helen Burroughs Avenue to Benning Road	06:35	06:50	06:30
SB DC-295 from Benning Road to East Capitol Street	03:43	03:55	03:47
SB DC-295 from East Capitol Street to N Street	03:50	03:54	03:54
SB DC-295	18:47	19:18	18:42
WB Benning Road from East Capitol Street to Minnesota Avenue	04:16	03:16	03:20
WB Benning Road from Minnesota Avenue to 36 th Street	00:42	00:42	00:42
WB Benning Road from 36 th Street to Anacostia Avenue	00:48	00:51	01:08
WB Benning Road from Anacostia Avenue to 26 th Street	01:14	02:08	02:59
WB Benning Road	07:00	06:57	07:07
EB Benning Road from 26 th Street to Anacostia Avenue	01:06	01:13	01:22
EB Benning Road from Anacostia Avenue to 36 th Street	00:44	00:59	01:05
EB Benning Road from 36 th Street to Minnesota Avenue	01:28	00:49	00:48
EB Benning Road from Minnesota Avenue to East Capitol Street	05:41	04:45	04:16
EB Benning Road	08:59	07:46	07:31

During the PM peak demand period the model predicts a more substantial difference between the existing and No-Build condition (see **Table 4-3**). Relatively significant differences in travel times are expected to occur eastbound on Benning Road between 26th Street and Minnesota Avenue. Between these points, the model predicts a 14.65-minute decrease in the average travel time. Traffic on southbound DC-295 is expected to remain relatively unchanged, with a roughly 1.5-minute decrease in travel time between N Street and Benning Road. In the northbound direction, traffic on DC-295 is expected to experience a 3.4-minute increase in travel times. The travel times expected to occur westbound on Benning Road are slightly shorter (less than 60 seconds) than the existing condition.

The project team included four intersections in the queue length comparison portion of the analysis:

- DC-295 and Benning Road,
- Benning Road and East Capitol Street,
- East Capitol Street and Texas Avenue, and
- Benning Road and Minnesota Avenue.

Table 4-4 provides the results of this analysis for the AM peak period, and **Table 4-5** provides the results for the PM peak period.

Table 4-3: PM Peak Period Travel Times

Route	Existing Condition	No-Build Alternative	Preferred Alternative
NB DC-295 from East Capitol Street to Benning Road	03:46	5:58	5:01
NB DC-295 from Benning Road to Nannie Helen Burroughs Avenue	02:21	03:33	02:47
NB DC-295 from Nannie Helen Burroughs Ave to Polk Street	02:31	02:14	02:04
NB DC-295 from Nelson Place to East Capitol Street Bridge	02:50	01:48	02:13
NB DC-295	11:28	13:33	12:05
SB DC-295 from Polk Street to Lane Place	00:31	00:31	00:31
SB DC-295 from Lane Place to Nannie Helen Burroughs Avenue	00:13	00:13	00:13
SB DC-295 from Nannie Helen Burroughs Ave to Benning Road	00:47	00:45	00:45
SB DC-295 from Benning Road to East Capitol Street	01:45	00:50	00:52
SB DC-295 from East Capitol Street to N Street	02:52	02:21	02:23
SB DC-295	06:08	04:40	04:44
WB Benning Road from East Capitol Street to Minnesota Avenue	03:49	02:53	03:11
WB Benning Road from Minnesota Ave to 36 th Street	00:39	00:39	00:39
WB Benning Road from 36 th Street to Anacostia Avenue	00:44	00:41	00:51
WB Benning Road from Anacostia Ave to 26 th Street	01:03	01:03	02:40
WB Benning Road	06:15	05:16	05:57
EB Benning Road from 26 th Street to Anacostia Avenue	03:45	01:20	01:24
EB Benning Road from Anacostia Avenue to 36 th Street	07:11	00:59	00:59
EB Benning Road from 36 th Street to Minnesota Avenue	06:48	00:46	02:19
EB Benning Road from Minnesota Avenue to East Capitol Street	03:22	02:50	03:03
EB Benning Road	21:06	05:55	07:08

The largest increases in maximum queue length (relative to existing conditions), are predicted to occur at the intersections of Benning Road with DC-295 and East Capitol Street. During the AM peak period, motorists traveling east on Benning Road to DC-295 NB would experience slightly longer queues (7 to 46 feet) as they attempt to exit. Motorists traveling north on DC-295 exiting on Benning Road WB, however, would encounter queues approximately 324 feet longer than they do under existing conditions. At the intersection of Benning Road and East Capitol Street, queues for northbound vehicles are expected to decrease by 192 ft, while the queue for southbound and westbound vehicles are expected to increase (by 735 ft and 906 ft, respectively). Eastbound motorists are expected to experience a negligible change in queuing (less than one car length). During the PM peak period, only the northbound motorists traveling on DC-295 exiting to Benning Road WB are expected to experience longer maximum queues (65 ft). Motorists traveling from Benning Road EB onto DC-295 NB, as well as those travelling from DC-295 NB onto Benning Road WB, are all expected to experience shorter queues under the No-Build condition (1908 ft and 79 ft shorter, respectively).

Table 4-4: AM Peak Queue Lengths

Location		Max Queue Length (ft)		
		Existing Condition	No-Build Alternative	Preferred Alternative
DC 295 and Benning Road	Eastbound Benning Road to Southbound DC-295	0	0	0
	Eastbound Benning Road / Southbound Kenilworth Avenue to Northbound DC-295	7	46	25
	Southbound Kenilworth Avenue to Northbound DC-295	18	30	21
	Northbound DC-295 to Westbound Benning Road	380	704	382
	Northbound DC-295/Southbound Kenilworth Avenue to Westbound Benning Road	0	0	167
Benning Road and East Capitol Street	Southbound Benning Road at East Capitol Street	168	903	913
	Northbound Benning Road at East Capitol Street	747	555	862
	Westbound East Capitol Street at Benning Road	870	1776	1784
	Eastbound East Capitol Street at Benning Road	242	247	320
East Capitol Street and Texas Avenue	Northbound Texas Avenue at East Capitol Street	701	540	541
	Westbound Texas Avenue at East Capitol Street (left turn from East Capitol to Texas)	300	86	79
Benning Road and Minnesota Avenue	Eastbound Benning Road at Minnesota Avenue	554	382	304
	Westbound Benning Road at Minnesota Avenue	411	389	416
	Northbound Minnesota Avenue at Benning Road	454	478	403
	Southbound Minnesota Avenue at Benning Road	537	532	549

Table 4-5: PM Peak Queue Lengths

Location		Max Queue Length (ft)		
		Existing Condition	No-Build Alternative	Preferred Alternative
DC 295 and Benning Road	Eastbound Benning Road to Southbound DC-295	291	290	37
	Eastbound Benning Road / Southbound Kenilworth Avenue to Northbound DC-295	4603	2655	2783
	Southbound Kenilworth Avenue to Northbound DC-295	49	0	0
	Northbound DC-295 to Westbound Benning Road	79	0	0
	Northbound DC-295/Southbound Kenilworth Avenue to Westbound Benning Road	0	65	59
Benning Road and East Capitol Street	Southbound Benning Road at East Capitol Street	166	522	459
	Northbound Benning Road at East Capitol Street	313	292	271
	Westbound East Capitol Street at Benning Road	315	240	220
	Eastbound East Capitol Street at Benning Road	220	1335	1334
East Capitol Street and Texas Avenue	Northbound Texas Avenue at East Capitol Street	740	204	232
	Westbound Texas Avenue at East Capitol Street (left turn from East Capitol to Texas)	224	278	238
Benning Road and Minnesota Avenue	Eastbound Benning Road at Minnesota Avenue	1676	535	777
	Westbound Benning Road at Minnesota Avenue	297	313	330
	Northbound Minnesota Avenue at Benning Road	581	373	482
	Southbound Minnesota Avenue at Benning Road	424	454	482

During the PM peak period, vehicles traveling west on East Capitol Street attempting to turn left on Texas Avenue would experience modest increase in maximum queue lengths (approximately 50 ft). Otherwise, vehicles travelling through the intersection would encounter smaller maximum queues. Motorists traveling through the intersection of Benning Road and Minnesota Avenue would generally see maximum queue lengths decrease during the AM and PM peak periods.

Per the analysis, motorists travelling east on Benning Road would experience reduced maximum queue lengths during the AM and PM peak periods, particularly those approaching the intersection from the west.

Preferred Alternative

Table 4-6 provides LOS and delay projections for critical intersections under the Preferred Alternative. Relative to the No-Build condition, the Preferred Alternative would improve the LOS experienced at four intersections and reduce it at seven.

The four intersections projected to improve are:

- Benning Road at Minnesota Avenue - During the AM peak period, operations would improve from LOS D to C. This improvement is associated with reduced delays for vehicles traveling in the northbound and eastbound directions.
- Benning Road at Oklahoma Avenue - During the AM peak period, operations would improve from LOS E to D. This improvement is associated with reduced delays for vehicles traveling in the westbound direction.
- Benning Road at Central Avenue - During the PM peak period, operations would improve from LOS C to B. This improvement is associated with reduced delays for vehicles traveling in the eastbound direction.
- Nannie Helen Burroughs Avenue at 44th Street - During the PM peak period, operations would improve from LOS F to D. This improvement is associated with reduced delays for all vehicles.

The seven intersections projected to decline are:

- Benning Road at Anacostia Avenue - During the AM peak period, operations would fall from LOS A to B. This decrease in service is the result of increased delays for vehicles traveling in the eastbound direction.
- Benning Road at Central Avenue - During the AM peak period, operations would drop from LOS D to E. This disparity is associated with increased delays for vehicles traveling in the southbound direction.
- Nannie Helen Burroughs Avenue at 44th Street - During the AM peak period, operations would fall from LOS D to E. This decrease in service is the result of increased delays for vehicles traveling in the westbound direction.
- Benning Road at 34th Street - During the PM peak period, operations would fall from LOS C to D. This decrease in service is the result of increased delays for vehicles traveling in the eastbound direction.

- Minnesota Avenue at Bus Exit South - During the PM peak period, operations would fall from LOS A to B. This decrease in service is the result of increased delays for vehicles traveling in the eastbound direction.
- Benning Road at 45th Street - During the PM peak period, operations would fall from LOS A to B. This decrease in service is the result of increased delays for vehicles traveling in the southbound and westbound directions.
- Deane Avenue and Kenilworth Avenue - During the PM peak period, operations would fall from LOS C to D. This decrease in service is the result of increased delays for vehicles traveling in the southbound and westbound directions.

Table 4-6: 2045 Preferred Alternative Peak Period (AM and PM) Delay and LOS at Critical Intersections

Intersection	Peak Period	Intersection		Northbound		Southbound		Westbound		Eastbound	
		Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>Unsignalized Intersections</i>											
Benning Road Ramp to DC-295 at 36 th Street	PM	140	F	280	F					104	F
Deane Avenue at Lee St	AM	387	F			516	F	1	A	394	F
Kenilworth Avenue at Foote Street	AM	192	F			226	F			17	B
<i>Signalized Intersections</i>											
Benning Road at Oklahoma Avenue	AM	56	E	39	D			75	E	13	B
Benning Road at East Capitol Street	AM	104	F	17	B	215	F	53	D	19	B
East Capitol Street at Texas Avenue	PM	73	E	80	E			8	A	112	F
Deane Avenue at Kenilworth Terrace	AM	179	F	268	F	258	F	5	A	57	E
Deane Avenue at Kenilworth Avenue	AM	62	E			314	F	66	E	8	A
Nannie Helen Burroughs Avenue at Kenilworth Avenue and DC-295 U-turns	PM	154	F	339	F			45	D	33	C
Nannie Helen Burroughs Avenue at Minnesota Avenue	AM	155	F	364	F	366	F	49	D	29	C
Nannie Helen Burroughs Avenue at Minnesota Avenue	PM	176	F	182	F	130	F	512	F	31	C
Nannie Helen Burroughs Avenue at 44 th Street and Hunt Place	PM	177	F	360	F	81	F	404	F	23	C

For more information on intersection performance under the Preferred Alternative, please see the Intersection Measure of Efficiency (MOE) Tables at the end of **Appendix E**.

The traffic models indicate that AM travel times under the Preferred Alternative would be like those experienced under the No-Build condition (see **Table 4-2**). DC-295 SB shows the biggest difference, which is approximately 46 seconds less than the No-Build condition. Compared with the existing condition, the difference is even smaller. The model of the PM peak period also shows strong similarities with the No-Build condition (see **Table 4-3**). Both Alternatives show an increase in travel times on DC-295 NB (relative to the existing condition) and reduced travel times on DC-295 SB and Benning Road (both directions). Benning Road WB is forecasted to have approximately 39 seconds of increased travel times relative to the No-Build condition. Benning Road EB is forecasted to have approximately 73 seconds of increased travel times relative to the No-Build condition.

The traffic model of the Preferred Alternative predicts queue lengths like those under the No-Build condition. Generally, the queues at the DC 295 – Benning Road interchange are expected to shrink relative to the No-Build condition. The two exceptions to this generalization are the ramp from DC 295 NB onto Benning Road WB (during the AM peak period) and the ramp from Benning Road EB to DC 295 NB. In both cases, maximum queue lengths are expected to increase by around 150 ft. During the AM peak period, the intersection of Benning Road and East Capitol Street is expected to have maximum queue lengths extend for northbound and eastbound motorists (308 ft and 73 ft, respectively). The traffic model predicts negligible changes (i.e. approximately 20 ft) during the PM peak period relative to the No-Build condition. Maximum queue lengths at the intersection of East Capitol Street and Texas Avenue are expected to be like those predicted to occur under the No-Build Condition.

During the AM peak period, motorists approaching the intersection of Benning Road and Minnesota Avenue from the west and south would experience maximum queues approximately 80 ft shorter. From the east and north, the maximum queues are expected to be slightly longer (i.e. roughly 30 ft), relative to the No-Build condition. During the PM peak period, motorists approaching the intersection of Benning Road and Minnesota Avenue from the west and south would experience longer maximum queues (approximately 240 ft and 120 ft, respectively). From the east and north, the maximum queues would be like those expected to occur under the No-Build condition.

TPSS

The operation and maintenance of the two TPSS facilities proposed under the Preferred Alternative would occasionally require maintenance crews to visit the sites. However, normal maintenance activities would not impact roadway traffic operations because they would not be within active travel lanes. Driveway access would be designed according to DDOT standards for

safety of access driveways. Therefore, both TPSS sites would have no direct impact on vehicular operations.

Propulsion System

The wired propulsion system proposed under the Preferred Alternative would be placed adjacent to or outside of the active travel lanes. Therefore, these facilities would have no direct impact on vehicular operations.

DC Streetcar Car Barn Training Center

The Preferred Alternative would place streetcar tracks within the 26th Street roadway. Based on the current operations plan, these tracks would only be used by one streetcar vehicle in the early morning and late evening.

Anticipated Early Morning Schedule:

- Monday – Friday 5:00AM - 5:40AM
- Saturday, Sunday, and Holidays – 7:00AM – 7:40AM

Anticipated Late Evening Schedule:

- Monday – Thursday 12:20AM – 1:00AM
- Friday and Saturday 2:20AM – 3:00AM
- Sunday and Holidays 10:20PM – 11:00PM

This operation occurs during off peak hours when vehicular volumes are anticipated to be low. However, to avoid potential conflicts a new traffic signal would be located at the entrance to the DC Streetcar Car Barn Training Center on 26th St and vehicular signal timing would be adjusted at Benning Road to allow the streetcars to complete the turning movement during a separate phase. Since this affect would occur during off-peak hours and be minimized by coordinating the movement of streetcars with the signal's general timing, the use of the proposed improvements to the DC Streetcar Car Barn Training Center would have no direct impact on vehicular operations.

Mitigation Summary

Relative to the No-Build Alternative, the physical and operational changes proposed under the Preferred Alternative are predicted to increase travel times on Benning Road. Mitigation for this impact would be provided in two ways: through systemic signal coordination and optimization, and by providing another mass transit option in the study area. The operation of the tracks connecting the DC Streetcar Barn Training Center and Benning Road would require interrupting normal vehicular operations during the early morning and late evening hours. However, minimum traffic is anticipated on Benning Road outside the DC Streetcar Barn Training Center at the early morning and late-night hours (described above) when streetcars would ingress and egress from the DC Streetcar Car Barn Training Center. Any potential traffic impacts would be further reduced through the installation of a new traffic signal at the entrance of DC Streetcar Barn Training Center on 26th Street and adjusted signal timing on the Benning Road intersection.

4.3.2 MASS TRANSIT

Streetcar Ridership

Simplified Trips-on-Project Software (STOPS) (version 2.5) was used to forecast planning-level transit ridership in both the Build and No-Build scenarios for the Benning Road Reconstruction and Streetcar Project in the opening year 2025 and future horizon year 2045. STOPS was developed by the Federal Transit Administration (FTA) and has been widely used in ridership analysis and forecasting for transit planning and development projects. STOPS estimates daily ridership patterns using typical planning data including current and projected regional land use and demographic data. It can report line-level and stop-level ridership, and model both local and regional transit networks, including the first phase of the DC Streetcar and the planned extension.

Projected Streetcar boarding at each stop under No-Build (terminating at Oklahoma Avenue) and Build (extension to Benning Road Metrorail station) scenarios for 2025 is summarized in **Table 4-7**. It is projected that in 2025, combined weekday boarding at the proposed stops along the Benning Road Extension would be approximately 2,500 riders. This is in addition to a projected 5,000 total riders boarding at stops along the existing line between Union Station and Oklahoma Avenue, 27% of which are riders projected to be generated by the addition of the extension.

Table 4-7: No-Build and Preferred Alternative - Streetcar Ridership in 2025

Stop	No-Build Alternative (Daily)	Preferred Alternative (Daily)
Union Station	1,240	1,510
3 rd Street and H Street	210	590
8 th Street and H Street	250	350
13 th Street and H Street	390	460
15 th Street and Benning Road	390	700
19 th Street and Benning Road	480	720
Oklahoma Avenue and Benning Road	600	530
Kingman Island and Benning Road	-	10
34 th Street and Benning Road	-	440
39 th Street and Benning Road	-	400
42 nd Street and Benning Road	-	360
Benning Road Metrorail Station	-	1,310
Total	3,560	7,380

Notes:

1. For purposes of the STOPS planning level analysis it is assumed that the H Street Bridge construction would be completed, and the Streetcar stop at Union Station would be operational in 2025 with the relevant federal and local certifications granted for revenue service. The actual timing of the H Street Bridge construction is unknown at this time and it is expected to impact Streetcar ridership and operations.
2. The STOPS model does not fully capture the potential impacts of the H Street Bridge construction (including the closure of the Union Station Streetcar stop) on transit ridership (Metrobus and DC Streetcar) and traffic patterns and the time required for travel patterns to normalize after completion of the bridge
3. Special markets and associated transit trips are not modeled, such as those related to tourism, recreation, and sporting events.

Table 4-8 summarizes the 2045 streetcar ridership under the No-Build Alternative (terminating at Oklahoma Avenue) and the Preferred Alternative (includes extension to Benning Road Metrorail

Station). By 2045, estimated weekday boarding at proposed stops along the Benning Road Extension would be approximately 4,900 riders. This is in addition to a projected 9,800 riders boarding at stops along the existing line, 29% of which is projected to be generated by the addition of the extension.

Table 4-8: No-Build and Preferred Alternative - Streetcar Ridership in 2045

Stop	No-Build Alternative (Daily)	Preferred Alternative (Daily)
Union Station	2,210	2,840
3 rd Street and H Street	380	1,190
8 th Street and H Street	470	640
13 th Street and H Street	690	800
15 th Street and Benning Road	680	1,110
19 th Street and Benning Road	930	1,410
Oklahoma Avenue and Benning Road	1,340	1,430
Kingman Island and Benning Road	-	20
34 th Street and Benning Road	-	770
39 th Street and Benning Road	-	1,010
42 nd Street and Benning Road	-	750
Benning Road Metrorail Station	-	2,390
Total	6,700	14,360

Bus Ridership

Table 4-9 provides the total daily (weekday) bus ridership by bus route (for the entire route) serving the study area under the No-Build and the Preferred Alternative in 2025. **Table 4-10** shows daily (weekday) ridership by route within the study area under the No-Build and the Preferred Alternative in 2045. These numbers include ridership for the entire routes, not just ridership at stops within the study area.

Table 4-9: 2025 No-Build and Preferred Alternative - Route Level Daily Bus Ridership

Bus Route	Daily	
	No-Build Alternative	Preferred Alternative
X Line (X1, X2, X3, X9)	17,490	16,480
U4	1,900	1,880
U5, U6	2,410	2,340
U8	2,570	2,250
96, 97	7,880	7,700
W4	8,170	8,240
Total	40,420	38,890
Percent Change from No-Build = - 3.8%		

Compared to the 2045 No-Build scenario, the total daily weekday bus ridership in the study area (bus stops within a quarter mile of an existing or proposed Streetcar stop) would decrease by approximately 6 percent in the 2045 Build scenario—from 53,260 to 50,150 daily weekday riders. A similar decrease is estimated in 2025 from 40,420 to 38,890 daily weekday riders (4 percent decrease). This decrease may be explained by the introduction of the streetcar service, which offers

faster service and higher frequency. For example, the streetcar service would reduce passenger waiting time between the Benning Road Metrorail Station and Union Station by operating with the same 10-minute headway during both the peak and off-peak periods.

Table 4-10: 2045 No-Build and Preferred Alternative – Route Level Daily Bus Ridership

Bus Route	Daily	
	No-Build Alternative	Preferred Alternative
X Line (X1, X2, X3, X9)	21,630	19,580
U4	2,160	2,020
U5, U6	3,390	3,200
U8	3,430	2,880
96,97	9,320	9,040
W4	13,330	13,430
Total	53,260	50,150
Percent Change from No-Build = -5.8%		

Streetcar Travel Time

To evaluate the operation of the streetcar alignments and to determine streetcar ridership, average travel speeds were obtained from the VISSIM simulation model. VISSIM travel time segments were defined from 20th Street to the Benning Road Metrorail Station in the eastbound direction and from Benning Road Metrorail Station to 26th Street in the westbound direction.

Table 4-11 provides average travel time and speed for the Preferred Alternative in 2045 during the morning and evening peak periods.

Table 4-12 shows the travel time between stops during the morning and evening peak periods.

Table 4-11: 2045 Average Streetcar Travel Time and Speed – Preferred Alternative (Morning and Evening Peak Hours)

Direction	Peak Hour	Travel Time (min)	Speed (mph)
Eastbound	AM	9.2	13.9
Westbound*	AM	10.3	10.9
Eastbound*	PM	11.6	11.0
Westbound	PM	8.3	13.4

*indicates the peak (critical) direction during that peak hour.

Table 4-12 : 2045 Streetcar Stop to Stop Travel Time - Preferred Alternative

Segment	Preferred Alternative	
	Travel Time (min) – AM Peak Hour	Travel Time (min) – PM Peak Hour
Eastbound Direction		
26 th Street to Oklahoma Avenue	0.7	0.8
Oklahoma Avenue to Kingman Island	1.5	1.2
Kingman Island to 34 th Street	1.1	1.2
34 th Street to 39 th Street	2.5	2.7
39 th Street to 42 nd Street	1.0	1.3

Segment	Preferred Alternative	
	Travel Time (min) – AM Peak Hour	Travel Time (min) – PM Peak Hour
42 nd Street to Benning Road Metrorail Station	2.3	4.4
TOTAL	9.2	11.6
Westbound Direction		
Benning Road Metrorail Station to 42 nd Street	2.1	1.5
42 nd Street to 39 th Street	1.7	1.2
39 th Street to 34 th Street	2.2	2.4
34 th Street to Kingman Island	1.1	1.1
Kingman Island to Oklahoma Avenue	2.6	1.4
Oklahoma Avenue to 26 th Street	0.6	0.8
TOTAL	10.3	8.3

4.3.2.1 Environmental Consequences

No-Build Alternative

The Orange Line at the Minnesota Avenue Metrorail Station and Blue and Silver Lines at the Benning Road Metrorail Station currently serve the study area. Metrobus service in the study area comprises 17 routes; 15 routes serve Metrorail Stations. H Street/Benning Road between Minnesota Avenue and west through downtown is also identified as a priority corridor by WMATA in their Priority Corridor Network Plan. No change to existing mass transit service would occur under the No-Build Alternative.

Preferred Alternative

The proposed streetcar platform at the Benning Road Metro Station would directly and permanently impact the Station's physical structure. The proposed impact is associated with the construction of the track improvements. Most of the area that is projected to be impacted lies within DDOT's existing ROW; only a portion of the Station's southwestern corner would be transferred from WMATA to DDOT. The limit of disturbance contains several facilities which are associated with the Station's pedestrian access, including: sidewalks (with stairs and ramps), landscaping, overhead lights, fencing, and a Metrobus shelter. Construction of the proposed track would require that these features be temporarily removed (see **Section 4.13** for more information on construction-related potential impacts). Reconstruction of the affected area and replacement of impacted site features would follow the track construction. Based on the current design, the replacement sidewalk would be shifted approximately 20 feet to the northeast but remain connected to the 45th Street and Central Avenue Crosswalks. The replacement Metrobus shelter would be shifted approximately 35 feet to the southeast. At this location, buses would be able to pass streetcars positioned at the platform. The Station's short-term parking lot would not be directly affected.

Metrobus operations would experience slightly increased travel times on Benning Road during the AM and PM peak periods, relative to the No-Build Alternative. During the AM peak period, this increase would be less than 30 seconds in the eastbound direction and less than 10 seconds in

the westbound direction. During the PM peak period, the delay would be approximately 60 seconds in either direction. This slight delay would be due to the combination of higher vehicle volumes in 2045 and the proposed signal timing modifications to accommodate streetcar operations at Benning Road Metro Station. With the implementation of traffic control measures like signal timing adjustments, previously mentioned slight delays to Metrobus operation could be further reduced or eliminated. No impacts to the WMATA schedule are expected at this time due to the Preferred Alternative. DDOT is committed to being in continuous coordination with WMATA to eliminate any potential schedule impacts due to the proposed streetcar extension, should they arise.

In addition, the final EA proposes to relocate the 42nd Street stop to the west side of the intersection, so that Metrobus can maneuver around a stopped streetcar vehicle and queuing of traffic could be avoided. Since the Preferred Alternative would be an extension of the existing streetcar line, it would not adversely impact other transit services within the study area. Streetcar schedule and operation of the proposed extension will be coordinated with WMATA and other transit agencies in the same way as the existing H/Benning streetcar line.

TPSS

The two TPSS sites proposed under the Preferred Alternative would not directly impact the operation of mass transit facilities.

Propulsion System

The wired propulsion system proposed under the Preferred Alternative would not affect mass transit service delivery and would therefore have no impact on other study area transit services.

DC Streetcar Car Barn Training Center

Under the Preferred Alternative, the proposed connection to the DC Streetcar Car Barn Training Center would not affect DC Streetcar operations because the Preferred Alternative would be an extension of the existing service. This connection would not impact other study area transit services as the other services do not occur on the property.

Mitigation Summary

Any potential impacts associated with the construction of a streetcar stop at Benning Road Metrorail Station will be mitigated through reconstruction of the affected area and full replacement of impacted site features. Based on the current design, this includes: sidewalk reconstruction, replacement of the Benning Road & East Capitol Street Metrobus shelter, and landscaping. Proposed streetcar extension would not impact other transit services within the study area. DDOT is committed to keeping WMATA fully informed throughout the project and continued consultation through the final design and construction.

4.3.3 PEDESTRIAN AND BICYCLE NETWORK

This section assesses the potential impacts of the No-Build Alternative and the Preferred Alternative on the pedestrian and bicycle network in the proposed action study area.

No-Build Alternative

No changes or impacts to the pedestrian and bicycle network in the study area would occur under the No-Build Alternative.

Preferred Alternative

The Preferred Alternative would provide the following enhancements to the pedestrian and bicycle network:

- A continuous shared-use path would be provided on the south side of Benning Road between Oklahoma Avenue and Minnesota Avenue. The distance between the edge of the shoulder and shared use path would be maintained at more than 5 ft. In addition, a 42-inch high barrier would be provided on the Whitlock Bridge to ensure safety of the shared-use path users.
- A bicycle lane option between Anacostia Avenue and 36th Street.
- A pedestrian crossing with a traffic signal would be provided at the Kingman Island streetcar stop location to provide a safe crossing between the westbound and eastbound platforms.
- An enhanced, high-visibility pedestrian crossing would be provided at Benning Road and 36th Street to accommodate high pedestrian volumes and safety needs at this intersection.
- Sidewalks between 42nd Street and the Benning Road Metrorail Station that currently do not meet ADA specifications would be brought up to ADA standards.

These enhancements would provide bicycle connectivity across the Anacostia River to Minnesota Avenue. No bicycle improvements are proposed as part of the Preferred Alternative on Benning Road between Minnesota Avenue and East Capitol Street due to ROW limitations. Temporary construction impacts are expected to affect pedestrian and bicycle facilities along Benning Road in the study area. However, with use of mitigation measures such as public outreach during construction, development of MOT plans specific to pedestrian and bicycle facilities, these impacts are anticipated to be minor. For a detailed discussion of these impacts and the applicable mitigation measures, please see **Section 4.13**.

TPSS

The two TPSS sites proposed under the Preferred Alternative would not impact the use or function of pedestrian and bicycle networks.

Propulsion System

The wired propulsion system being proposed under the Preferred Alternative would not impact the use or function of pedestrian and bicycle networks.

DC Streetcar Car Barn Training Center

The new 26th Street track connection to the DC Streetcar Car Barn Training Center proposed under the Preferred Alternative would not impact the use or function of existing or new pedestrian and bicycle networks. Due to streetcar operations from Benning Road to 26th Street occurring at off-

peak periods, it is anticipated that there would be little to no conflict with pedestrians and bicyclists.

Mitigation Summary

The Preferred Alternative would enhance pedestrian and bicycle facilities along Benning Road in the study area without generate negative impacts. Any temporary construction impacts to pedestrian and bicycle facilities will be mitigated by maintaining a minimum level pedestrian and bicycle access through construction. If detour routes or temporary closures to pedestrian or bicycle facilities are required, the public will be notified per DDOT's Construction and Maintenance of Traffic (MOT) policy manual.

4.3.4 PARKING AND ACCESS

This section assesses the potential impacts of the No-Build Alternative and the Preferred Alternative to on-street parking.

No-Build Alternative

No impacts to parking would occur under the No-Build Alternative.

Preferred Alternative

The Draft EA identified potential direct and permanent impacts on 19 on-street parking spaces along Benning Road. Five of the spaces were impacted by the relocation of the Metrobus stop located on the westbound side of Benning Road just east of 42nd Street, to the west of the intersection. The remaining 14 spaces were impacted by the reconfiguration of Benning Road around the proposed streetcar platform at 42nd Street. However, the Final EA proposes to relocate the 42nd Street stop west of 42nd Street to avoid these potential parking impacts (See **Figure 4-2**). As the Preferred Alternative proposes median-running alignment for the streetcar, potential temporary and permanent parking impacts are anticipated to be negligible. In total, the Preferred Alternative's limit of disturbance includes 56 vehicular access points on Benning Road. No changes are anticipated on these access points due to the Preferred Alternative.

TPSS

Under the Preferred Alternative, the proposed TPSS facilities would not directly impact on-street parking or alter any points of vehicular access.

Propulsion System

The proposed wired propulsion system for the Preferred Alternative would not directly impact on-street parking or alter any points of vehicular access.

DC Streetcar Car Barn Training Center

Operating the proposed connection to the DC Streetcar Car Barn Training Center for the Preferred Alternative would affect 12 on-street parking spaces. These 12 spaces are located on the southbound side of 26th Street, between Benning Road and approximately 60 ft south of the access

lane to the DC Streetcar Car Barn Training Center's rear parking lot. These 12 spaces would be permanently closed to allow the construction of the southbound section of the streetcar track. The affected spaces are primarily utilized by DDOT employees working at the DC Streetcar Car Barn Training Center. However, the DC Streetcar Car Barn Training Center operations would not be affected by the proposed closures because its off-street parking lot is large enough to meet its internal requirements. Similarly, Langston Golf Course's operations are expected to be unaffected because of its large off-street parking lot and the general availability of on-street parking along the Course's frontage. Based on the scale of the effect versus the amount of on-street parking available in the adjacent sections of 26th Street, the proposed elimination of on-street parking would have no discernable effect on traffic operations or vehicular access.

Mitigation Summary

The Preferred Alternative would not require the permanent modification of any access points. If there are any temporary impacts to access points during construction, DDOT will reconstruct those impacted areas and restore them to the original condition. Since there is availability of off-street parking lots and on-street parking along Benning Road, no mitigation is proposed for the elimination of parking.

4.3.5 FREIGHT RAIL SERVICE

This section assesses the potential impacts of the No-Build Alternative and the Preferred Alternative on freight rail service in the study area.

No-Build Alternative

The condition and operation of the CSX railroad tracks within the study area would not be impacted by the No-Build Alternative.

Preferred Alternative

The proposed new Whitlock Bridge over the CSX railroad as part of the Preferred Alternative would be built higher than the current bridge to provide a vertical clearance of 23 feet above the tracks, which conforms to the Federal Railroad Administration (FRA) guidelines. In addition, new bridge piers will be required to support wider spans. The new bridge piers would be located within the available DDOT ROW under the bridge. A temporary easement for construction related staging associated with the bridge piers could be required within CSX ROW. DDOT is in coordination with CSX on these temporary requirements. If temporary staging area within CSX ROW is pursued further, DDOT will adhere to the CSX conditions that must be maintained during construction in order to avoid interruptions to rail operations (CSX, 2017). No permanent direct impacts to freight rail service are expected to occur. For more information on potential construction-related impacts, please see the Transportation and Traffic Operations discussion in **Section 4.13**.

TPSS

The operation of the two TPSS sites proposed under the Preferred Alternative would not impact freight rail facilities or services in the study area.

Propulsion System

The wired propulsion system proposed under the Preferred Alternative would not impact freight rail facilities or services in the study area.

DC Streetcar Car Barn Training Center

The proposed connection to the DC Streetcar Car Barn Training Center in the Preferred Alternative would not impact freight rail facilities or services in the study area.

Mitigation Summary

There are no potential permanent impacts expected to occur to the freight operations as a result of the operation of the Preferred Alternative. DDOT will adhere to the CSX conditions that must be maintained during construction in order to avoid interruptions to rail operations. If temporary staging areas are finalized within the CSX ROW, DDOT will follow conditions laid out in the CSX permit.

4.4 PARKLANDS

This section evaluates the potential impacts of the No-Build Alternative and the Preferred Alternative on parklands, including trails, in the study area.

No-Build Alternative

The No-Build Alternative would have no impact on parklands in the study area.

Preferred Alternative

The Preferred Alternative would have the beneficial impact of increasing multi-modal access to parklands adjacent to Benning Road, such as Fort Mahan Park, Kingman and Heritage Islands Park, and the Fort Circle Trail. To avoid potential noise impacts to residences at 42nd Street, the Final EA proposes to relocate the streetcar stop to the west of 42nd Street; closer to the Fort Mahan Park. No direct impacts on the Fort Mahan Park would occur because improvements would be located within existing Benning Road DDOT ROW. Visitors of Fort Mahan Park could experience proximity impacts related to changes in the visual and noise environment. Transportation infrastructure associated with the proposed streetcar stop would be added in the visual environment. However, given the presence of existing roadway and utility infrastructure and visual screening provided by trees, the potential visual impacts to Fort Mahan Park visitors would not be significant. Visitors at Fort Mahan Park could experience an increase in noise due to the proximity of the proposed streetcar stop and additional noise associated with bell ringing of the streetcar. Given the existing noise environment on the Benning Road corridor, the overall change in noise conditions within Fort Mahan Park would not be significant.

The proposed new typical roadway section and associated transportation structure on Benning Road would minimally affect the viewshed for the visitors of Kingman and Heritage Islands Parks. Potential visual impacts are discussed in detail in Section 4.5. Potential noise impacts to the visitors of Kingman and Heritage Islands Parks due to the streetcar pass-by are unlikely to be significant under the Preferred Alternative due to the slow travel speeds along the in-street running rail corridor and the existing noise levels along the Benning Road corridor. See Section 4.10- Noise and Vibration for more details.

TPSS

The two TPSS sites proposed under the Preferred Alternative would have no direct impact on parklands as neither facility would be on or adjacent to study area parklands. Potential proximity impacts related to visual changes, and noise and vibration would be minimal (See Sections 4.5 and 4.9).

Propulsion System

The wired propulsion systems propulsion system proposed under the Preferred Alternative would have no direct impact on parklands as the system infrastructure would be located within the existing Benning Road DDOT ROW. Proximity impacts related to visual changes, and noise and vibration would be minimal (See **Sections 4.6** and **4.10**).

DC Streetcar Car Barn Training Center

The connecting track and switches to the DC Streetcar Car Barn Training Center proposed under the Preferred Alternative would have no direct impact on parklands as each would be located within existing DDOT ROW. Potential proximity impacts related to visual changes, and noise and vibration would be minimal (See **Sections 4.6** and **4.10**).

Mitigation Summary

No permanent direct impacts to parklands are expected to occur. Proposed measures related to indirect and minor impacts to the visual and, noise and vibration environment are described in **Sections 4.6** and **4.10** respectively. The Preferred Alternative is expected to temporarily impact Anacostia Park during the reconstruction of the sidewalk to the south of Benning Road, west of Anacostia Avenue NE. Completion of the work would require a 0.04-acre temporary construction staging area approved via a Special Use Permit (SUP) from NPS within the park property. Adherence to the conditions of the SUP would result in the mitigation of the temporary construction impacts and restoration of the site to its original condition. The Preferred Alternative would also temporarily impact 0.07 acres of Kingman and Heritage Islands Park. This impact is associated with the reconstruction of the sidewalk to the south of Benning Road. DDOT will apply for a required permit from District Department of Energy and Environment (DOEE) regarding the

staging area. DDOT's adherence with the District's permit conditions will result in the mitigation of temporary construction related impacts.

4.5 HISTORIC PROPERTIES AND ARCHAEOLOGICAL RESOURCES

The National Historic Preservation Act (NHPA) outlines federal policy to protect historic properties and promote historic preservation in cooperation with states, tribal governments, local governments, and other consulting parties. The NHPA established the NRHP and designated the State Historic Preservation Officer (SHPO) as the entity responsible for administering state-level programs. Section 106 of the NHPA (16 U.S.C. 470f) and its implementing regulations (36 CFR part 800 et seq.) outline the procedures for federal agencies to follow to consider the effect of their undertakings on historic properties. The Section 106 process applies to any federal undertaking (in this case, the proposed action) that has the potential to affect historic properties, defined in the NHPA as those properties (archaeological sites, standing structures, or other historic properties) that are listed in or eligible for listing in the NRHP.

The project APE for above-ground historic properties and below-ground archaeological resources is shown on **Figure 3-16** and listed in **Table 3-11** in **Section 3.5**. The DC SHPO has agreed to defer the assessment of the proposed action to affect archaeological resources until the project design has advanced sufficiently to better understand the location and extent of all earth-moving activities related to project construction and operations.

The potential for effects of the proposed action on historic properties was determined by identifying whether and where the proposed action would directly impact each historic property and/or have a proximity effect on each property. The assessment used the Secretary of the Interior's criteria for adverse effects (36 CFR 800.5(a)). Adverse effects occur when an undertaking alters, directly or indirectly, any characteristics that make a historic property eligible for the NRHP. Alterations involve diminishing the integrity of location, design, setting, materials, workmanship, feeling or association of the historic property.

This section presents preliminary determinations of the proposed action's impact on historic properties. **Table 4-13** summarizes the final findings of proposed action's effect. This determination was made in consultation with the DC SHPO and other consulting parties.

Appendix F contains the *Section 106 Technical Memorandum* that provides additional information about the APE, the historic properties, and the archaeological resources within the APE. The Memorandum also provides background information on how potential effects on historic properties were determined.

Table 4-13: Project Effects on Listed or Eligible Historic Properties*

Property Name	Status	Potential Adverse Effect	No Adverse Effect
Kingman Lake Historic District	NRHP Listed		X
Fort Mahan/ Civil War Sites (Defenses of Washington) District	NRHP Listed		X
Langston Golf Course Historic District	NRHP Listed		X
Anacostia Park	NRHP Eligible		X
Senator Theater Entrance Pavilion	DCIHS Listed		X

Property Name	Status	Potential Adverse Effect	No Adverse Effect
Spingarn Senior High School	DCIHS Listed		X
Browne, Phelps, Spingarn, and Young Schools Historic District	NRHP Eligible		X
3300 Benning Road – PEPCO Bldg. 32	NRHP Eligible		X
4201-4243 Benning Road	NRHP Eligible		X
4208 Benning Road	NRHP Eligible		X
Fire and Police Call Boxes	NRHP Eligible		X
4001 Benning Road	NRHP Eligible		X
Baltimore & Potomac Railroad	NRHP Eligible		X
3938 Benning Road	NRHP Eligible		X
4228 Benning Road	NRHP Eligible		X
4236 Benning Road	NRHP Eligible		X
4270 Benning Road	NRHP Eligible		X
4274 Benning Road	NRHP Eligible		X
Totals		0	18

No-Build Alternative

Under the No-Build Alternative, existing conditions would remain unchanged. Historic properties would not be affected since no excavation, demolition, or construction would occur on or near the resources.

Preferred Alternative

Safety improvements at the intersection of Benning Road and Minnesota Avenue would require relocation of a historic fire and police call boxes in the southeast corner of the intersection because of minor widening to accommodate a left-turning lane.¹ DDOT would relocate the call boxes to a comparable position at the new roadway edge, in coordination with the DC SHPO. The Preferred Alternative would have no other direct effects to historic properties. See Appendix F for complete Section 106 consultation. **Figure 4-7** through **Figure 4-16** are renderings of the Preferred Alternative. The proposed action would modify the Benning Road typical section resulting in visual changes that are described in **Section 4.6**. A key element in that change is the wider roadway section adjacent to historic properties aligned along Benning Road. A second key element is the new streetcar operation along Benning Road (track, stops, and vehicles); the third key element is the wired streetcar propulsion system. Each element would be located on or near the outside lane areas of the roadway section.

¹ This call box is one of three objects in the study area known herein as the Fire and Police Call Boxes. The other objects, a fire call box and a police officer call box at the intersection of Benning Road and 36th Street, would not be impacted by the proposed action.

Figure 4-7: Kingman Island Stop- Preferred Alternative (eastward)



Figure 4-8: Kingman Island Stop- Preferred Alternative (westward)



Figure 4-9: 34th Street Stop – Preferred Alternative (eastward)



Figure 4-10: 34th Street Stop – Preferred Alternative (westward)



Figure 4-11: 39th Street Stop – Preferred Alternative (eastward)



Figure 4-12: 39th Street Stop – Preferred Alternative (westward)



Figure 4-13: 42nd Street Stop – Preferred Alternative (eastward)



Figure 4-14: 42nd Street Stop – Preferred Alternative (eastward)



Figure 4-15: Benning Metrorail Station Stop – Preferred Alternative (eastward)



Figure 4-16: Benning Metrorail Station Stop – Preferred Alternative (westward)



Figure 4-17: Union Station Stop on H Street



Apart from the fort component of Fort Mahan Park (an archaeological resource), Benning Road pre-dates all the historic properties. A streetcar historically ran along the segment of Benning Road in the APE from the west side of the Anacostia River to Kenilworth Avenue. The presence of this line was a positive selling point for the developers of River Terrace and provided transit access to the area around Benning Road and north to the Deanwood neighborhood. Introduction of a new streetcar would be consistent with the historical presence of streetcar transit in the neighborhood. **Figure 4-17** shows the existing stop platform design at Union Station. The assessment of potential effect of the proposed action on historic properties determined that there would be no adverse effects due to the introduction of streetcar elements in the corridor. While each would be a new visual element in the context of the historic properties, the proposed improvements would not be inconsistent with the existing and historic visual elements in the APE.

Based on the scope of the proposed improvements, the Preferred Alternative warrants the consideration of potential noise effects under both FHWA and FTA's noise analysis protocols. Using FHWA's criteria, all 15 of the historic properties included in the noise analysis are predicted to experience traffic noise levels above the NAC under both the existing and build conditions. The traffic noise levels predicted to occur under the build condition for all 15 properties are within one decibel of those currently experienced. These changes in traffic noise volumes generated by the proposed improvements would not be discernable and therefore are not evaluated to constitute an adverse effect under Section 106 of the Historic Preservation Act.

Using FTA's criteria, five historic properties are predicted to be impacted by the noise generated by streetcar operations. Three of the five properties are expected to experience severe noise effects under the build condition: Spingarn High School, Kingman Park Historic District, and Browne, Phelps, Spingarn, and Young Educational Campus Historic District. The potential effects are associated with: use of the streetcar warning bell, the use of track switches, and the occurrence of wheel squeal. These effects will be mitigated using several noise reduction measures, including:

- the installation of "spring frogs," pointless switches, flange-lifters, and similar fixtures which eliminate the gap in the rail and thereby the impulsive or impact noise from the steel wheel striking the rail gap;
- increasing the radius of the track curves, applying flange lubricators to "grease" the contact points between the steel wheels and the steel rail heads, or procuring streetcar vehicles that can operate effectively along tracks with radii less than 100 ft without causing wheel squeal to occur; and
- reducing the intensity of the streetcar warning bell (as safety protocols allow).

Detailed specifications for these measures, including their placement, will be defined during final design. The two remaining properties are expected to experience moderate noise effects under the build condition; these two properties are the apartment building located at 4208 Benning Road and the block of rowhouses located between 4201 and 4243 Benning Road. These potential effects are associated with the use of the streetcar warning bell and will be mitigated by reducing the intensity of the streetcar warning bell and shifting the 42nd Street stop to the west side of the intersection. From a cumulative perspective, the noise from future streetcar operations represents only two percent of the noise that would be generated on Benning Road under the build condition. As a result, the overall noise impact is expected to be approximately the same as loudest period noise levels predicted using FHWA's Traffic Noise Model (TNM). As stated previously, the build condition noise levels predicted by TNM are within one decibel of existing noise levels and therefore do not constitute an adverse effect under Section 106 of the National Historic Preservation Act.

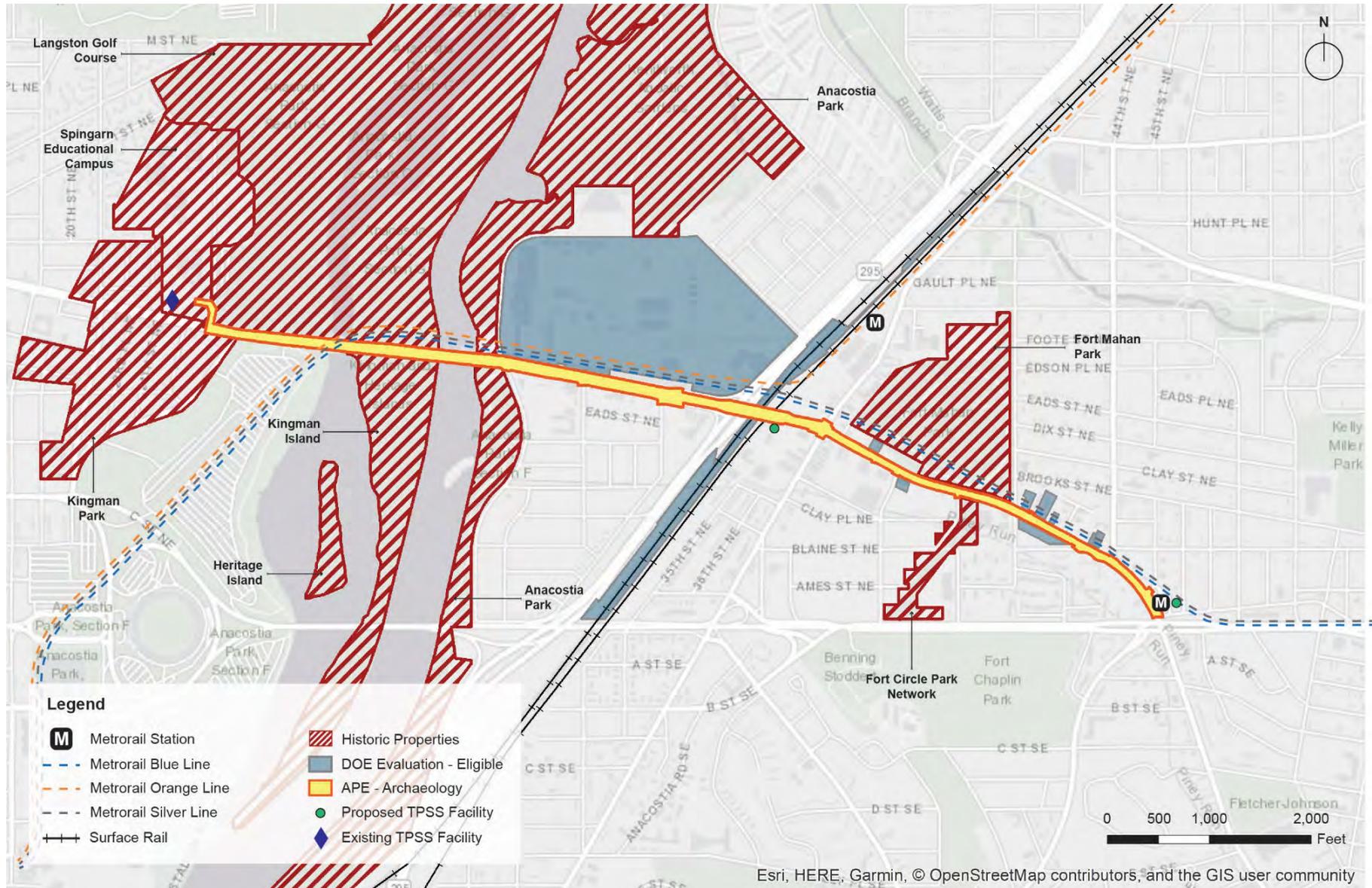
TPSS

Figure 4-18 shows the locations of the proposed TPSS facilities. The proposed TPSS facilities would be located on land that is not part of an historic property and would not be adjacent to or near an historic property. The TPSS facilities will be designed using context sensitive solutions to match the area setting. Based on these conditions, no adverse effect on the historic properties is expected to occur because of the proposed TPSS facilities.

Propulsion System

The Preferred Alternative's wired propulsion system would have no direct impact on the study area's historic resources. The installation of the overhead wires and support systems would change the visual environment in and around several resources. However, given the presence of existing roadway and utility infrastructure in the current visual environment, the introduction of new visual elements has been determined to have no adverse effect on the historic properties within the Study Area.

Figure 4-18: Potential TPSS Locations



DC Streetcar Car Barn Training Center

The proposed connection to the DC Streetcar Car Barn Training Center would be located within the DDOT ROW within the boundaries of the Browne, Phelps, Spingarn, and Young Educational Campus Historic District, as well as the Kingman Park Historic District. While the connection to the car barn is within these historic districts, it would be constructed entirely within the existing roadway and therefore would have no direct permanent impact on resources which contribute to the attributes which qualified these historic districts for inclusion on the NRHP. In addition, context sensitive solutions will be explored and implemented during designing the DC Streetcar Car Barn Training Center to comply with the historic district guidelines and the area setting. No adverse effect on the NRHP eligible or listed historic properties would occur due to the DC Streetcar Car Barn Training Center.

Mitigation Summary

The operation of the proposed improvements at the intersection of Benning Road and Minnesota Avenue would require relocation of historic fire and police call boxes in the southeast corner of the intersection because of minor widening to accommodate a left-turning lane. In the letter dated December 5, 2019, DC SHPO has provided concurrence to FHWA's determination that the undertaking will have "no adverse effect" on the historic properties, provided that the avoidance measures are implemented, and the following two conditions are met:

1. DDOT will consult with DC SHPO to determine the appropriate sites to relocate the historic fire and police call boxes in order to ensure their integrity of location and setting is diminished as little as possible (i.e. the relocation sites should be as close as possible to their historic locations); and
2. DDOT would consult further with DC SHPO to determine the need for phased archaeological investigations in previously unsurveyed areas where ground disturbing activities are proposed.

DDOT is committed to implementing the above conditions determined by the DC SHPO. DDOT has begun to seek DCSHPO's feedback on the location options for the historic fire and police call boxes as a part of the streetscape improvements. Other additional measures related to noise and vibration, and visual environment, implemented as part of the overall project are specified in the FHWA letter to DC SHPO dated December 4, 2019. Those measures would further reduce any indirect effects on the historic properties. Please see **Appendix F** for detailed Section 106 consultation.

4.6 AESTHETICS AND VISUAL QUALITY

The visual impacts assessment addresses potential changes to the visual environment due to the alternatives and viewer responses. The assessment is consistent with the FHWA *Guidelines for the Visual Impact Assessment of Highway Projects (2015)*. The degree of visual impact is determined based on the compatibility of the impact and the sensitivity to the impact. The first step in visual assessment is to evaluate the compatibility of the proposed action with the visual character of the

existing landscape. The second step is to determine the sensitivity to the impact based on changes in the visual character. The resulting degree of visual impact is a beneficial, adverse, or neutral change to visual quality.

No-Build Alternative

Under the No-Build Alternative, no changes would be made to the visual environment of the study area apart from streetscape improvements that are planned as part of the Minnesota Avenue Revitalization project.

Preferred Alternative

Under the Preferred Alternative, the proposed action would introduce new visual elements in the study area visual environment, such as streetcar stops. Potential impacts of the proposed action are described by each Key View area and are summarized in **Table 4-14**.

Key View 1 – 26th Street

The proposed roadway and track improvements would be imposed on a visual environment that has a lack of visual order due to multiple elements (power lines, commercial development, fencing, and roadway elements) disrupting visual lines and competing for viewer attention. Although DDOT cannot address the visual impacts of elements outside its ROW, the consistent arrangement of elements in the typical roadway section would address the visual disorder in the ROW caused by the existing infrastructure (utility poles, streetlights, and signs, for example). Viewers of and from 26th Street would be relatively insensitive to the proposed change due to the short duration of exposure and generally limited focus of attention. For these reasons, the degree of visual impact by the Preferred Alternative in Key View 1 would be neutral for all viewers.

Key View 2 – Western Benning Road

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has a lack of visual order due to multiple elements (power lines, commercial development, fencing, and roadway elements) disrupting visual lines and competing for viewer attention. Although DDOT cannot address the visual impacts of elements outside its ROW, the consistent arrangement of elements in the typical roadway section would address the visual disorder in the ROW caused by the existing infrastructure (utility poles, streetlights, and signs, for example). Viewers of and from Benning Road would be relatively insensitive to the proposed change due to the short duration of exposure and generally limited focus of attention. For these reasons, the degree of visual impact by the Preferred Alternative in Key View 2 would be neutral for all viewers.

Table 4-14 : Summary of Impacts on Aesthetics and Visual Quality for the Preferred Alternative

Key View	Compatibility of Impact	Viewer Sensitivity	Degree of Impact
<p>1. 26th Street</p>	<p>Existing visual character: Urban transportation features, utility poles, and institutional and residential uses</p> <p>Proposed elements: New OCS poles/wires (wired option), streetcars, tracks, and switches</p> <p>Finding: compatible</p>	<p>Travelers on 26th Street: awareness limited by driving short duration exposure Golf Course Users: awareness limited by activity short duration exposure Pedestrians on Adjacent Paths: unlimited awareness short duration exposure</p> <p>Finding: insensitive</p>	<p>Travelers on Benning Road: neutral change Golf Course Users: neutral change Pedestrians on Adjacent Paths: neutral change</p>
<p>2. Western Benning Road</p>	<p>Existing Visual character: Urban transportation features: roadway, streetlights, fencing, Metrorail bridge, and buses</p> <p>Proposed elements: New typical roadway section, OCS poles/wires (wired option), streetcars, and stop platform</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Golf Course Users: awareness limited by activity short duration exposure Pedestrians on Adjacent Paths: unlimited awareness short duration exposure</p> <p>Finding: insensitive</p>	<p>Travelers on Benning Road: neutral change Golf Course Users: neutral change Pedestrians on Adjacent Paths: neutral change</p>

Key View	Compatibility of Impact	Viewer Sensitivity	Degree of Impact
<p>3. Kingman Park</p>	<p>Existing visual character: Park shelter and woodland, urban transportation features: Kingman Lake bridge, Metrorail bridge, Pepco smoke stacks, and utility poles</p> <p>Proposed elements: New typical roadway section, utility poles (wired option), streetcars</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Kingman Park Users: awareness limited by activity short duration exposure Pedestrians on Adjacent Paths: unlimited awareness short duration exposure</p> <p>Finding: insensitive</p>	<p>Travelers on Benning Road: neutral change Kingman Park Users: neutral change Pedestrians on Adjacent Paths: neutral change</p>
<p>4. Benning Road/ Minnesota Avenue Intersection</p>	<p>Existing visual character: Urban transportation features, Whitlock Bridge, commercial development, new mixed-use, multi-story residential development, traffic signals, and utility poles</p> <p>Proposed elements: New typical roadway section, OCS poles (wired option), streetcars, stop platform</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Residents and Businesses: awareness unlimited long duration exposure Pedestrians on Sidewalks: unlimited awareness short duration exposure</p> <p>Finding: insensitive</p>	<p>Travelers on Benning Road: neutral change Residents and Businesses: neutral change Pedestrians on Sidewalks: neutral change</p>

Key View	Compatibility of Impact	Viewer Sensitivity	Degree of Impact
<p>5. Benning Road at Fort Mahan Park</p>	<p>Existing visual elements: Urban transportation features, sidewalks, utility poles and overhead wires, street trees, and park, residential, and commercial uses</p> <p>Proposed elements: New typical roadway section, OCS poles (wired option), streetcars, stop platform and street tree removal</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Residents and Commercial Uses: awareness unlimited long duration exposure Park Path Users: awareness short duration exposure Pedestrians on Sidewalks: awareness unlimited short duration exposure</p> <p>Finding: sensitive</p>	<p>Travelers on Benning Road: neutral change Residents, Commercial Uses: no significant impact Park Path Users: neutral change Pedestrians on Sidewalks: neutral change</p>
<p>6. Eastern Benning Road</p>	<p>Existing visual character: Urban transportation features, sidewalks, utility poles and overhead wires, street trees, and residential uses</p> <p>Proposed elements: New typical roadway section, OCS poles (wired option), streetcars, stop platform, streetcars, and street tree removal</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Residents: awareness unlimited long duration exposure Pedestrians on Sidewalks: awareness unlimited long duration exposure</p> <p>Finding: sensitive</p>	<p>Travelers on Benning Road: no significant impact Residents: no significant impact Pedestrians on Sidewalks: no significant impact</p>

Key View	Compatibility of Impact	Viewer Sensitivity	Degree of Impact
<p>7. Benning Road Metrorail Station</p>	<p>Existing visual character: Urban transportation features, utility poles, and commercial uses</p> <p>Proposed elements: New poles, OCS poles (wired option), stop platform, typical roadway section, utility poles, streetcars, and TPSS</p> <p>Finding: compatible</p>	<p>Travelers on Benning Road: awareness limited by driving short duration exposure Businesses: awareness unlimited long duration exposure Pedestrians on Sidewalks: awareness unlimited long duration exposure</p> <p>Finding: insensitive</p>	<p>Travelers on Benning Road: neutral change Businesses: neutral change Pedestrians on Sidewalks: neutral change</p>

Key View 3 – Kingman Park

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has moderate visual order due to the horizontal forms of the roadway and Metrorail infrastructure. The consistent arrangement of elements in the typical roadway section would increase the visual order in the ROW. Viewers of and from Benning Road would be relatively insensitive to the proposed change due to the short duration of exposure and generally limited focus of attention on the roadway. For these reasons, the degree of visual impact by the Preferred Alternative in Key View 3 would be neutral for all viewers.

Key View 4 – Benning Road/Minnesota Avenue

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has a lack of visual order due to multiple elements (roadway and utility infrastructure, and buildings of varying heights, masses, and styles) disrupting visual lines and competing for viewer attention. Although DDOT cannot address the visual impacts of elements outside its ROW, the consistent arrangement of elements in the typical roadway section would enhance visual order in the ROW in terms of the locations of associated utilities, signs, and streetlights, and the configuration of travel lanes and bicycle/pedestrian elements. Viewers of and from Benning Road would be relatively insensitive to the proposed change given the current lack of coherence in the visual environment. For these reasons, the degree of visual impact by the Preferred Alternative in Key View 4 would be neutral for all viewers.

Key View 5 – Benning Road at Fort Mahan Park

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has moderate visual order due to the horizontal form of the roadway, street-side residences, street trees, and adjacent forested park. The new elements of the proposed action would reduce the area of grass, remove the street trees within the ROW, and increase the width of the roadway section. These changes, as well as the addition of OCS poles and overhead wire under the wired propulsion system, would give Benning Road a more urbanized visual character in Key View 5 than the existing condition. Viewers of and from Benning Road would be moderately sensitive to the proposed change. Residents in Key View 5 would experience long-term visual change. Considering the context and intensity of the proposed elements, based on the CEQ regulations these impacts would not rise to the level of introducing adverse impacts. For other viewers, the impact would be neutral as the duration of exposure would be short term.

Key View 6 – Eastern Benning Road

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has moderate visual order due to the horizontal form of the roadway, street-side residences, and street trees. The new elements of the proposed action would reduce the area of grass, remove the street trees within the ROW, and increase the width of the roadway section. These changes, as well as the provision of OCS poles and overhead wire under

the wired propulsion system, would give Benning Road a more urbanized visual character in Key View 6 than the existing condition. Viewers of and from Benning Road would be moderately sensitive to the proposed change. Residents in Key View 6 would experience long-term visual change. However, considering the context and intensity of the proposed elements, these impacts would not result in adverse impacts. For travelers on Benning Road and pedestrians, the impact would also be moderate because of the tree loss despite the short duration of exposure.

Key View 7 – Benning Road and Metrorail Station

The proposed new typical roadway section and associated transportation infrastructure would be imposed on a visual environment that has a lack of visual order due to multiple elements (roadway and utility infrastructure, and buildings of varying heights, masses, and styles) disrupting visual lines and competing for viewer attention. The consistent arrangement of elements in the typical roadway section would enhance visual order in the ROW in terms of the locations of associated utilities, signs, and streetlights, and the configuration of travel lanes and bicycle/pedestrian elements. Viewers of and from Benning Road would be relatively insensitive to the proposed change given the current lack of coherence in the visual environment. For these reasons, the degree of visual impact by the Preferred Alternative in Key View 7 would be neutral for all viewers.

Aesthetic and visual quality within the project area will be maintained by planting new street trees within its ROW. In this setting, DDOT is the certified arborist and landscaper. DDOT's UFA will develop and implement a street tree management plan during the design phase of the proposed action. The plan will comply with District standards and regulations regarding planting, pruning, or removing a tree within the DDOT ROW as part of the Preferred Alternative. When trees must be removed and as reasonably feasible, DDOT will replace street trees removed within the ROW as part of UFA's Standard Specification 608.07 Tree Protection and Replacement, which requires a diameter breast-height (DBH) inch per DBH inch replacement. New street trees would reach a maturity in approximately 15 years.

TPSS

The TPSS site beneath the Whitlock Bridge is in Key View 4 – Benning Road/Minnesota Avenue. This visual environment lacks visual order due to multiple elements (roadway and utility infrastructure, and buildings of varying heights, masses, and styles) disrupting visual lines and competing for viewer attention. Viewers of and from Benning Road would be relatively insensitive to the proposed change given the current lack of coherence in the visual environment. For these reasons, the degree of visual impact created by the proposed TPSS facility beneath the Whitlock Bridge in Key View 4 would be neutral for all viewers.

The proposed TPSS site adjacent to the Benning Road Metro Station is within the key view of properties in the AVE. This structure, located in Key View 7, would be in areas that have existing buildings of similar scale, form, and materials and would be consistent with the existing cultural order. The placement of the TPSS at this location would not alter the cultural and natural order of the view by introducing a new structure in an area that is currently open. DDOT will use context-sensitive design solutions for impacts associated with the location of the TPSS facilities. To assure

aesthetic compatibility, DDOT will adapt the exterior treatments (e.g. brick color and style) to complement nearby structures. In addition, DDOT will continue to engage the public on the design aesthetics and incorporate the public's feedback into the design solution, wherever feasible.

Propulsion System

Under the Preferred Alternative, the proposed action would utilize wired propulsion. The wired system would place OCS poles and wires along the Benning Road corridor and along 26th Street. The new overhead wires would be visually indistinguishable due to the similarity of scale and material of the existing overhead utility wires in the corridor. Viewers of the propulsion systems would be motorists, pedestrians, and residents. DDOT will consider following context-sensitive design measures to reduce the impacts due to new visual elements:

- replacing street trees;
- the collocation of OCS equipment on existing utility and light posts; and
- the burying of overhead utilities in select locations.

Collectively, these measures are expected to offset the influence of the new visual elements to the point that a significant change in aesthetics and visual quality is not anticipated.

DC Streetcar Car Barn Training Center

The Preferred Alternative would require the installation of tracks along 26th Street leading from Benning Road to the existing DC Streetcar Car Barn Training Center (Key View 1). Installation of OCS poles/wires along 26th Street would be required for the wired option. The proposed transportation infrastructure leading from Benning Road to the DC Streetcar Car Barn Training Center would be imposed on a visual environment that has a lack of visual order due to multiple elements (utility poles, parking lots, fencing, and roadway elements) disrupting visual lines and competing for viewer attention. Although DDOT cannot address the visual impacts of elements outside its ROW, the consistent arrangement of elements in the typical roadway section would address the visual disorder in the ROW caused by the existing infrastructure (utility poles, streetlights, and signs, for example). Viewers of and from Benning Road would be relatively insensitive to the proposed change due to the short duration of exposure and generally limited focus of attention. For these reasons, the degree of visual impact by the DC Streetcar Car Barn Training Center in Key View 1 would be neutral for all viewers.

Mitigation Summary

The proposed action would place various new elements into the existing visual environment of the study area. The most prominent features seen from the street and by the users would be the streetcar tracks, stops, the overhead electric power system, and the moving streetcar vehicles. All these visual elements are already present in the study area. Streetcar stops would be similar in size and appearance to existing DDOT bus stops, streetcar vehicles would be similar in visual appearance to the existing DDOT Circulator bus fleet, and the overhead wires would be visually similar to existing utility wires in the corridor.

The new overhead wires of the streetcar would be visually indistinguishable due to the similarity of scale and material of the existing overhead utility wires in the corridor. While visual effects are expected as a result of new elements associated with the streetcar, such as the poles, stops, and substations, the proposed action would implement context sensitive designs for the related infrastructure. Wherever feasible, DDOT would bury any overhead utility wires at select locations. Included with the proposed streetcar development is a set of related streetscape improvements to enhance the user experience. These improvements would include street paving, curb reconstruction, street lighting, sidewalk improvements, landscaping, and street tree plantings among others. In addition, as a part of the streetscape improvements, DDOT is exploring the possibility of collocating the OCS device on the existing lighting poles (as seen on the existing H Street/Benning Streetcar line).

4.7 NATURAL RESOURCES

This section assesses the potential impacts of the No-Build Alternative and the Preferred Alternative regarding the following topic areas: Surface Water Resources, Wildlife (including Threatened and Endangered Species), and Vegetation.

4.7.1 SURFACE WATER RESOURCES

This section assesses the potential impacts to Waters of the US (WOUS), including wetlands as defined in 40 CFR 230.3(s), Navigable Waters of the United States as defined in 33 CFR 2.36, and regulated floodplains.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative; therefore, no impacts to WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains are expected to occur.

Preferred Alternative

The modification of the Ethel Kennedy Bridge would require the removal of a portion of the existing bridge decking, modification of the girders beneath, and installation of the new deck and streetcar tracks. None of these actions would require modifying the piers, abutments, or similar elements of the Bridge's substructure. Based on the current design, these actions would be completed from the remaining sections of the bridge deck. As a result, no direct permanent impacts to Kingman Lake or the Anacostia River are anticipated at this time. Beyond this area, none of the improvements proposed under the Preferred Alternative would extend into WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains.

Unavoidable impacts to wetlands and other waters of the U.S. require federal and state permit authorizations. Typically, construction within WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains requires following permits:

- A Section 404 Individual Permit from the USACE for the discharge of dredged or fill materials into waters of the U.S. (greater than 2,000 linear feet), including wetlands (greater than 1 acre);

- A USACE Section 404 permit (administered by the District Department of Energy and Environment) or a letter of authorization for activities in a wetland that are not under USACE jurisdiction (pursuant to D.C. Official Code §§ 8-103.06 and 8-103.13);
- A Section 10 permit from the USACE for construction of bridge structures over the navigable waters of the Anacostia River;
- A Section 9 (Rivers and Harbors Act) permit from the U.S. Coast Guard (USCG) for construction of a new bridge over a navigable waterway
- A Notice of Intent under the National Pollution Discharge Elimination System (NPDES) General Permit for Stormwater Associated with Construction Activity designed to control pollution runoff, including sediment, during construction.

DDOT will be coordinating the proposed action with the above federal and state agencies for the required permits and approvals. Any unavoidable project impacts to the WOUS, including wetlands, will follow the Federal Compensatory Mitigation Rule (33 CFR Part 325 and 40 CFR Part 230), and District state compensatory mitigation guidelines, as well as other practicable recommendations from federal and state resource agencies. Temporary impacts to surface water resources that would occur during construction are discussed in **Section 4.13**.

TPSS

The two TPSS site proposed under the Preferred Alternative would have no impact on WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains.

Propulsion System

The wired propulsion system proposed under the Preferred Alternative would not impact WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains.

DC Streetcar Car Barn Training Center

The proposed connection to the DC Streetcar Car Barn Training Center included in the Preferred Alternative, would not impact WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains.

Mitigation Summary

No direct impacts to WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains are anticipated due to the proposed action. Potential impacts to the surface waters have been minimized by placing the proposed action within the existing roadway alignment. Appropriate avoidance, minimization, and mitigation of potential impacts to wetlands, navigable waterways, and floodplains will be addressed as part of the permit application/authorization process with the DOEE, USACE and USCG.

4.7.2 WILDLIFE INCLUDING THREATENED AND ENDANGERED SPECIES

This section assesses the potential impacts to terrestrial species, sensitive wildlife habitats, and threatened and endangered species.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative; therefore, no impacts to wildlife or threatened/endangered species will occur.

Preferred Alternative

An on-line project review with the USFWS IPaC system indicated that the Northern Long-eared bat (*Myotis septentrionalis*) could be present within the study area (see **Appendix G**). However, since most of the study area is urbanized and does not contain suitable habitat, the USFWS online determination indicates that the proposed action would have no effect on the threatened Northern long-eared bat.

The National Oceanic and Atmospheric Administration's (NOAA) Endangered Species (ESA) Section 7 Mapper indicated that the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and Shortnose sturgeon (*Acipenser brevirostrum*) are known to inhabit the sections of Kingman Lake and the Anacostia River which lie within the project area. On July 17, 2020 NOAA concurred with DDOT's determination that the proposed action may affect, but is not likely to adversely affect the ESA-listed species under NOAA's jurisdiction. NOAA further determined that these species will not be exposed to any direct or indirect effects of the proposed action and further project consultation under Section 7 of the Endangered Species Act (ESA) is not required with their agency (see **Appendix G**).

DOEE has identified several state-listed species which are protected under the District code; including Dwarf wedgemussel (*Alasmidonta heterodon*), Northern bog turtle (*Clemmys muhlenbergii*), Northern long-eared bat (*Myotis septentrionalis*), Hay's Spring amphipod (*Stygobromus hayi*), Kenk's amphipod (*Stygobromus kenki*), Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and Shortnose sturgeon (*Acipenser brevirostrum*). DDOT solicited comments from the DOEE's Fish and Wildlife Division towards the proposed action, pursuant to the Fish and Wildlife Coordination Act (16 U.S.C. 661-667e). On August 5, 2020, DOEE Fish and Wildlife Division provided determination that according to current observations, surveys, and data derived from the District's Wildlife Action Plan, the proposed project area does not harbor any listed species (see **Appendix G**).

TPSS

The two proposed TPSS facilities were included in the USFWS, NOAA and DOEE Fish and Wildlife Division consultation. Therefore, agency determination for the Preferred Alternative will be applicable to this project component.

Propulsion System

The wired propulsion proposed as part of the Preferred Alternative were included in the USFWS, NOAA and DOEE Fish and Wildlife Division consultation. Therefore, agency determination for the Preferred Alternative will be applicable to this project component.

DC Streetcar Car Barn Training Center

The improvements to the DC Streetcar Barn Training Center proposed as part of the Preferred Alternative was included in consultation with the USFWS, NOAA and DOEE Fish and Wildlife Division. Therefore, agency determination for the Preferred Alternative will be applicable to this project component.

Mitigation Summary

Since no threatened or endangered species have been identified in the study area, no significant impacts to terrestrial federally or state-listed endangered or threatened species are anticipated. Protective measures would be identified from the USFWS BMPs and implemented during the construction to minimize any potential impacts to the aquatic species, should they occur.

4.7.3 VEGETATION

This section assesses the potential impacts to vegetation, including native and planted vegetation, as well as invasive species.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative; therefore, no potential impacts to vegetation would occur.

Preferred Alternative

No impact to the tracts of natural vegetation that occur along the banks of the Anacostia River and Fort Mahan Park are expected to occur due to the operation of the Preferred Alternative.

However, approximately 147 street trees are predicted to be removed within the Benning Road ROW in order to accommodate roadway, pedestrian and bicycle, and transit improvements. The removal or relocation of street trees within the ROW would comprise a total caliper loss of 1,267 inches. Nine of these trees have a circumference greater than 100 inches and are considered Heritage Trees in accordance with the DDOT Tree Regulations. Additional trees not maintained by DDOT but located in the public ROW would also be lost, however based on a review of aerial photography and Google Street View mapping, this loss would be negligible.

DDOT is the certified arborist and landscaper within its rights-of-way. DDOT's Urban Forestry Administration (UFA) will develop and implement a street tree management plan during the design phase of the proposed action. The plan will comply with District standards and regulations regarding planting, pruning, or removing a tree within the DDOT right-of-way as part of the Preferred Alternative. When trees must be removed and as reasonably feasible, DDOT will replace street trees removed within the right-of-way as part of UFA's Standard Specification 608.07 Tree Protection and Replacement, which requires a diameter breast-height (DBH) inch per DBH inch replacement. New street trees would reach a maturity in approximately 15 years.

TPSS

Since both TPSS sites are currently vacant lots and containing no trees, no direct impact to street trees or other vegetation will occur.

Propulsion System

The wired propulsion system proposed under the Preferred Alternative would have no impact on street trees or other vegetation.

DC Streetcar Car Barn Training Center

The creation of the new Car Barn entrance has the potential to impact street trees and ornamental landscaping. Mitigation for these potential impacts will provided in the same as described for the Preferred Alternative.

Mitigation Summary

DDOT will replace street trees removed within the right-of-way as part of UFA's *Standard Specification 608.07 Tree Protection and Replacement*, which requires a diameter breast-height (DBH) inch per DBH inch replacement. Additionally, landscaping, tree, and shrub planting is proposed as a part of the streetscape improvements to enhance the user experience. Tree planting in the proposed action would occur in conjunction with construction.

4.8 UTILITIES

Chapter 9 of the DDOT Design and Engineering Manual describes the process that project teams must follow in assessing the impact of the DDOT projects on the utility infrastructure and vice versa. This process includes reviewing documents which show the location of existing utilities, the completion of visual inspections, and involving representatives from utility companies at project meetings. The District DC Streetcar Utilities Standard of Practice 2015 (USP) provides planning and design guidelines specific to the streetcar infrastructure and operation. These design guidelines identify required clearances between utilities and the streetcar which could lead to relocation, adjustment, or abandonment of existing utility facilities. The USP guidelines also address the permit process for maintenance and emergency access to the utility facilities.²

A variety of subsurface and overhead utilities form a web of potential conflicts for the proposed roadway and streetcar improvements. It is DDOT's policy to address these conflicts proactively in order to enhance the service life, operation, and maintenance of the roadway infrastructure, streetcar, and the utilities. DDOT follows developed standard guidelines in collaboration with the local public utility agencies and private utility companies.

Early in the planning process for this project, DDOT and others met with utility companies and were able to identify areas with utility conflicts. DDOT has identified affected utilities which are listed in Chapter 3 and created a project-specific utility stakeholders group. These utility

² The guidelines can be retrieved through the following URL: https://dcstreetcar.com/wp-content/uploads/2015/02/DCSC_35_USP-FINAL-Version-1-0_20150218_HDR_A19_Deliverable-Copy.pdf.

stakeholders guide the planning and design of the roadway and streetcar infrastructure along with the utilities. DDOT has been holding regular meetings with the utilities stakeholders to keep them informed of the proposed project, establish expectations, and reduce uncertainty for the utility stakeholders before engineering designs are progressed and construction begins.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative; therefore, no utilities would be impacted.

Preferred Alternative

New utilities and infrastructure would be provided to support new streetcar extension and roadway improvement operations. These include power, communications, train control, signals, and drainage. No utilities are predicted to be permanently interrupted by the implementation of the Preferred Alternative. Potential construction related impacts, such as temporary interruptions in services (several hours), could be experienced during relocation or rerouting of utilities. Potential impacts and mitigation measures to utility services during construction are discussed in **Section 4.13**.

TPSS

Operation of the two proposed TPSS facilities are not expected to impact existing utilities. Impacts that could occur during the construction of the two facilities are discussed in **Section 4.13**.

Propulsion System

Operation of the wired propulsion system would not impact existing utilities. Potential impacts to utilities during construction are discussed in **Section 4.13**.

DC Streetcar Car Barn Training Center

Operation of the connection to the DC Streetcar Car Barn Training Center would have no impact on existing utilities. Impacts that may occur during construction are discussed in **Section 4.13**.

Mitigation Summary

It would be necessary to relocate, modify, or protect-in-place all utilities and underground structures prior to construction that would conflict with excavations for the streetcar stop platforms and trackwork, roadway reconstruction, cables for traction power, communications, and signaling. Temporary interruptions in services (several hours) could be experienced during relocation or rerouting of utilities. Mitigation measures for utility impacts incurred during construction would involve early coordination with utility companies to minimize disruptions. DDOT will remain in close coordination with the utility stakeholders throughout the design and construction process. Proactive outreach effort will be made to notify businesses and residences of anticipated schedule of utility disruptions. During operation of the proposed action, no impacts on utilities would occur. More detailed mitigation measures are discussed in **Section 4.13**.

4.9 HAZARDOUS MATERIALS

This section identifies and assesses the potential impacts on hazardous waste and contaminated material sites.

A total of 97 properties with suspected hazardous or contaminated material were identified as Recognized Environmental Concerns (RECs) within the study and are shown in shown in **Figure 4-19**. **Appendix H** provides detailed information of each REC: name, physical address, regulatory database reference, description of suspected contamination, and map identification number (some properties contain multiple REC sites).

RECs located within and somewhat beyond the LOD, i.e. the boundary within which all construction, materials storage, grading, landscaping, and related activities occurs, for the Preferred Alternative are of the greatest concern for potential impacts from the alternatives. RECs in proximity to the LOD where contamination or hazardous materials storage has been documented are considered a moderate risk to the proposed action. Eight high risk RECs in proximity to the LOD have documented contaminant releases and are undergoing current site clean-up activities. The high-risk RECs are generally associated with LUST, USTs, or releases of polychlorinated biphenyls. The moderate and low-risk RECs within the study area include LUSTs, previous dry-cleaning facilities, and documented brownfields.

Of the eight high risk RECs, five are close enough to the LOD and could be temporarily affected by construction activities (see **Table 4-15**). Since the Hazardous Materials Technical Memorandum was prepared, one of the five sites was redeveloped by D.C. Housing Authority. The new facility is the Conway Center (located at 4430 Benning Road) and now serves as mixed-use facility, including housing and medical facilities.

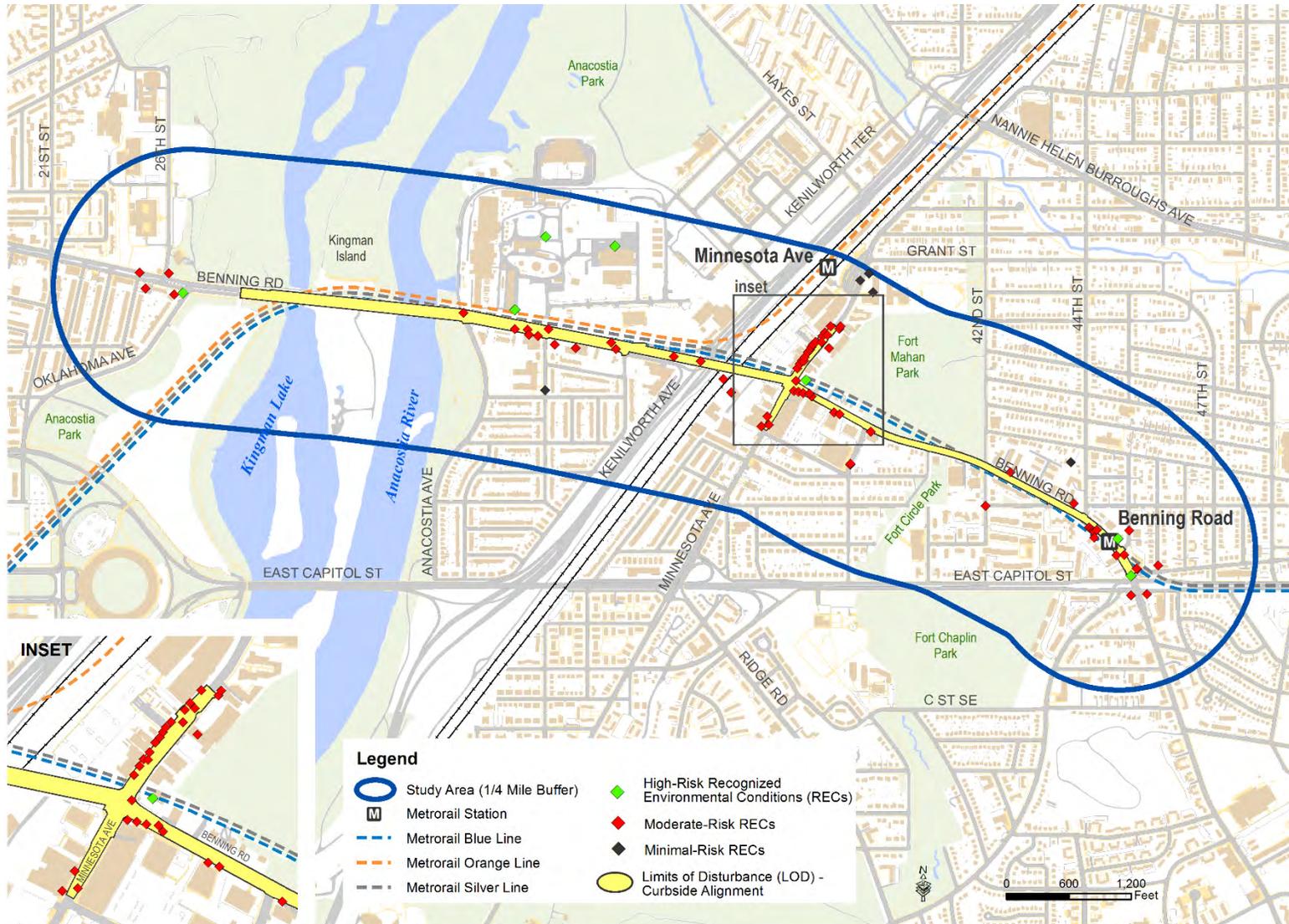
Table 4-15: High Risk RECs near the Preferred Alternative

Facility Name	Physical Address	Summary of Risk
Stadium Exxon	2651 Benning Road	Soil and property impact as a result of antifreeze (ethylene glycol) being dumped on the property.
Potomac Electric Power Company	3400 Benning Road	The generation and temporary staging of PCB waste ≥ 500 ppm has the potential to impact the property.
7-Eleven	3900 and 3908 Benning Road	Soil and groundwater impacts were identified as a result of leaking underground gasoline storage tanks.
Former Amoco Oil Company	4430 Benning Road	Soil and groundwater impacts were identified on the property as the result of an abandoned underground gasoline storage tank located on the property
Exxon 2-7707	4501 Benning Road	Soil and groundwater impacts were identified on the property as a result of a leaking underground oil and gasoline storage tanks.

No-Build Alternative

The No-Build Alternative will have no impact on hazardous materials because the Minnesota Avenue Revitalization project will not be a source of such materials.

Figure 4-19: REC Sites



Preferred Alternative

The Preferred Alternative does not require permanent disturbance of any of the properties associated with the four high-risks RECs, which remain in the LOD. Most of the infrastructure improvements proposed in the Preferred Alternative would be installed/constructed within the existing roadway right-of-way, on existing streets. Therefore, typical operation of the Preferred Alternative would not contribute or result in hazardous material releases to the environment. However, three of the four REC sites: 3400 Benning Road; 3900 and 3908 Benning Road; and 4501 Benning Road; could be temporarily impacted during construction. The impact at all three sites would be associated with the installation of construction fencing, erosion and sediment control measures, and temporary pedestrian facilities. Since these activities would not require deep excavation, no impacts to contaminated soils or groundwater are anticipated. In addition, the relatively shallow excavations needed for streetcar track installation significantly reduce the likelihood of encountering the REC sites. For more information on construction-related potential impacts and mitigation measures, please see **Section 4.13**.

Other than these temporary impacts, the Preferred Alternative would have no permanent impact on hazardous materials because the multi-modal roadway improvements would not be a new source of such materials. The existing risks of fuel, oil, and lubricant leaks from motor vehicles, as well as accidental fuel spills, on the roadway would remain as usual. Operation of the streetcar would not be a source for accidental fuel spills on Benning Road because the power source would be electricity. DDOT will continue to apply the District Response Plan and Water Pollution Control Contingency Plan as appropriate for accidental fuel spills within its rights-of-way. Additional mitigation measures are not warranted as no other operational impacts regarding hazardous materials are anticipated.

TPSS

The two proposed TPSS facilities would not be sources of impact on hazardous materials.

Propulsion System

The wired propulsion system proposed as part of the Preferred Alternative would not be a source of impact on hazardous materials.

DC Streetcar Car Barn Training Center

The connecting track to the DC Streetcar Car Barn and Training Center would not be a source of potential impacts to hazardous materials.

Mitigation Summary

As the project progresses into next phase, further investigation, beginning with site-specific ASTM-compliant Phase I Environmental Site Assessments (ESA), would be conducted at all medium- and high-risk rated properties along the Preferred Alternative prior to the construction of the proposed infrastructure improvements. If RECs are confirmed at these properties, subsurface soil and groundwater investigations and laboratory testing would need to be

conducted as part of a Phase 2 ESA. Construction plans would then include notes advising contractors of the risk, general location, and type of tanks and/or contaminants (petroleum, lead, etc.) that may be found along the Preferred Alternative alignment. Contractors would be advised that, should suspected hazardous materials be found, further sampling, as well as required permitting, transport, and disposal of the material would be completed in accordance with the DDOT guidelines. Potential construction-related impacts and mitigation measures are discussed in **Section 4.13**.

Operation of the streetcar would not be a source for accidental fuel spills on Benning Road because the power source would be electricity. DDOT will continue to apply the District Response Plan and Water Pollution Control Contingency Plan as appropriate for accidental fuel spills within its rights-of-way.

4.10 NOISE AND VIBRATION

This section describes the noise and vibration impacts that are expected to occur because of the No-Build and Preferred Alternatives, and the measures that DDOT will employ to mitigate them. More detail on the noise and vibration analyses may be found in the *Benning Road and Bridges Transportation Improvements Noise and Vibration Technical Memorandum* in **Appendix I**.

The Federal Noise Control Act of 1972 (Public Law 92-574) requires that all federal agencies administer their programs in a manner that promotes an environment free from noises that could jeopardize public health or welfare. The noise and vibration analyses for the proposed action were prepared to comply with NEPA requirements (23 CFR 772) and the guidelines set forth by FTA's *Transit Noise and Vibration Impact Assessment* (May 2006). Additionally, traffic impacts were evaluated using the guidelines set forth by FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* (December 2011).

4.10.1 Operational Noise Analysis Methodology

As described in **Section 3.10**, the proposed action is an FHWA Type 1 noise project. This classification means that a project could cause impacts if it increases existing noise levels by at least 6 decibels, or if the predicted traffic noise approaches or exceeds the operational NAC. Any sensitive receiver that would experience one or both changes is eligible for noise abatement consideration. DDOT's noise abatement criteria for highway projects are based on land use categories and are at least as stringent as those of FTA and FHWA; the criteria are summarized in **Table 3-16**.

Consistent with DDOT policy, noise abatement would be considered for land use categories B and C if exterior noise due to a project that causes traffic noise to be 66 dBA or higher. For Category E land uses, noise abatement would be considered if the predicted exterior noise is 71 dBA or higher. Only the external land use categories B, C and E have been evaluated for the proposed action. For these land use categories, the operational noise impact criteria are applicable only when there are areas of frequent outdoor human activity at the receivers. For the proposed action, interior land uses have not been evaluated for potential noise impacts. A total of 197 noise sensitive receiver sites were identified within the study area and used in the noise modeling.

Traffic noise modeling used peak-hour traffic data for the 2014 Existing Condition and the future 2040 No-Build and Build Alternatives derived from the traffic report for the proposed action (**Appendix E**).

The operational noise analysis examines Build Alternatives 1 and 2 (including streetcar operations and vehicular traffic). The various noise modeling assumptions (including traffic, train pass-bys, warning bells, etc.), and other operating characteristics (such as average dwell times, source heights, etc.) are based on default FTA data, as well as information included in the *Benning Road Operations Plan Report* (2014). Other streetcar infrastructure elements, including the traction powered substations and the wired propulsion system would not be sources of noise and, therefore, are not analyzed.

4.10.2 Operational Vibration Analysis Methodology

The vibration assessment of the proposed streetcar service was prepared in accordance with NEPA and the guidelines set forth FTA's *Transit Noise and Vibration Impact Assessment* (May 2006). The operational vibration analyses examine Build Alternatives 1 and 2, including the connecting track to the DC Streetcar Car Barn Training Center. Other elements, including the traction powered substations and the wired propulsion system would not be sources of vibration and, therefore, are not analyzed. Roadway traffic vibration was assessed qualitatively as FTA's methodology does not provide a means to analyze roadway traffic vibration and because the potential for traffic vibration is the same for the No-Build and Build Alternatives (because traffic volumes under each alternative would be the same).

FTA's operational vibration impact criteria for evaluating ground-borne vibration impacts from train pass-bys at nearby sensitive receivers are shown in **Table 4-16**.

Table 4-16: Ground-Borne RMS Vibration Impact Criteria for Annoyance during Operations and Construction (VdB)

Receptor Land Use		RMS Vibration Levels (VdB)			Ground-borne Noise Levels (dBA)		
Category	Description	Frequent Events	Occasional Events	Infrequent Events	Frequent Events	Occasional Events	Infrequent Events
1	Buildings where low vibration is essential for interior operations	65	65	65	N/A	N/A	N/A
2	Residences and buildings where people normally sleep	72	75	80	35	38	43
3	Daytime institutional and office use	75	78	83	40	43	48
Specific Buildings	TV/Recording Studios/Concert Halls	65	65	65	25	25	25
	Auditoriums	72	80	80	30	38	38
	Theaters	72	80	80	35	43	43

4.10.3 ENVIRONMENTAL CONSEQUENCES – OPERATIONAL NOISE

The DDOT Highway Traffic Noise Analysis and Policy divides the noise analysis process into three stages: sensitive receptor identification; noise report preparation, and mitigation design. During the initial phases of the Benning Road and Bridges Transportation Improvements EA, it was determined that the study area contains multiple sensitive receptors. This section describes the noise conditions predicted to occur at these receptors if the Preferred Alternative is completed. During project design, DDOT will develop construction plans for any selected mitigation measures.

No-Build Alternative

Worst-case conditions were calculated for the future (2040) No-Build Alternative. This scenario represents the future roadway facilities, incorporating no changes to the roadway geometry and no elements of the proposed action. The validated noise model was used as the baseline for the calculation of future No-Build worst-case noise levels. As shown in **Table 4-17**, calculated worst-case cumulative L_{eq} noise levels for the No-Build Alternative range from 66 dBA at Site M12 (a residence along 46th Street) to 75 dBA at Site M1 (a residence at 2531 Benning Road opposite the DC Streetcar Car Barn Training Center).

As shown in **Table 4-17**, traffic noise is predicted to exceed the FHWA operational NAC at all residences and parks immediately adjacent to Benning Road in the No-Build Alternative. As no streetcar operations would occur in the No-Build Alternative, no exceedances of FTA’s operational impact criteria would occur.

Table 4-17: Predicted Peak-Hour Noise Levels – Traffic Only

Name	Description	Cat.	NAC	2014 Existing	2040 No-Build	2040 Curbside	2040 Median
M1	2531 Benning Road	Residence	67 / B	74	75	75	75
M2	Langston Golf Course Historic District	Park	67 / C	70	70	70	70
M3	Kingman and Heritage Islands Park	Park	67 / C	67	68	68	68
M4	3341 Benning Road	Park	67 / C	69	69	70	70
M5	505 34 th Street	Residence	67 / B	69	70	70	70
M6	3940 Benning Road	Residence	67 / B	67	67	67	67
M7	4043 Benning Road	Residence	67 / B	68	68	68	68
M8	4103 Benning Road	Office	72 / E	67	67	67	67
M9	4201 Benning Road	Residence	67 / B	69	70	70	70
M10	4242 Benning Road	Office	72 / E	68	69	68	68
M11	4365 Benning Road	Residence	67 / B	68	69	69	69
M12	26 46 th Street	Residence	67 / B	66	66	66	66

Since the release of the Draft EA, the design year for the No-Build & Preferred Alternatives has been changed from 2040 to 2045. The traffic conditions expected to exist during these periods are described in **Appendix E**. The traffic model for the 2045 condition shows increased travel demand

throughout the study area network. The No-Build Alternative does not assume any major capacity improvements; it is therefore reasonable to conclude that with the increase in traffic demand, traffic congestion would continue to increase proportionately. Since roadway facilities are typically their noisiest when traffic is traveling at high speeds, this expected increase in congestion would most likely cause noise levels to be lower in 2045 than they are in 2040. Therefore, since the current 2040 traffic noise model for the No-Build Alternative still assesses the worst traffic noise condition, it is considered valid for the purposes of the Final EA.

Preferred Alternative

Streetcar Operations

DDOT modified the validated noise models to incorporate the design elements of the Preferred Alternative to calculate the future (2040) noisiest hour sound levels. The Preferred Alternative elements were used to identify the number and location of noise sensitive receivers. As shown in **Table 4-18**, noise levels from streetcar operations under the Preferred Alternative are predicted to range from 49 dBA at Site M4 (Anacostia Park at 3341 Benning Road) to 69 dBA at Site M1 (a residence at 2531 Benning Road opposite the DC Streetcar Car Barn Training Center). The number of potential noise impacts due to streetcar operations in the study area is quantified in **Table 4-19**. Specifically, exceedances of FTA's *severe* impact criteria are predicted at four residences (or FTA Category 2 land uses) in the vicinity of the track switches at the curve for the DC Streetcar Car Barn Training Center. Additionally, exceedances of FTA's *moderate* impact criteria are predicted at five other residences under the Preferred Alternative (four at the DC Streetcar Car Barn Training Center switches and one near the 42nd Street stop due to rail transit bell ringing). No exceedances of FTA's noise impact criteria are predicted at any Category 1 or 3 land uses. The locations of predicted noise impacts for the Preferred Alternative are shown in **Figure 4-20**.

Table 4-18: Predicted Streetcar Noise Levels at Sensitive Receivers - Preferred Alternative (dBA)

ID	Receptor Description	FTA Cat.	Noise		FTA Criteria			
			Existing	Build	Moderate	Severe	Impact	Metric
M1	2531 Benning Road	2	65	69	61	66	SEV	L _{dn}
M2	Langston Golf Course Historic District	3	67	52	67	73	NO	Leq
M3	Kingman and Heritage Islands Park	3	67	52	67	73	NO	Leq
M4	Anacostia Park	3	67	49	67	73	NO	Leq
M5	505 34 th St	2	65	55	61	66	NO	L _{dn}
M6	3940 Benning Road	2	71	57	65	70	NO	L _{dn}
M7	4043 Benning Road	2	71	58	65	70	NO	L _{dn}
M8	4103 Benning Road	3	73	55	70	77	NO	Leq
M9	4201 Benning Road	2	71	59	65	70	NO	L _{dn}
M10	4242 Benning Road	3	73	54	70	77	NO	Leq
M11	4365 Benning Road	2	71	57	65	70	NO	L _{dn}
M12	26 46 th St	2	71	60	65	70	NO	L _{dn}

Table 4-19: Number of Noise Impacts Predicted for Streetcar Operations - Preferred Alternative

Metric	Noise Impacts		
	No Impact	Moderate	Severe
1	0	0	0
2	168	5	4
3	12	0	0

Traffic Operations

DDOT's noise modeling predicted traffic noise impacts along Benning Road in the Preferred Alternative like those to under the No-Build Alternative. This similarity exists because the traffic volumes expected to occur under both scenarios are similar. As shown in **Table 4-17**, calculated worst-case cumulative L_{eq} noise levels for the Preferred Alternative range from 66 dBA at Site M12 (a residence along 46th Street) to 75 dBA at Site M1 (a residence at 2531 Benning Road opposite the DC Streetcar Car Barn Training Center). As shown in **Table 4-17**, exceedances of the FHWA NAC are predicted at all residences and parks adjacent to Benning Road. The future vehicular traffic along Benning Road would account for up to 98 percent of the total noise in the Benning Road corridor. Future noise due to streetcar operations would account for an additional two percent of total noise in the Benning Road corridor. As a result, the cumulative noise levels that combine both the streetcar operations and the future traffic under the Preferred Alternative would be approximately the same as the peak-hour noise levels shown in **Table 4-17**, and the same as the No-Build Alternative.

TPSS

TPSS facility noise sources would include the occasional service vehicle driving up to and parking at the location. No exceedance of the FHWA or FTA noise impact criteria would occur.

Propulsion System

The operation of the wired propulsion system included in the Preferred Alternative would not introduce a new noise source into the study area or affect existing noise levels.

DC Streetcar Car Barn Training Center

Under the Preferred Alternative, exceedances of the FTA *severe* criteria for noise are predicted at four residences (Category 2 land uses) due to track switches for the 26th Street track to the DC Streetcar Car Barn Training Center. Additionally, exceedances of the FTA *moderate* impact criteria for noise are also predicted at four other residences at the DC Streetcar Car Barn Training Center track switches. The mitigation measures associated with these impacts are the same as those described for the Preferred Alternative.

Mitigation Summary

DDOT will undertake mitigation measures to reduce or eliminate impacts for the Preferred Alternative. These measures will be evaluated during project design and will include the following typical activities:

- Eliminate or reduce noise impacts on the residences by relocating 42nd Street stop to the west side of 42nd Street.
- Eliminate or reduce noise impacts due to track switches by installing “spring frogs,” pointless switches or other controls (such as a “well-designed flange-bearing frog” as recommended in the Noise and Vibration Technical Report for H Street/Benning Road Streetcar Project, April 2013), or a flange-lifter. These fixtures eliminate the gap in the rail and thereby the impulsive or impact noise from the steel wheel striking the rail gap. These control measures would reduce noise levels due to this source approximately 6 dBA.
- Eliminate or reduce noise impacts due to wheel squeal by increasing the radius of the track curves, applying flange lubricators to “grease” the contact points between the steel wheels and the steel rail heads, or procuring streetcar vehicles that can operate effectively along tracks with radii less than 100 feet without causing wheel squeal to occur. These control measures would reduce noise levels due to this source approximately 10 dBA.
- Eliminate or reduce noise impacts of rail transit bell ringing as safety protocols allow. Alternative measures where source controls are not practical or feasible include wayside treatments such as residential sound insulation, including acoustical windows and doors. These control measures would reduce noise levels due to this source approximately 7-10 dBA.
- Additional evaluations to verify the predicted impacts.
- Post project implementation, streetcar operational noise levels may be recomputed and reassessed to account for and confirm the above mitigation.

The majority of the noise impacts predicted to occur under the Preferred Alternative are due to traffic along Benning Road corridor rather than streetcar operations. As a result, the predicted impacts cannot be completely avoided or mitigated by altering the design of the streetcar vehicles, the location of the streetcar facilities or streetcar operations. Other abatement measures (such as limiting truck traffic, reduced speeds, land-acquisition, buffer zones, etc.) are not considered “feasible and reasonable” in accordance with the DDOT Noise Policy.

4.10.4 ENVIRONMENTAL CONSEQUENCES – OPERATIONAL VIBRATION

No-Build Alternative

Future vibration levels under the No-Build Alternative would be like those currently experienced under existing conditions. Traffic, including heavy trucks and buses, rarely creates perceptible ground-borne vibration unless vehicles are operating very close to buildings or there are irregularities in the road, such as potholes or expansion joints. The pneumatic tires and suspension systems of automobiles, trucks, and buses eliminate most ground-borne vibration.

Preferred Alternative

Streetcar Operations

Significant vibration impacts due to streetcar pass-bys are unlikely to occur under the Preferred Alternative due to the slow travel speeds along the in-street running rail corridor. DDOT evaluated potential vibration impacts resulting from steel wheel on steel rail interactions using a speed of 25 mph. Six exceedances of FTA’s vibration “annoyance” impact criteria for frequent events were predicted at FTA Category 2 land uses using FTA’s default ground-surface curves. Exceedances of FTA’s operational vibration impact criteria are predicted using the measured data reported in the *Noise and Vibration Technical Report for H Street/Benning Road Streetcar Project*, April 2013. Thus, these latter data were applied to this analysis and not FTA’s vibration curves.

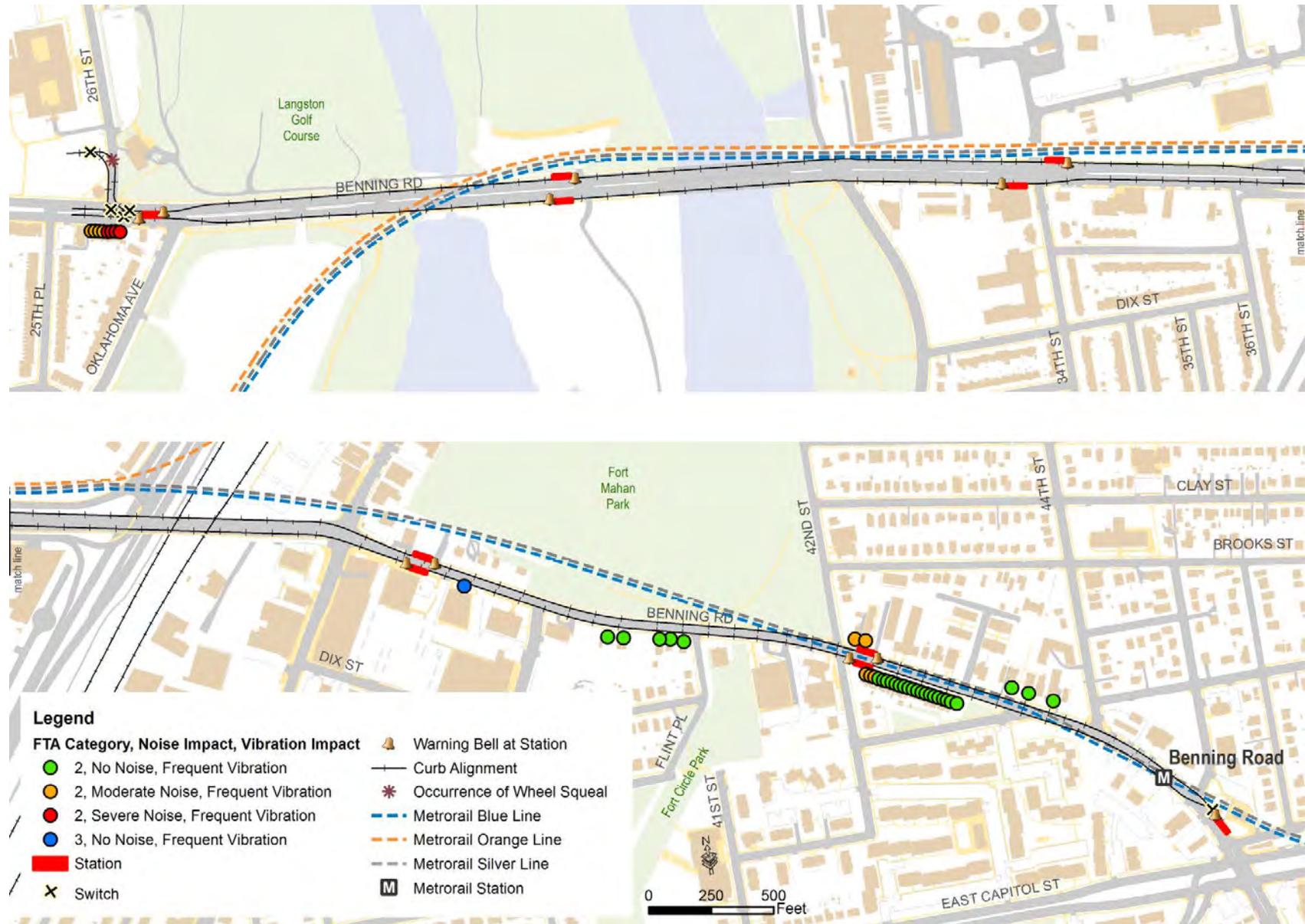
As shown in **Table 4-20**, the maximum vibration levels using the H/Benning streetcar study information along Benning Road under the Preferred Alternative are predicted to range from 57 VdB at Receptor M1 (residences along 34th Street) to 72 VdB at Receptor M2 (residences along Benning Road). The default FTA ground-surface vibration levels are predicted to range from 67 VdB at Receptor M2 to 68 VdB at Receptor M1. The proposed action vibration level at Receptor M2 is predicted to exceed FTA’s impact criterion of 72 VdB using the H/Benning streetcar study data.

Table 4-20: Predicted Streetcar Vibration Levels at Select Receptors - Preferred Alternative (VdB)

ID	Receptor Description	FTA Cat.	Build Alternative		FTA Criteria	
			H Street Report	Default FTA	Frequent	Impact
M1	Residences adjacent to the River Terrace Elementary School, 34 th Street	2	57	68	72	No
M2	Residences, Benning Road at 41 st St opposite Fort Mahan Park	2	72	67	72	Yes (H Street)

The number of vibration-related impacts due to streetcar operations in the study area is quantified in **Table 4-21**. Specifically, exceedances of FTA’s *frequent* vibration impact criterion of 72 VdB are predicted at 20 residences (Category 2 land uses) along Benning Road less than 50 feet from the Preferred Alternative. Similarly, one exceedance of FTA’s impact criterion of 75 VdB is predicted at an institutional receiver (Dorothy I. Height/Benning Neighborhood Library). No exceedances of FTA’s operational vibration impact criteria are predicted for any Category 1 land uses. The location of predicted vibration impacts for The Preferred Alternative are shown graphically in **Figure 4-20**.

Figure 4-20: Preferred Alternative Noise and Vibration Modeling Results



Source: DCGIS

Traffic Operations

Like the No-Build Alternative, traffic, including heavy trucks and buses, would rarely create perceptible ground-borne vibration unless vehicles are operating very close to buildings or there are irregularities in the road, such as potholes or expansion joints.

Table 4-21 : Number of Predicted Vibration Impacts Predicted for Streetcar Operations - Preferred Alternative

Metric	Vibration Impacts	
Cat.	Per H Street Report	Per Default FTA
1	0	0
2	20	6
3	1	0

TPSS

The TPSS facilities would not be sources of vibration; no exceedance of the FTA’s vibration impact criteria would occur.

DC Streetcar Car Barn Training Center

The connecting tracks to the DC Streetcar Car Barn Training Center would not be sources of vibration; no exceedance of the FTA’s vibration impact criteria would occur.

Mitigation Summary

There are no FTA Vibration Category 1 (highly sensitive) land uses or “special buildings” along the Preferred Alternative alignment. Considering the minor effect, the vibrations would have and that there are no highly sensitive land uses, based on CEQ regulation on context and intensity, the Preferred Alternative would not impact vibration levels in the study area.

General mitigation or avoidance measures for vibration impacts generated by steel wheel – steel rail interactions will come in the form of ballast mats, spring frogs, pointless switches, flange-bearing frogs, and similar designed to reduce vibration levels by approximately 10 VdB. Other measures which can reduce the vibrations include resilient fasteners, undertie pads, and floating pads. Resilient fasteners, for example, are stiffer than traditional fasteners and are therefore reduce the ability of streetcar rails to vibrate against the concrete track slabs. The implementation of these devices will be established during final design. More information on the function and benefit of each of these mitigation measures can be found in Section 6.5 (Step 4) of the FTA’s *Transit Noise and Vibration Impact Assessment Manual*.

4.11 AIR QUALITY

This section discusses the predicted impacts of the No-Build and Preferred Alternatives on the air quality conditions described in **Section 3.11**. This evaluation addresses regional and project-level conformity requirements (see **Appendix J** for a detailed air quality analysis). The evaluation resulted in the following findings:

- As the proposed action is included in the MWCOG 2016 CLRP and the 2019-2024 TIP, the Preferred Alternative is in compliance with the transportation conformity rule on a regional level and are exempt from a regional emissions analysis.
- The Preferred Alternative would not exceed the NAAQS for CO based on local hot-spot analysis. The proposed action is not a project of air quality concern regarding PM_{2.5} or PM₁₀. The proposed action does not warrant further qualitative or quantitative analysis regarding Mobile Source Air Toxics (MSAT).

No-Build Alternative

The No-Build Alternative will not alter existing mass transit or traffic operations. As a result, the No-Build Alternative will have no operational impacts on air quality. The No-Build Alternative will not assist the region in its conformity goals.

Preferred Alternative

Under the CAA, federal agencies are responsible to ensure that a project conforms to the SIP. The EPA also developed the CAA transportation conformity rule (40 CFR 51.390 and Part 93), applicable to transportation projects funded and approved by FHWA and/or FTA in nonattainment and maintenance areas for the transportation related criteria pollutants: O₃, PM_{2.5}, PM₁₀, NO₂, and CO. The transportation conformity rule requires the regional and localized analysis of project-related air emissions to show the project would not cause or contribute to any new violations of the NAAQS and would be in conformance of the corresponding SIPs and the established motor vehicles emissions budget (MVEB). The MWCOG is responsible for developing the SIP-conforming TIP to address mobile source emissions within the region.³

Regional Conformity

Conformity demonstration on a regional level was made by the MWCOG through the TIP. If a project is included in a conforming TIP, that project is exempt from regional emissions analysis and is presumed to be in compliance with the transportation conformity rule on a regional level. The proposed action is included in the currently adopted MWCOG 2016 CLRP and the 2019-2024 TIP. Thus, the proposed project is in compliance with the transportation conformity rule on a regional level and is exempt from a regional emissions analysis.

³ In the metropolitan Washington region, the 2015-2020 TIP was adopted on October 15, 2014 after a regional conformity determination showed that the total emissions from on-road travel on the region's transportation system would be consistent with the SIP goals for air quality.

Localized CO, PM_{2.5}, and PM₁₀ Hot Spot Analysis

For a specific transportation project, the conformity determination must show that potential localized emissions impacts are addressed by the project and are consistent with goals for air quality in the SIP. Project-level conformity for CO and PM_{2.5} is demonstrated by a hot-spot analysis. Other localized pollutants of concern (PM₁₀ and MSAT) are also evaluated per NEPA requirements.⁴

The potential for the proposed action to impact intersections with LOS D or worse triggered the need for a hot-spot analysis for CO (40 CFR 93.123[b][1]). The methodology and screening and ranking analysis results are detailed in **Appendix J**. At each of the intersections selected for a hot spot analysis, maximum one-hour and eight-hour CO concentrations were predicted at several receptor locations where the maximum concentrations would be expected and where the public would have reasonable access. The worst-case hot spot analysis results at the two most-congested intersections in the study area are provided in **Table 4-22**. No exceedances of the NAAQS of 35 ppm for one-hour CO or 9 ppm for 8-hour CO are predicted at any of the selected intersections.

Since the release of the Draft EA, the opening year has changed from 2018 to 2025 and design year has changed from 2040 to 2045 for the Preferred Alternative. Traffic modelling results were used to prepare the Air Quality Technical Memorandum for the Draft EA. Since traffic modelling results for 2025 build year and 2045 design year are found to be similar to the original scenarios and there is no meaningful change, air quality analysis presented in **Appendix J** remains applicable.

Table 4-22: Predicted Hot Spot Worst-Case CO Concentration Levels

Intersection	CO Concentrations (ppm)			
	Build - 2018		Build - 2040	
	1-hour	8-hour	1-hour	8-hour
Benning Road and Minnesota Avenue	4.9	3.7	3.7	2.9
Benning Road and East Capitol Street	5.8	4.4	3.8	3.0

As the proposed action is in a maintenance area for PM_{2.5}, an evaluation of the potential for the proposed action to be a project of air quality concern was undertaken consistent with the transportation conformity rule (40 CFR 93.123[b][1]). The Preferred Alternative would provide improvements to an existing local arterial roadway (along Benning Road), would introduce streetcar service that would be powered by electricity, and would not cause an overall increase in diesel vehicular traffic in the study area. Therefore, the proposed action does not meet any of the criteria for being a project of air quality concern as defined in 40 CFR 93.123(b)(1). Therefore, the proposed action would not cause or contribute to a PM_{2.5} or PM₁₀ violation that would alter the

⁴ Because O₃ is a regional pollutant that is formed in the presence of VOC and NO_x, O₃ is evaluated on a regional level. Regional impacts of the pollutants with regional concerns from a transportation project are evaluated through the TIP development by the MPO. Since the proposed action is included in a SIP conforming TIP, no regional emissions analysis is required for regional pollutants including O₃ precursors.

current attainment status of the area for PM_{2.5} or PM₁₀. Consequently, no further hot-spot analysis for PM_{2.5} or PM₁₀ is warranted.

MSAT Analysis

In the MSAT analysis for the proposed action, FHWA's interim guidance on MSAT analysis was applied, which provides a three-tiered approach to determine the level of MSAT analysis required (FHWA, 2012). The approach assigns a level of analysis based on the type of project being undertaken: quantitative analysis required, qualitative analysis required, and no qualitative or quantitative analysis required. Accordingly, The Preferred Alternative falls into the category of not requiring further qualitative or quantitative analysis because it would:

- only involve an improvement to local arterial roadway resulting in no meaningful changes in traffic volume or vehicle mix within the study area; and
- result in all roadways affected by the proposed action having AADT that are well below the 140,000-AADT threshold for a higher potential MSAT impacts.

TPSS

The TPSS locations would not impact transit or traffic operations for The Preferred Alternative and would have no air quality potential operational impacts and no impact on the conformity determination.

Propulsion System

The wired propulsion system included in the Preferred Alternative would not impact transit or traffic operations and would have no potential air quality operational impacts and no impact on the conformity determination.

DC Streetcar Car Barn Training Center

The tracks to the DC Streetcar Car Barn Training Center would not impact transit or traffic operations for the Preferred Alternative and would have no air quality operational impacts and no impact on the conformity determination.

Mitigation Summary

The Preferred Alternative would have no impact on air quality, therefore no mitigation is required.

4.12 ENERGY USE AND CLIMATE CHANGE

This section discusses the projected impacts of the Alternatives on energy use and climate change described in **Section 3.12**. The analysis focuses on the impacts of the proposed action on greenhouse gas emissions and the risks to transportation systems and services from climate change.

No-Build Alternative

The No-Build Alternative will not result in reduced VMT, lower energy use, or reduction in greenhouse gas emissions.

Preferred Alternative

Because climate change is a global issue and the emission changes due to the proposed action would be very small compared to global totals, greenhouse gas emissions were not estimated for individual alternatives.

According to initial projections in the *FTA Urban Circulator Grant Application* (DDOT, 2010) for this proposed action, the proposed action would result in a reduction of approximately 640,000 VMT per year. Based on the estimated reduction in VMT, the resulting passenger vehicle emissions reductions as a result of the proposed action were estimated. **Table 4-23** lists the potential reductions in annual vehicle emissions of Carbon Monoxide (CO), Nitrous Oxide (NO_x), Volatile Organic Compounds (VOC), Particulate Matter (PM₁₀), and Carbon Dioxide (CO₂).

Table 4-23: Estimated Reductions in Vehicle Emissions (Tons Per Year)

Pollutant	Benning Road Streetcar Extension
CO	0.82
NO _x	0.79
VOC	0.04
PM ₁₀	0.07
CO ₂	305.00

One of the District's primary strategies to reduce greenhouse gas emissions is to provide choices for travel so that options other than single-occupant vehicle travel are available. The Preferred Alternative would provide a transit travel-option that does not currently exist in the Benning Road corridor. The District identifies the Streetcar Program, including the Benning Road Streetcar Extension, as one of the transportation measures to be taken to address climate change. The District has the benefit of dense development, availability of mass transit, and walkable neighborhoods, which support efforts to reduce greenhouse gas emissions. Addition of streetcar and related improvements to the transportation options within the study area would support both national and District missions to reduce greenhouse gas emissions and VMT.

TPSS

The TPSS facilities would not result in energy use or potential climate change impacts beyond those documented above for the Preferred Alternative.

Propulsion System

The wired propulsion system included in the Preferred Alternative would not result in energy use or potential climate change impacts beyond those documented above for The Preferred Alternative.

DC Streetcar Car Barn Training Center

The installation of new track infrastructure leading to the DC Streetcar Car Barn Training Center would not result in energy use or potential climate change impacts beyond those documented above for the build alternatives.

Mitigation Summary

The proposed action will support efforts to provide more sustainable transportation alternatives in the District of Columbia, particularly by extending the streetcar service in the study area. The streetcar plan is a key part of the District's initiative to achieve its climate and energy efficiency goals in the transportation sector. The proposed Benning Road infrastructure improvements would result in several environmental benefits:

- *Reduction in Fossil Fuels*—Extending the electricity run streetcars service in the study area would reduce fossil fuel dependence and improve air quality.
- *Reduction in Vehicle Emissions* – Preferred Alternative would provide an additional transit option and improved roadway and sidewalk infrastructure for walking and biking, resulting in overall reduction of greenhouse gases.
- *Protection and Preservation of Existing Trees* – All feasible measures will be undertaken to protect existing trees from being damaged by nearby construction activities.
- *Tree Planting* – Tree and shrub planting is planned for the project corridor as part of the streetscape improvements. Tree planting in the proposed action will occur in conjunction with construction.
- The project would support roadway reconstruction using sustainable techniques.

4.13 CONSTRUCTION IMPACTS

This section identifies and assesses the potential construction impacts of each alternative. Prior to construction, DDOT will prepare and implement a Construction Management Plan in compliance with the *DC Construction Management Manual* (DDOT, 2010). The plan will prescribe construction phasing for the proposed action. Construction phasing will organize construction activities in a manner that maintains access to adjacent bus stops, residences, businesses, and community facilities; and minimizes disruption of transportation facility operations. The Construction Management Plan will include detailed Maintenance of Traffic (MOT) and Maintenance of Access (MOA) plans. A preliminary concept Maintenance of Traffic Plan for the Preferred Alternative can be found in **Appendix D**.

As indicated in **Section 4.3**, modifications are planned on the Benning Road/ DC-295 interchange to improve connectivity, to eliminate unsafe conditions, and to manage traffic demands. Consequently, DDOT will prepare a Construction Management Plan along with the Maintenance of Traffic (MOT) which will include both Benning Road infrastructure improvements proposed in this EA and DC-295 interchange improvements together. The inclusion of both projects in the Construction Management Plan would guide phasing of construction to minimize impacts to the community; and to realistically assess construction phasing of the bridges, DC-295 ramps, and the

streetcar extension. It will be developed based on the construction phasing of the proposed action, which would be sequenced in a manner that will maintain access to adjacent bus stops, residences, businesses, community facilities, and trail systems. Phasing will minimize the duration of interruptions to services of transportation facilities. A MOA Plan will also be developed which will provide alternative routes for motor vehicles, pedestrians, bicyclist, and emergency vehicles during each phase of construction.

The MOT will identify the locations and durations of short-term driveway closures along Benning Road during construction. DDOT will communicate these conditions to the affected property owners in advance to closure activity. For properties with multiple driveways, at least one access point will always remain open. DDOT's Construction Management Plan will also identify construction staging areas, access points, and construction truck routes. Staging areas are areas designated for storage and mobilization of construction equipment and materials. DDOT is expected to establish one or more staging areas along Benning Road and at each TPSS facility location. Necessary local and federal permits would be applied for securing temporary easements associated with the staging areas. Adherence to the permit provisions; like construction access points, truck routes, construction conditions etc. would minimize the potential construction impacts to the general public.

DDOT will also develop and implement a Health and Safety Plan as part of the Construction Management Plan to address construction worker and public safety. In conjunction with the MOT and MOA plans, the Health and Safety Plan will establish procedures that promote safe worker and public environments and provide a mechanism for responding to safety issues as they arise. Typical measures DDOT will examine when developing the plan include designating work zones and public areas, signing and providing advance communication of alternative motor vehicle and pedestrian routes, securing work zones, and establishing emergency response procedures. For construction worker safety, the plan will prescribe practices to promote safe operations as well as a response plan in the event of an incident on a construction site. DDOT will apply existing procedures and protocols that are used on its roadway and transportation systems, such as for the existing DC Streetcar system, including:

- District of Columbia's Response Plan
- District of Columbia's Water Pollution Control Contingency Plan
- District of Columbia's Standard Specifications for Highways and Structures

Construction activities are expected to occur on both curb-sides along Benning Road between Anacostia Avenue and 45th Street, including short-term closures of access driveways. Impacts to private and commercial property driveway access during construction of the Preferred Alternative would be minimized by restricting construction to short segments and sequenced so that driveways remain open except for short-term closures. The need for closures would be communicated to affected property and businesses prior to the construction activity. For properties with multiple driveways, at least one access point would always remain open. Preventative measures will be employed along the corridor to minimize or avoid potential impacts to businesses along Benning Road during construction. DDOT may assist retail property owners along the corridor with advertisements that encourage continued patronization businesses during construction. Coordination with businesses will continue to provide the latest information

on construction schedules, changes, and potential detours that result from the project. To maintain continued access to properties during construction, collective project phasing, construction phasing, and staging activities will be staggered. In addition, directional signage will be provided to direct visitors to businesses. Finally, a collective communication program will be developed that includes routine updates on construction sequencing and short-term utility interruptions.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative. Therefore, no construction impacts are expected to occur.

Preferred Alternative

Zoning and Land Use

The construction of the Preferred Alternative would require the use of temporary construction easements at several location within the study are (see **Figure 4-21** through **Figure 4-33**). The proposed improvements to the Benning Road – Minnesota Avenue intersection would require temporary construction easements at the intersection’s northwest quadrant (the 7-Eleven Parking Lot). The use of this easement for construction would temporarily reduce the space available for vehicles to circulate through the parking lot (see Parking and Access discussion below for more information). Once construction is complete existing site conditions will be restored, thereby resolving any temporary conflicts with existing zoning and land use. The proposed widening of the Ethel Kennedy Bridge would require temporary construction easements in Kingman and Heritage Island Park and Anacostia Park (see **Figure 4-22** through **Figure 4-24**). These easements would be needed to install construction fencing; erosion and sediment control measures; and temporary pedestrian facilities. Over the short-term, the use of these easements could disturb park vegetation and pedestrian circulation patterns (for more information see the Parklands discussion below). Once construction is complete, existing site conditions will be restored, thereby resolving any temporary conflicts with existing zoning and land use

The proposed replacement of the Whitlock Bridge would require temporary construction easements from four properties:

- two parcels owned by CSX that house active rail lines;
- an open lot owned by WMATA; and
- a small portion of grounds of the Park 7 Apartments.

Over the short-term, the use of the easements on the CSX properties would not interfere with the use of rail lines and it would not undermine zoning or land use (see the ROW section below for more information). The utilization of the easement on WMATA property and the far-western corner of the Park 7 property, are not expected to directly impact site operations and therefore would not directly impact zoning or land use. Furthermore, once construction is complete existing site conditions will be restored, thereby resolving any potential temporary construction related impacts.

Throughout the proposed limits of roadway work, temporary construction easements would be needed to provide adequate space for sidewalk reconstruction, installation of erosion and sediment control systems, creation of temporary pedestrian facilities, and similar roadway improvement actions. Over the short-term, the use of these easements would interfere with site access and operations (mitigation for these impacts are discussed in the ROW impacts section below). Once construction is complete existing site conditions will be restored to the original condition, thereby resolving any temporary conflicts with existing zoning and land use. Over the short-term, construction activities would generate noise that could temporarily cause inconvenience to the neighboring residential properties and recreational land uses. Mitigation for these impacts are discussed in the noise and vibration section below.

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Figure 4-21:
Preferred
Alternative
ROW Impacts
(1 of 13)

D.C. DEPARTMENT OF TRANSPORTATION	
BENNING ROAD AND BRIDGES TRANSPORTATION IMPROVEMENTS ENVIRONMENTAL ASSESSMENT	
PREFERRED ALTERNATIVE	
RIGHT OF WAY IMPACT 1 OF 13	

LEGEND

- Limit of Disturbance
- Property Boundaries
- Stage 1 Right of Way Impacts by Construction Stage
- Stage 2 Right of Way Impacts by Construction Stage
- Stage 3 Right of Way Impacts by Construction Stage

Impact No.

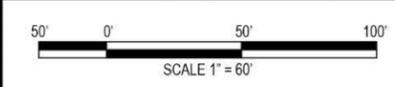




Figure 4-22:
Preferred
Alternative
ROW Impacts
(2 of 13)

D.C. DEPARTMENT OF TRANSPORTATION	
BENNING ROAD AND BRIDGES TRANSPORTATION IMPROVEMENTS ENVIRONMENTAL ASSESSMENT	
PREFERRED ALTERNATIVE	
RIGHT OF WAY IMPACT 2 OF 13	

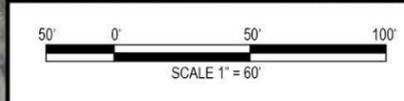


Figure 4-23:
Preferred
Alternative
ROW Impacts
(3 of 13)

LEGEND

- Limit of Disturbance
- Property Boundaries
- Stage 1 Right of Way Impacts by Construction Stage
- Stage 2
- Stage 3

Impact No.



D.C. DEPARTMENT OF TRANSPORTATION
BENNING ROAD AND BRIDGES TRANSPORTATION IMPROVEMENTS ENVIRONMENTAL ASSESSMENT
PREFERRED ALTERNATIVE RIGHT OF WAY IMPACT 3 OF 13



Figure 4-24;
Preferred
Alternative
ROW Impacts
(4 of 13)



Figure 4-25: Preferred Alternative ROW Impacts

(5 of 13)

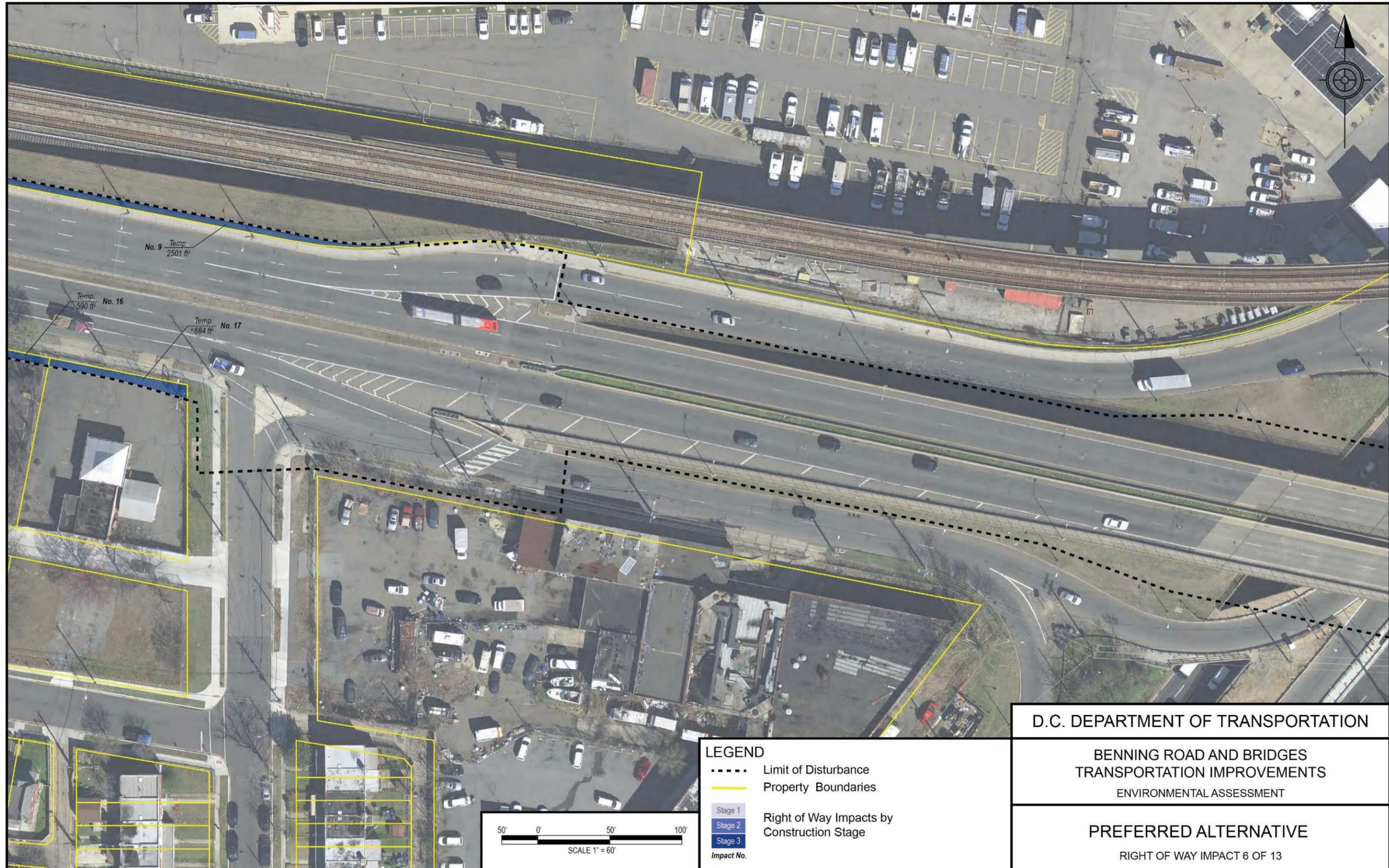


Figure 4-26:
Preferred
Alternative
ROW Impacts
(6 of 13)

D.C. DEPARTMENT OF TRANSPORTATION	
BENNING ROAD AND BRIDGES TRANSPORTATION IMPROVEMENTS ENVIRONMENTAL ASSESSMENT	
PREFERRED ALTERNATIVE	
RIGHT OF WAY IMPACT 6 OF 13	

LEGEND

- Limit of Disturbance
- _____ Property Boundaries
- Stage 1 Right of Way Impacts by Construction Stage
- Stage 2 Right of Way Impacts by Construction Stage
- Stage 3 Right of Way Impacts by Construction Stage

Impact No.



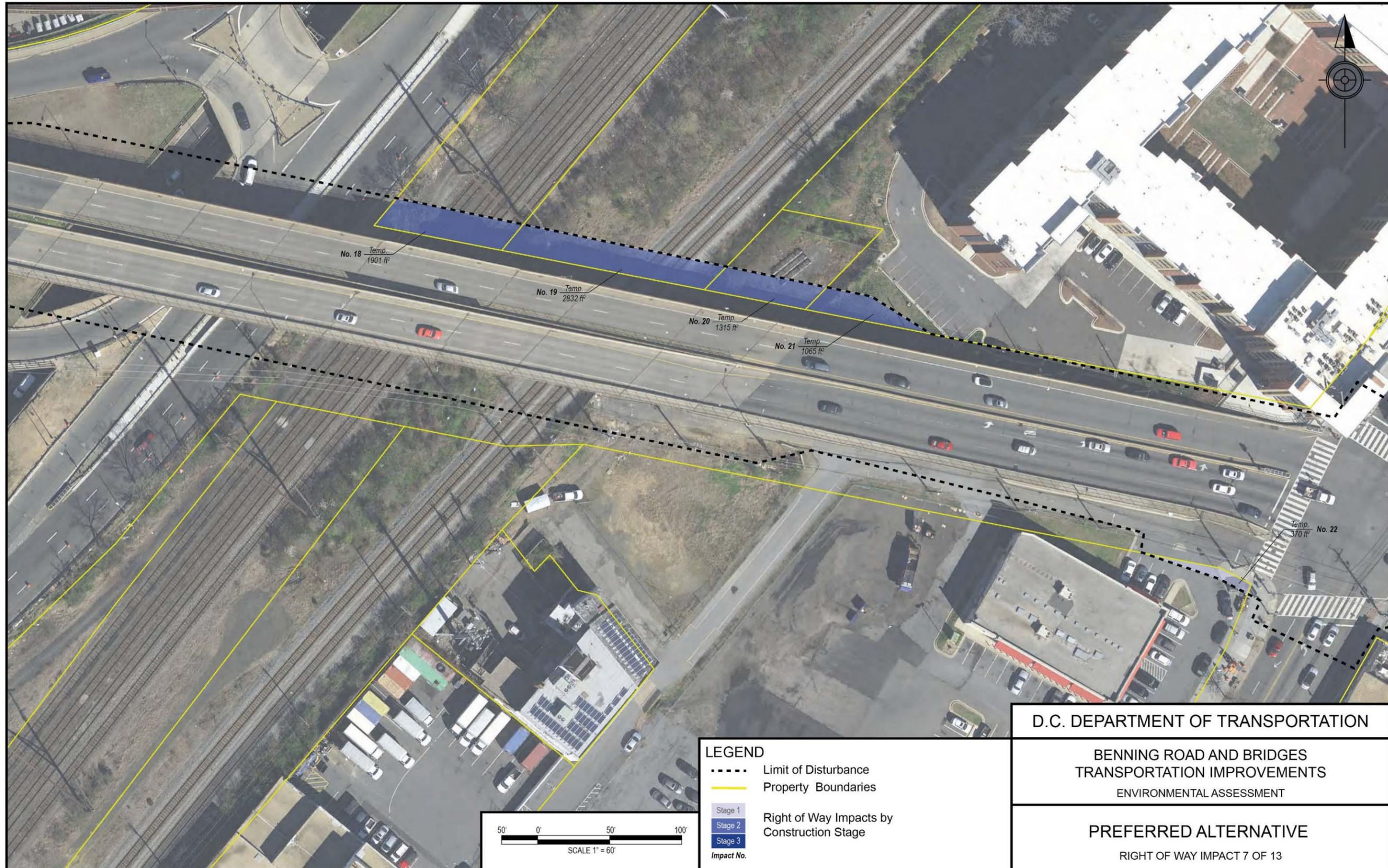


Figure 4-27:
Preferred
Alternative
ROW Impacts
(7 of 13)

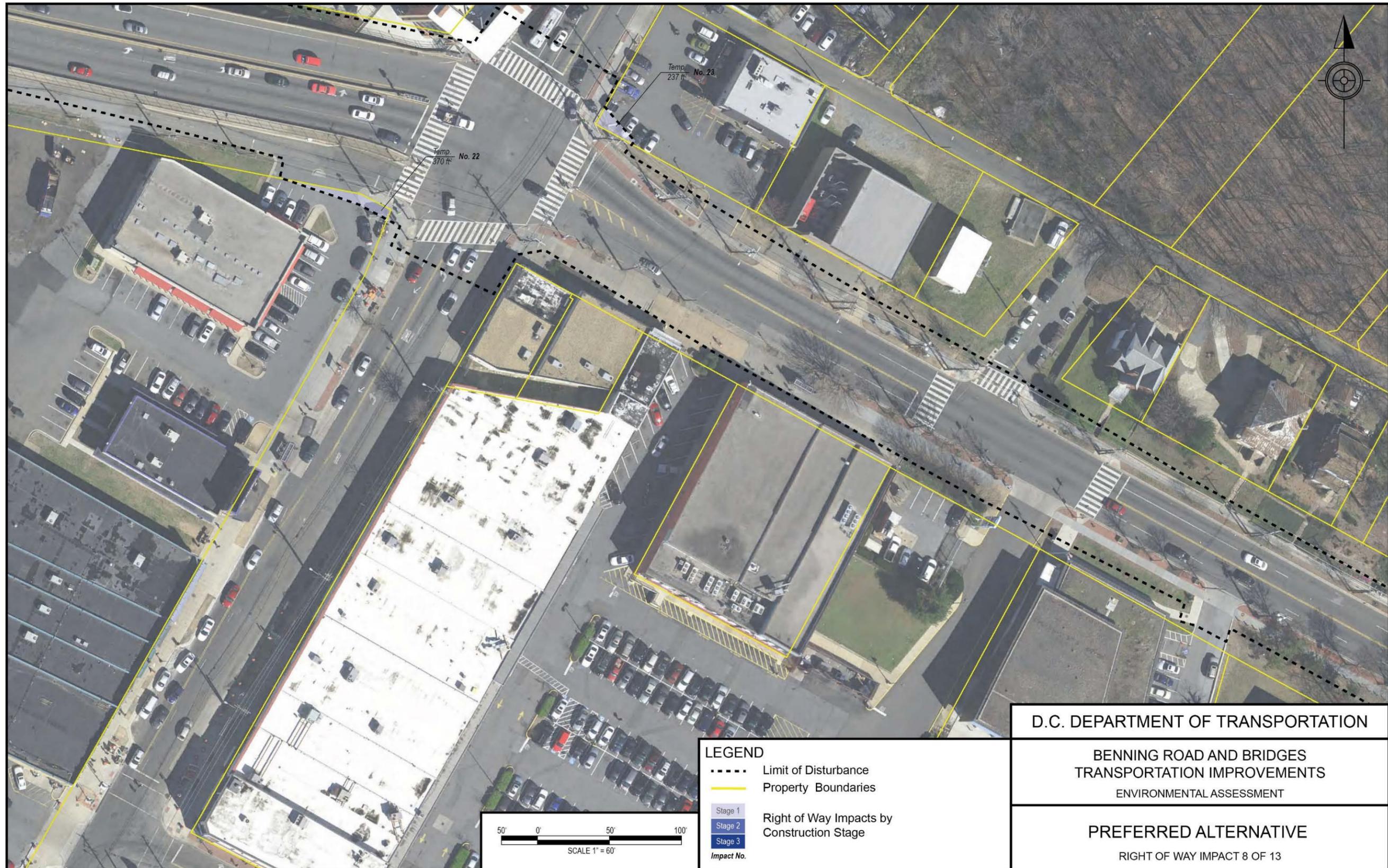


Figure 4-28:
Preferred
Alternative
ROW Impacts
(8 of 13)

D.C. DEPARTMENT OF TRANSPORTATION

BENNING ROAD AND BRIDGES
TRANSPORTATION IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

PREFERRED ALTERNATIVE

RIGHT OF WAY IMPACT 8 OF 13

LEGEND

- Limit of Disturbance
- _____ Property Boundaries

- Stage 1 Right of Way Impacts by Construction Stage
- Stage 2
- Stage 3

Impact No.

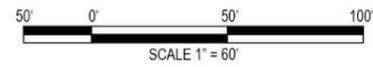




Figure 4-29
Preferred
Alternative
ROW Impacts
(9 of 13)

D.C. DEPARTMENT OF TRANSPORTATION

BENNING ROAD AND BRIDGES
TRANSPORTATION IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

PREFERRED ALTERNATIVE
RIGHT OF WAY IMPACT 9 OF 13



Figure 4-30:
Preferred
Alternative
ROW Impacts
(10 of 13)



Figure 4-31:
Preferred
Alternative
ROW Impacts
(11 of 13)



Figure 4-32
Preferred
Alternative
ROW
Impacts
(12 of 13)

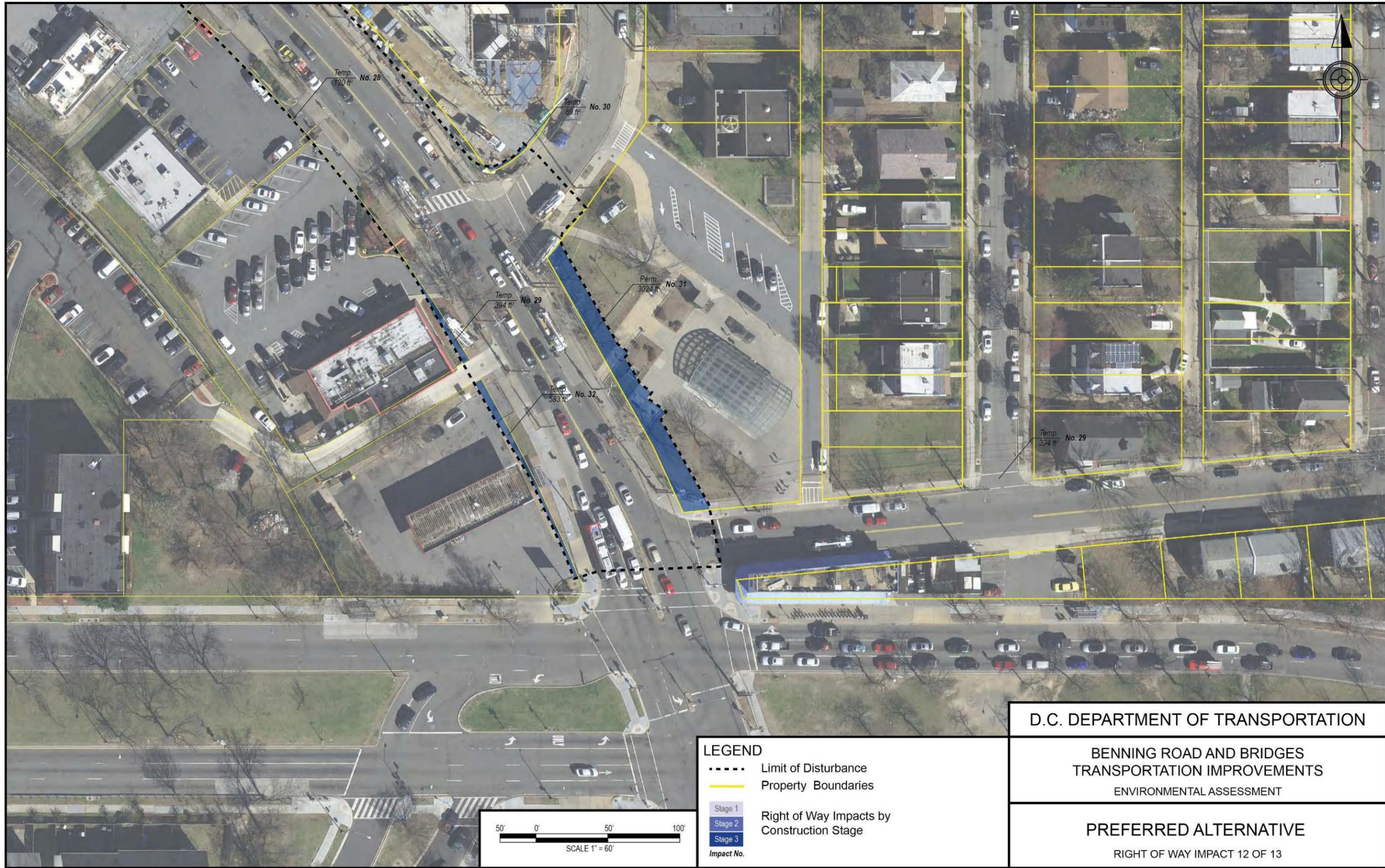
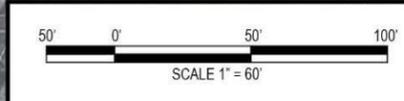


Figure 4-33:
Preferred
Alternative
ROW
Impacts
(13 of 13)

LEGEND

- Limit of Disturbance
- Property Boundaries
- Stage 1 Right of Way Impacts by Construction Stage
- Stage 2 Right of Way Impacts by Construction Stage
- Stage 3 Right of Way Impacts by Construction Stage
- Impact No.



D.C. DEPARTMENT OF TRANSPORTATION

BENNING ROAD AND BRIDGES
TRANSPORTATION IMPROVEMENTS
ENVIRONMENTAL ASSESSMENT

PREFERRED ALTERNATIVE

RIGHT OF WAY IMPACT 12 OF 13

ROW and Relocation Impacts

Throughout the construction process, temporary construction access or easements are expected to be needed to complete the proposed improvements. The location, extent, and size of these easements are listed in **Table 4-24** and presented in **Figure 4-21** through **Figure 4-33**.

Infrastructure improvements proposed at the intersection of Benning Road and Minnesota Avenue are located within DDOT's existing ROW. However, installation of temporary facilities would require temporary construction easement from the 7-Eleven located in the northeastern quadrant of the Benning Road – Minnesota Avenue intersection and the retail property located in the southwestern quadrant (Impact Nos. 22 and 23). The temporary easements are needed to provide access for installation of sediment and erosion controls, sidewalks, and utility relocation. The use of this easement for construction would temporarily reduce the space available for vehicles to circulate through the parking lot (see Parking and Access discussion below for more information).

Construction of the proposed improvements to the Ethel Kennedy Bridge would require temporary construction access at Kingman and Heritage Islands Park and Anacostia Park (Impact Nos. 1, 2, and 3). The access would be needed to provide adequate space for sidewalk reconstruction, the provision of temporary pedestrian facilities, the installation of erosion and sediment control measures, and similar actions. Over the short-term, presence of temporary construction related equipment could disturb park vegetation and pedestrian circulation patterns. These temporary impacts to Anacostia Park's features and operations will be mitigated through adhering to the NPS Special Use Permit conditions. The permit's requirements will be structured to assure that the proposed activities can be sustained without causing unacceptable impacts to park resources.⁵ For example, the permit would require the restoration of disturbed site features. Temporary impacts to Kingman and Heritage Islands Park's features and operations would similarly be mitigated through adhering to DOEE's permit provisions.

Permanent improvements associated with the replacement of the Whitlock Bridge are located within DDOT's existing ROW. However, temporary construction easements would be needed on four properties (Impact Nos. 18 through 21). All four properties are located on the north side of the Bridge. Two of these properties house CSX freight rail facilities, the third property is an open lot owned by WMATA, and the fourth property is associated with the neighboring Park 7 Apartments parcel containing only grass turf. Staging areas and temporary construction activities within the CSX ROW will be coordinated via CSX permit provisions and guidelines. They are generally scheduled in such a way that there is no interference with the current use of the rail lines. Temporary construction easements are not expected to impact site operations.

⁵ National Park Service. (2015). Special Use Permits. Retrieved from <https://www.nps.gov/nace/planyourvisit/special-use-permits.htm>

Table 4-24: Preferred Alternative Temporary ROW Impact Summary

Impact No.	Property	Area (sq. ft)
1	Anacostia Park	120.22
2	Kingman Island	3038.62
3	Anacostia Park	1622.92
4	PEPCO - Benning Service Center	2928.89
5	3341 Benning Road	11.48
6	3345 Benning Road	94.38
7	3355-3399 Benning Road	672.99
8	WMATA - TPSS (3350 Benning Road)	373.94
9	PEPCO - Benning Service Center	2501.04
10	3399 Benning Road	222.04
11	3401 Benning Road	781.28
12	3423-3439 Benning Road	1815.07
13	WMATA Rail Line	3222.43
14	3443 Benning Road	470.54
15	3445 Benning Road	206.61
16	Benning Road	589.50
17	3461 Benning Road	684.03
18	CSX Rail Line	1900.86
19	B&O/CSX Rail Line	2831.97
20	District of Columbia	1315.47
21	4020 Minnesota Avenue	1065.35
22	3962/3960 Benning Road	369.92
23	3900 Benning Road	237.52
24	4214 Benning Road	689.43
25	4371 Benning Road	127.71
26	4400 Benning Road	114.86
27	4435 Benning Road	79.57
28	4443 Benning Road	120.11
29	4445 Benning Road	393.84
30	4430 Benning Road	89.15
32	4501 Benning Road	582.75

Neighborhoods and Community Resources

The construction of the proposed improvements to the Benning Road-Minnesota Avenue intersection would not require the acquisition of land from or alter access to any community facilities or important neighborhood features. The land that would be directly and permanently impacted is already owned by DDOT and is being utilized for transportation purposes. Therefore, construction of the proposed intersection improvements would not directly impact neighborhood resources or community facilities.

Rehabilitation of the Ethel Kennedy Bridge and replacement of the Whitlock Bridge are not expected to require the permanent acquisition of land from or alter access to any community facilities or important neighborhood features. The land that would be directly and permanently affected is already owned by DDOT and is being utilized as a public transportation facility.

Therefore, construction of the proposed infrastructure improvements would not impact neighborhood resources or community facilities.

The construction of the proposed roadway, track and site improvements would not displace any community facilities or important neighborhood features. Lane shifts, lane closures, and the installation of pedestrian exclusion areas would temporarily impact vehicular and pedestrian access to community facilities with access points on Benning Road. Overall, while access may be rerouted or otherwise encumbered during construction, no facilities would be completely deprived of vehicular or pedestrian access.

Based on the current design, all the transit stops located within the limits of work will be maintained (either in their existing locations or in a temporary site nearby). The adoption of this avoidance measure will ensure that the operation and schedule of the mass transit system remains undisturbed throughout the construction. The movement of heavy machinery would increase the presence of noise outside of community facilities abutting Benning Road. Potential noise impacts during construction and feasible mitigation options are discussed in **Section 4.10**.

Transportation and Traffic Operations

Roadway Network

Construction of the proposed improvements is expected to require temporarily closing and shifting lanes to provide space for construction activities. During some periods, traffic on Benning Road would be reduced to one lane in each direction. These actions would extend travel times for all motor vehicles (including buses and emergency response vehicles) on Benning Road as well those crossing Benning Road at intersections within the limits of work. Related effects, such as reduced speed limits and increased roadway congestion, would also occur. DDOT will mitigate the projected construction related impact on roadway network operations by:

- adjusting signal timing;
- developing alternative routing and detours (see preliminary Alternative Route Plan in **Appendix D**);
- installing temporary traffic control measures; and
- scheduling night-time and weekend closures in non-residential areas (e.g. between Oklahoma Avenue and the Whitlock Bridge).

Emergency services (fire, ambulance, and police services) and bus services (school buses, WMATA buses and handicapped and elderly transportation) could experience detours and slower travel during construction where access to or passage through existing roads might be restricted. In accordance with DDOT's standard operating procedures, the construction contractor will develop a MOT plan defining measures to minimize potential construction impacts on traffic.

Roadway network operations would also be impacted as a result of work associated with utilities during construction. Care would be taken during construction activities to avoid underground utilities that do not require relocation. As part of developing the utility relocation plan during construction, each of the respective utility agencies would be consulted early in design to determine exactly where, and to what depth the utilities are buried. Areas would then be marked

and carefully excavated to ensure utilities are not accidentally damaged during construction. DDOT would consult with utility companies to determine how utility poles and other above-ground utilities in the study area would be impacted during construction. DDOT has identified the affected utilities within the project area and remains in continuous coordination with them. For more information on impact mitigation measures, please see **Section 4.13**.

General staging for replacement of the Whitlock Bridge typically would require that one structure be demolished first. This requirement would allow the existing structure to remain intact, maintaining one lane of traffic each way. Once the new half of the Whitlock Bridge is built, vehicular traffic would commence on the new structure while the remaining structure is replaced.

Parking and Access

During the construction of the proposed improvements to the intersection of Benning Road and Minnesota Avenue, site access points may be consolidated or relocated to accommodate construction activities. However, all the properties likely to be affected have alternate access points. The roadway segment leading up to the Benning Road – Minnesota Avenue intersection does not permit on-street parking. Therefore, the proposed improvement will not permanently or temporarily affect the availability of on-street parking.

The modification of the Ethel Kennedy Bridge includes two access points: the Langston Golf Course Driving Range and the Kingman and Heritage Islands Park. The proposed improvements are not expected to permanently alter either access point. However, the entrance to Kingman and Heritage Islands Park would be temporarily impacted by the reconstruction of the sidewalks on the eastbound side of Benning Road. The impact is specifically associated with the placement of traffic barriers near the Park's entrance. Based on the size of the Park's driveway, the impact would be minor and minimized using temporary signage. The only parking facility affected by the proposed bridge improvements is the off-street lot that serves the Langston Golf Course's driving range. The temporary lane shifts and closures required to construct the proposed roadway improvements are predicted to minimally impact the traffic operation of Benning Road. During this period, vehicles would still be able to access the lot and the number of spaces which the lot holds would not change. Construction of the replacement Whitlock Bridge would have no impact on parking or vehicular access.

There are approximately 272 existing on-street parking spaces along the length of Benning Road from Oklahoma Avenue to Central Avenue. The lane shifts and closures needed for the maintenance of traffic would temporarily impact all 272 spaces. However, construction would be phased so that not all parking spaces are impacted at the same time and inconvenience to the public is minimized. Of these 272 parking spaces, 176 spaces are adjacent to curbs that would be reconstructed to increase the width of Benning Road. This reconstruction would require temporary closure of the parking lane.

From a project-wide perspective, the selection of the Preferred Alternative constitutes an important step towards minimizing potential parking impacts. This has directed most construction activities to the median of the roadway and would shorten the duration of the parking impact by reducing the complexity, duration, and extent of construction occurring along the eastbound curb. Predicted on-street parking impacts will be minimized through phasing of

construction activities, coordination and notification to the public, and identification of alternative parking locations during construction.

Mass Transit

During the construction of the proposed improvements to the intersection of Benning Road and Minnesota Avenue, two transit stops would be temporarily impacted. Both stops are operated by WMATA Metrobus and are located on the intersection's eastern leg (one eastbound and one westbound). The impact would be associated with the reconstruction of the curb and sidewalk at the stops. The affected Metrobus stops will be temporarily placed at the locations determined by WMATA where their operating schedule is not disturbed.

No transit stops would be directly impacted during the construction of the proposed improvements to the Ethel Kennedy Bridge or the replacement of the Whitlock Bridge. However, lane closures and shifts would be required to construct the proposed bridge and roadway improvements. These actions could temporarily impact mass transit operations by increasing travel times. Temporary impacts will be minimized through the implementation of temporary traffic control measures and phasing construction activities. Further impact reductions will be achieved by scheduling work during off-peak periods and night-time periods (where appropriate). The short-term lane closures, lane shifts, and other maintenance of traffic measures needed could result in increased travel times between stops that are located within construction zones. DDOT will remain in continuous coordination with WMATA to minimize any potential construction related impacts on the schedule of Metrobus.

The replacement of the Whitlock Bridge is predicted to require the acquisition of temporary construction easements on the CSX-operated freight facilities located beneath the bridge. The potential impacts to the CSX site access and operations would be avoided by adhering to the CSX guidelines provided in *Public Project Information for Construction and Improvement Projects That May Involve the Railroad*, July 2017 (CSX, 2017). As the project design progresses, DDOT will coordinate the easement process and cooperatively schedule construction activities with CSX.

The proposed roadway and sidewalk improvements would also temporarily impact 15 bus stops. The impacts are associated with the reconstruction of the existing sidewalks, the creation of pedestrian exclusion areas, short-term lane closures, and similar actions that could impede pedestrian and vehicular access to the existing Metrobus stops. The inconvenience to the public will be minimized by employing mitigation measures such as phasing construction activities to minimize duration of potential impacts, relocating impacted bus stops to a nearby location, continuous coordination with WMATA, and early notification to the public regarding temporary bus stop relocations.

The construction of the streetcar platform at the Benning Road Metro Station would temporarily impact the Metrobus stop located on Benning Road just south of 45th Street. This impact will be minimized by temporarily relocating the stop outside of the construction area.

Freight Rail

The replacement of the Whitlock Bridge is predicted to require the acquisition of temporary construction easements on CSX ROW. DDOT will follow guidelines prescribed in CSX's *Public Project Information for Construction and Improvement Projects That May Involve the Railroad* document, which describes methods that must be used to reconstruct bridges over CSX ROW (CSX, 2017). During demolition, CSX requires:

- the installation of a protective shield beneath the existing structure;
- the use of ballast protection systems that extend at least 25' beyond the limits of work; and
- the submission of detailed plans prior to the start of demolition.

Before the construction of the new bridge, CSX requires that the contractor submit a variety of design and survey documents, including:

- drawings of all structural features and shoring systems;
- detailed track monitoring program;
- subsurface boring reports; and
- an erection plan (describing the location and capacity of cranes).

DDOT is using the reference guidance document (CSX,2017) based on the feedback provided by CSX during the scoping and preliminary design processes. As the project moves into final design, DDOT is committed to maintaining continuous coordination with CSX.

Pedestrians and Cyclists

The construction of the proposed improvements along Benning Road would temporarily limit pedestrian access. However, DDOT would maintain access to nearby neighborhoods, businesses, and community facilities during construction. Mitigation measures to minimize the impact will include installation of temporary pedestrian facilities and detours, phasing construction activities to minimize duration, and notification to the public prior to start of construction activities. To maintain access and overall mobility throughout construction, temporary pedestrian facilities will be constructed to Americans with Disabilities Act (ADA) standards.

The rehabilitation of the Ethel Kennedy Bridge and the replacement of the Whitlock Bridge are expected to require temporarily rerouting pedestrian traffic. The impact will be reduced through the installation of temporary pedestrian facilities, detours, and signage, and notification to the public prior to construction. Pedestrian and cyclist access along the bridge will be maintained throughout construction. General staging for replacement of the Whitlock Bridge typically would require that one structure be demolished first. This requirement would allow the existing structure to remain intact, maintaining a pedestrian sidewalk. Once the new half of the Whitlock Bridge is built, pedestrian access would commence on the new structure while the remaining structure is replaced

Parklands

None of the proposed construction activities associated with proposed improvements to the Benning Road – Minnesota Avenue intersection or the Whitlock Bridge would cause any

permanent damage to the parklands. Therefore, the construction of the proposed intersection and roadway improvements will have no direct impact on parklands.

The reconstruction of sidewalks on the eastbound-side of the Ethel Kennedy Bridge are expected to require the temporary occupancy of portions of Kingman and Heritage Islands Park and Anacostia Park. This access would be needed to provide adequate space for sidewalk reconstruction, installation of temporary pedestrian facilities, erosion and sediment control measures, and similar construction related temporary actions. Over the short-term, the completion of these activities could disturb park vegetation and pedestrian circulation patterns. These temporary impacts to Anacostia Park's features and operations will be mitigated by adhering to the conditions of the NPS Special Use Permit. The permit's conditions will be structured to assure that the proposed activities can be sustained without causing unacceptable impacts to the park resources.⁶ Temporary impacts to Kingman and Heritage Islands Park's features and operations would be mitigated through DOEE's permit provisions.

Visual changes, noise, and vibration caused by the presence of project construction activity (equipment, staging areas, and work zones) near parklands would occur as described in the sections below. Presence of construction equipment in the area would disturb the visual, noise, and vibration context of the parklands in the short-term. At the end of construction, staging areas, work zones and equipment would be removed, and disturbed areas would be restored to their original state.

Historic Properties

Construction of the proposed improvement to the intersection of Benning Road and Minnesota Avenue would require the relocation of historic fire and police call boxes in the southeast corner of the intersection. DDOT, in consultation with DC SHPO will assure that the historic fire and police call boxes are reinstalled at a location that would not diminish the integrity of the call boxes or its setting.

The development of the Preferred Alternative would require temporary access at Kingman and Heritage Island Park, Anacostia Park, the CSX rail facility under the Whitlock Bridge), and the PEPCO powerplant (located within the Benning Service Center). Temporary access would be needed to install temporary fencing, erosion, and sediment control measures, and provide adequate space for construction activities. In the CSX corridor, the easements would extend approximately 30 – 50 ft from the perimeter of the Whitlock Bridge. Figures depicting the extent of the easements are provided in **Appendix B**. The principal construction activity in this area would be demolition and reconstruction of the Whitlock Bridge. In Anacostia Park, Kingman Park, and the PEPCO Powerplant, the temporary access would extend approximately 5 ft south from the existing edge of sidewalk. As the project design process progresses, DDOT will continue consultation with DC SHPO to determine the need for phased archaeological investigations at locations that were not previously surveyed where ground disturbing activities are proposed.

Visual changes, noise, and vibration caused by the presence of project construction activity (equipment, staging areas, and work zones) near historic properties would occur as described in

⁶ National Park Service. (2015). Special Use Permits. Retrieved from <https://www.nps.gov/nace/planyourvisit/special-use-permits.htm>

the sections below. Presence of construction equipment would change the visual, noise, and vibration context of the historic properties in the short-term. However, at the end of construction, staging areas, work zones and construction equipment would be removed, and disturbed areas would be restored. No permanent impact to the visual, noise, or vibration context of the historic properties would occur as a result of construction activity.

Aesthetics and Visual Quality

Construction of the Preferred Alternative would cause visual change by the introduction of construction equipment and materials, work zones, staging areas, and truck routes. Construction activities would be visible along all portions of the Benning Road in the study area. DDOT's Construction Management Plan would identify specific locations for each construction element and a schedule for the occurrence and duration of these elements. As construction activity would be phased, the length of time any one area would experience visual impacts of construction would vary. Where reasonably feasible, multiple proposed action elements in a single location, such as traffic lane and track work, would occur simultaneously to minimize the duration of lane closures at any one location.

A component of DDOT's Construction Management Plan will include an organizational plan that would designate construction work zones and staging areas. These zones and areas would be within DDOT ROW to the extent reasonably feasible. Within such zones and areas, construction materials, and equipment would be contained, in order to minimize construction related visual impacts. Areas outside these designated areas would not be impacted by the proposed action. The plan would prescribe measures to be taken at the end of construction to remove construction-related materials and equipment and restore disturbed areas to their original condition.

Natural Resources

Surface-water Resources

The construction of the Preferred Alternative is not predicted to directly impact any WOUS, wetlands, navigable waterways, and/or 100- and 500-year floodplains. However, construction activities have the potential to increase the transmission of sediment, demolition debris, and construction materials (i.e., raw concrete, aggregates, etc.) through stormwater runoff. The occurrence and severity of these potential impacts will be minimized through strict adherence to DDOT's erosion and sediment control requirements, USACE and local permitting procedures.

Wildlife including Rare, Threatened, and Endangered Species

Construction activities may impact drainage patterns of the project area that could result in impacts on the listed species or their critical habitats. Stormwater may drain or inundate listed species habitat. In addition, excavation, site development, grading, and other surface disturbance activities like the installation or placement of stormwater controls, may affect listed species or their habitat. Desktop research of the USFWS IPaC website revealed that the Northern Long-eared bat could be present within the study area (see **Appendix G**). However, based on the proposed improvements and the study area's level of urbanization, the desktop research determined that the proposed action would have no effect on the threatened Northern long-eared bat.

Consultation with NOAA determined that although Shortnose sturgeon and Atlantic sturgeon originating from five Distinct Population Segments (DPS) are known to occur in the Chesapeake Bay and its rivers and tributaries. However, based on the location and activities associated with the project, these species will not be exposed to any direct or indirect effects of the action. Consultation with DOEE's Fish and Wildlife Division determined that based on the current observations, surveys, and data derived from the District's Wildlife Action Plan, the proposed project area does not harbor any listed species. DDOT will adhere to the conditions of the NPDES permit, Water Quality Certification, and Federal permits to ensure that the effects of construction related discharges on the wildlife and aquatic species are further minimized.

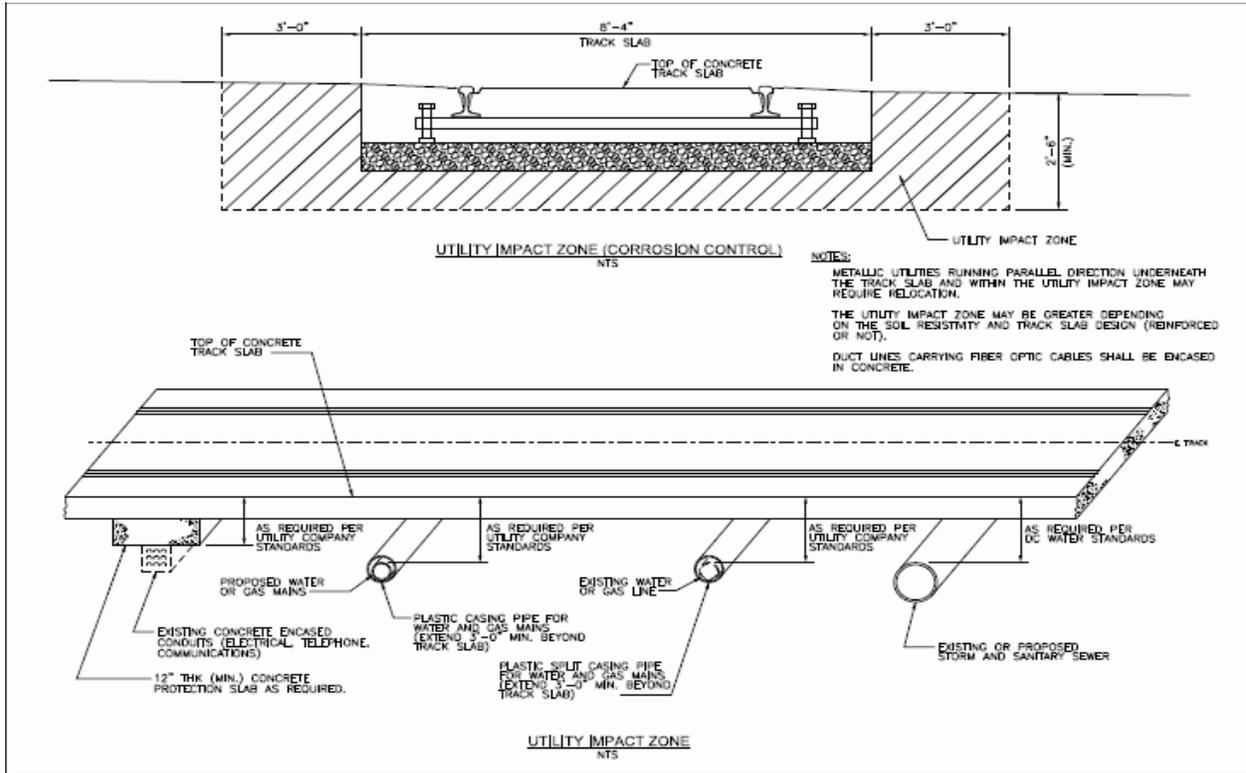
Vegetation

Trees within DDOT ROW that do not require removal during construction of the Preferred Alternative potentially could be impacted by construction activities, resulting in issues like root disturbance, soil compaction, loss of limbs, and bark damage. The occurrence of these impacts will be minimized through the installation of tree protection measures (e.g. temporary fencing, root pruning, limb pruning).

Utilities

Throughout the LOD, construction of the Preferred Alternative would temporarily impact utilities such as power, potable water, cable, natural gas, and sanitary sewers (see **Figure 4-34**). Temporary impacts may include interruption of any of these utility services for a few hours. However, DDOT has been in continuous coordination with the identified utilities within the project area, so that these interruptions could be reduced or eliminated (see **Table 4-25**). Care would be taken during construction activities to avoid any impact on underground utilities that do not require relocation. As part of developing the utility relocation plan, each of the respective utility agencies would be consulted early in design to determine exactly where, and to what depth the utilities are buried. Areas would then be marked and carefully excavated to ensure utilities are not accidentally damaged during construction. DDOT would continue consultation with utility companies to determine how utility poles and other above-ground utilities in the study area would be impacted during construction. The utility relocation plan would provide communication strategies to inform residents, businesses, and community facilities of any planned service disruptions. Relocated utility connections would be provided to residences, businesses, and community facilities in cases where existing connection sites are impacted by construction activity. The utility relocation plan would also include emergency response procedures to ensure prompt and effective repair of any utility accidentally damaged during construction.

Figure 4-34: Utility Impact Zone



Source: DDOT Streetcar Standards

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Table 4-25: Mitigation Measures for Construction Impacts and Utility Relocations

Utility Type	Utility Owner	Impact	Mitigation
Gas	Washington Gas	Access and loading impact for subsurface elements.	Relocate elements parallel and under track slab. Reinforce or bridge facilities within buffer.
Water	DC Water (WASA)	Access and loading impact for subsurface elements. Roadway widening requires relocation of fire hydrants	Relocate fire hydrants and connections. Relocate elements parallel and under track slab. Reinforce or bridge facilities within buffer.
Electric	Pepco	Roadway widening requires relocation of poles for communications and media. Access and loading impact for subsurface elements.	Relocate poles and aerial facilities. Relocate subsurface elements parallel and under the track slab. Reinforce or bridge facilities within the buffer.
Telephone	Verizon Communications	Roadway widening requires relocation of poles for communications and media	Relocate poles and aerial facilities. Relocate subsurface elements parallel and under the track slab. Reinforce or bridge facilities within the buffer.
Communication/ CATV	TBD	Roadway widening requires relocation of poles for communications and media	Relocate poles and aerial facilities
Sanitary Sewer	DC Water (WASA)	Access and loading impact	Relocate subsurface elements parallel and under the track slab. Reinforce or bridge facilities within the buffer.
Street Lighting	DDOT	Roadway widening requires relocation of poles for street lighting	Relocate lighting and poles in kind and provide connections. Utilize where feasible same poles for multiple uses.
Traffic Signals/ Enforcement	DDOT and Metropolitan Police Department	Roadway widening requires relocation of signals and ancillary equipment	Relocate signals and underground facilities parallel and under track slab. Relocate manholes to maintain access. Reinforce or bridge utilities within buffer.
Storm Drainage	DC Water (WASA)	Roadway widening requires relocation inlets and connection for runoff	Relocate drainage facilities in coordination with roadway and track construction.

The construction of the proposed improvements to the intersection of Benning Road and Minnesota Avenue is expected to require the relocation of overhead utilities, overhead lighting, traffic signals and stormwater inlets. The replacement poles will be installed prior to the removal of the existing sidewalk, significantly reducing the likelihood that any service interruptions would occur. Potential impacts to street lighting include the removal of the lighting fixture itself as well as the conduits which provide electrical connections. These effects will be avoided during construction by installing temporary lighting fixtures. Potential impacts to traffic operations will be avoided through the installation of temporary signals. Reconstruction of the curb at the intersection would impact existing stormwater inlets. Erosion and sediment (E&S) controls will be

used to redirect runoff to the unaffected inlets and maintain drainage until the replacement inlets are installed.

The construction of the proposed improvements to the Ethel Kennedy Bridge would impact overhead lighting and a single overhead electrical cable (providing service to the Kingman & Heritage Islands Community Garden). The replacement utility poles would be installed prior to the removal of the existing sidewalk, significantly reducing the likelihood that any service interruptions will occur. Potential impacts to street lighting include the temporary removal of the lighting fixture itself as well as the conduits which provide electrical connections. Over the short-term, these actions could affect traffic operations and public safety. However, these effects will be avoided during construction by installing temporary lighting fixtures. The proposed reconstruction of bridge decking and girders has the potential to impact utility conduits located beneath the road deck. Since the potential impact is limited to the bridge's central girders, the likelihood of service interruptions can be minimized by relocating the affected utility conduits to other bays prior to the initiation of bridge construction. The reconstruction of the eastbound-side sidewalk has the potential to impact existing stormwater inlets. E&S controls will be used to redirect runoff to unaffected inlets and maintain drainage until the replacement inlets are installed.

Overhead utility lines pass over the Whitlock Bridge approximately 600 ft west of Minnesota Avenue. These lines are associated with the railways passing under the Whitlock Bridge and would need to be temporarily relocated to accommodate construction activities, such as the movement of cranes and other types of heavy machinery. However, service interruptions associated with this conflict will be avoided by relocating the utility lines prior to the initiation of construction. The replacement of the Whitlock bridge will impact existing stormwater inlets and conveyance pipes. These fixtures are mounted directly to the existing structures, and therefore must be removed during demolition. However, E&S controls will be used to capture runoff generated within the construction site and thereby avoid temporary impacts to stormwater infrastructure.

The construction of the proposed roadway and sidewalk improvements would impact existing street lights and traffic signals. Potential impacts to street lighting include the permanent replacement of the lighting fixture itself as well as the conduits which provide electrical connections. These potential impacts will be avoided during construction by installing temporary lighting fixtures. Similarly, temporary signals will be used to offset any changes in traffic operations or public safety that may occur during construction. The proposed improvements are also expected to impact overhead utility lines and poles. This impact would lead to short-term service failures. Replacement poles will be installed prior to the removal of the existing sidewalk, significantly reducing the likelihood that any service interruptions would occur. The reconstruction of the curb throughout the limits of disturbance will impact existing stormwater inlets. The severity of this impact would be reduced by phasing construction to the greatest degree practical. In addition, E&S controls will be used to redirect runoff to unaffected inlets and maintain drainage until the replacement inlets are installed.

Hazardous Materials

For the Preferred Alternative, documented and/or undocumented moderate-risk and high-risk REC sites may be encountered during construction activities. Subsurface hazardous materials could be uncovered during excavation activities, such as construction of new shelters and platforms, potential relocation of underground utilities, and the replacement of bridge piers at the Whitlock Bridge. As shown in **Figure 4-19**, REC sites 8, 11, and 12 are near the location of the proposed connecting track to the DC Streetcar Car Barn Training Center. Constructing the connecting track has the potential to encounter documented and/or undocumented REC sites because excavation activities would be required to provide the track and its foundation support.

DDOT would develop and implement a Hazardous Materials Management Plan prior to construction, in order to address any encounter with the documented and/or undocumented REC sites. The plan would be part of DDOT's Construction Management Plan. It would comply with the DC Construction Manual (DDOT, 2010) and would include a protocol for identifying the location and extent of documented REC sites, assessing the potential for the proposed action to impact such sites if they extend into the construction work area, and addressing potential impacts as appropriate, in accordance with the applicable federal, state, and local regulations.

In particular, the Hazardous Materials Management Plan mitigation measures would include construction worker health and safety procedures for working with and near hazardous materials, contaminated soil excavation protocols, on-site management of soils procedures, soil and waste material disposal methods, dust control protocols, requirements for clean soil fill (including borrow material), and emergency recognition and prevention protocols (such as pre-emergency planning, coordination with outside parties, personnel roles, lines of authority, communication, safe distances and places of refuge, site security and control, evacuation routes and procedures, decontamination procedures, emergency medical treatment and first aid, and emergency alerting and response procedures). Regarding soils handling, the plan would provide procedures for characterizing excavated materials for proper disposal at permitted disposal facilities. Clean structural fill would be placed in work areas where additional soil materials are needed to achieve design elevations.

Noise and Vibration

Noise levels from construction activities would be a nuisance at nearby sensitive receivers such as residences, hotels, and schools. Noise levels during construction would vary depending on the types of construction activity and equipment used for each stage of work. Heavy machinery, the major source of noise in construction, would be constantly moving and not usually at one location for very long. For example, construction activities would include embedding track, rehabilitating bridges, relocating utilities, reconstructing street intersections, constructing stations stops, and other ancillary facilities (i.e., OCS poles, TPSS, etc.).

Activities associated with construction staging and/or material lay down areas could result in noise impacts if located in noise-sensitive areas. For that reason, noise-sensitive areas would be avoided to the extent reasonably feasible. Similarly, there would also be the potential for noise increases along detour routes and truck haul routes. This analysis makes conservative assumptions regarding construction noise and vibration in order to ensure that potential impacts

are analyzed and disclosed consistent with NEPA requirements. DDOT will prepare and implement a Noise, Vibration and Air Quality Management Plan as part of the Construction Management Plan to prescribe practices DDOT will undertake to mitigate noise and vibration impacts likely to occur during construction. Typical DDOT construction noise and vibration control measures and strategies are below:

- Complying with DDOT construction noise and vibration limits to the extent reasonably feasible.
- Conducting construction activities during daytime and during weekdays whenever possible.
- Requiring the use of enclosures to minimize the potential impacts of noise producing machinery.
- Requiring the use of efficient silencers on air intakes for equipment and efficient intake and exhaust mufflers on internal combustion engines.
- Requiring that the lining of hoppers and storage bins include sound deadening material.
- Locating construction equipment and material staging areas as far away from sensitive receivers as possible.
- Establishing a control plan that identifies monitoring locations and the timing of monitoring measurements to be taken at the boundaries of construction sites and at nearby residential, commercial, and industrial property lines to ensure compliance with DDOT's construction noise and vibration policy.
- Conducting all operations in a manner that will minimize, to the greatest extent feasible, disturbance to the public in areas adjacent to the construction activities and to occupants of nearby buildings.
- Requiring the construction contractor to implement appropriate noise and vibration control measures to minimize potential impacts during construction activities. Typical mitigation measures include substituting equipment with lower noise and vibration levels.
- Giving consideration in the MOT plan to the potential noise and vibration impacts when planning alternate routes for detours, emergency vehicles, and truck haul routes.

Air Quality

Construction of the Preferred Alternative would not exceed five years in any single location. According to 40 CFR 93.123(c)(5): CO, PM₁₀, and PM_{2.5} hot-spot analyses are not required for construction-related activities which cause short-term increases in emissions.

The primary air quality concerns during construction would be a localized increase in the concentration of fugitive dust (including airborne particulate matter, PM_{2.5} and PM₁₀). Direct emissions from construction equipment would not impact local air quality provided that all equipment is properly operated and maintained. Disruption of traffic during construction (such as reduction of roadway capacity and increased queue lengths) would result in short-term elevated concentrations of localized pollutants such as CO and PM.

DDOT will prepare and implement a Noise, Vibration and Air Quality Management Plan as part of the Construction Management Plan to prescribe practices DDOT will undertake to mitigate localized increases in fugitive dust and motor vehicle emissions during construction of the Preferred Alternative. Typically, fugitive dust impacts are minimized through good "housekeeping" practices such as water sprays during demolition; wetting, paving, or landscaping exposed earth areas; covering dust-producing materials during transport; limiting dust-producing construction activities during high wind conditions; and providing street sweeping and tire washes for trucks leaving the site. As described in the Transportation and Traffic Operations portion of this subsection, the MOT plan will identify traffic management techniques to address traffic congestion due to lane closures, detours, and construction vehicles accessing sites.

Energy

The primary sources of energy would be fossil fuels that power construction trucks and other equipment that would be used to transport materials to and from the construction site, move earth and materials on the site (such as dozers), and other activities (for example, generators and power tools). Construction-related energy use would be a one-time, nonrecoverable expenditure. At the end of construction, the activities, and the use of energy to enable those activities would end.

TPSS

Zoning and Land Use

The Preferred Alternative includes the operation of two TPSS sites. The site of the proposed TPSS facility beneath the Whitlock Bridge is currently zoned PDR-1. This zone permits moderate-density commercial and PDR activities employing a large workforce and requiring some heavy machinery. The site of the proposed TPSS facility adjacent to the Benning Road Metro Station is currently zoned R-2. TPSS facilities would have no construction-related ROW impacts or relocations. The actions needed to construct the TPSS sites would temporarily increase noise levels. Measures which can be taken to mitigate construction noise are described in the Noise and Vibration section below.

Neighborhoods and Community Resources

Construction of the TPSS facilities would occur within the property that DDOT acquires at the locations described in **Section 4.2.2**. Construction activities associated with the proposed TPSS facilities have the potential for short-term transportation, visual, air quality, and noise impacts to nearby neighborhoods and community facilities as described in this section. Construction of TPSS facilities would not impair access to neighborhoods and community facilities because access in these areas would be maintained during construction.

Transportation and Traffic Operations

Roadway Network

Construction of the two TPSS facilities are expected to temporarily impact traffic conditions on neighboring streets. The impact would be associated with the movement of construction staff and equipment to and from the proposed TPSS site. Based on the level of development that exists

around Benning Road, this impact may be shifted but not avoided. Given the industrial nature of the proposed TPSS site beneath the Whitlock Bridge and the size of the existing roadway, the effect at this location is expected to be negligible. Conversely, the land uses around the proposed TPSS site just east of the Benning Road Metro Station are adjacent to residences. Temporary impacts to Central Avenue NE, 46th Street, and other local roads, will be minimized by coordinating construction activities to avoid peak traffic periods and with temporary signage, flaggers, and other temporary traffic control measures.

The construction of the proposed TPSS facility below the Whitlock Bridge is not expected to temporarily or permanently alter any vehicular access points. However, the construction of the proposed TPSS site next to the Benning Road Metro Station could temporarily interfere with vehicular egress out of the Metro Station's rear parking lot due to the movement of construction staff and equipment. Any temporary impacts on the vehicular egress point will be minimized by coordinating construction activities to avoid peak traffic periods and by using temporary signage, flaggers, and other temporary traffic control measures.

Parking and Access

The presence of construction staff and equipment at the proposed TPSS facility locations would temporarily interfere with the use of on-street parking. At the site below DC-295, the adjacent street frontage provides approximately 130 ft (seven spots) of on-street parking. Based on existing land uses, DC Eagle night club is most likely to utilize this parking. Since the club does not open until 5 pm, construction could be scheduled accordingly to minimize any impact on the parking at this location. At the site just east of the Benning Metro Station, the adjacent street frontage provides approximately 126 ft (seven spots) of on-street parking. Based on existing land uses, the parking is mostly likely used by residents, transit riders, and the restaurant located at 4510 East Capitol Street (Ida's Kitchen - Shrimp Boat Plaza). Based on the availability of both on-street and off-street parking nearby, the overall effect will be negligible.

Mass Transit

The construction of the proposed TPSS facility below DC-295 is not expected to physically impact any element of the mass transit system or interfere with its operations. Construction of the proposed facility just east of the Benning Road Metro Station would temporarily impact the mass transit by interfering with vehicular egress out of the Metro Station's rear parking lot. These temporary impacts on the vehicular egress point will be minimized by coordinating construction activities with WMATA, providing advanced notifications to the public, using temporary signage, flaggers, and other temporary traffic control measures.

Pedestrians and Cyclists

The movement of staff and equipment during the construction of the TPSS facility just east of Benning Road Metro Station is expected to temporarily impact cyclists and pedestrians using neighboring streets. This temporary impact will be reduced through the installation of temporary pedestrian facilities and detours. The use of these facilities would lead to a relative increase in travel times but will maintain access and overall mobility throughout construction.

Parklands

Construction of the TPSS facilities would have no direct or proximity impacts on parklands because such properties are not on or visible from the proposed TPSS locations. Overall, construction mitigation measures as explained above for the Preferred Alternative will remain applicable.

Historic Properties and Archaeological Resources

Construction of the TPSS facilities are not expected to impact the study area's historic properties because no such properties are on or visible from the TPSS locations. As the project design process progresses, DDOT will continue consultation with DC SHPO to determine need for phased archaeological investigations in previously unsurveyed areas of the proposed TPSS locations where ground disturbing activities are proposed. Overall construction mitigation measures as explained above for the Preferred Alternative will remain applicable.

Aesthetics and Visual Quality

Construction of the TPSS facilities would cause visual change by the introduction of construction equipment and materials, work zones, staging areas, and truck routes. Construction activities would be visible from nearby properties and from Benning Road. DDOT's Construction Management Plan would identify specific locations for each construction element and a schedule for the occurrence and duration of these elements. As construction activity would be phased, the length of time any one area would experience visual impacts of construction would vary. Where reasonably feasible, multiple proposed action elements in a single location, such as traffic lane and track work, would occur simultaneously to minimize the duration of lane closures at any one location.

Natural Resources

Surface-water Resources

Construction of the two proposed TPSS sites would not directly impact any WOUS, wetlands, navigable waterways, and/or 100-year and 500-year floodplains. However, construction activities have the potential to increase the transmission of sediment, demolition debris, and construction materials (i.e., raw concrete, aggregates, etc.) through stormwater runoff. These potential impacts would be minimized through strict adherence to DDOT's erosion and sediment control requirements and conditions of the applicable Federal and local permits.

Wildlife including Rare, Threatened, and Endangered Species

The two proposed TPSS facilities were included in the action area during the consultation with NOAA and DOEE Fish and Wildlife Division, and USFWS desktop IPaC review process for the Preferred Alternative. Consultation with the NOAA, USFWS and DOEE has determined that the proposed project is not likely to adversely affect any listed species that might be present in the project area. DDOT will adhere to the conditions of the NPDES permit, Water Quality Certification, and Federal permits ensuring that the effects of construction related discharges on

the wildlife and aquatic species are further minimized. General mitigation measures mentioned for the Preferred Alternative will be applicable.

Vegetation

The construction of the TPSS facilities will disturb turf grasses, small trees, and other forms of vegetation that exists at the two sites. Post construction, disturbed areas will be revegetated and restored to their original condition. Trees that exist within these locations could be impacted by construction activities. The occurrence of harm to the existing trees will be minimized through the installation of tree protection measures (e.g. temporary fencing, root pruning, limb pruning).

Utilities

Construction of the TPSS facilities will require the installation of equipment that connects to existing electric utilities. In general, installation activities of these utilities have the potential to generate short-term service disruptions. Identification of conflicting utilities within the TPSS locations will be conducted using the same provisions and conditions as described in the sections above. DDOT will remain in continuous coordination with the identified utilities within the TPSS sites, so that service interruptions could be reduced or eliminated.

Hazardous Materials

As shown in **Figure 4-19**, REC sites 40, 64, 79, and 96 are near the proposed TPSS locations. The construction of the TPSS facilities would involve subsurface excavation activities, which could impact documented and/or undocumented moderate- and high-risk REC sites. DDOT will develop and implement a Hazardous Materials Management Plan prior to construction, in order to address any encounter with the documented and/or undocumented REC sites. This plan would be part of project's Construction Management Plan and would include a protocol for identifying the location and extent of documented REC sites, assessing the potential for the proposed action to impact such sites if they extend into the construction work area, and addressing potential impacts as appropriate, in accordance with the applicable federal, state, and local regulations.

Noise and Vibration

Noise and vibration levels during construction of each TPSS facility would vary depending on the types of construction activity and equipment used for each stage of work. During construction, potential noise and vibration impacts are expected at the receptors adjacent to the TPSS sites. DDOT will prepare and implement noise and vibration control measures and strategies during construction of the TPSS sites. These typical noise and vibration control measures are described in the above sections.

Air Quality

Air quality concerns during construction at the TPSS facility locations and associated typical mitigation measures would be the same as for the Preferred Alternative.

Energy

Energy use characteristics during construction at the TPSS facility locations would be the same as for the Preferred Alternative.

Propulsion Systems

Zoning and Land Use

The construction of the proposed propulsion systems is not expected impact to zoning and land use because the proposed action would be built on land that is designated for transportation use. Typical construction mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component.

ROW and Relocation Impacts

The propulsion system would have no potential construction-related ROW and relocation impacts because the proposed action would be built within existing DDOT ROW.

Neighborhoods and Community Resources

The wired propulsion system would require installation of poles and overhead wires using aerial trucks. Wired propulsion system construction would not impact access to neighborhoods and community facilities because access across and along Benning Road would be maintained during construction. Typical construction mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component.

Transportation and Traffic Operations

Construction of wired propulsion systems would have no additional impact on transportation and traffic operations because the propulsion systems would be built at the same time and in the same affected DDOT ROW as the Preferred Alternative. Typical mitigation measures related to management of traffic during construction of the wired propulsion system will remain same as explained above for the Preferred Alternative.

Parklands

Construction of the propulsion system, including the construction lay-down area within DDOT ROW, would have no direct impact on study area parklands. Potential temporary proximity impacts to the parks, such as visual changes and noise impacts are expected during the construction phase. Typical mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component. At the end of construction, construction equipment, staging areas, and work zones would be removed, and disturbed areas would be restored.

Historic Properties and Archaeological Resources

Construction of the propulsion system would have no direct impact on study area historic properties. Visual changes, noise, and vibration caused by the presence of project construction

activity (equipment, staging areas, and work zones) near historic properties would occur as described in the sections below. The changes would alter the visual, noise, and vibration context of the historic properties in the short-term. At the end of construction, construction equipment, staging areas, and work zones would be removed, and disturbed areas would be restored. No permanent impact to the visual, noise, or vibration context of the historic properties would occur as a result of construction activity.

Aesthetics and Visual Quality

Construction of the propulsion system would cause visual change by the introduction of construction equipment and materials, work zones, staging areas, and truck routes. Construction activities would be visible along all portions of Benning Road in the study area. DDOT's Construction Management Plan would identify specific locations for each construction element and a schedule for the occurrence and duration of these elements. As construction activity would be phased, the length of time any one area would experience visual impacts of construction would vary. Where reasonably feasible, multiple proposed action elements in a single location, such as traffic lane and track work, would occur simultaneously to minimize the duration of lane closures at any one location.

Natural Resources

Surface-water Resources

Construction of the propulsion system is not expected to directly impact any WOUS, wetlands, navigable waterways, and/or 100-year and 500-year floodplains. However, construction activities have the potential to increase the transmission of sediment, demolition debris, and construction materials (i.e., raw concrete, aggregates, etc.) through the stormwater runoff. These potential impacts will be minimized through strict adherence to DDOT's erosion and sediment control requirements, USACE and DOEE's permitting procedures. Other typical mitigation measures, as explained above for the Preferred Alternative will remain applicable to the construction of the propulsion system.

Wildlife including Rare, Threatened, and Endangered Species

The wired propulsion systems were included in the in the action area while assessing the project using USFWS IPaC desktop review process and consultation with NOAA and DOEE Fish and Wildlife Division for the Preferred Alternative. Typical mitigation measures as explained above for the Preferred Alternative will be applicable to this project component.

Vegetation

Construction of the wired propulsion system and associated OCS poles could require the removal of street trees. DDOT's Urban Forestry Administration (UFA) has been reviewing tree inventory within the Preferred Alternative alignment. Tree replacement, wherever feasible, will be completed as a part of the streetscape improvements. Any harm to the existing trees during construction phase will be minimized through the installation of tree protection measures (e.g. temporary fencing, root pruning, limb pruning).

Utilities

The propulsion systems are part of the required utility infrastructure to be constructed within DDOT ROW to support streetcar operations. No long-term conflicts or disruption to utility services would result from construction of the wired propulsion system included in the Preferred Alternative. In general, identification of conflicting utilities with the new propulsion system installation and required relocation will be conducted using the same provisions and conditions as described in the sections above. There could be short-term service disruptions of the existing utilities during the construction phase. DDOT will remain in continuous coordination with the identified utilities within the project corridor, so that service interruptions could be reduced or eliminated. Other typical mitigation measures associated with the short-term impacts to the utilities during construction will be the same as explained above for the Preferred Alternative.

Hazardous Materials

Excavation and installation of OCS poles to support the wired propulsion option has the potential to impact documented and/or undocumented moderate- and high-risk REC sites. DDOT will develop and implement a Hazardous Materials Management Plan prior to construction, in order to address any encounter with the documented and/or undocumented REC sites. This plan would be part of project's Construction Management Plan and would include a protocol for identifying the location and extent of documented REC sites, assessing the potential for the proposed action to impact such sites if they extend into the construction work area, and addressing potential impacts as appropriate, in accordance with the applicable federal, state, and local regulations.

Noise and Vibration

Noise and vibration levels during construction of the propulsion system would vary depending on the types of construction activity and equipment used for each stage of work. During construction, potential noise and vibration impacts are expected along Benning Road. Typical noise and vibration control measures implemented during the propulsion system construction will be the same as described above for the Preferred Alternative.

Air Quality

Air quality concerns during construction of the propulsion system and associated mitigation measures would be the same as for the Preferred Alternative explained above.

Energy

Energy use characteristics during construction of the propulsion system would be the same as for the roadway improvements.

DC Streetcar Car Barn Training Center

Zoning and Land Use

Proposed permanent improvements for the DC Streetcar Car Barn Training Center, as well as the temporary facilities needed to secure the construction sites, will be located within DDOT's existing

ROW. Over the short-term, construction activities would result in change in visual and noise environment by the introduction of construction equipment and materials, work zones, staging areas, and truck routes. DDOT's Construction Management Plan will identify specific locations for placing these construction elements and a schedule for the occurrence and duration of these elements. There could be temporary conflict with the use of neighboring residential properties and recreational land uses nearby. However, once construction is complete, original site conditions will be restored and any construction activities incompatible with zoning and land use will be terminated.

Potential ROW and Relocation Impacts

Proposed permanent improvements to the DC Streetcar Barn Training Center, as well as the temporary facilities needed to secure the construction sites, would be located within DDOT's existing ROW. Once construction is complete, site conditions will be restored to their original state.

Neighborhoods and Community Resources

Construction of the proposed roadway, track and site improvements for the DC Streetcar Car Barn Training Center could result in temporary inconvenience with the use of community facilities or neighborhood features. Vehicular access to Spingarn High School would be impacted by the construction of the tracks that connects the DC Streetcar Barn to Benning Road. This impact will be minimized through the maintenance of at least one lane of traffic on 26th Street during construction and the installation of detour routes. Pedestrian access to Spingarn High School from Benning Road will be maintained during construction through installation of temporary pedestrian facilities along the northbound side of 26th Street. The movement of heavy machinery would increase the presence of noise within adjacent portions of the Spingarn High School. Construction related noise impact and mitigation measures are discussed in the Noise & Vibration section. The construction of the new entrance to the DC Streetcar Barn Training Center could require removal of some ornamental plantings and street trees at the facility. Mitigation for this impact is discussed in the **Section 4.7.3**.

Transportation and Traffic Operations

Roadway Network

The construction of the proposed rail spurs connecting the Benning Road Tracks with the eastern side of the DC Streetcar Car Barn Training Center is expected to temporarily interfere with traffic operation on Benning Road and 26th Street. Lane closures on both roadways would be required for pavement removal, reconstruction, and track installation. However, at this section of Benning Road, the existing pavement section is wide enough to maintain two-way pedestrian traffic during construction. Short-term impact on both vehicular and transit operations is anticipated during construction due to lane closures and reduction in vehicular capacity. However, this impact will be minimized by scheduling roadway work during off-peak periods. On 24th Street, however, a one-way conversion may be required between Benning Road and the main entrance to the Langston Golf Course.

Parking and Access

The proposed improvements are adjacent to two entrance points associated with the Langston Golf Course: the main public entrance and the service entrance. Based on the current design, neither access point would be directly impacted. However, the conversion of 24th Street into a one-way facility would make reaching both access points inconvenient. Similarly, the proposed construction would temporarily affect the pedestrian access points. Temporary pedestrian facilities will be provided during construction to reduce inconvenience to the travelling public.

The lane shifts and closures needed to complete the proposed roadway and track improvements would require short-term closure of on-street parking along 26th Street between Benning Road and the service entrance to the Langston Golf Course. However, due to the availability of on-street parking nearby and at the Langston Golf Course's off-street lot, this impact would be temporary and negligible.

Mass Transit

The limit of work for the proposed improvements at DC Streetcar Car Barn Training Center includes two WMATA Metrobus stops (one on each side of Benning Road, between 24th Street and Oklahoma Avenue). The stop located on the eastbound-side of Benning Road would not be affected by construction activities. However, access to the westbound-side stop would be limited by the installation of pedestrian exclusion areas and traffic barriers. This impact will be avoided by temporarily relocating the bus stop to a site outside the limits of work (e.g. the northwestern quadrant of the 24th Street – Benning Road intersection) prior to the initiation of construction.

Pedestrians and Cyclists

The construction of the proposed roadway, track, and facility improvements would require the installation of pedestrian exclusion areas on Benning Road and 26th Street. These exclusion areas would partially restrict pedestrians and cyclists to access Langston Golf Course, Spingarn High School, and other community facilities located to the north of 26th Street. Temporary pedestrian facilities on the northbound side of 26th Street will be provided. The use of these facilities could increase travel times for pedestrians and cyclists, but access will be maintained throughout construction.

Parklands

Construction of the DC Streetcar Car Barn Training Center would have no impact on the study area parklands. Potential proximity impacts, such as noise and visual changes, are described in the respective sections below.

Historic Properties and Archaeological Resources

Construction of the proposed connection to the DC Streetcar Car Barn Training Center would occur within the boundaries of the Browne, Phelps, Spingarn, and Young Educational Campus and Kingman Park Historic Districts. Based on the current design, all activities associated with the construction of the Car Barn would be within the existing DDOT ROW. Potential proximity impacts related to construction, such as noise and visual changes are also anticipated. The changes

would alter the visual, noise, and vibration context of the historic properties in the short-term. At the end of construction, construction equipment, staging areas, and work zones will be removed, and disturbed areas will be restored. With these measures in place, no permanent impacts to the historic properties are anticipated as a result of construction activity.

Aesthetics and Visual Quality

Construction of the DC Streetcar Car Barn Training Center connection would cause temporary visual change by the introduction of construction equipment and materials, work zones, staging areas, and truck routes. Construction activities would be visible along the section of Benning Road where the track would be built. DDOT's Construction Management Plan would identify specific locations for each construction element and a schedule for the occurrence and duration of these elements. As construction activity would be phased, the length of time any one area would experience visual impacts of construction would vary. Where reasonably feasible, multiple proposed action elements in a single location, such as traffic lane and track work, would occur simultaneously to minimize the duration of construction activity at any one location.

Natural Resources

Surface-water Resources

Construction of the proposed roadway, track, and site improvements would not directly impact any WOUS, wetlands, navigable waterways, and/or 100-year and 500-year floodplains. However, construction activities have the potential to increase the transmission of sediment, demolition debris, and construction materials (i.e., raw concrete, aggregates, etc.) through stormwater runoff. These potential impacts will be minimized through strict adherence to DDOT's erosion and sediment control requirements; USACE and local permitting procedures. Mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component.

Wildlife including Rare, Threatened, and Endangered Species

The DC Streetcar Barn Training Center was included in the action area while assessing the project using USFWS IPaC desktop review process and consultation with NOAA and DOEE Fish and Wildlife Division for the Preferred Alternative. Mitigation measures as explained above for the Preferred Alternative will be applicable to this project component.

Vegetation

On 26th Street, the creation of the new Barn entrance has the potential to impact street trees and ornamental landscaping. Potential impacts include: root disturbance during excavation, compaction of soils in the root area, loss of limbs, and bark damage from equipment hits. The occurrence and severity of these effects will be reduced through implementation of avoidance and minimization measures, such as: the installation of tree protection fencing; structural pruning; and increasing the depth of boring that must occur within critical root zones (Chapters 8, 14, and 47 in the DDOT Design and Engineering Manual). The location and extent of these measures will be determined during the project's final design and will be documented in the project's street tree management plan. Other mitigation measures, as explained above for the Preferred Alternative will remain applicable for this project component.

Utilities

The creation of the new Barn entrance and the track spur has the potential to impact overhead utilities running along Benning Road and overhead lighting on 24th Street. The potential overhead utility line impact is associated with the installation of wired propulsion above the proposed spur tracks. Proactive coordination will be completed with the utilities for the avoidance options like relocating the affected lines prior to construction.

There could be potential impacts to street lighting associated with the construction of the new Barn entrance. Removal of the lighting fixture itself as well as the conduits which provide electrical connections could be required during construction. However, this impact will be avoided during construction by installing temporary lighting fixtures.

Hazardous Materials

As shown in **Figure 4-19**, REC sites 8, 11, and 12 are near the location of the proposed connecting track to the DC Streetcar Car Barn Training Center. Constructing the connecting track has the potential to encounter documented and/or undocumented REC sites because excavation activities would be required to provide the track and its foundation support. Mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component.

Noise and Vibration

Noise and vibration levels during construction of the connecting track to the DC Streetcar Car Barn would vary depending on the types of construction activity and equipment used for each stage of work. During construction, noise and vibration impacts are expected along Benning Road in the vicinity of the proposed track location. Mitigation measures, as explained above for the Preferred Alternative will remain applicable to this project component.

Air Quality

Air quality concerns and mitigation during construction of the DC Streetcar Car Barn Training Center connection would be the same as for the Preferred Alternative.

Energy

Energy use characteristics during construction at the DC Streetcar Car Barn Training Center connection would be the same as those describe for the Preferred Alternative.

4.14 INDIRECT IMPACTS

This section identifies and assesses the indirect impacts of the proposed action alternatives. Indirect impacts are those that may be caused by the proposed action but occur later in time or farther in distance but are still reasonably foreseeable than the direct impacts discussed in previous sections of **Chapter 4**.

No-Build Alternative

No changes are proposed as part of the No-Build Alternative. Therefore, no indirect impacts are expected to occur.

Preferred Alternative

Socioeconomic Resources

The improvement proposed under the Preferred Alternative would indirectly affect socioeconomic conditions by stimulating economic development. The FTA Urban Circulator Grant Application for this proposed action (DDOT, 2010) found that potential economic impacts of the proposed action include the short-term increases in jobs and wages associated with construction and the long-term jobs and income from on-going streetcar operations. The economic impacts analysis considers the direct impacts on employment due to streetcar construction and operations as well as the reasonably foreseeable indirect impacts on the economy and local jobs as the streetcar related wages are spent in the local economy. This benefit is derived from programs the District has put in place to encourage that companies hire locally. For instance, the District's First Source Program assures that employment opportunities generated by municipal development programs are captured locally. The program requires that 51% of all new hires on any government-assisted project or contract between \$300,000 and \$5,000,000 must be District residents. The First Source Program has been in effect since 1984 and is administered by the Department of Employment Services (DOES). **Table 4-26** summarizes direct and indirect employment (expressed in jobs of one-year duration) sustained by the addition of the streetcar and resulting corridor development.

Table 4-26: Summary of Direct and Indirect Employment Sustained by the Proposed Action

Type	Construction	Development Construction	Operations
	2011-2012 (one-year duration)	2013-2029 (one-year duration)	2013-2062 (one-year duration)
Streetcar Construction-direct jobs	448		
Streetcar Construction-indirect jobs	408		
Streetcar Operation personnel-direct jobs			1,100
Streetcar Operation personnel-indirect jobs			350
Streetcar Operation non-personnel expenditures			700
Development Construction-direct jobs		556	
Development Construction-indirect jobs		1,207	
Increase in Occupied Commercial Development-direct jobs			8,508
Increase in Occupied Commercial Development-indirect jobs			14,120
TOTAL	856	1,763	17,128

The provision of a new transit service could affect economic development by making the study area more attractive to individuals sensitive to the availability of additional mass transit service option. This change would, in turn, increase the demand for housing in the study area. According to the District of Columbia's Streetcar Land Use Study (2012), the streetcar is projected to raise housing values and rents in neighborhoods along each line by roughly five percent to 12 percent. In addition to the proposed action, the Office of the Deputy Mayor for Planning and Economic Development is developing many projects in Ward 7 that may also contribute to changes in land use and property values. Over time, property values could continue to increase as the corridor's attractiveness increases.

On a programmatic level, the District of Columbia is taking numerous actions to offset the effects of the rising housing prices. For example, Assessment Cap Credit is available that caps assessed property value each year at a ten percent increase, to limit the increase of real property taxes for homeowners. This credit does not reduce the assessed value of the property on the tax roll or the assessment notice but appears as an automatic credit against the real property tax bill. Further, pursuant to "Inclusionary Zoning Implementation" of Title 14 (Housing) of the District of Columbia Municipal Regulations, it is required that a certain percentage of units in a new development or a substantial rehabilitation that expands an existing building is set aside for affordable units in exchange for a bonus density. At the scale of the individual resident or household, programs like the Ward 7 Buyer's Club make homeownership more attainable by connecting residents to resources for down payments, closing cost assistance, and mortgage products. The DC Open Doors program similarly offers down payment assistance loans that help renters transition onto mortgage payments. Other available programs include:

- The Home Purchase Assistance Program;
- Employer Assisted Housing Program; and
- HomeSaver Phase II – Restore Assistance Program.

All these support services are available to the residents of the study area, and therefore provide a means to offset the relative change in housing demand that would occur because of the development of the Preferred Alternative. Public meetings conducted for the proposed action has been including a member of District Housing and Community Development to promote awareness of these affordable housing programs.

Transportation

Roadway Network

The traffic models prepared for this study indicate that the operation of the streetcar and completion of the proposed roadway improvements would generally have the same effect as the No-Build Alternative. Traffic models are presented in detail in **Appendix E**. Operational conditions which are expected to differ between the two scenarios include:

- a small increase in travel times on Benning Road (between 15 and 60 seconds);
- longer queues at Benning Road and East Capitol Street;
- increased delays at the intersections of Benning Road and Anacostia Avenue and Benning and 34th Street; and

- decreased delays at the intersections of Benning Road with Minnesota and Oklahoma Avenues.

Although often small in scale, these changes would create an incentive for motorists to utilize alternative routes, and therefore indirectly affect traffic demand on parallel routes. DDOT will mitigate this impact by:

- optimizing and coordinating signals on parallel routes;
- coordinating with affected agencies (e.g. emergency responders and WMATA) and the general public to provide awareness of upcoming changes in traffic patterns; and
- increasing the availability and attractiveness of additional mass transit services.

Data presented in **Section 4.3**, and **Appendix E** indicate that Roadway congestion exists in the study area and is projected to worsen by 2045. Roadway congestion proportionally affects travel times for all travelers in the study area. Analyses of current and projected traffic conditions reveals that an extended Benning Road streetcar line would not significantly reduce traffic congestion, but it would provide an added alternative to travel within the community and provide better connections to the transit network.

By leveraging existing transportation infrastructure assets in the study area, the proposed action could improve residents' quality of life. The construction of streetcar extension, improved roadway and sidewalk infrastructure, and associated streetscape improvements, could overall enhance community's transportation user experience. Several multi-modal transportation investments have occurred in the Benning Road corridor from roadway and bridge improvements to bicycle facilities and transit enhancements that are included in the No-build alternative. The proposed infrastructure improvements would help facilitate the community's access and interaction with these various mobility improvements and provide improved linkages to take advantage of existing and planned transportation facilities.

Parking and Access

The roadway improvements proposed under the Preferred Alternative are not predicted to permanently alter the availability or use of parking within the study area. Similarly, no existing point of access (vehicular, pedestrian, or bicycle) will be closed or diminished. Based on this observation, it is unlikely that the proposed extension of the DC Streetcar to Benning Road Metro station would permanently indirectly affect the availability of parking or the utilization of any access points in the study area.

Mass Transit

The roadway improvements proposed under the Preferred Alternative (including the operation of the streetcar) will improve the diversity of mass transit services available in the study area, as well as the connections between existing services. These two improvements would make mass transit use more appealing to both existing mass transit users and those considering switching to mass transit from another mode. This change, in turn, could indirectly increase utilization of mass transit services within the study area and in the neighboring areas. The Preferred Alternative is

expected to slightly increase travel times for buses traveling down Benning Road. However, this change would not be large enough to generate a significant indirect effect.

The Benning Road community is highly dependent on public transportation for mobility and access to the District's growing employment centers. **Section 4.2** indicates that the study area contains significant concentrations of transit-dependent households. Therefore, increased population and high transit dependence could lead to an increased need for improved transit services in the area. In addition, 2025 and 2045 traffic projections show that congestion in the Benning Road study area is expected to continuously increase. Benning Road, in the study area, has limited transportation ROW, with many commercial buildings and residences built flush with the property line. Therefore, widening the roadway by taking private ROW to relieve traffic congestion is not a viable option for DDOT. An added transit service alternative would provide the community additional options for access and mobility.

Pedestrian and Bicycle Network

The improved shared-use path facilities provided through the Preferred Alternative would make walking and cycling in the study area more attractive. This change would, in turn, indirectly increase the utilization of pedestrian and bicycle facilities within the study area and nearby areas. The multimodal and intersection improvements that are a part of the proposed action would improve access and safety for pedestrians in proximity to the Benning Road Metro Station. The proposed project includes streetscape improvements providing new sidewalks, lighting, and street trees that could enhance user experience throughout the project area.

Freight Rail Service

The replacement of the Whitlock Bridge is not predicted to generate an indirect impact on the CSX services. Clearance requirements for the Whitlock Bridge would be determined in compliance with CSX consultation. Since CSX minimum clearance requirements for the Whitlock Bridge would not be violated, the proposed action would not indirectly affect the use of the underlying rail lines.

Parklands

The roadway improvements proposed under the Preferred Alternative (including the operation of the streetcar) will enhance multi-modal access to the study area's parks. Improved transportation infrastructure would make it easier for the area's communities to reach nearby parks on foot, by bicycle, through mass transit and improved roadway system. This change associated with improved access to the park system in the study area, is expected to have positive indirect effect on the use of park facilities.

Historic Properties and Archaeological Resources

The roadway improvements proposed under the Preferred Alternative (including the operation of the streetcar) will make accessing the study area's historic properties easier on foot, by bicycle, through mass transit and improved roadway system. This change would have positive indirect effect on the use of public recreational historic sites, such as Fort Mahan Park and Langston Golf Course. Additionally, the Preferred Alternative would revive the streetcars, which historically ran

in this corridor. Proposed streetscape improvements will explore the potential of leveraging the historical context of streetcars in this corridor. For example, the use of interactive boards would be explored to educate the public about the historic transportation context of the study area. More exposure of area's history could result in an indirect beneficial effect to the historic resources.

Natural Resources

Surface-water Resources

Drainage improvements are required by DDOT's design standards and therefore will be included as a part of proposed action. Rehabilitation of stormwater facilities could result in an overall indirect beneficial effect on the overall drainage conditions of the study area.

Wildlife including Rare, Threatened, and Endangered Species

The Preferred Alternative is not proposing any elements that could impact any threatened or endangered species or its critical habitat or living conditions, to the extent of generating an indirect effect. Due to the heavily urbanized nature of the study area, the Preferred Alternative is not expected to indirectly affect any wildlife or rare, threatened, and endangered species.

Vegetation

The development of the Preferred Alternative is not expected to generate any short-term or long-term indirect impacts on the study area's vegetation.

Utilities

Development of the Preferred Alternative would involve burying some of the overhead utilities located on Benning Road. This action would reduce the likelihood that relocated utilities would be damaged during storm events. Over the long-term, this action could reduce the risk of utility outages and damage during the storm events; and indirectly improve the services.

Hazardous Materials

The operation and development of the Preferred Alternative is not expected to generate any indirect impacts on the presence of hazardous materials within the study area.

4.15 CUMULATIVE IMPACTS

The CEQ regulations, which implement NEPA, require assessment of cumulative impacts in the decision-making process for federally funded projects. Cumulative impacts are defined as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person "undertakes such other actions. Cumulative effects can result from individually minor, but collectively moderate or major actions taking place over a period of time."* (40 CFR 1508.7). Based on this definition, assessing the orientation and severity of cumulative effects requires project teams to identify other past, ongoing, or foreseeable future projects within the vicinity of the study area. The study area for cumulative impacts differs based on resource topic. For instance, cumulative

effects to water quality generally use a larger watershed to define the study area; whereas, cumulative effects on aesthetics would use a study area defined by viewsheds.

Except for extreme circumstances, temporary impacts generally do not contribute to cumulative effects. As presented earlier in this EA, implementation of the alternatives would have no long-term impacts on certain resources because the resource is either not present or the proposed mitigation is expected to compensate for the projected impact. Under these conditions, the Preferred Action is not predicted to contribute to the cumulative impact of past, present, and future actions on said resource. Based on the information that is currently available, DDOT determined that twelve resource categories meet these criteria. They are: zoning, joint development; parklands; historic resources; aesthetics and visual quality; geology; soils; topography; water resources; wildlife; utilities; energy use and climate change.

Past, present, and future representative projects that would have the potential to add to cumulative effects are described below. Cumulative effects are considered for the Build Alternative and are presented in this section for each resource topic.

Past Actions

Benning Road is a 3.62-mile corridor in Northeast Washington, D.C. that connects Bladensburg Road & H Street at the Starburst Intersection to the Maryland State border at Southern Avenue. It is a major corridor that has been historically significant and continues to be a major backbone of transportation infrastructure in the District that supports both commuters as well as residents in the neighborhoods that straddle the Anacostia River and extend further east to the edge of the city.

Benning Road shares a distinguished history in the District. The original development of the corridor predates the Civil War and generally followed traditional development patterns during the late 19th century and early 20th century and post-World War II. Streetcars were introduced to the corridor after the Civil War and intense residential development occurred in the 1950's and 1960's. Following the 1968 Riots, neighborhoods around the U Street Corridor and H Street, and Benning Road experienced an increase in crime, vandalism, and a subsequent economic decline. While the U Street Corridor and H Street have seen more intense redevelopment and revitalization, the Benning Road has trailed behind.

Current or Future Actions

Table 4-27 below shows projects recently developed in the study area, as well as sites currently under construction or have proposals for redevelopment. These projects are also described in **Chapter 3.1**. In addition to these actions, DDOT plans to construct DC-295/Benning Road intersection improvements project in a reasonably foreseeable future. A conceptual construction sequences for the Preferred Alternative and DC-295/ Benning Road interchange improvements project has been prepared and is presented in **Section 2.2 of Appendix D**.

Table 4-27: Development Projects in the Study Area

No.	Name	Description	Status
1	DC Streetcar Car Barn Training Center	The first phase of DDOT's DC Streetcar Car Barn Training Center, which comprises the yard and temporary streetcar vehicle storage facility, is located to the west of 26th St. The permanent DC Streetcar Car Barn Training Center, which serves as the maintenance facility for the DC Streetcar system and a training center, opened in 2017.	Completed
2	Kingman Island Nature Center	A renovated pedestrian bridge provides access to these islands, and over 40 acres of tidal marsh in Kingman Lake are currently being restored. The renovated islands would include a new Environmental Education Center and a memorial tree grove dedicated to the District of Columbia schoolchildren who were victims of the September 11, 2001 terrorist attack.	Proposed
3	Kenilworth- Parkside Neighborhood	City Interests is the master developer for a 2.8 million square foot mixed-use development on a 26-acre site located off Kenilworth Avenue across from the Minnesota Avenue Metrorail Station. Plans call for 1,500–2,000 residential units, 30,000–50,000 square feet of retail space, 500,000–750,000 square feet of office space, and a one-acre park. An \$8 million pedestrian bridge crossing DC-295 is also planned that would link the neighborhood with the Minnesota Avenue Metrorail Station.	Under Construction
4	Park 7	Donatelli Development and Blue Skye Development delivered their Park 7 project in 2014, which offers 22,000 square feet of retail space and 376 apartments adjacent to the Minnesota Avenue Metrorail Station.	Construction completed in 2014
5	East River Park Shopping Center	Katz Properties purchased the East River Park Shopping Center in 2012 for \$33.6 million. The developer plans to upgrade the property and add new restaurants and neighborhood-serving stores around the existing anchors, Safeway and CVS.	Proposed
6	St. Stephens Apartments	Washington Metropolitan Community Development Corporation, the Warrenton Group and Penrose Properties, LLC are constructing 71 apartments that would serve DC Department of Behavioral Health clients who earn 30 percent or less of area median income (AMI) and those whose incomes are at or below 50 percent of AMI. The Latin American Youth Center would provide education services on-site.	Complete
7	Benning and East Capitol Gateway	So Others Might Eat (SOME) proposes to develop 202 units of affordable, workforce and senior housing (all drug and alcohol free), a sit-down deli, a seven-classroom expansion of SOME's Center for Employment Training, a 36,000-square-foot medical and dental clinic, and administrative offices on the three properties adjacent to the Benning Road Metrorail Station.	Complete

No-Build Alternative

No changes are proposed as part of the No-Build Alternative. Therefore, no cumulative impacts would occur.

Preferred Alternative (including TPSS, Propulsion System, and DC Car Bar Training Center)

Socioeconomic Resources

The extension of streetcar service included in the Preferred Alternative would create a permanent fixed-guideway transit investment that would enhance connectivity and mobility for the surrounding community, many of which are transit-dependent. This investment would support planned development and redevelopment along the corridor, while also potentially increasing the

economic competitiveness of the existing activity center located around the intersection of Benning Road and Minnesota Avenue.

The extension of the streetcar line would provide greater access and mobility. Improved access could potentially increase property values, resulting in rising rental costs. This domino effect of more economic development, rising housing values and population migration is popularly known as “gentrification”. Some argue that gentrification process reverses decades of urban decline and could bring broad new benefits to the unprivileged neighborhoods through a growing tax base, increased socioeconomic integration, and improved amenities. However, gentrification has generated far more alarm than excitement (Brummet and Reed 2019).

The extension of streetcar service further into the Benning Road neighborhood would create an additional transit investment that would improve connectivity and mobility for the community. Generally, areas with enhanced multimodal transportation connections attract commercial investment, which in turn invites residential development in the area. Therefore, it is likely that mixed-use projects that contain higher density residential uses along with offices, commercial and retail uses, are likely to develop in the near future as a result of the proposed Benning Road transportation improvements and streetscape elements. Residents in these corridors would benefit from these transit-oriented economic developments, such as improved roadway infrastructure, an added transit option, and improved connectivity to the District’s resources. These benefits would offset increased land and rental values for the property owners. District’s affordable housing options and tax-exception programs will continue to be available to the residents of the community, providing them relief from increased land values, when appropriate.

The District is projected to continue growing through 2045. The importance of neighborhood amenities, wrap-around services for affordable housing; the current lack of affordable housing supply, exacerbating financial pressure on existing families, is well realized by the District. The District is attempting to offset high housing prices through various measures on a programmatic level.

An Assessment Cap Credit is offered to limit the increase in property taxes. This credit ensures that an increase in the annual property tax may not exceed a 10 percent increase over the previous year’s assessment. While this does not reduce the assessed value of a property, a tax credit is automatically incorporated into the tax bill.

In accordance with Title 14 of the District of Columbia Municipal Regulations, it is required that a certain percentage of units within a new development or a substantial rehabilitation that expands an existing building is set aside for affordable units in exchange for a bonus density. This essentially means that in exchange for a percentage of affordable units, a developer may receive an additional Buyer area beyond what allowed under existing zoning regulations. Programs like the Ward 7 Buyer’s Club make homeownership more attainable by connecting residents to resources for down payments, closing cost assistance, and mortgage products. The DC Open Doors program offers down payment assistance loans that help renters transition onto mortgage payments. Other available programs include:

- The Home Purchase Assistance;
- Employer Assisted Housing; and

- HomeSaver Phase II – Restore Assistance Programs.

All of these support services are available to the residents of the study area, and therefore provide a means to offset the relative change in housing demand that would occur because of the development of the Preferred Alternative.

While the proposed action may cause cumulative impacts through improvements to roadway infrastructure and transit service, it is important to note that transportation improvements are but one of the many factors that influence land use decisions and development patterns. There are other factors that influence development patterns; including but not limited the supply and demand for developable property, land-use controls (zoning and development regulations) and the economic health of the community. Therefore, for development and redevelopment to occur, all these influences like demand and supply for developable property, and institutional requirements must be compatible at the same time and place.

Transportation

Roadway Network

As discussed in **Section 4.3** the operation of the Preferred Alternative is expected to affect roadway network operations by: increasing travel times on Benning Road during both AM and PM peak demand periods; increasing the maximum queue length at the intersection of Benning Road and East Capitol Street; and increasing the delay at the intersections of Benning Road with Anacostia Avenue and 34th Street. These changes are expected to contribute to an overall increase in traffic congestion throughout the study area. Conversely, the extension of the streetcar services throughout the study area and improved roadway operations at the intersection of Benning Road with Minnesota and Oklahoma Avenues are expected to positively affect roadway network operations by making mass transit services more connected and accessible.

In addition to the Preferred Alternative, several projects have been constructed, are under construction, or are proposed along the Benning Road corridor. Over the last five years, several facilities were constructed. The DDOT's DC Streetcar Car Barn Training Center, which comprises the yard and temporary streetcar vehicle storage facility, is located to the west of 26th Street. It serves as the maintenance facility for the DC Streetcar system and a training center. The DC Streetcar Car Barn Training Center has been a contributing employer within the study area.

Several apartment complexes, including the Park 7 project, St. Stephens Apartments, and Benning and East Capitol Gateway have been completed within or near the Benning Road corridor since 2014. Much of the population that resides within these complexes typically utilizes mass transit. The Preferred Alternative, with the addition of the streetcar to the improved roadway network will serve to improve connectivity and potentially alleviating roadway traffic in the foreseeable future.

The Kenilworth-Parkside Neighborhood is currently under development. Located off Kenilworth Avenue across from the Minnesota Avenue Metrorail Station, the proposed project includes the construction of 1,500–2,000 residential units, 30,000–50,000 square feet of retail space, 500,000–750,000 square feet of office space, and a one-acre park. A pedestrian bridge crossing DC-295 is

also planned that would link the neighborhood with the Minnesota Avenue Metrorail Station. This project is located to the north of the proposed project area. It is likely that the Preferred Alternative will support the access and multimodal connectivity needs of such residential developments in the foreseeable future.

The Kingman Island Nature Center is proposed in Kingman Lake, where over 40 acres of tidal marsh in Kingman Lake are currently being restored. A renovated pedestrian bridge provides access to these islands. The renovated islands would include a new Environmental Education Center and a memorial tree grove dedicated to the District schoolchildren who were victims of the September 11, 2001 terrorist attack. Given the nature of the proposed nature center, it is unlikely that the proposed action and development of Kingman Island Nature Center would result in any adverse cumulative impact in the foreseeable future.

The existing East River Park Shopping Center would be upgraded to add new restaurants and neighborhood-serving stores around the existing anchors, Safeway and CVS. While the shopping center would be upgraded, the anchor stores at the facility would not change. Since this consists of the renovation of an existing shopping center, no substantial cumulative potential impacts are anticipated to be generated when combined with the Preferred Alternative.

Over the long term, it is reasonable to expect that the growth projected to occur within the study area could have a negative cumulative effect on roadway network operations within the study area. Due to the limited public space available, improving the mass transit options is one of the most viable way to counteract the transportation demand in the foreseeable future. The Preferred Alternative, by offering improved Benning Road and bridges infrastructure, extended streetcar service, and improved continuity of bike and pedestrian facilities, could contribute to the positive cumulative impacts.

Mass Transit

Since several WMATA Metrobus routes pass through the study area, it is reasonable to conclude that future congestion on the roadway network could translate into a negative cumulative effect on local Metrobus operations. DDOT will continue working with WMATA to adjust the signal timing on associated roadways to minimize the potential traffic impacts on peak period bus operations.

In addition, according to the DC Streetcar System Plan (DDOT, 2010), WMATA Metrorail will reach or exceed capacity soon. To meet this demand, a variety of transportation agencies (including WMATA and DDOT) are taking actions to: provide new services, increase existing system capacity, and improve service reliability. Together, this interagency effort could result in a positive cumulative effect on mass transit services throughout the District and its surrounding communities. The proposed transit improvements included in the Preferred Alternative, implemented in conjunction with the other streetcar lines of DDOT's proposed 37-mile streetcar system, will add to a beneficial cumulative effect by locally providing capacity relief to the WMATA Metrorail system.

Pedestrian and Bicycle Network

The pedestrian and bicycle improvements proposed as part of the Preferred Alternative would provide a seamless connection for the neighborhoods on the east side of the Anacostia with an extensive pedestrian and bicycle network within the District. These improvements, in conjunction with the *moveDC Multimodal Long-Range Plan* (DDOT, October 2014), will generate a positive cumulative effect on the pedestrian and bicycle facilities located within the study area.

Freight Rail Service

The proposed replacement of the Whitlock Bridge could improve the clearances around the underlying CSX rail line. This improvement is expected to compliment guideway preservation and improvement actions undertaken by CSX in the future. Therefore, the development of the Preferred Alternative is expected to contribute to a positive cumulative effect on freight rail service within the study area.

Noise and Vibration

Operational traffic noise characterizes the noise environment in the current and predicted future conditions. Operational streetcar noise would impact the 26th Street and 42nd Street areas of Benning Road as described in **Section 4.10**. Any other planned projects in the study area would cumulatively increase noise because they would more than likely result in increased travel and construction activities.

Air Quality

A CO hotspot analysis was conducted to determine the Preferred Alternative's effect on intersections rated at LOS D or lower. This analysis determined that, relative to existing conditions, CO levels would decrease under the Preferred Alternative (see **Table 4-22**). Since the hot spot model includes both existing and reasonably foreseeable futures sources of vehicle emission, this result indicates that the Preferred Alternative would contribute to a positive cumulative effect on the CO emissions within the study area. On a regional level, the NCRTPB's current Air Quality Conformity Analysis (FY 2015 – 2020) show similar results. This analysis provides forecasts for 2015, 2017, 2025, 2030, and 2045. Models of future conditions include vehicle emissions generated by existing transportation facilities, the Preferred Alternative, and other reasonably foreseeable transportation projects. Across all the forecasts, NCRTPB's Analysis shows downward trends in the emission of ozone, particulate matter, carbon monoxide, and nitrogen oxides. Therefore, the Preferred Alternative is expected to contribute to a positive cumulative effect on regional air quality in the foreseeable future.

Additional Resources

Based on information provided in **Chapters 2 and 3**, no cumulative impacts were identified for any of the proposed alternatives for the following resources:

- Freight Rail Service;
- Parklands;
- Historic Properties and Archaeological Resources;

- Aesthetics and Visual Resources;
- Surface Water Resources;
- Wildlife, including threatened and endangered species;
- Vegetation;
- Utilities; and
- Hazardous Materials.

4.16 ENVIRONMENTAL JUSTICE

Under Executive Order 12898, each Federal agency must identify and address, as appropriate, disproportionately high, and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. A disproportionately high and adverse effect on a minority or low-income population means the adverse effect is predominantly borne by such population or is appreciably more severe or greater in magnitude on the minority or low-income population than the adverse effect suffered by the non-minority or non-low-income population.

Based on the demographic data presented in **Section 3.13**, all the census block groups included in the study area qualify are comprised of communities which qualify as environmental justice (EJ) populations. Therefore, all the impacts that would be generated by the Preferred Alternative would be predominately borne by environmental justice populations.

In the recent decades, housing preferences have shifted towards locations that are more well-connected, resulting in higher costs of living in historically EJ neighborhoods. This has led to the relocation of individuals to the suburban areas with fewer transportation options, lower housing costs, and less access to necessary goods and services. Such relocation and displacements generally result in breakup of established networks within the community and other social bonds; which further diminish economic opportunities for the displaced individuals. The proposed action's investment in transportation infrastructure has the potential to impact the established community within the project area. It is FHWA's policy to identify and prevent discriminatory effects by actively administering its programs and policies to ensure that social impacts to communities and people are recognized early and continually throughout the decision-making process from early planning through implementation and operations. Implementation of these principles are supported by the FHWA's Guidance on Environmental Justice and NEPA Memorandum, U.S. DOT Environmental Justice Order 5610.2(a) and FHWA Order 6640.23A: Actions to Address on Environmental Justice in Minority Populations and Low-Income Populations.

The DDOT project team started engaging other District agencies like Department of Housing and Community Development and Department of Employment Services early in the project development and public outreach process. A representative from applicable District agency was provided a booth during the project public meetings and open houses. The project meeting forums were used to inform the public about District administered various programs and options that are available to provide relief from increased land values.

The project team continues to successfully engage the community regarding urban growth issues related to transportation equity, housing affordability, and job creation. When compared to a no-

build scenario, the Preferred Alternative improves safety and overall job and social access for the community. Although, the impacts of the Preferred Alternative will be borne by the EJ populations that are predominantly living within the project area; the impacts would not rise to the level of disproportionately high and adverse effects, as defined by the CEQ regulations.

4.16.1 PUBLIC INVOLVEMENT

Full and fair access to meaningful involvement by minority and low-income populations in project planning and development is an important aspect of EJ. Ensuring full and fair access means actively seeking the input and participation from groups typically underrepresented throughout all proposed action stages. Residents provide feedback on community issues and concerns which can be used in the design and evaluation of the proposed action to avoid negative impacts to neighborhood resources and support the development of transportation options that are responsive to the concerns of EJ communities and the community-at-large.

Under Title VI of the Civil Rights Act of 1964, DDOT actively solicited public participation as part of the planning process and gave equal consideration to input from persons regardless of age, race, income status, or other socioeconomic factors. The engagement of residents, business owners, and other stakeholders began during Spring 2014 and continued through the EA review process. The public involvement included several public meetings, one public hearing, one scoping public comment period, one Draft EA review public comment period, a newsletter to encourage productive and meaningful dialogue with the community that would be served by the proposed action.

Because the proposed action is located entirely within a geographic area identified as an EJ community, public involvement activities provided opportunities for the community to comment on the proposed action through its various stages. Continuous involvement of the public facilitated awareness and understanding of the proposed action by residents, businesses, local officials, community-based organizations, and other stakeholders in the study area. A variety of communication methods were used to reach as much of the community as possible. See Chapter 6 for a more detailed discussion of public involvement activities.

4.16.2 ENVIRONMENTAL CONSEQUENCES

No-Build Alternative

The No-Build Alternative recommends no actions be taken beyond routine maintenance, and therefore would not directly or indirectly impact any of the EJ populations residing within the study area.

Preferred Alternative

The construction and operation of the improvements proposed under the Preferred Alternative would generate a variety of benefits and impacts. Since the proposed action is located entirely in a geographic area with high concentration of minority and low-income populations, both types of effects would affect EJ populations. The primary direct benefits generated by the Preferred Alternative include:

- Improved Transit Access: The extension of the DC Streetcar service through the study area will help satisfy demand for mass transit services during peak demand periods and improve the connection between modes of mass transit.
- Enhanced Safety: Vehicular safety will be improved by the proposed improvements to the intersection of Benning Road and Minnesota Avenue. Safety for all users will be improved by the proposed Benning Road and bridges rehabilitation and associated changes to the crossings just west of DC-295.
- Improved Pedestrian & Cyclist Mobility: The proposed sidewalk improvements throughout the limits of work, combined with the reconstruction of the Whitlock Bridge and the installation of a new crossing at Kingman and Heritage Islands will make it easier for pedestrians and cyclists to travel through the study area.

As discussed in **Section 4.14**, the Preferred Alternative could indirectly affect the socio-economic resources when combined with other planned projects in the study area and contribute in the economic growth. The beneficial indirect effect predicted to be generated by the Preferred Alternative is the economic growth. This growth in the study area could generate an increased demand for housing, resulting in about five to 12 percent increase in home values and rent. This increase could stress the low-income populations and indirectly lead to the displacement of some of the study area's current households. A representative from District Department of Housing and Community Development (DHCD) has been a part of project's public meetings so that information could be provided about the several affordable housing programs being administered by the District. To see a list of these programs, please see **Section 4.14**.

4.16.3 POTENTIAL FOR DISPROPORTIONATELY HIGH AND ADVERSE IMPACTS ON EJ POPULATIONS

Since the project inception, public outreach and engagement opportunities have been included to identify and refine the Build Alternatives in order to minimize potential impacts on the EJ populations (see **Chapter 6**). Demographic data collected during the preparation of this EA indicates that minority and low-income populations predominantly exist within the study area.

For the proposed action, extensive project planning efforts have been made to ensure that the proposed improvements are confined within the existing DDOT ROW. The Preferred Alternative would not require acquisition and relocation of any private businesses or residences. Only temporary construction phase related access and mobility disturbances are expected on the study area neighborhoods which will be mitigated through DDOT construction policy. Based on the efficacy of the mitigation measures for the short-term construction related impacts, and the overall long-term transportation infrastructure benefits, although the impacts of the Preferred Alternative will be borne by the EJ population that are predominately living with the project area; the impacts would not rise to the levels of disproportionately high and adverse effects, as defined by the CEQ regulations.

4.17 EVALUATION OF ALTERNATIVES

This section provides an evaluation of the No-Build and Build Alternatives, taking into consideration, the information presented in the preceding chapters of this EA and focusing on the

factors that distinguish the alternatives from each other. The distinguishing factors enable comparison of the benefits, costs, and environmental consequences of the alternatives. The results of this evaluation are intended to inform the identification of an environmentally preferable alternative under NEPA.

4.17.1 EFFECTIVENESS IN MEETING THE PURPOSE AND NEED

As presented in **Chapter 1**, the purpose of the proposed action is to:

- Address deficiencies in transportation infrastructure conditions;
- Improve safety conditions and operations for both motorized and non-motorized access; and
- Provide for increased mobility and accessibility between the intersection of Benning Road and Oklahoma Avenue and the Benning Road Metrorail Station.

The following discussions analyze the effectiveness of the Build Alternatives in achieving the intended purpose for the proposed action, which is summarized in **Table 4-28**. The No-Build Alternative would not address the purpose and need identified in **Chapter 1**.

Address deficiencies in transportation infrastructure conditions

- Intersection congestion and inadequate capacity: Build Alternatives 1 and 2 would provide the same geometrical improvements at the intersections of Benning Road and 36th Street as well as Benning Road and Minnesota Avenue.
- Structurally deficient bridge conditions: Build Alternatives 1 and 2 would each replace the Whitlock Bridge over DC-295 and CSX railroad tracks with a new bridge conforming also to FRA clearance requirements.

Improve safety conditions and operations for both motorized and non-motorized access

- Challenging pedestrian crossings at intersections: Build Alternatives 1 and 2 would provide crosswalk, sidewalk, and signal provisions to enhance pedestrian safety at the intersection of Benning Road and 36th Street as well as at the intersection of Benning Road and Minnesota Avenue. Sidewalks and ramps at 36th Street and the Whitlock Bridge would be aligned. ADA compliant design would be applied.
- Narrow sidewalks along Benning Road and on the Whitlock Bridge: Build Alternatives 1 and 2 would provide ADA compliant sidewalks on both sides of Benning Road in the study area. Poor and confining conditions would be eliminated.
- High crash rates at intersections: Build Alternatives 1 and 2 would improve turning movements and signal timing at the intersections of Benning Road and 36th Street, and Benning Road and Minnesota Avenue to reduce congestion and enhance safety

Table 4-28: Performance of Alternatives – Purpose and Need

Factors	No-Build Alternative	Preferred Alternative
Addresses deficiencies in transportation infrastructure conditions		
Reduces intersection congestion and increases capacity	No	Yes – turn lane and signal improvements
Eliminates deficient bridge conditions	No – no bridge replacement	Yes – bridge replacement
Improve safety conditions and operations for both motorized and non-motorized access		
Improves pedestrian infrastructure at intersections and on Whitlock Bridges	No	Yes – crosswalk, sidewalk, and signal improvements
Improves Benning Road pedestrian facilities	No	Yes – ADA compliant sidewalks provided in both directions
Provides safety improvements at intersections	No	Yes – high visibility pedestrian crosswalk, signals, turning lanes; reconstruct Benning Road and Minnesota Avenue intersection
Provide for increased mobility and accessibility between the intersection of Benning Road and Oklahoma Avenue and the Benning Road Metrorail Station		
Connects DC Streetcar to Benning Road Metrorail Station	30 to 35 minutes in one direction (Peak Period) Oklahoma Ave to Benning Road stop	Yes – DC Streetcar service extension; 8 to 14 minutes in one direction (Peak Period) Oklahoma Avenue to Benning Road stop
Adds transit vehicle capacity	No	Yes – 5,600 daily streetcar riders
Improves reliability of transit service	No	Yes – signal priority
Provides direct connection to H Street corridor and Union Station	No	Yes – DC Streetcar service extension

Provide increased mobility and accessibility between the intersection of Benning Road and Oklahoma Avenue and the Benning Road Metrorail Station.

- Transit connection needed between the intersection of Benning Road and Oklahoma Avenue and the Benning Road Metrorail Station: Build Alternatives 1 and 2 would extend the H/Benning Streetcar from its terminus at Oklahoma Avenue to the Benning Road Metrorail Station, with five stops in the study area.
- Existing peak period transit vehicle overcapacity problem: Build Alternatives 1 and 2 would provide an additional transit service option in the study area with forecasted daily ridership of 5,400 passengers in 2045. This additional transit service and capacity would help alleviate current overcrowded conditions characteristic of X Line trips along Benning Road.
- Poor bus service schedule adherence: Build Alternatives 1 and 2 would improve roadway capacity and safety with wider lane, signals, improved intersections in the study area and the provision of an additional transit option and bicycle improvements.
- No direct Metrorail connection from study area to the H St corridor or Union Station: Build Alternatives 1 and 2 would provide a direct transit connection for study area transit users to the H St corridor and Union Station using the streetcar.

4.17.2 PUBLIC AND AGENCY INPUT

In evaluating the Build Alternatives and the No-Build Alternative, FHWA and DDOT considered public and agency input. As described in Chapter 6, public and agency engagement was part of the alternative's development and evaluation process. Study area residents and other members of the public have shown support as well as non-support for the proposed action. Agency representatives expressed support but also noted concerns related to impact to circulation, access, viewsheds, stop design, and loss of trees. Key themes from the outreach program included: safety, bicycle access, traffic circulation, parking, cost, visual impacts, and construction impacts.

FHWA and DDOT considered all public and agency input during development of the alternatives and the EA and have worked to address concerns through alignment and infrastructure refinement to avoid or minimize negative impacts and provide mitigation. For example, Build Alternatives 1 and 2 would minimize impacts by remaining almost entirely within the DDOT right-of way (except for a stop and a TPSS location at WMATA property) and through the design of bus and streetcar stop locations, which were designed to minimize conflicts.

4.17.3 COMPARISON OF ALTERNATIVES

In this section, the Build Alternatives and the No-Build Alternative are compared with each other using the categories and factors considered in the EA: purpose and need (**Section 4.17.1**), key public and agency concerns, and technical factors. Supporting documentation for the findings described in this section are provided in other sections of the EA. For example, **Section 4.2.2** explains how and why the Build Alternatives differ in regard to ROW impact.

Table 4-29 summarizes the results of the quantitative and qualitative analyses for each alternative. The results in this table show that for some factors such as "Zoning and Land Use," the Build Alternatives would perform similarly, while for others, such as "On-Street Parking Impacts," each

would perform differently. How well each alternative would perform compared to the others varies from factor to factor. No single alternative would perform best or worst in all categories and factors. For this reason, a closer look at the results is needed to determine which alternative best balances proposed action benefits and impacts.

No-Build Alternative

As described in **Section 4.17.1**, the No-Build Alternative would not achieve the purpose and need for the proposed action. As indicated in **Section 4.14**, forecast development in the study area would provide some economic benefit; however, impacts to the transportation network would also likely occur as population and employment increases. The No-Build Alternative would provide no means of accommodating these impacts.

Preferred Alternative

As described in **Section 4.17.1**, the Preferred Alternative, like Build Alternative 1, would achieve the purpose and need for the proposed action. As indicated in **Table 4-29**, the Preferred Alternative would not generate significant adverse impacts to the sensitive resources. With the inclusion of avoidance and mitigation measures, any impact would be further reduced.

4.17.4 IDENTIFICATION OF A LOCALLY PREFERRED ALTERNATIVE

The CEQ requires a NEPA document to specify the alternative that is considered to be environmentally preferable (Section 1505.2(b)). CEQ defines an environmentally preferable alternative as the alternative that will cause the least damage to the natural and built environment. Since it is rare in an evaluation of alternatives, that one alternative will exhibit only benefits and no negative impacts, identifying an environmentally preferable alternative typically involves considering the trade-offs between benefits and impacts.

In this EA, the alternatives evaluation considered how responsive each alternative is to the purpose and need, as well as what benefits and impacts each alternative potentially would have on the natural and built environment. Input from the public and agencies provided insight into this evaluation process. Upon consideration of the trade-offs in benefits and impacts among the Build Alternatives, FHWA and DDOT have identified the Preferred Alternative (Build Alternative 2) as the environmentally preferable alternative for the proposed action. It best achieves the purpose and need by performing as well as Build Alternative 1. Likewise, it would perform as well or better regarding natural and built environment resources as reported in this EA, including less intense or fewer impacts on neighborhoods and community resources; on-street parking; noise and vibration; and environmental justice. Mitigation has been identified to address impacts.

Table 4-29: Summary of Benefits and Impacts of Alternatives

Resources	Benefits and Impacts		Mitigation
	No-Build Alternative	Preferred Alternative	
Zoning and Land Use	None	Impacts: None	During Concept design, DDOT selected sites that area zoned for transportation use and undeveloped.
ROW and Relocation Impacts	None	Impacts: ROW acquisition for TPSS facilities	ROW acquisition will be required from WMATA for the TPSS facility located at the Benning Road Metro Station. This acquisition will be conducted in conformance with the applicable transfer of land requirements.
Neighborhoods and Community Facilities	None	Benefits: Improved transit access, connectivity, frequency, and multi-modal safety; neighborhood cohesiveness preserved Impacts: Visual impacts of continuous overhead wires for wired option, street tree removal nine noise impacts 20 vibration impacts	The use of design measures which reduce the generation of noise and vibration Street tree replacement, Context sensitive design measures at TPSS and stop platforms Burying of overhead utilities at select locations.
Transportation and Traffic Operations	Benefits: None Impacts: On-going transit, roadway, intersection, bicycle, and pedestrian deficiencies Potential for losses due to crashes	Benefits: Increased transit frequency Increased transit capacity Direct transit connection to H Street and Union Station Intersection capacity and safety improvements Pedestrian and bicycle enhancements Bridge rehabilitation and replacement Greater turn lane capacity Impacts: Reduced LOS at Benning Road-East Capitol Street Intersection	DDOT will continue coordination with CSX to plan the design, operation, and maintenance of the new Whitlock Bridge, and identify mitigation, if needed, to address impacts to CSX track infrastructure and freight rail service in the study area.

Resources	Benefits and Impacts		Mitigation
	No-Build Alternative	Preferred Alternative	
Parklands	None	<p>Benefits: Improved multi-modal access to parklands</p> <p>Impacts: Visual impact for Fort Mahan Park Increase in noise due to the operation of the 42nd Street streetcar stop.</p>	<p>The use of design measures which reduce the generation of noise and vibration Street tree replacement, Context sensitive design measures at TPSS facilities and stop platforms Burying of overhead utilities at select locations.</p>
Historic Properties and Archeological Resources	None	<p>Impacts: Impact on Fire and Police Call Boxes located at the southeast corner of the Benning Road and 36th Street NE intersection due to sidewalk construction Noise & Vibration Impacts in: Spingarn High School, Kingman Park Historic District; Browne, Phelps, Spingarn, and Young Educational Campus Historic District; 4208 Benning Road and the block of rowhouses located between 4201 and 4243 Benning Road Impacts to visual and aesthetic quality for Fort Mahan Park & historic properties located in eastern Benning Road Key View.</p>	<p>Relocation of Fire and Police call boxes to a comparable location Noise & Vibration control measures Relocation of 42nd Street Stop to west side of intersection Street tree replacement Context sensitive design measures at TPSS, stop platforms and other related infrastructure. Burying of overhead utilities at select locations.</p>
Aesthetics and Visual Quality	None	<p>Impacts: Impacts on Fort Mahan Park and eastern Benning Road residential areas Neutral change at other locations</p>	<p>DDOT's Urban Forestry Administration (UFA) will develop and implement a street tree management plan during project design. The plan will comply with District standards and regulations regarding planting, pruning, or removing a tree within the DDOT ROW. When trees must be removed and as reasonably feasible, DDOT will replace street trees removed within the ROW as part of UFA's Standard Specification 608.07 Tree Protection and Replacement. Context sensitive design measures at TPSS, stop platforms and other related infrastructure. Burying of overhead utilities at select locations.</p>
Surface Water Resources	None	None	None warranted.

Resources	Benefits and Impacts		Mitigation
	No-Build Alternative	Preferred Alternative	
Wildlife including Threatened and Endangered Species	None	None	None warranted.
Vegetation	None	Loss of approximately 147 street trees	DDOT’s Urban Forestry Administration (UFA) will develop and implement a street tree management plan during project design. The plan will comply with District standards and regulations regarding planting, pruning, or removing a tree within the DDOT ROW. When trees must be removed and as reasonably feasible, DDOT will replace street trees removed within the ROW as part of UFA’s Standard Specification 608.07 Tree Protection and Replacement.
Utilities	None	None	Adhering to the procedures of: Chapter 9 of the DDOT Design and Engineering Manual District DC Streetcar Utilities Standards of Practice 2015
Hazardous Materials	None	None	None warranted. If required, ASTM-compliant Phase I Environmental Site Assessments (ESA) and subsequent surveys will be completed.
Noise and Vibration	None	<p>Noise: eight residential noise impacts (four moderate, four severe) at switches for the 26th Street track to the DC Streetcar Car Barn Training Center one residential noise impact at southeast quadrant of Benning Road – 42nd Street Stop</p> <p>Vibration: 20 residential vibration impacts along Benning Road one vibration impact at Dorothy I. Height/Benning Neighborhood Library</p>	<p>Noise: Eliminate or reduce noise impacts due to track switches by installing “spring frogs,” pointless switches or other controls (such as a “well-designed flange-bearing frog”, or a flange-lifter.</p> <p>Eliminate or reduce the severity of noise impacts due to wheel squeal by increasing the radius of the track curves, applying flange lubricators to “grease” the contact points between the steel wheels and the steel rail heads, or procuring streetcar vehicles that can operate effectively along tracks with radii less than 100 ft without causing wheel squeal to occur.</p> <p>Eliminate or reduce in severity the noise impacts of rail transit bell ringing as safety protocols allow. Alternative measures where source controls are not practical or feasible include wayside treatments such as residential sound insulation, including acoustical windows and doors.</p> <p>Vibration: DDOT will undertake a vibration mitigation analysis during</p>

Resources	Benefits and Impacts		Mitigation
	No-Build Alternative	Preferred Alternative	
			project design to identify and implement vibration control measures (such as ballast mats under the tracks, spring frogs, pointless switches, and flange-bearing frogs). Such control measures would reduce vibration levels by approximately ten VdB.
Air Quality	None	None	None warranted.
Energy Use and Climate Change	None	None	None warranted.
Construction Impacts	None	<p>Impacts:</p> <p>Temporary construction easements; Construction-related congestion and detours; Changes in pedestrian movement; Short-term interruption or freight rail operations; Presence of construction equipment in sensitive viewsheds; Increased transmission of sediment and construction debris Incidental impacts to street trees not slated for removal Short-term interruptions of utility service Generation of construction noise and vibrations</p>	<p>Maintenance of Transportation, Traffic and Access Plans DDOT will coordinate with CSX as an integral part of the Whitlock Bridge design and construction. Reduced duration of construction activities through strategic improvement phasing Strict adherence to DDOT's erosion and sediment control requirements and USACE permitting procedures. Health and Safety Plan Coordination with utility owners & operators. Installation of tree protection measures Noise, Vibration and Air Quality Management Plan</p>
Indirect Impacts	<p>Some benefits from forecasted population and employment growth: Economic growth</p> <p>Potential impacts: Increased demand for transit Changes in property values</p>	<p>Benefit:</p> <p>Higher benefits from population and employment growth than the No-Build Alternative. Improved transit service connectivity Improved roadway infrastructure and associated pedestrian and cyclist facilities Improved access to parklands</p> <p>Impacts:</p> <p>Increased property values Reduced community cohesion (as a result of noise and vibration impacts and changes to aesthetics and visual resources) Increased demand for transit</p>	<p>Affordable housing programs administered by various elements of the District of Columbia's local government, Use of design measures which reduce the generation of noise and vibration, Street tree replacement, Context sensitive design measures at TPSS and stop platforms, Burying of overhead utilities at select locations.</p>
Cumulative Impacts	None	Benefits:	Zoning restrictions, affordable housing programs, tax

Resources	Benefits and Impacts		Mitigation
	No-Build Alternative	Preferred Alternative	
		Incremental contribution to Metrorail and Metrobus system capacity relief Incremental enhancement to bicycle and pedestrian network Incremental air quality benefit Impacts: Incremental increase in property values Incremental increase to noise levels	incentive programs administered by various elements of the District of Columbia’s local government Use of design measures which reduce the generation of noise and vibration
Environmental Justice	None	None	None warranted.
Section 4(f) Evaluation	None	No permanent use of Section 4(f) resources. Temporary Occupancy of six Section 4(f) properties would occur to Anacostia Park, Kingman and Heritage Islands Park, Kingman Park Historic District, Fire & Police Call Boxes, the Baltimore & Potomac Railroad (part of the CSX rail facility under the Whitlock Bridge), and the PEPCO powerplant (located within the Benning Service Center). No use or temporary occupancy would occur at Langston Golf Course Historic District as project impacts would only occur within the DDOT ROW.	Mitigation for impacts to Section 4(f) resources will be provided through compliance with the required construction related permits from the National Park Service (NPS) (Special Use Permit) and Department of Parks and Recreation. Permit conditions will be implemented to guide the construction usage and restore the site features. Mitigation for historic or archeological resources will be implemented by adhering to the DC SHPO conditional concurrence to FHWA’s Section 106 no adverse effect finding.
Vehicles	None	3 streetcars for wired propulsion option Wireless vehicles 25-35% per price per unit Systems infrastructure less costly for wireless	Not applicable
Total Capital Costs	None	\$178.1 million wired \$178.1 million wireless	Not applicable

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5

SECTION 4(f) EVALUATION

5.1 INTRODUCTION

This evaluation discusses the effects of the Benning Road and Bridges Transportation Improvements project (the proposed action) on publicly owned park and recreational lands, publicly owned wildlife and waterfowl refuges, and historic properties (whether publicly or privately owned) eligible for protection under the provisions of Section 4(f) of the U.S. Department of Transportation Act of 1966 (commonly referred to as Section 4(f)). This Section 4(f) evaluation has been prepared in accordance with the joint FTA and FHWA regulations for Section 4(f) compliance as codified in 23 CFR Part 774. Additional guidance has also been incorporated from FHWA's 2012 *Section 4(f) Policy Paper*.

5.2 LEGAL AND REGULATORY REQUIREMENTS

Section 4(f) of the U.S. Department of Transportation Act of 1966 (49 U.S.C. § 303), as amended, protects publicly owned parks and recreational lands; publicly owned wildlife and waterfowl refuges; and historic sites of national, state, or local significance (whether publicly or privately owned) from acquisition or conversion to transportation use. Under Section 4(f), the use of such lands for transportation purposes can occur only if there is no feasible and prudent avoidance alternative to such use, and if the project includes all possible planning to minimize harm to those resources. The authority to administer Section 4(f) and make Section 4(f) approvals resides with the FHWA Administrator, as delegated by the Secretary of the USDOT.

Section 4(f) does not apply to parks, recreational areas, and wildlife and waterfowl refuges if these land uses are privately owned. However, Section 4(f) does apply to all historic sites that are listed or eligible for listing in the NRHP, regardless of whether they are publicly or privately owned. Section 4(f) also applies to archaeological sites on or eligible for inclusion in the NRHP that warrant preservation in place. Per the exception in the Section 4(f) regulations at 23 CFR 774.13(b), Section 4(f) does not apply when FHWA determines, and the SHPO concurs, that the archaeological resource is important chiefly because of what can be learned by data recovery and has minimal value for preservation in place.

Section 4(f) regulations require FHWA to consult with the DOI when FHWA makes a Section 4(f) finding or when a project would use property managed by DOI and, as appropriate, the Department of Agriculture (USDA) and the Department of Housing and Urban Development (HUD). FHWA must also consult with relevant state and local officials in developing transportation projects and programs that use lands protected by Section 4(f). Since the proposed action will not use land administered or funded by USDA or HUD, consultation with either agency is not required.

Section 4(f) also provides specific consultation roles for the owners and/or managers of Section 4(f) properties as officials with jurisdiction. For historic sites listed in or eligible for the NRHP, the SHPO is the official with jurisdiction and generally fulfills their role under Section 4(f) through their role in the Section 106 consultation process.

5.2.1 USE UNDER SECTION 4(f)

Section 4(f) applies to protected resources when a “use” occurs. A “use” can be permanent, temporary, or constructive, as defined below.

Permanent Use

Pursuant to 23 CFR 774.17, permanent use includes acquisition and incorporation of all or a portion of the resource into the transportation facility. It includes fee simple and permanent easement use, as well as construction easements that exceed regulatory limits.

Temporary Occupancy, No Use

A temporary occupancy occurs when a Section 4(f) resource, in whole or in part, is required for construction-related activities. As defined in 23 CFR 774.13(d), a temporary occupancy of property does not constitute a use of a Section 4(f) resource when all the following conditions are satisfied:

- Duration is less than the time needed for the construction of the project and there is no change in ownership of the land;
- The nature and magnitude of the changes to the Section 4(f) property are minimal;
- There is no anticipated permanent adverse physical impact, nor is there interference with the protected activities, features, or attributes of the property on either a temporary or permanent basis;
- The land being used will be fully returned to a condition at least as good as that which existed prior to the project; and
- There is a documented agreement of the official(s) with jurisdiction over the Section 4(f) resource regarding the above conditions.

If the conditions in 23 CFR 774.13(d) are met, the exception for temporary occupancy applies in which there is no “use” of the Section 4(f) resource. If the criteria in 23 CFR 774.13(d) are not met, the use is evaluated as permanent.

Constructive Use

As defined by 23 CFR 774.15(a), constructive use occurs when the transportation project does not incorporate land from a Section 4(f) resource, but the project’s proximity effects are so severe that the protected activities, features, or attributes that qualify the resource for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the resource are substantially diminished.

5.3 DESCRIPTION OF THE PROPOSED ACTION

This Section 4(f) Evaluation was prepared in conjunction with the Benning Road and Bridges Transportation Improvements EA. DDOT, in conjunction with FHWA, is proposing transportation improvements (the proposed action) along the Benning Road corridor in Washington, DC. The proposed action would improve transportation infrastructure conditions; enhance safety and operations along the corridor; extend streetcar transit service; and at key intersections, enhance pedestrian and bicycle facilities. The EA **Chapter 1: Purpose and Need**, and **Chapter 2: Alternatives Considered**, provide further descriptions of the proposed action. **Chapter 2** also illustrates the alternatives considered in this chapter. **Sections 3.3** and **3.4** of the EA describe the public parks and historic properties, respectively.

5.4 SECTION 4(F) RESOURCES

Section 4(f) resources in the one-quarter-mile study area (described in **Chapter 1**) include publicly owned parks and/or recreation areas, as well as public or privately-owned historic sites (both historic properties and archaeological sites) that are listed in or eligible for the NRHP. No wildlife or waterfowl refuges are located within the study area; therefore, such resources were not evaluated for potential Section 4(f) use.

Twenty-one properties protected by Section 4(f) are assessed in this evaluation and are listed and described in **Table 5-1** and **Table 5-2**. Fort Mahan Park and Anacostia Park (which includes Langston Golf Course Historic District) are categorized as a national park/recreational resource and a historic site. **Figure 5-1** shows the location of each identified resource in the study area.

5.5 DESCRIPTION OF SECTION 4(F) RESOURCES

Spingarn Senior High School

NRHP-listed Spingarn Senior High School is located at 26th Street and Benning Road, on a 27.25-acre site with three other schools that were built for African Americans during segregation. The public Colonial Revival-style building overlooking the Anacostia River was built in 1950 (**Figure 5-2**). The school meets Criterion A as the last Washington, DC school to be built for African Americans during segregation. It also meets Criterion C as the last Colonial Revival-style school building built in the District. Spingarn Senior High School is also a contributing resource to the Young, Browne, Phelps, and Spingarn Educational Campus Historic District, which is the next resource described in this section.

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Table 5-1: Section 4(f) Resources Evaluated- Parks and NRHP Listed Properties

Resource Name	Address / Location	Official(s) w/ Jurisdiction	Description
Spingarn Senior High School	2500 Benning Road	DC SHPO	<i>Public Historic Site:</i> NRHP listed (#14000198). Meets National Register Criteria A and C with architecture and education as areas of significance.
Young, Browne, Phelps and Spingarn Educational Campus Historic District	2500 Benning Road, 704 26 th Street, 820 26 th Street, and 850 26 th Street	DC SHPO	<i>Public Historic Site:</i> NRHP Listed (#15000743). A planned school campus that includes four Colonial-style and Classical Revival-style schools. Areas of significance include education, black heritage, architecture, community planning and development.
Langston Golf Course Historic District	2600 Benning Road	NPS/ DC SHPO	<i>Public Recreation Area & Public Historic Site:</i> NRHP listed (#91001525) federally owned public recreational facility within Anacostia Park, maintained by NPS. Includes an 18-hole golf course and driving range.
Anacostia Park	105 acres along the Anacostia River (both banks)	NPS-owned/ DC SHPO	<i>National Park & Public Historic Site:</i> Eligible for listing in the NRHP. Active and passive recreational uses. The park has shoreline access, a swimming pool, ball fields, trails, picnic facilities and the Anacostia Park Pavilion with public space for roller skating and special events. Also includes Langston Golf Course described above.
Kingman and Heritage Islands Park	51 acres along the Anacostia River (both banks)	DOEE	<i>Public Recreation Area:</i> Active and passive recreational uses. Originally created by the Army Corps of Engineers in 1916, Kingman and Heritage Islands have now been transformed into recreational areas for people of all ages to learn about the natural environment in DC., managed by Living Classrooms under contract of the Office of Deputy Mayor for Planning and Economic Development.
Building 32 of former Pepco Power Plant	3300 Benning Road	DC SHPO	<i>Private Historic Site:</i> Warehouse building associated with the former Pepco Power Plant (most of plant was demolished, this structure remains standing). Individually eligible for listing in the NRHP under Criteria A and C
Fort Mahan/Civil War Sites (Defenses of Washington) District	39 acres along Benning Road between 42 nd Street and Grant Street	NPS-owned/ DC SHPO	<i>National Park & Public Historic Site:</i> NRHP listed (#0011461). Open space and woodlands.
3938 Benning Road	3938 Benning Road	DC SHPO	<i>Private Historic Site:</i> 1931 residence designed by African-American architect Lewis Giles. Eligible for listing in the NRHP under Criterion C.
Stewart Funeral Home	4001 Benning Road	DC SHPO	<i>Private Historic Site:</i> Designed by Donald H. Roberts for an African-American family-owned and operated business founded in 1900. Eligible for listing in the NRHP under Criterion C.

Resource Name	Address / Location	Official(s) w/ Jurisdiction	Description
Fort Circle Park	455 acres connecting Anacostia Park to Fort Mahan Park; Fort Mahan Park to Fort Dupont Park	NPS-owned	<i>Public Recreational Trail:</i> Recreational trail that is part of a greenway network connecting the Civil War Defenses of Washington.
Fort Chaplin Park – NPS Property	35 acres South of East Capitol Street between Chaplin Street and T Street	NPS-owned	<i>National Park & Public Historic Site:</i> Mostly woodlands.
Fort Chaplin Park – District Property	2.7 acres at Texas Avenue and C Street	DC-owned	<i>Public Park:</i> Open space and woodlands adjacent to Fort Chaplin Park, owned by NPS.
Kingman Park Historic District	Rosedale and D Street to the south, Maryland Avenue NE to the north, 19 th Street to the west, and Oklahoma Avenue NE to the east	DC SHPO	Public Historic Site: NRHP listed (#100003246). Meets National Register Criteria A and C with Ethnic History – Black and community planning and development as areas of significance.

Notes: DC SHPO = District of Columbia State Historic Preservation Officer; NPS = National Park Service

Table 5-2: Section 4(f) Resources Evaluated- Properties Eligible for NRHP Listing

Ref. No.	Address	Officials w/ Jurisdiction	Description
1	Benning Rd	DC SHPO	Fire and Police Call Boxes
2	3300 Benning Road	DC SHPO	Pepco Power Plant, 1906 (most of plant demolished, this structure remains standing)
3	Vicinity of 3700 Benning Road	DC SHPO	Segment of Baltimore & Potomac Railroad
4	3938 Benning Road	DC SHPO	1931 residence designed by African-American Architect Lewis Giles
5	4001 Benning Road	DC SHPO	Stewart Funeral Home, 1964. Designed by Donald H. Roberts for an African-American family-owned and operated business founded in 1900.
6	4201-4243 Benning Road	DC SHPO	Block of row houses, c. 1940
7	4208 Benning Road	DC SHPO	Designed by African-American architect Cyril Bow in 1939. Eligible under “Apartment Buildings in Washington DC 1880-1945” MPDF

Ref. No.	Address	Officials w/ Jurisdiction	Description
8	4228 Benning Road	DC SHPO	1945-46 apartment building designed by African-American Architect R. C. Archer
9	4236 Benning Road	DC SHPO	1941 apartment building designed by African-American Architect Cyril Bow. Eligible under "Apartment Buildings in Washington DC 1880-1945" MPDF
10	4270 Benning Road	DC SHPO	Jones Memorial Methodist Episcopal Church, now New Mount Calvary Baptist Church, designed by Woodson & Vaughn, built in 1923
11	4274 Benning Road	DC SHPO	1942 apartment building designed by George T. Sant Myers. Eligible under "Apartment Buildings in Washington DC 1880-1945" MPDF

Young, Browne, Phelps, and Spingarn Educational Campus Historic District

The Young, Browne, Phelps, and Spingarn Educational Campus Historic District consists of a 27.25-acre planned school campus, including Charles Young Elementary School, Hugh M. Browne Junior High School, Seth Ledyard Phelps Vocational School, and Joel Elias Spingarn High School (**Figure 5-3** through **Figure 5-5**). The schools were built between 1931 and 1952 in Colonial Revival-style and Classical Revival-style for African American youth during segregation. The publicly accessible district meets Criteria A and C in the areas of education, black history, architecture, and community planning and development.

Young and Spingarn schools closed in 2009 and 2013, respectively. Browne Education Campus now serves students from pre-K 3 through 8th grades. Phelps Senior High School closed in 2002 and re-opened as Phelps Architecture, Construction, and Engineering High School in 2008.

Langston Golf Course Historic District

Langston Golf Course at 26th Street and Benning Road consists of an 18-hole course, stall driving range, Langston's ProShop, Langston Grille restaurant (**Figure 5-6**). The public golf course opens between 6:00 am and 8:00 am depending on the time of year and closes between 2:00 pm and 8:00 pm depending on the day of the week and time of year. Prices range from \$5 for nine holes for minors and \$32 for adults for 18 holes on weekends and holidays.

The golf course was established in 1939 and named for John Mercer Langston, the first African-American elected to the United States Congress. The golf course was the second racially de-segregated golf course in the District of Columbia. The first nine holes were listed in the National Register in 1991 under Criterion A for its significance during the era of segregation and its association with Congressman Langston.

Anacostia Park

NPS owned-and-operated Anacostia Park is located between Benning Road and South Capitol Street, SW along the southeast bank of the Anacostia River (

Figure 5-7). It is open to the public 24 hours per day. Park entrance is free. Tennis courts, basketball courts, and a playing field are located within the portion of the park in the study area. Additional recreational park resources outside the study area include: playgrounds, a boat ramp, playing fields, basketball courts, a roller-skating pavilion, a fitness station, tennis courts, soccer fields, and a swimming pool. Free skate rentals are available seven days per week between Memorial Day and late August, and on the weekends between late August and Labor Day.

Anacostia Park was designated a park by the United States Congress in 1918. Planning for the park was undertaken over the years by such notable figures as Daniel Burnham and Frederick Law Olmsted, though implementation was never fully realized. Anacostia Park was listed in the National Register under Criterion A for its association with the development of Washington DC and for the planning and implementation of Burnham, Olmsted and others.

Kingman and Heritage Islands Park

The 45-acre District owned-and-operated Kingman and Heritage Islands Park is located along the Anacostia River (**Figure 5-8**). The public park provides opportunities for recreation, environmental education and observation via a 9,000-square foot Environmental Education Center, pedestrian bridge, memorial tree grove, trails, programs for youth, and river clean-ups.

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Figure 5-1: Section 4(f) Resources

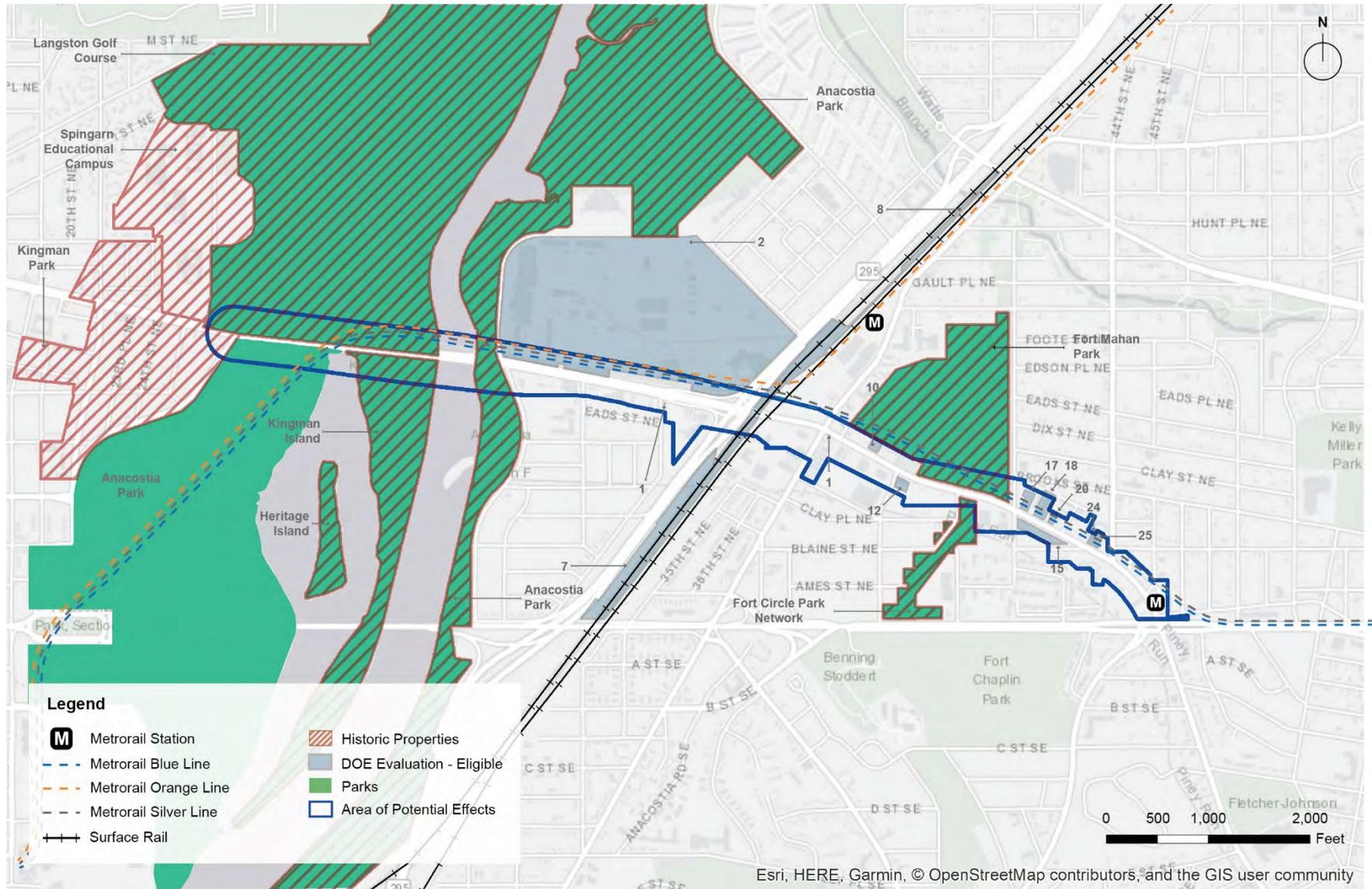


Figure 5-2: Spingarn Senior High School, Jan. 16, 2014



Figure 5-3: Young School, Jan. 16, 2014



Figure 5-4: Phelps School, July 7, 2016



Figure 5-5: Browne School, Jan. 16, 2014



Building 32 of Former Pepco Power Plant

Building 32 is a rectangular building located on the north side of Benning Road. It was constructed in 1906 and serves as an early example of concrete block construction (

Figure 5-9). Building 32 is the last surviving original feature of the privately-owned power plant. It is individually eligible for listing in the NRHP under Criteria A and C for its association with the power plant complex and for the early use of concrete block construction in Washington, DC.

Fire and Police Call Boxes

One fire call box and one police call box are located on the southeast corner of Benning Road and 36th Street (**Figure 5-10**). An additional fire call box is located on the southeast corner of Benning Road and Minnesota Avenue. The publicly accessible call boxes are made of cast iron with octagonal bases. The fire call boxes are house-shaped and topped with electric lamp posts, while the police call box is pill-shaped. The call boxes were in use between approximately 1865 and 1976 and served as means of communication with the local precincts. They are eligible for the NRHP under Criterion A in the area of communications.

Baltimore and Potomac (B&P) Railroad

Four tracks associated with the Baltimore and Potomac Railroad run alongside the eastern side of Anacostia Freeway, west of Minnesota Avenue and the Baltimore and Ohio Railroad (

Figure 5-11). The tracks run at ground level underneath the Whitlock Bridge between 36th Street and Minnesota Avenue. For the purposes of the proposed action EA, the privately-owned B&P Railroad is considered eligible under Criteria A, B, and C for their association with the expansion of rail after the Civil War, the electrification of railroads, and John Edgar Thomson, a prominent railroad engineer.

Fort Mahan Park

Fort Mahan Park is part of the NPS owned-and-operated Civil War Defenses of Washington. It is located near the intersection of Benning Road and 41st Street (**Figure 5-12**). The park has no gates, fences, or security personnel, so the public has 24-hour access. Uses of the park include NPS-led education programs or hikes for the general public, school groups, Boy Scout troops, etc.; NPS-led clean-up activities; private hikes or dog-walking; and tours led by groups such as the Audubon Society or Maryland Native Plant Society.

Figure 5-6: Langston Golf Course, view looking southeast, Jan. 16, 2014



Figure 5-7: Anacostia Park, footbridges to Kingman and Heritage Islands, Jan. 16, 2014



Figure 5-8: Kingman and Heritage Island Parks



Source: www.kingmanisland.org

Figure 5-9: Pepco Building 32



Dwelling, 3938 Benning Road

The two-story Colonial Revival-style dwelling was designed in the 1930's by L.W. Giles, an African American architect who designed hundreds of buildings in Washington from the 1920's to the 1970's (**Figure 5-13**). The privately-owned building is considered NRHP eligible under Criterion C for its architectural association with Giles and his buildings in the District.

Stewart Funeral Home, 4001 Benning Road

Stewart Funerals on Benning Road and 40th Street opened in September of 1964. It was designed by Donald Hughes Roberts, the first African American to study under Frank Lloyd Wright (**Figure 5-14**). The privately-owned building is eligible for NRHP listing under Criterion C.

Fort Circle Park

“Fort Circle Park” is the name given to previously unnamed parcels of land connecting the forts within of the Civil War Defenses of Washington (**Figure 5-15**). In the context of the study area, Fort Circle Park refers to mostly forested land between Benning Road, East Capitol Street, 41st Street, and 40th Street. The land is open to the public 24 hours per day as it is not secured or fenced. The public uses the land for passive recreational uses, such as dog-walking and picnics.

Row Houses, 4201-4243 Benning Road

The unit block of row houses along Benning Road at the intersection of 42nd Street was first referenced in a 1940 advertisement in *The Evening Star* (**Figure 5-16**). The row houses were built for African American families in the Capitol View neighborhood. Each is now owned by a separate, private owner. For the purposes of the Benning Road and Bridges Transportation Improvements EA, the privately-owned properties are considered eligible for NRHP listing under Criterion A and C as part of the historically African-American community of Capital View and its architectural features that were typical of the time: brick exterior and decorative window, doorway and roofline accents.

Condominium Building, 4208 Benning Road

The three-story condominium building on Benning Road and 42nd Street was designed and built in the Art Deco style by African American architects and builders beginning in 1939 (**Figure 5-17**). The privately-owned building retains its original use, form, dimension, materials, and decorative features. It is eligible for NRHP listing under Criterion C because it meets the criteria of the previously listed “Apartment Buildings of Washington DC 1870-1945”. This previous listing established significance for properties in the District that retain integrity and contribute to the historic context of the city during the time period.

Benning Road Apartments, 4228 Benning Road

Benning Road Apartments, located at 4228 Benning Road, is a four-story, T-shaped building with a flat roof construction beginning in 1945 (**Figure 5-18**). The privately-owned building was most likely designed by Romulus C. Archer, Jr., an African American architect active in DC from the 1920s to 1950s. It is considered NRHP eligible under Criterion C due to its association with Archer and the integrity of original features and uses.

Figure 5-10: Fire and Police Call Boxes



Figure 5-11: Baltimore and Potomac Railroad



Figure 5-12: Fort Mahan from 42nd Street, view looking northwest, Jan. 16, 2014



Figure 5-13: 3938 Benning Road



Figure 5-14: Stewart Funeral Home



Figure 5-15: Fort Circle Park

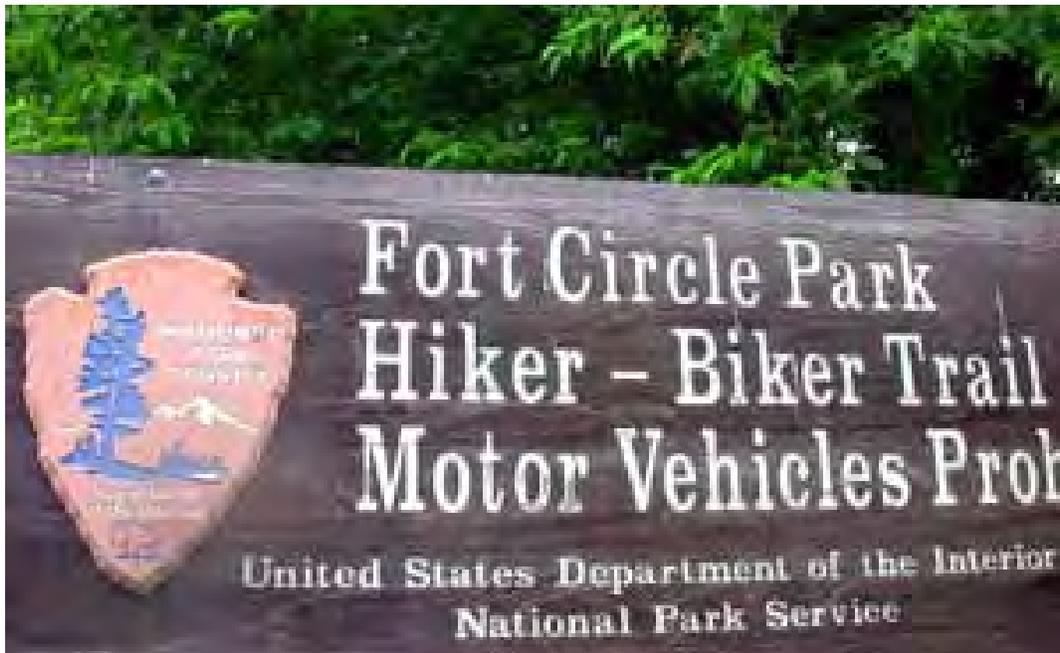


Figure 5-16: Row Houses, 4201-4243 Benning Road



Figure 5-17: Condominium Building, 4208 Benning Road



Apartment Building, 4236 Benning Road

4236 Benning Road is a two-story, T-shaped apartment building designed in the early 1940's by Cyril G. Bow, an African-American architect (**Figure 5-19**). DC SHPO determined the privately-owned property to be eligible for NRHP listing due to the integrity of its original use and features.

New Mount Calvary Baptist Church, 4270 Benning Road

The church building at 4270 Benning Road was re-built for Jones Memorial Church in the 1920's. It was built as a frame church, relatively rare in DC. It was purchased by New Mount Calvary Baptist Church in 1992 (**Figure 5-20**). The public building is eligible for listing in the NRHP under Criteria C for its Gothic Revival design by African American architect Howard Dilworth Woodson and its wood-frame type form that is relatively rare in the District. The New Mount Calvary Baptist Church holds church activities on Wednesday evenings and on Sunday mornings.

Apartment Building, 4274 Benning Road

4274 Benning Road is a three-story, T-shaped art deco style apartment building designed in the 1940s by George T. Santmyers, a prolific DC architect during the first half of the 20th Century (**Figure 5-21**). The privately-owned building is eligible for NRHP listing under Criterion C as an example of Santmyers' apartment designs and of Conventional Low-Rise Apartment Buildings, 1880-1945.

It is also eligible for NRHP listing under Criterion C because it meets the criteria of the previously listed "Apartment Buildings of Washington DC 1870-1945". This previous listing established significance for properties in Washington, DC that retain integrity and contribute to the historic context of the city during the time period.

Fort Chaplin Park – NPS-Owned

Fort Chaplin Park is part of the NPS-owned and operated Civil War Defenses of Washington. It is located near the intersection of East Capitol Street, SE and Texas Avenue, SE between East Capitol Street, SE and C Street, SE. The park has no gates, fences, or security personnel, so the public has 24-hour access. Uses of the public park include NPS-led education programs or hikes for the general public, school groups, Boy Scout troops, etc.; NPS-led clean-up activities; private hikes or dog-walking; and tours led by groups such as the Audubon Society or Maryland Native Plant Society.

Fort Chaplin Park – District-Owned

The District owns a 2.7-acre parcel adjacent to the NPS-owned Fort Chaplin Park at the intersection of Texas Avenue and C Street, SE. Fort Chaplin Park is an undeveloped, publicly accessible parcel that is primarily wooded.

Figure 5-18: Apartment Building, 4228 Benning Road



Figure 5-19: Apartment Building, 4236 Benning Road



Figure 5-20: New Mount Calvary Baptist Church



Figure 5-21: Apartment Building, 4274 Benning Road

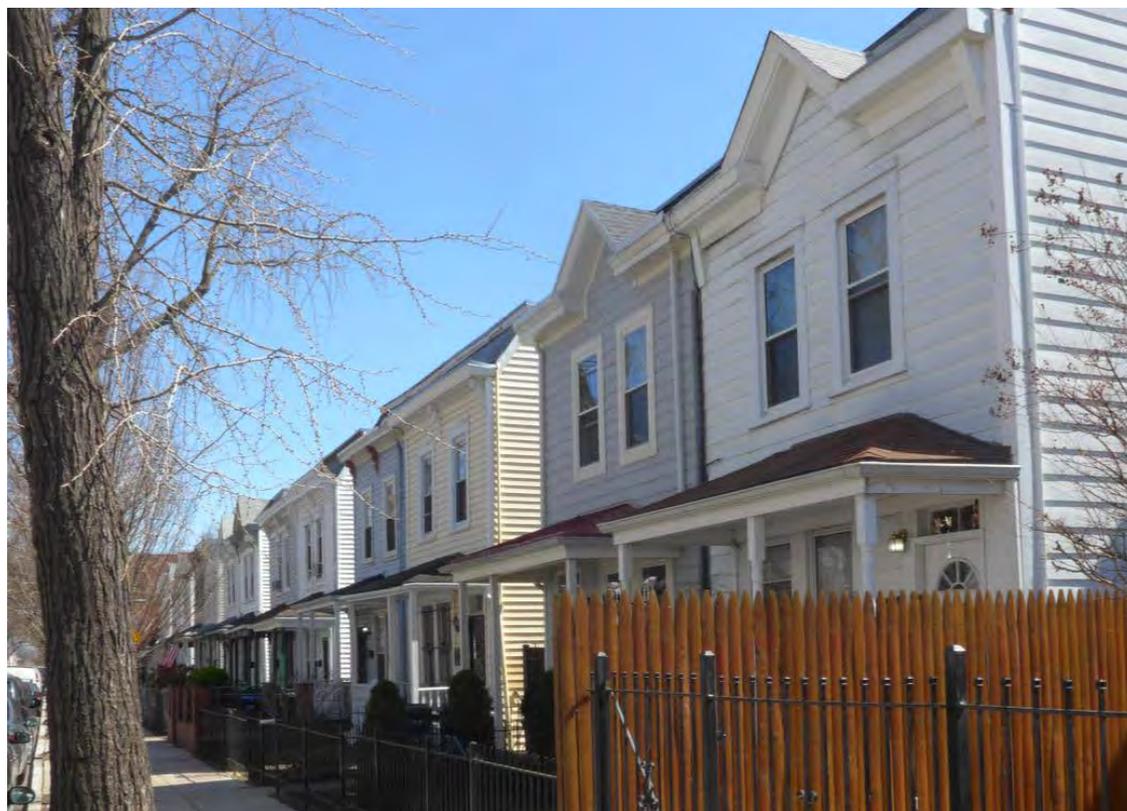


Kingman Park Historic District

NRHP-listed Kingman Park Historic District is bounded by Rosedale and D Street to the south, Maryland Avenue NE to the north, 19th Street to the west, and Oklahoma Avenue NE to the east. The historic district is part of a larger area that includes Kingman Park and Langston neighborhoods, as well as the Rosedale and Isherwood historic residential subdivisions. The historic district encompasses the residential, commercial, institutional, and recreation properties that provide the best physical representation of the community that was built for and developed by African Americans during a period of legally sanctioned segregation in housing, education, recreation and commerce (Figure 5-22). The historic district includes groupings of properties that contribute to the social, cultural and physical history of the development and growth of Kingman Park as a segregated African American community.

The historic district meets Criterion A as with Ethnic History – Black for its association with events that have made a significant contribution to the broad patterns of our history. It also meets Criterion C for Community Planning and Development, as Kingman Park represents a significant and distinguishable neighborhood that includes a dense residential core with a commercial spine and institutional facilities built to serve both.

Figure 5-22: 1500 Block of Gales Street – Some of the First Houses Built in Rosedale-Isherwood



5.6 SECTION 4(F) USE EVALUATION

In this evaluation, the Preferred Alternative includes all elements, roadway improvements, streetcar tracks, vehicles, TPSS facilities, propulsion system, and connection to the DC Streetcar Car Barn Training Center. The Preferred Alternative would not permanently use any resource protected by Section 4(f).

An evaluation of the potential for a constructive use of each resource was also undertaken for the Preferred Alternative. This evaluation examined the potential noise and vibration, and visual effects that the Preferred Alternative would have on protected resources and relied on the results of the assessments provided in EA **Sections 4.5** and **4.9**. For the summarized impact assessments provided for each resource in the following bullets, the Preferred Alternative would not cause a constructive use of Section 4(f) resources:

- Noise – Noise levels from traffic along Benning Road exceed FHWA impact thresholds at the parks and historic properties that are adjacent to Benning Road in the existing condition because of the proximity of the resources to Benning Road. Similar traffic noise effects to the same parks and historic properties are predicted in the 2045 No Build and Preferred Alternative conditions because similar traffic volumes are predicted to occur. With the Preferred Alternative, streetcar bell ringing would have a noise impact on the historic Fort Mahan Park near the 42nd Street stop, other streetcar operations would have no noise impact on resources protected by Section 4(f). Because of the significance and attributes of the impacted historic properties, the noise impact of streetcar bell ringing in the Preferred Alternative would not be so severe as to diminish the significance and attributes of, or interfere with the use and enjoyment of, each resource.
- Vibration - The streetcar in the Preferred Alternative would exceed FTA vibration impact thresholds at two historic properties (4201-4243 Benning Road and 4208 Benning Road) for the same reason as described in Noise above. DDOT will implement vibration control measures (such as streetcar speed reductions and ballast mats under the tracks) to reduce or eliminate vibration effects. Because of this commitment, vibration from streetcar operations in the Preferred Alternative would not be so severe as to diminish the significance and attributes of, or interfere with the use and enjoyment of, each resource.
- Visual –Regarding the parks, the significance and attributes of the resources are as recreational facilities. The focus of activity is primarily internal to each park resource (for example, the trail through the forest in Fort Mahan Park). Regarding the historic properties, the significance and attributes of the properties are the historic architecture (such as the New Mount Calvary Baptist Church) and/or the historic use (such as the Langston Golf Course Historic District). The parks and historic properties that are adjacent to Benning Road are peripherally exposed to the visual elements of the existing roadway infrastructure and will be exposed to the visual changes by the Preferred Alternative within the Benning Road ROW. However, because of the significance and attributes of the resources and the primarily internal focus of activity at the parks, the visual effects of the Preferred Alternative would not be so severe as to diminish the significance and attributes of, or interfere with the use and enjoyment of, each resource.

Table 5-3: Summary of Proposed Use of Section 4(f) Resources

Resource Name	No Use	Temporary Occupancy, No Use	No Constructive Use
Spingarn Senior High School	✓		✓
Young, Browne, Phelps and Spingarn Educational Campus Historic District	✓		✓
Langston Golf Course Historic District and Public Recreational Facility	✓		✓
Anacostia Park	✓	✓	✓
Kingman and Heritage Islands Park	✓	✓	✓
Building 32 of former Pepco Power Plant	✓	✓	✓
Fire and Police Call Boxes	✓	✓	✓
Baltimore & Potomac (B&P) Railroad	✓	✓	✓
Fort Mahan/Civil War Sites (Defenses of Washington) District	✓		✓
3938 Benning Road	✓		✓
Stewart Funeral Home	✓		✓
Fort Circle Park	✓		✓
4201-4243 Benning Road	✓		✓
4208 Benning Road	✓		✓
Benning Road Apartments	✓		✓
4236 Benning Road	✓		✓
New Mount Calvary Baptist Church	✓		✓
4274 Benning Road	✓		✓
Fort Chaplin Park – NPS-Owned	✓		✓
Fort Chaplin Park – District-Owned	✓		✓
Kingman Park Historic District	✓	✓	✓

Spingarn Senior High School

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Spingarn Senior High School resource for the construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Spingarn Senior High School for the Preferred Alternative, as the use of school property for the implementation of the project is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the school building. No temporary occupancy of the Spingarn Senior High School would occur.

No Constructive Use – Spingarn Senior High School is currently exposed to Benning Road noise and vibration, and visual effects. The property's significance and attributes are its historic architecture and historic purpose as a school. It is located farther than 450 feet from Benning Road and a direct view of the roadway from the school is partially obstructed by buildings. There would be a minor change in exposure due to the shift of the travel lane approximately two feet closer to the school, as well as the introduction of new streetcar elements. The focus of activity at the school is internal to the property. A finding of no constructive use is made for Spingarn Senior High School because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Young, Browne, Phelps, and Spingarn Educational Campus Historic District

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Young, Brown, Phelps and Spingarn Educational Campus Historic District resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Young, Brown, Phelps and Spingarn Educational Campus Historic District for the Preferred Alternative, as the use of property within the historic district is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the District. No temporary occupancy of the Young, Brown, Phelps and Spingarn Educational Campus Historic District would occur.

No Constructive Use – The rationale and finding would be the same as for Spingarn Senior High School.

Langston Golf Course Historic District

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Langston Golf Course Historic District for construction or operation of the Preferred Alternative. A finding of no permanent use is made for the Preferred Alternative, as the use of property within the historic district is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the District. No temporary occupancy of the Langston Golf Course Historic District would occur.

No Constructive Use – The Langston Golf Course Historic District currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are as an historic and existing recreational facility. The focus of activity is internal to the property. A change in exposure would occur due to travel lane shift approximately two feet closer and new streetcar elements. A finding of no constructive use is made for the Langston Golf Course Historic District because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Anacostia Park

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from Anacostia Park for the operation of the Preferred Alternative. A finding of no permanent use is made for the Preferred Alternative regarding Anacostia Park, as the use of property within the park is not required.

Temporary Occupancy Exception, No Use – The Preferred Alternative would temporarily impact 0.04 acre of Anacostia Park during construction in order accommodate staging area for the reconstruction of the sidewalk to the south of Benning Road, west of Anacostia Avenue NE. DDOT will apply for a Special Use Permit from NPS to conduct the proposed improvements within the park property. Construction activities would not adversely affect the activities, features, or attributes of the resource to make it eligible for protection under Section 4(f). A preliminary finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. The reconstruction of the sidewalk within park property would be less than the construction duration of the entire proposed action because the proposed improvements in this area constitute a small portion of the overall project area. No land ownership would change as a result of the Preferred Alternative.
- The scope of the work would be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal. Construction activities would affect a small portion of the Anacostia Park in order to reconstruct the sidewalk for a short duration of time. As a result, the Preferred Alternative would not affect the park facilities and functions.
- There would be no anticipated permanent adverse physical impacts, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. The project within park property would include only the reconstruction of an existing sidewalk, which would improve access.
- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project. As such, the land would be fully restored when construction is complete.

- Construction access within Anacostia Park would be attained through a NPS Special Use Permit. Conditions of the Special Use Permit would ensure that construction access and restoration requirements at the Anacostia Park are met appropriately.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect determination confirms that the Preferred Alternative does not impact the features, attribute or activities of the historic property.

On November 9, 2017, the Department of the Interior (DOI) responded to FHWA's request to the review the Section 4(f) Evaluation, which serves as Chapter 5 of the EA. DOI stated in their review that they tentatively agree with FHWA's preliminary determination that the proposed action would not use any resources that are protected by Section 4(f). And, it is also noted that the design of the Preferred Alternative has not changed since this review occurred. In addition, DDOT would coordinate with NPS to attain the Special Use Permit for construction access to Anacostia Park prior to construction.

In addition, DOEE, responded on October 1, 2020, to DDOT's concurrence request that the anticipated impacts to Kingman and Heritage Island Park do not constitute a Section 4(f) use, but rather temporary occupancy.

No Constructive Use – Anacostia Park currently experiences exposure to Benning Road noise and vibration, and visual effects. The property's significance and attributes are as a recreational facility. Changes in exposure would occur due to the travel lane shift of approximately two feet closer and new streetcar elements. The focus of activity is internal to the property. A finding of no constructive use is made for Anacostia Park because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Kingman and Heritage Islands Park

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from Kingman and Heritage Islands Park for construction or operation of the Preferred Alternative. A finding of no permanent use is made for the Preferred Alternative regarding Kingman and Heritage Islands Park, as the use of property within the park is not required.

Temporary Occupancy Exception, No Use – The Preferred Alternative would temporarily impact 0.07 acres of Kingman and Heritage Islands Park during construction in order accommodate the reconstruction of the sidewalk to the south of Benning Road, west of Anacostia Avenue NE. Completion of the work would temporarily occupying 0.07 acres within park property. Construction activities would not adversely affect the activities, features, or attributes of the resource to make it eligible for protection under Section 4(f). A finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. The

reconstruction of the sidewalk within park property would be less than the construction duration of the entire proposed action because the proposed improvements in this area constitute a small portion of the overall project area. No land ownership would change as a result of the Preferred Alternative;

- The scope of the work would be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal. Construction activities would affect a small portion of the park in order to reconstruct the sidewalk. As a result, the Preferred Alternative would not affect park facilities;
- There would be no anticipated permanent adverse physical impacts, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. The project within park property would include only the reconstruction of an existing sidewalk, which would improve access.
- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project. The project within park property only includes the reconstruction of an existing sidewalk. As such, the land would be fully restored when construction is complete; and
- There must be documented agreement of the appropriate Federal, State, or local officials having jurisdiction over the resource regarding the above conditions.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect determination confirms that the Preferred Alternative does not impact the features, attribute or activities of the historic property.

Throughout the project development process, DDOT has been in regular coordination with DOEE regarding the proposed improvements and impacts in the vicinity of Kingman and Heritage Islands Park. Based on the positive responses provided by DOEE during these interactions and concurrence letter (October 1, 2020), as well as the DC SHPO's concurrence on the no-adverse effect determination DDOT believes that the conditions set in 23 CFR 774.13(d) have been satisfied.

No Constructive Use – Kingman and Heritage Islands Park currently experiences exposure to Benning Road's noise and vibration, and visual effects. The property's significance and attributes are as a recreational facility. Changes in exposure would occur due to the travel lane shift of approximately two feet closer and new streetcar elements. The focus of activity is internal to the property. A finding of no constructive use is made for Kingman and Heritage Islands Park because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Building 32 of Former Pepco Power Plant

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from or directly impact Building 32 to construct or operate the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is

made for Building 32 for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – Temporary Occupancy Exception, No Use — The Preferred Alternative would temporarily impact 0.12 acre of the Former Pepco Power Plant during construction in order accommodate staging area for the reconstruction of the sidewalk to the north of Benning Road, between Anacostia Avenue and 36th Street. The impacted area is located directly adjacent to the existing sidewalk and does not include Building 32 or the parking lots which serve it. Construction activities would not adversely affect the activities, features, or attributes of the resource to make it eligible for protection under Section 4(f). A finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. The reconstruction of the sidewalk within the Pepco property would be less than the construction duration of the entire proposed action because the proposed improvements in this area constitute a small portion of the overall project area. No land ownership would change as a result of the Preferred Alternative.
- The scope of the work would be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal. Construction activities would affect a small portion of the Pepco property in order to reconstruct the sidewalk for a short duration of time. As a result, the Preferred Alternative would not affect the site's operations or Building 32 itself.
- There would be no anticipated permanent adverse physical impacts, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. The project within the Pepco property would include only the reconstruction of an existing sidewalk, which would improve access. No permanent adverse effects are expected.
- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project. The project within the Pepco property only includes the reconstruction of an existing sidewalk. As such, the land would be fully restored when construction is complete.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect determination confirms that the Preferred Alternative does not impact the features, attributes or activities of the historic property.

No Constructive Use – Building 32 currently experiences exposure to Benning Road's noise and vibration, and visual effects. The property's significance and attributes are its architecture and as part of a former historic industrial facility. Benning Road is 110 feet from the building and the view is partially obstructed by existing elevated Metrorail guideway. Changes in exposure would occur due to the travel lane shift of approximately two feet closer and new streetcar elements. A finding of no constructive use is made for Building 32 because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Fire and Police Call Boxes

No Permanent Use – The Preferred Alternative would not impact the fire and police call boxes located on the southeast corner of Benning Road and 36th Street. A finding of no permanent use is made for the fire and police call boxes at that location for the Preferred Alternative, as the use of the historic resource is not required.

Temporary Occupancy Exception, No Use – The Preferred Alternative would require reconfiguration of the intersection of Benning Road and Minnesota Avenue to accommodate the proposed roadway section and safety improvements. The work would impact the area along the existing curb where a fire call box is located at the southeast corner of the intersection, requiring relocation of the fire call box. In coordination with the DC SHPO, DDOT would relocate the fire call box to a similar position at the intersection that is as close as possible to the original location so as to retain its historic context. A preliminary finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. The duration of construction work at the Minnesota Avenue/Benning Road intersection would be less than the construction duration of the entire proposed action because the proposed safety improvements are one of the components of the proposed action. No land ownership would change related to the fire call box due to the Preferred Alternative;
- The scope of the work would be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) resource are minimal. In the letter dated December 5, 2019, DC SHPO has provided concurrence to the determination of no adverse effect on the fire and police call boxes provided that DDOT continues to consult in determining appropriate sites to relocate the call boxes in order to ensure their integrity of location and setting is diminished as little as possible (i.e. the relocation sites should be as close as possible to their historic locations). The determination was made by FHWA for the Preferred Alternative because the call boxes would remain intact and generally in a similar location. As a result, the Preferred Alternative would not alter the historic integrity of the fire call box (related to location, design, setting, materials, workmanship, feeling and association) or the ability of the property to convey its significance;
- There would be no anticipated permanent adverse physical effects, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. The no adverse effect determination means that the Preferred Alternative would have no permanent adverse physical effects to the fire call box and no temporary or permanent interference with the protected activities, features, or attributes of the property – the conveyance of its historic significance; and
- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project. The fire and police call boxes would be stored during construction to protect their integrity and then re-installed at a new location determined in coordination with the DC SHPO.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect

determination confirms that the Preferred Alternative does not impact the features, attribute or activities of the fire and police call boxes for protection by Section 4(f), as long as the following condition was met:

- FHWA/DDOT will consult with DC SHPO to determine the appropriate sites to relocate the historic fire and police call boxes in order to ensure their integrity of location and setting is diminished as little as possible (i.e. the relocation sites should be as close as possible to their historic locations).

No Constructive Use – Existing exposure to Benning Road’s noise and vibration, and visual effects; property significance and attributes are as historic objects. Proposed relocation would place the objects in a similar location with respect to the roadway. The objects are not sensitive to proximity noise and vibration, or visual effects, provided they remain in a similar location with respect to the roadway. A finding of no constructive use is made because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the fire and police call boxes at Minnesota Avenue and 36th Street.

B&P Railroad

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the B&P Railroad resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for the Baltimore and Potomac (B&P) Railroad for the Preferred Alternative, as the use of property within the historic resource is not required.

Temporary Occupancy Exception, No Use – The Preferred Alternative would temporarily impact 0.043 acre of the B&P Railroad corridor (part of the CSX rail facility under the Whitlock Bridge) during construction in order accommodate the replacement of the Whitlock Bridge. Construction activities would not adversely affect the activities, features, or attributes of the resource to make it eligible for protection under Section 4(f). A finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. Based on the current phasing plan, the time required to reconstruct the Whitlock Bridge would be less than the construction duration of the entire proposed action. No land ownership would change as a result of the Preferred Alternative.
- The scope of the work scheduled to occur within CSX’s right of way would be limited to temporary construction. Therefore, the magnitude of the changes to the Section 4(f) resource are expected to be minimal. As a result, the Preferred Alternative would not affect the integrity of the historic site.
- There would be no anticipated permanent adverse physical effects, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. Construction activities will be coordinated with CSX so as to minimize the occurrence of service interruptions. The site is not currently accessible to the public, so

no change in access is anticipated.

- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect determination confirms that the Preferred Alternative does not impact the features, attributes, or activities of the historic property, as long as the following condition was met:

- FHWA/DDOT will consult further with DC SHPO to determine the need for phased archaeological investigations in previously unsurveyed areas where ground disturbing activities are proposed.

No Constructive Use – The property has existing exposure to Benning Road's noise and vibration, and visual effects. Its significance and attributes are as an historic transportation facility, but is not sensitive to proximity noise and vibration, and visual effects. A finding of no constructive use is made for the B&P Railroad because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the B&P Railroad.

Fort Mahan Park

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Fort Mahan Park resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Fort Mahan Park for the Preferred Alternative as the use of property within the park is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the park. No temporary occupancy of Fort Mahan Park would occur.

No Constructive Use – Fort Mahan Park currently experiences exposure to Benning Road's noise and vibration, and visual effects. The property significance is as an archaeological site and existing recreational facility. Changes in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is internal to the property. A finding of no constructive use is made for Fort Mahan Park because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

3938 Benning Road

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the 3938 Benning Road resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no

permanent use is made for 3938 Benning Road for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the building. No temporary occupancy of 3938 Benning Road would occur.

No Constructive Use – The property currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture. It is located adjacent to Benning Road with a direct view. Changes in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is the architecture. A finding of no constructive use is made for 3938 Benning Road because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Stewart Funeral Home

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Stewart Funeral Home resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Stewart Funeral Home for the Preferred Alternative, as the use of property within the historic resource is no required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the funeral home. No temporary occupancy of Stewart Funeral Home would occur.

No Constructive Use – Stewart Funeral Home currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture and historic business. It is located adjacent to Benning Road with a direct view. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is internal to the building. A finding of no constructive use is made for Stewart Funeral Home because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Fort Circle Park

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Fort Circle Park resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Fort Circle Park for the Preferred Alternative, as the use of property within the park is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the park. No temporary occupancy of Fort Circle Park would occur.

No Constructive Use – Fort Circle Park currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are as a recreational corridor. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is as a connector to historic properties. A finding of no constructive use is made for Fort Circle Park because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

4201-4243 Benning Road

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the 4201-4243 Benning Road resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for 4201-4243 Benning Road for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the buildings. No temporary occupancy of 4201-4243 Benning Road would occur.

No Constructive Use – The property at 4201-4243 currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture. The location is adjacent to Benning Road with a direct view. The change in exposure due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is the architecture. A finding of no constructive use is made for 4201-4243 Benning Road because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

4208 Benning Road

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the 4208 Benning Road resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for 4208 Benning Road for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the building. No temporary occupancy of 4208 Benning Road would occur.

No Constructive Use – The property at 4208 Benning Road currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture. It is located adjacent to Benning Road with a direct view. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is the architecture. A finding of no constructive use is made for 4208 Benning Road because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Benning Road Apartments

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Benning Road Apartments resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Benning Road Apartments for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the apartments. No temporary occupancy of the Benning Road Apartments would occur.

No Constructive Use – Existing exposure to Benning Road’s noise and vibration, and visual effects. Property significance and attributes are its historic architecture. Location is adjacent to Benning Road with a direct view. Change in exposure due to the travel lane shift of approximately three feet closer and new streetcar elements. Focus of activity is the architecture. A finding of no constructive use is made for the Benning Road Apartments because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

4236 Benning Road

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the 4236 Benning Road resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for 4236 Benning Road for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the building. No temporary occupancy of 4236 Benning Road would occur.

No Constructive Use – The property at 4236 Benning Road currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture. It is located adjacent to Benning Road with a direct view. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new

streetcar elements. The focus of activity is the architecture. A finding of no constructive use is made for 4236 Benning Road because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

New Mount Calvary Baptist Church

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the New Mount Calvary Baptist Church resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for New Mount Calvary Baptist Church for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the church. No temporary occupancy of New Mount Calvary Baptist Church would occur.

No Constructive Use – The New Mount Calvary Baptist Church currently experiences exposure to Benning Road’s noise and vibration, and visual effects. The property’s significance and attributes are its historic architecture and historic house of worship. It is located adjacent to Benning Road with a direct view. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is the architecture and its association with the community. A finding of no constructive use is made for the New Mount Calvary Baptist Church because proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

4274 Benning Road

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the 4274 Benning Road resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for 4274 Benning Road for the Preferred Alternative, as the use of property within the historic resource is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the building. No temporary occupancy of 4274 Benning Road would occur.

No Constructive Use – The property at 4274 Benning Road currently experiences exposure to Benning Road’s noise and vibration, and visual impacts. The property’s significance and attributes are its historic architecture. It is located adjacent to Benning Road with a direct view. A change in exposure would occur due to the travel lane shift of approximately three feet closer and new streetcar elements. The focus of activity is the architecture. A finding of no constructive use is made for 4274 Benning Road because proximity effects (noise and vibration, and visual) would

not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

Fort Chaplin Park – NPS-Owned

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Fort Chaplin Park resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Fort Chaplin Park – NPS-Owned for the Preferred Alternative, as the use of property within the historic park is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of the park. No temporary occupancy of Fort Chaplin Park – NPS-Owned would occur.

No Constructive Use – Fort Chaplin Park is owned by NPS. The property’s significance and attributes are its historic purpose as a recreation facility. It is located more than 680 feet from Benning Road; direct view and paths of noise and vibration are obstructed by buildings. No noise and vibration, or visual effects of the proposed action would occur. A finding of no constructive use is made for Fort Chaplin Park – NPS-Owned because no proximity effects (noise and vibration, or visual) are expected.

Fort Chaplin Park – District-Owned

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road, approximately 1,270 feet from the park boundary. DDOT would not require ROW from the Fort Chaplin Park resource for construction or operation of the Preferred Alternative, as all proposed work activities required to implement the Preferred Alternative would occur within existing DDOT ROW. A finding of no permanent use is made for Fort Chaplin Park for the Preferred Alternative, as the use of property within the park is not required.

No Temporary Occupancy – The construction area for the Preferred Alternative would be within the Benning Road ROW in the area of Fort Chaplin Park – District-Owned. No temporary occupancy of Fort Chaplin Park – District-Owned would occur.

No Constructive Use – Fort Chaplin Park is owned by the District. The property’s significance and attributes are its historic purpose as a recreation facility. It is located more than 1270 feet from Benning Road; direct view and paths of noise and vibration are obstructed by buildings. No noise and vibration, or visual effects of the proposed action would occur. A finding of no constructive use is made for Fort Chaplin Park – District-Owned because no proximity effects (noise and vibration, or visual) are expected.

Kingman Park Historic District

No Permanent Use – The Preferred Alternative would operate at grade within the ROW of Benning Road. DDOT would not require ROW from the Kingman Park Historic District for

construction or operation of the Preferred Alternative. A finding of no permanent use is made for the Preferred Alternative, as the use of property within the historic district is not required.

Temporary Occupancy Exception, No Use — The boundaries of the Kingman Park Historic District cross Benning Road and include the Langston Golf Course Historic District. Therefore, the Preferred Alternative would temporarily impact 3.3 acres of the historic district during construction in order to accommodate the proposed roadway section and safety improvements. Easements would not be required, as all work within the historic district would be completed within DDOT ROW. Construction activities would not adversely affect the activities, features, or attributes of the resource, making it eligible for protection under Section 4(f). A preliminary finding of temporary occupancy exception, no use, is made for the Preferred Alternative based on the following criteria:

- The duration (of the occupancy) would be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land. The duration of construction work on Benning Road between 25th Place NE and Anacostia Avenue NE would be less than the construction duration of the entire proposed action because the proposed improvements in this area constitute a small portion of the overall project area. No land ownership would change as a result of the Preferred Alternative.
- All construction activities within the historic district would occur within DDOT ROW and would not directly affect historic resources. As a result, the Preferred Alternative would not alter the historic integrity of the historic district (related to location, design, setting, materials, workmanship, feeling and association) or the ability of the property to convey its significance.
- There would be no anticipated permanent adverse physical effects, nor would there be interference with the activities or purpose of the resource, on either a temporary or permanent basis. The no adverse effect determination means that the Preferred Alternative would have no permanent adverse physical effects to the historic district and no temporary or permanent interference with the protected activities, features or attributes of the property – the conveyance of its historic significance.
- The land being used would be fully restored, i.e., the resource would be returned to a condition which is at least as good as that which existed prior to the project. All construction activities would occur within DDOT ROW and would not affect the protected activities, features, or attributes of the property.

In the letter dated December 5, 2019, DC SHPO concurred with FHWA's determination that the undertaking would have no adverse effect on historic properties. A no adverse effect determination confirms that the Preferred Alternative does not impact the features, attributes or activities of the historic district.

No Constructive Use – The Kingman Park Historic District currently experiences exposure to Benning Road's noise and vibration, and visual effects. The property's significance and attributes are as an historic district. The focus of activity is internal to the property. A change in exposure would occur due to the travel lane shift of approximately two feet closer and new streetcar elements. A finding of no constructive use is made for the Kingman Park Historic District because

proximity effects (noise and vibration, and visual) would not be so severe as to diminish the attributes of or interfere with the use and enjoyment of the property.

5.7 ALL POSSIBLE PLANNING TO MINIMIZE HARM

During alternatives and EA development, FHWA and DDOT applied the following planning strategies to minimize harm to Section 4(f) resources;

- Coordinating with officials with jurisdiction to identify Section 4(f) resources;
- Seeking input from agencies and the public regarding the effects of the Preferred Alternative on the Section 4(f) resources and other resources;
- Using existing transportation and utility corridors as much as is reasonably feasible to keep additional ROW needs to a minimum; and
- Avoiding or reducing effects to Section 4(f) resources by minimizing ROW requirements for the roadway typical section elements and intersection safety improvements.

As a result of these measures, all permanent use of Section 4(f) resources were eliminated. Based on the current design and coordination documents, DDOT has concluded that the five proposed temporary occupancies of 4(f) properties meet the conditions stipulated in 23 CFR 774.13 (d) and therefore do not constitute uses. As a result, least overall harm analysis and feasible and prudent avoidance alternative analysis were not conducted.

5.8 COORDINATION AND CONSULTATION

DDOT initiated coordination with officials with jurisdiction over Section 4(f) resources at the onset of the NEPA scoping process in February 2014. Each of the officials with jurisdiction over Section 4(f) resources in the study area was invited to participate, including the NPS, the District of Columbia Department of Parks and Recreation and the DC SHPO. The first scoping meeting on March 4, 2014 introduced the proposed action to agencies and included an overview of the historic features and context of the proposed action. Officials with jurisdiction who attended this meeting included the NPS. During that meeting, the NPS indicated that Fort Mahan Park should be protected from proposed effects.

For the Draft EA, Section 106 consultation with the DC SHPO was initiated for the proposed action on February 18, 2014, after which consultation on the area of potential effects occurred. Consultation was formally initiated on March 16, 2015.

On December 4, 2019, FHWA submitted its no adverse effect determination letter to the DC SHPO. In the letter dated December 5, 2019, DC SHPO provided determination that the undertaking will have no adverse effect on historic properties, provided that the avoidance measures are implemented, and the following two conditions are met:

- FHWA/DDOT will consult with DC SHPO to determine the appropriate sites to relocate the historic fire and police call boxes in order to ensure their integrity of location and setting is diminished as little as possible (i.e. the relocation sites should be as close as possible to their historic locations); and

- FHWA/DDOT will consult further with DC SHPO to determine the need for phased archaeological investigations in previously un-surveyed areas where ground disturbing activities are proposed.

DDOT is committed to continuous coordination with DC SHPO throughout the project design and implementation process to satisfy the conditions established by the DC SHPO. Prior to construction, DDOT would attain a Special Use Permit for construction access to allow the completion of construction activities the NPS-owned Anacostia Park and authorization to access the DOEE-owned Kingman and Heritage Island Park historic properties.

Section 4(f) of the U.S. Department of Transportation Act of 1966, which is codified at 49 U.S.C. § 303 and 23 U.S.C. § 138, implementing regulations at 23 C.F.R. § 774, permits the use of land from a publicly-owned public park, recreation area, wildlife or waterfowl refuge, or land of a historic site of national, state, or local significance only if there is no feasible and prudent avoidance alternative, to the use of land from the property; and the action includes all possible planning to minimize harm to the property resulting from such use. The Preferred Alternative would have temporary construction related use and effects on Anacostia Park and Kingman and Heritage Islands Park. However, the temporary occupancy related to construction staging areas within each historic resource would not affect the use of or impair the resources of these parks. There would be no change in the ownership of these resources. Since the temporary effects associated with construction activities would occur by the temporary occupancy only, the requirements of Section 4(f) would not apply.

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6 PUBLIC & AGENCY COORDINATION

Public and agency coordination for the proposed action was conducted in accordance with the requirements of NEPA and Section 106 of the National Historic Preservation Act (54 U.S.C. 300101 et seq.). Coordination served to help identify and evaluate alternatives, and to resolve issues related to the proposed action. Federal and local agencies and the public were invited to review and comment on the proposed action alternatives.

6.1 PUBLIC OUTREACH

The public was invited to participate in public involvement process for the project in 2012 as part of the *Benning Road Streetcar Extension Feasibility Study* (DDOT, 2013) and again during the development of this EA as described below.

6.1.1 PROJECT WEBSITE

In April 2014, a project website (<http://www.benningproject.com>) was launched to provide information on the project, NEPA and EA process, schedule, and to encourage interested parties to sign up for electronic updates and comment on the project. Following public meetings, meeting materials were posted online.

6.1.2 PROJECT NEWSLETTER

In September 2014, DDOT distributed newsletters to the commissioners of Advisory Neighborhood Commissions (ANCs) 5D, 7C, 7D, 7E, and 7F, as well as Deanwood Civic Association, Deanwood Heights Main Streets, and Central Northeast Civic Association. The newsletter provided updates on the NEPA and Section 106 processes, as well as information for upcoming public meeting milestones.

6.1.3 PUBLIC MEETING, PROJECT SCOPING: April 22, 2014

DDOT held the first public meeting from 6:30 pm to 8:00 pm on April 22, 2014 at the Department of Employment Services (DOES) located at 4058 Minnesota Avenue. DOES is an accessible and centrally located facility within the study area. The purpose of the meeting was to:

- Introduce the Benning Road and Bridges Transportation Improvements project to the public;
- Discuss the NEPA and Section 106 processes;
- Review findings on existing conditions (and alignments analyzed in the *Benning Road Streetcar Extension Feasibility Study*);
- Discuss and gather feedback on transportation issues and opportunities; and
- Gather input on the draft Purpose and Need.

During this 90 minute open house, attendees were given a four-page, fold-over agenda that introduced the project, the project area, and provided a timeline for the NEPA and Section 106 processes. There were 61 attendees at the meeting. DDOT representatives were available to answer questions at display boards. Attendees provided written comments via comment forms made available during the meeting. Overall, attendees communicated that there is a need for safety improvements at the intersection of Benning Road and Minnesota Avenue for all modes, suitable river crossings for pedestrians and bicycles, congestion relief, commercial property access, and neighborhood branding and conservation.

Figure 6-1: Public Meeting Advertisement Examples

Public Meeting Postcard

Public Meeting
Benning Road Transportation Improvements Environmental Assessment

How to get there:

- Metrobus: U2, U4, U5, U6, U8, V7, X2, X9
- Metrorail: Minnesota Avenue (Orange Line)

Contact us:

- Visit us online: benningproject.com
- Call us: (202) 563-5003
- Email us: info@benningproject.com

The District Department of Transportation (DDOT) does not discriminate on the basis of actual or perceived: race, color, national origin, sex, age, marital status, personal appearance, sexual orientation, gender identity or expression, familial status, family responsibilities, matriculation, political affiliation, genetic information, disability, source of income, status as a victim of an intrafamily offense, or place of residence of business as provided by Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act, the D.C. Human Rights Act of 1977, and other related statutes. If you need special accommodations or language assistance services (translation or interpretation) please contact Malia Salaam at (202) 563-5003 or info@benningproject.com 72 hours in advance of the meeting. These services will be provided free of charge.

When: Tuesday, April 22, 2014 6:30 – 8:00 PM
Where: Department of Employment Services Building (DOES) 4058 Minnesota Ave NE Community Room Washington, DC 20019

PRRBT STD
E-CRWSS
U.S. POSTAGE
PAID

Public Meeting Flyer

Public Meeting
Benning Road Transportation Improvements Environmental Assessment

When: Tuesday, April 22, 2014 6:30 – 8:00 PM
Where: Department of Employment Services Building (DOES) 4058 Minnesota Ave, NE Community Room Washington, DC 20019

Project Area:

How to get there:

- Metrobus: U2, U4, U5, U6, U8, V7, X2, X9
- Metrorail: Minnesota Avenue (Orange Line)

The District Department of Transportation (DDOT) does not discriminate on the basis of actual or perceived: race, color, national origin, sex, age, marital status, personal appearance, sexual orientation, gender identity or expression, familial status, family responsibilities, matriculation, political affiliation, genetic information, disability, source of income, status as a victim of an intrafamily offense, or place of residence of business as provided by Title VI of the Civil Rights Act of 1964, the Americans with Disabilities Act, the D.C. Human Rights Act of 1977, and other related statutes. If you need special accommodations or language assistance services (translation or interpretation) please contact Malia Salaam at (202) 563-5003 or info@benningproject.com 72 hours in advance of the meeting. These services will be provided free of charge.

Contact us:

- Visit us online: benningproject.com
- Call us: (202) 563-5003
- Email us: info@benningproject.com

The meeting was advertised in the Washington Post Express and the Afro News, and flyers were distributed to community centers, churches, businesses, and at Minnesota Avenue and Benning Road Metrorail Stations. Email notifications were sent to ANC commissioners for 5D, 7C, 7D, 7E, and 7F, as well as Deanwood Civic Association, Deanwood Heights Main Streets, and Central Northeast Civic Association. Email notifications were also sent to 700 email addresses gathered from former DC Streetcar projects. Lastly, 5,000 postcard invitations were sent to residences and businesses in proximity to the project area by USPS Every Door Direct Mailing (EDDM) service, and 5,035 local phone numbers were contacted via Switch Board Communication Services to share the announcement. Public meeting advertisement examples can be seen in **Figure 6-1**.

Following the public meeting, DDOT prepared 15 preliminary alternatives to address issues and opportunities identified by the public.

6.1.3.1 Title VI Statistics for Public Meeting 1

Title VI questionnaires were distributed at the sign-in table. Of the 61 attendees at the public meeting, 37 people completed the form. Below is a brief summary of Title VI questions and responses.

Ward:

- 83% Seven
- 10% Five
- 3% Three
- 3% One

Gender:

- 38% Male
- 62% Female

General Race/ Ethnic Identification Categories (*Please circle as many may apply*):

- 76% African American
- 17% Caucasian
- 3% Asian/Pacific Islander
- 3% Hispanic

Age:

- 59% Above 50 years
- 25% 36-50
- 16% 26-35

Primary language spoken at home:

- 92% English
- 8% Spanish

How did you find out about this meeting? (Please circle all that apply):

- 50% Flyer
- 19% Listserv/Blog
- 8% Project Website
- 8% Advisory Neighborhood Commission (ANC)
- 5% Other/Word of Mouth, Neighbor, Robocall
- 2% DDOT Website
- 2% Newspaper

Other: Project representatives

How did you travel to this meeting? (Please circle all that apply):

- 50% Car
- 28% Walked
- 11% Metrorail
- 5% Bus
- 5% Bicycle

Did you find the meeting location to be accessible? (For purposes of location or disability):

- 97% Yes
- 3% No (If no, please explain): "Need more posters to remind people."

6.1.4 PUBLIC MEETING, ALTERNATIVES DEVELOPMENT: May 28, 2014

DDOT held a second public meeting from 6:00 pm to 7:30 pm on May 28, 2014 at DOES located at 4058 Minnesota Avenue, NE. The purpose of the meeting was to:

- Provide information about the NEPA and Section 106 processes;
- Receive feedback on the 2040 No Build Alternative (review 3D simulation video);
- Receive feedback on strengths and weaknesses of 15 preliminary alternatives; and
- Receive feedback on Benning Road and Minnesota Avenue Intersection Improvements.

During this 90-minute open house, attendees were given a four-page, fold-over agenda that described the project, and provided a timeline for the NEPA and Section 106 processes.

There were 45 attendees at the meeting. DDOT representatives were available to answer questions by display boards. Attendees provided written comments via comment forms made available during the meeting. Participants discussed transportation improvement concepts with DDOT staff on large roll-out maps and communicated a need for continuous multi-use paths where feasible, safe, and efficient streetcar operations with other modes, alternatives that have a minimal impact on adjacent land uses, and pedestrian safety improvements along Benning Road at Minnesota Avenue and at East Capitol Street.

The meeting was advertised in the Washington Post Express and the Afro News, and flyers were distributed to community centers, churches, businesses, and at Minnesota Avenue and Benning

Road Metrorail Stations. Email notifications were sent to ANC commissioners for 5D, 7C, 7D, 7E, and 7F, as well as Deanwood Civic Association, Deanwood Heights Main Streets, and Central Northeast Civic Association. Email notifications were also sent to 770 email addresses gathered from former DC Streetcar projects and the first public meeting. Lastly, 6,200 postcard invitations were sent to residences and businesses in proximity to the project area by USPS Every Door Direct Mailing service, and 5,154 local phone numbers were contacted via Switch Board Communication Services.

Following the public meeting and agency coordination, DDOT prepared two Build Alternatives, in addition to the No Build Alternative, to be carried forward for additional detailed analysis in the EA. The Build Alternatives include the extension of streetcar service from the eastern terminus of the H/Benning Streetcar Line to the Benning Road Metrorail Station.

6.1.4.1 Title VI Statistics for Public Meeting 2

Title VI questionnaires were distributed at the sign-in table. Of the 45 attendees at the meeting, 34 completed the form. Below is a brief summary of Title VI questions and responses.

Ward:

- 83% Seven
- 10% Five
- 3% Four
- 3% One

Gender:

- 47% Male
- 53% Female

General Race/ Ethnic Identification Categories:

- 71% African American
- 15% Caucasian
- 7% Other, All of the above
- 3% Asian/Pacific Islander
- 3% Other

Age:

- 59% Above 50 years
- 22% 36-50
- 16% 26-35
- 9% 18-25

Primary language spoken at home: 100% English

How did you find out about this meeting? (Please circle all that apply):

- 32% Flyer/Postcard Mailer
- 21% Listserv/Blog
- 12% Phone call/Robocall
- 12% Other/Word of Mouth
- 9% Project Website
- 9% Mail Chimp/Email
- 9% Advisory Neighborhood Commission (ANC)
- 9% DDOT Website
- 6% Television

How did you travel to this meeting? (Please circle all that apply):

- 56% Car
- 31% Walked
- 12% Metrorail
- 6% Bus

Did you find the meeting location to be accessible? (For purposes of location or disability):

- 94% Yes
- 6% No

6.1.5 PUBLIC HEARING On Draft Environmental Assessment: – May 19, 2016

DDOT held a public hearing for the proposed action from 6:00 pm to 8:00 pm on May 19, 2016 at DOES located at 4058 Minnesota Avenue. The purpose of the hearing was to:

- Provide information on the May 2016 EA;
- Discuss the NEPA and Section 106 processes; and
- Receive feedback on the strengths and weaknesses of Build Alternative 1, Build Alternative 2, and the No Build Alternative.

During the two-hour open house and hearing, attendees had the opportunity to view display boards, speak with project staff, and submit official written or spoken comments. Display boards showed the study area; NEPA and Section 106 Evaluation timeline; project Purpose and Need; summaries of the Section 106 and Alternatives Development processes; and information and visuals describing the impacts of Build Alternatives 1 and 2. Project staff members were available to answer questions.

There were 70 attendees at the hearing. Participants discussed support for or opposition to the proposed action or specific alternatives and concerns about neighborhood and community facility impacts, bicycle accommodations, parking, loss of street trees, and other issues. All public hearing comments along with DDOT's responses are shown in **Appendix L**.

Prior to the hearing, project staff attended meetings for five ANCs (5D, 7C, 7D, 7E, and 7F) and sent e-mails to ANC commissioners, the DC Streetcar Listserv, and prior public meeting attendees. The DDOT also distributed 7,200 postcards in person and via mail to local public facilities, residences, churches, and businesses; arranged automated phone calls to local telephone numbers; printed ads in three local newspapers; and published notifications on the project website.

6.1.5.1 Title VI Statistics for Public Hearing

A total of 41 respondents filled out the Title VI questionnaire distributed at the sign-in table. A brief summary of the results follows:

Ward:

- 61% Seven
- 15% Six
- 5% Eight
- 5% Four
- 2% Five

Gender:

- 54% Male
- 39% Female

General Race/ Ethnic Identification Categories:

- 61% African American
- 29% Caucasian
- 5% Other

Age:

- 54% Above 50 years
- 12% 36-50
- 22% 26-35
- 7% 18-25

Primary language spoken at home:

- 98% English

How did you find out about this meeting? (Please circle all that apply):

- 29% Flyer/Postcard Mailer
- 17% Listserv/Blog
- 15% Other/Word of Mouth
- 12% Mail Chimp/Email
- 7% Phone call/Robocall
- 7% Project Website
- 6% Television

2% Community Meeting

How did you travel to this meeting? (Please circle all that apply):

49% Car

24% Walked

20% Metrorail

15% Bus

Did you find the meeting location to be accessible? (For purposes of location or disability):

98% Yes

2% No

6.1.6 EA Open House: November 15, 2017

On Wednesday November 15, 2017, the District Department of Transportation (DDOT) held an Open House for the Benning Road and Bridges Transportation Improvements Environmental Assessment (EA). The Open House was held, Friendship Collegiate Academy located at 4095 Minnesota Avenue, NE. The Open House began at 6:00 pm and concluded at 8:00 pm.

The purpose of this Open House is to provide an update on the status of the Benning Road and Bridges Transportation Improvements EA.

There were 49 attendees who signed in and a total of 55 attendees counted, excluding DDOT and consultant staff. Five Advisory Neighborhood Commissioners also participated in the meeting in addition to the Constituent Director for Councilmember Gray. Members of the Capitol View Civic Association, River Terrace Civic Association and Deanwood Civic Association also attended.

Open House attendees made a wide variety of comments on the project. Accordingly, several key themes arose from the comments. Traffic was the greatest concern, as evidenced by comments on the current congestion on both Benning Road, which was said to be at a standstill during rush hour, and Minnesota Avenue. Many of these comments expressed concern that the streetcar, both during construction and operation, would have a negative impact on what is already a very congested traffic corridor.

While traffic concerns received the most comments, the projects impact on sidewalks and pedestrian safety was also concern. One specific concern was raised regarding the narrowing of sidewalks to facilitate road widening. Parking was another major concern. One commenter stated that they were “worried about parking and congested streets, worried that you will force our business to leave.” Other commenters expressed concern about parking-related negative impacts on existing businesses, churches, and funeral homes

Commenters expressed concern about potential impacts on existing bus service, which was viewed as positive for the community. One commenter stated that “the existing bus and trains can get them there more efficiently” than the proposed streetcar. Other commenters expressed a desire for increased bus service via a Circulator-type bus. A number of other commenters expressed that they prefer a terminus at the Minnesota Ave station as opposed to the Benning Road Station. Other areas of concern included jobs, gentrification, and negative construction impacts.

While many concerns focused on negative project impacts, two areas of concern received positive comments: the proposed bike facilities and changes to the Whitlock Bridge. These changes were met with positive responses with people looking forward to a new Whitlock bridge with improved pedestrian and bicycle facilities.

Title VI Statistics for Public Hearing

A total of 28 respondents filled out the Title VI questionnaire distributed at the sign-in table. A brief summary of the results follows:

Ward:

- 89% Seven
- 4% Eight
- 7% Blank

Gender:

- 57% Male
- 39% Female
- 3% Blank

General Race/ Ethnic Identification Categories:

- 53% African American
- 25% Caucasian
- 21% Not answered

Age:

- 36% Above 50 years
- 21% 36-50
- 25% 26-35
- 11% 18-25

Primary language spoken at home:

- 96% English

How did you find out about this meeting? (Count):

- 11 Flier
- 1 Other/Word of Mouth
- 3 Advisory Neighborhood Commission (ANC)
- 2 Email
- 4 Listserv
- 2 Blog
- 1 Project Website
- 1 Newspaper
- 3 DDOT Website

- 1 Other – Phone Call
- 1 Other – Community Meeting
- 1 Other – Twitter

How did you travel to this meeting? (Count):

- 16 Car
- 3 Walked
- 8 Metrorail
- 2 Bus
- 2 Bicycle
- 1 Other

Did you find the meeting location to be accessible? (For purposes of location or disability):

- 88% Yes
- 12% No

6.1.7 Open House #1: September 19, 2019

On Thursday, September 19, 2019 DDOT held an open house for the Benning Road and Bridges Transportation Improvements Project at the Department of Employment Services (DOES) building located at 4058 Minnesota Avenue. The meeting began at 6:30 pm and was concluded at 8:30 pm. The purpose of the meeting was to present the preliminary designs to and solicit comment from the public. The preliminary designs included potential modifications of the DC-295 and Benning Road Interchange. General update on the status of the Benning Road and Bridges Transportation Improvements Final EA was also provided. The public was informed that the next step will be the release of Benning Road and Bridges Transportation Improvements Final EA along with the FONSI.

Project information was presented to the public through a series of stations supported by at least two staff members. In addition, meeting participants were presented with scroll maps of the three sections of the corridor. Comments were collected through flip charts and cards. Community members were notified of the meeting through a press release, email (to individuals listed in the project contact database), and social media platforms.

There were 74 attendees who signed-in to the open house, excluding DDOT and consultant staff. Elected officials (i.e. ANC commissioners) and institutional representatives were not included on the sign-in sheet. Open house attendees made a variety of comments on the project. Several thematic concerns became apparent through these comments. The most consistent theme was the need for bicycle and pedestrian-related improvements within the project area. Most commenters who addressed the issue were in support of the proposed improvements, and several requested that the facilities proposed for the Whitlock Bridge be extended to the Benning Road Metro Station.

Another issue commonly addressed by commenters was vehicular safety. Often this issue was presented alongside comments regarding the need for dedicated pedestrian and cyclist facilities.

Several participants specifically highlighted concerns regarding speeding and the occurrence of U-turns along Benning Road. Specific concerns were also voiced regarding maintaining safe access to the Greater Washington Boys and Girls Club, particularly during construction.

Commenters frequently expressed concerns regarding the project's potential influence on Metrobus operations. Often, these concerns focused on traffic operations (e.g. changes in Metrobus regularity) and the need for dedicated transit lanes (bus and streetcar). Individuals voicing opposition to the project often expressed a preference for the DC Circulator service over the proposed streetcar extension.

Title VI Statistics for Public Hearing

A total of 40 respondents filled out the Title VI questionnaire distributed at the sign-in table. A brief summary of the results follows:

Ward:

2% Two
2% Three
3% Five
7% Six
54% Seven
7% Eight
24% Blank

Gender:

44% Male
41% Female
15% Blank

General Race/ Ethnic Identification Categories:

39% African American
10% Asian and Pacific Islander
5% Hispanic
32% Caucasian
2% Other
12% Not answered

Age:

5% Senior Citizen
20% Above 54 years
24% 45-54
19% 35-44
22% 25-34
0% 18-24

10% Not Answered

Primary language spoken at home:

87.5% English

5% Not Answered

2.5% Chinese

2.5% Japanese

2.5% Spanish

How did you find out about this meeting? (Count):

12 DDOT Website

7 Listserv

6 Community Member

3 Project Website

4 Not Answered

1 Email

1 Flier

1 Facebook

1 Commun-ET

1 Newspaper

1 Other – Contractor

1 Other – Community Meeting

1 Other – Twitter

How did you travel to this meeting? (Count):

20 Car

7 Metrorail

4 Walked

3 Bicycle

2 Metrobus

2 Rideshare

2 Not Answered

6.1.8 Open House #2: February 20, 2020

On Thursday, February 20, 2020, DDOT held an open house for the Benning Road and Bridges Transportation Improvement Project at the River Terrace Education Campus located at 405 Anacostia Avenue. The meeting began at 6:30 pm and was concluded at 8:00 pm. The purpose of the meeting was to inform community members of the project's status, present the DC-295 and Benning Road Interchange build alternatives, and solicit comment from the public.

Project information was presented to the public through a series of stations supported by at least two staff members. In addition, meeting participants were presented with scroll maps of the three sections of the corridor. Comments were collected through flip charts and cards. Community members were notified of the meeting through a press release, email (to individuals listed in the project contact database), and social media platforms. The team also engaged community members in-person at the Minnesota Avenue and Benning Road Metro Stations.

There were 48 attendees who signed in, excluding DDOT and consultant staff. Elected officials (i.e. ANC commissioners) and institutional representatives were not included on the sign-in sheet. As was the case at the September 19th meeting, most of the comments provided by the meeting participants were in support of the proposed improvements. The most popular elements are the bike and pedestrian improvements. Several commenters requested that a shared use path be constructed to the east and west of the Whitlock Bridge. The importance of having safe pedestrian crossings, particularly for children, was also commonly expressed. Across the board, community members expressed concerns regarding the severity of traffic congestion during construction and under the build condition. During this meeting, this concern expanded geographically to include Nannie Helen Burroughs Avenue and its interchange with DC-295.

The comments submitted regarding transit services generally focused on three thematic issues: the desire for dedicated transit lanes (bus and streetcar); potential changes in Metrobus operations; and the desire to enhance existing Metrobus services. Together these themes help illustrate the important role Metrobus services play in the life of the community. Individuals voicing opposition to the project often expressed a preference for the DC Circulator service over the proposed streetcar extension.

Commenters who participated in this open house reiterated the land use concerns voiced during earlier public involvement events. Tree canopy preservation continued to be a common concern, as were the management of construction noise and potential changes in development patterns. In this set of comments, the comments on development focused on potential changes in housing density, zoning, and the future of Kingman Island. Together, these comments illustrate a general desire to preserve the character of Benning Road (particularly east of Minnesota Avenue) while improving transit services and traffic operations.

Title VI Statistics for Public Hearing

A total of 30 respondents filled out the Title VI questionnaire distributed at the sign-in table. A brief summary of the results follows:

Ward:

- 3% One
- 3% Five
- 20% Six
- 71% Seven
- 3% Nine

Gender:

- 45% Male
- 55% Female

General Race/ Ethnic Identification Categories:

- 58% African American
- 42% Caucasian

Age:

- 7% Senior Citizen
- 19% Above 54 years
- 3% 45-54
- 13% 35-44
- 52% 25-34
- 3% 18-24
- 3% Not Answered

Primary language spoken at home:

- 97% English
- 3% Spanish

How did you find out about this meeting? (Count):

- 8 Listserv
- 5 Facebook
- 5 Other – Community Meeting
- 3 Twitter
- 3 Flier
- 2 Project Website
- 2 DDOT Website
- 1 Streetcar Bulletin
- 1 Nextdoor

How did you travel to this meeting? (Count):

- 19 Car
- 5 Metrobus
- 3 Walked
- 2 Metrorail
- 1 Bicycle

6.1.9 Additional Outreach/Meetings

Additional outreach and public meetings have been held since the Draft EA was published. DDOT has conducted the following smaller group meetings:

- May 18, 2019 - Ward & Leadership Council Meeting
- June 18, 2019 - Advisory Neighborhood Commission 7F
- June 19, 2019 - River Terrace Community Organization
- July 6, 2019 - Marshall Heights Civic Association

The purpose of the meetings was to provide project updates and receive additional community feedback.

6.2 AGENCY COORDINATION

Beginning in February 2014, FHWA and DDOT contacted District, regional and federal agencies to introduce the proposed action to agency staff. Contact and meetings with agencies took place during the scoping of the proposed action, the development of alternatives, the analyses for the EA, and the Section 106 process.

The scoping letter requesting comments on the proposed action was sent on February 18, 2014. An example of the scoping letter is provided in **Appendix K. Table 6-1** summarizes agency correspondence.

6.2.1 AGENCY MEETING 1: PROJECT SCOPING

The first agency meeting was held on March 4, 2014 at DDOT. The purpose of the meeting was to introduce the proposed action to agency stakeholders and to review the federal laws and regulations that apply to the proposed action. The Purpose and Need was presented, the proposed action timeline was discussed, and an overview of the historic features and historic context of the proposed action was provided. The National Park Service (NPS) was a primary commenter and indicated a desire to protect Fort Mahan Park.

Table 6-1: Agency Coordination Summary

Agency	Date and Purpose	Response
Department of Parks and Recreation	2/18/14 Scoping Letter from DDOT	None
Department of Public Works	2/18/14 Scoping Letter from DDOT	None
District Department of the Environment	2/18/14 Scoping Letter from DDOT	None
District of Columbia Housing Authority	2/18/14 Scoping and Section 106 Initiation Letter from DDOT	None
District of Columbia Historic Preservation Office	2/18/14 Scoping Letter from DDOT	3/25/14 response from C. Andrew Lewis accepting invitation (see Appendix K)
Department of Housing and Community Development	2/18/14 Scoping Letter from DDOT	3/11/14 response from Paul Walker (see Appendix K)
District of Columbia Office of Planning	2/18/14 Scoping Letter from DDOT	None

Agency	Date and Purpose	Response
DC Water and Sewer Authority	2/18/14 Scoping Letter from DDOT	None
DC Fire and EMS Department	2/18/14 Scoping Letter from DDOT	None
Office of United Communications	2/18/14 Scoping Letter from DDOT	None
Metropolitan Washington Council of Governments	2/18/14 Scoping Letter from DDOT	None
National Capital Planning Commission	2/18/14 Scoping Letter from DDOT 5/4/14 Invitation from DDOT to become a cooperating agency to the project	None
National Oceanic and Atmospheric Administration	2/18/14 Scoping Letter from DDOT	None
U.S. Department of Agriculture	2/18/14 Scoping Letter from DDOT	None
U.S. Department of the Army, Corp of Engineers	2/18/14 Scoping Letter from DDOT	None
U.S. Department of Transportation, Federal Transit Administration	2/18/14 Scoping Letter from DDOT 5/4/14 Invitation from DDOT to become a cooperating agency to the project	None
U.S. Commission of Fine Arts	2/18/14 Scoping Letter from DDOT	None
U.S. Department of the Interior –National Park Service, National Capital Region	2/18/14 Scoping Letter from DDOT 5/4/14 Invitation from DDOT to become a cooperating agency to the project	None
U.S. Department of the Interior –National Park Service, National Capital Parks (East)	2/18/14 Scoping Letter from DDOT	None
U.S. Fish and Wildlife Service –Northeast (Region 5)	2/18/14 Scoping Letter from DDOT	None
U.S. Environmental Protection Agency –Office of Environmental Programs (Region 3)	2/18/14 Scoping Letter from DDOT	None
Washington Metropolitan Area Transit Authority	2/18/14 Scoping Letter from DDOT	None

6.2.2 SECTION 106 CONSULTATION

Section 106 of the NHPA requires FHWA and DDOT to provide the public with information about the proposed action and its effect on historic properties and to seek public comment. In a NEPA process, the NEPA procedures for public involvement satisfy this aspect of Section 106.

As required by Section 106, FHWA and DDOT involved the public as historic properties were identified and evaluated. **Table 6-2:** Section 106 Consultation Summary summarizes Section 106 consultations and correspondence to date. On December 5, 2019, the DC SHPO transmitted a letter to FHWA and DDOT providing it's written concurrence that the proposed improvements will not result in adverse effect on historic properties.

Table 6-2: Section 106 Consultation Summary

Date	From	To	Purpose
2/18/14	DDOT	DC SHPO	Informal Section 106 initiation letter and invitation from Clarence Dickerson.
3/25/14	DC SHPO	DDOT	Response from C. Andrew Lewis accepting invitation.
8/20/14	DC SHPO	DDOT	Comments on the Area of Potential Effect (APE) and potentially eligible historic properties for survey. Request to develop Determination of Eligibility (DOE) forms for historic properties.

Date	From	To	Purpose
3/16/15	FHWA	DC SHPO	Formal Section 106 initiation letter from Mike Hicks.
4/8/15	DC SHPO	DDOT	DC SHPO recommendations regarding the DOE forms.
8/25/15	FHWA	Consulting Parties	Invitation to participate as a Consulting Party.
12/04/19	FHWA	DC SHPO	Determination of "No Adverse Effect."
12/05/19	DC SHPO	FHWA	Concurrence on "No Adverse Effect Determination"

Section 106 requires the identification and involvement of organizations having an interest in historic properties in the study area (known as consulting parties). The FHWA, DDOT and the DC SHPO are consulting parties based on their roles in the Section 106 process. An invitation to participate in the Section 106 process as a consulting party was sent to the following additional organizations (see **Appendix F** for copies of the correspondence):

- Groundwork Anacostia;
- Hillbrook Community Association;
- Friends of Kingman Park Civic Association;
- Langston Terrace Resident Council;
- Langston Terrace Housing Authority;
- Carver-Langston Terrace Civic Association;
- Washington East Foundation;
- Ward 7 Business Partnership;
- Capitol View Citizens Association;
- Central Northeast Civic Association;
- Marshall Heights Community Development Corporation;
- New Mt. Calvary Baptist Church;
- Ward Memorial AME Church;
- Benning Ridge Civic Association;
- Central Northeast Civic Association;
- The Committee of 100 on the Federal City;
- District of Columbia Preservation League;
- Advisory Neighborhood Commissioners for ANC 5D;
- Advisory Neighborhood Commissioners for ANC 7B;
- Advisory Neighborhood Commissioners for ANC 7C;
- Advisory Neighborhood Commissioners for ANC 7D;
- Advisory Neighborhood Commissioners for ANC 7E; and
- Advisory Neighborhood Commissioners for ANC 7F.

To date, only the Committee of 100 on the Federal City provided a written response demonstrating interest in serving as a consulting party under Section 106. Thus, at this time the consulting parties under Section 106 are the FHWA, DDOT, DC SHPO, and the Committee of 100 on the Federal City.

6.3 SUMMARY OF PUBLIC AND AGENCY INPUT

Study area residents and other members of the public have shown support as well as non-support for the proposed action. Agency representatives from FHWA, U.S. EPA Region III, NCPC, WMATA, DC SHPO, DCOP, and DC Water as well as the general public, ANC Commissioners, and advocacy groups have provided comments on the Draft EA. Key themes from the outreach program included:

- Aesthetics and Visual Quality;
- Air Quality;
- Construction Impacts;
- Noise and Vibration;
- Propulsion Option;
- Section 4(f);
- TPSS Facilities; and
- Transportation and Traffic Operations.

Table 6-3 summarizes public and agency comments and how DDOT addressed this input. Full comments and responses are included in Appendix L.

Table 6-3: Summary of Public and Agency Input

Aesthetics and Visual Quality		
Comment	Commenter	Response
Consider public art along corridor.	ANC 7D07	Decisions regarding fencing, rails, and art will be made during project design.
Develop a Benning Road streetscape plan.	NCPC	Project design will incorporate streetscape design in coordination with Great Streets objectives and guidelines.
Add viewsheds from Langston Golf Course and Fort Mahan Park to gauge visual impacts	NCPC Public	DDOT analyzed these viewsheds in the Aesthetics and Visual Quality chapter of the EA.
Mitigate loss of trees/minimize impacts to tree canopy. Comp Plan states no net loss of trees for federal projects. Equity issues related to overhead wires in certain neighborhoods, when it results in the loss of trees.	ANC 7D07 DCOP Committee of 100 on the Federal City	Street trees removed due to roadway widening, not wires. Where trees must be removed, the DDOT Urban Forestry Administration (UFA), as the certified arborist would replace street trees removed within the right-of-way as part Standard Specification 608.07, Tree Protection and Replacement, which requires a diameter breast-height (DBH) inch per DBH inch replacement. Mitigation for canopy loss will be addressed in the design phase and will meet District and DDOT standards and regulations.

Construction Impacts		
Comment	Commenter	Response
Include impacts to and mitigations for surface water resources that may occur during construction activities, particularly the bridges over the Anacostia River.	EPA	Strict adherence to current District of Columbia Standards and Specifications for Soil Erosion and Sediment Control will be followed. The standards include best management practices (BMPs) for road stabilization, sediment barriers, dikes and diversions, sediment traps and basins, downdrains and flumes, inlet and outlet protection, dewatering strategy, waterway and stream protection, site preparation, vegetative stabilization, and other practices. If erosion and sediment control best management practices require space outside of the DDOT right-of-way, DDOT will coordinate with the applicable agencies.
Best Management Practices must be implemented due to mitigate eight identified REC sites. Erosion control must be considered during bridge modifications to mitigate impacts to WOUS.	U.S. EPA Region III	BMPs would be used on the construction site, such as development of a Contaminated Material Management Plan, pollution control devices, development of spill prevention programs, installation and maintenance of runoff diversion and secondary containment structures. The management of contaminated soil and water on the site and disposal off-site would be conducted in accordance with applicable District of Columbia solid waste management regulations and water management regulations. Additionally, REC sites would be further evaluated during final design and monitored during construction.
Relocate sewers and water main piping that may be impacted. Verify state of sewers post-construction.	DC Water	Utility coordination including relocation, protection and access will be addressed during project design.
Is there financing for businesses for lost income during construction? How is this financed; will it impact local funding appropriations for Ward 7?	ANC 7D07	Maintenance of Traffic (MOT) plans will be developed during project design to mitigate impacts to local businesses during construction. Programmatic resources from Deputy Mayor for Planning and Economic Development (DMPED) and Department of Small and Local business Development (DSLBD) may be used to support local businesses as funding becomes available.

Construction Impacts		
Comment	Commenter	Response
Need additional detail for congestion resulting from streetcar line.	ANC 7D07	Traffic impacts for the proposed action and, specifically, for the intersection of Benning Road and Minnesota Avenue are addressed in Section 4.2, Transportation and Traffic Operations and in Appendix E. The levels of service would remain the same or improve for the 2018 build year and the 2040 design year. Compared to the 2040 No Build Alternative, intersection levels of service (LOS) at 44 th Street would improve from LOS E to LOS D in the evening peak hour under both Build Alternatives 1 and 2 as a result of proposed signal timing modifications at the Benning Road and East Capitol Street intersection. This EA evaluates 2025 build year and 2045 design year.
Minimize impacts (access issues) to residents and businesses during construction. Engage property owners/residents and coordinate with adjacent developments.	Benning Road Civic Association DCOP Parkside Civic Association DC Eagle	Access to local businesses and community facilities would be maintained throughout construction as described in Section 4.12, Construction Impacts and Appendix D. A Maintenance of Access (MOA) plan would be developed and construction would be phased. After construction, local businesses and community facilities would benefit from improved safety and enhanced transportation services.

Noise and Vibration		
Comment	Commenter	Response
Noise Levels are severe/high near Langston Golf Course and Fort Mahan Park	NCPC	Traffic noise impacts the portion of the historic district adjacent to Benning Road in the existing condition. No changes in the level of traffic noise impacts would occur as a result of Build Alternatives 1 or 2. Streetcar operations would not exceed FTA's operational thresholds for impact at the historic district. As a result, no significant noise impact is anticipated to occur.
Local resident concerned about noise during and after construction.	Public	The final EA describes noise impacts from construction in Chapter 4, Section 4.12. Noise mitigation is described in Section 4.12.3.

Propulsion Option		
Comment	Commenter	Response
Other propulsion technologies, such as new battery technology and supercapacitors and other wireless options should be examined. Overhead wiring propulsion options conflict with PEPCO power lines and street trees on Benning Road.	Public	The final EA addresses continuous power supply, battery, and supercapacitor options. All are feasible technologies. A wired option could be implemented along Benning Road. Given PEPCO power lines, the location of wire for streetcar service and mitigation of conflicts with utilities will be determined during project design.
Draft EA needs further analysis of overhead vs. non-overhead propulsion due to recent technological improvements.	Committee of 100 on the Federal City	The final EA addresses continuous power supply, battery, and supercapacitor options. All are feasible technologies. A wired option could be implemented along Benning Road. Given PEPCO power lines, the location of wire for streetcar service and mitigation of conflicts with utilities will be determined during project design.
Recommend identification of preferred propulsion option in final EA.	NCPC	Impacts for both wired and wireless propulsion are documented in the final EA for both the curbside and median alignments. A final recommendation will be made in the NEPA decision document.

TPSS		
Comment	Commenter	Response
Show analysis of major system elements and infrastructure in relation to streetscape, spaces, and resources. Note all TPSS near or adjacent to NPS property.	NCPC	Chapters 2 and 4 of the final EA include additional detail for location, impacts, and mitigation associated with TPSS.
What are the environmental impacts of traction power substations?	DCOP	Chapters 2 and 4 of the final EA include additional detail for location, impacts, and mitigation associated with TPSS.

Transportation and Traffic Operations		
Comment	Commenter	Response
Mitigate loss of parking for both alternatives. Don't remove parking for residential sections of Benning Road (multiple comments).	EPA Public	The final EA describes in Chapter 4, Section 4.2.3, on-street parking impacts associated with each Build Alternative. Existing on-street parking in the study area would be eliminated with Build Alternative 1, the curbside alignment streetcar, whereas Build Alternative 2, the median alignment streetcar, would not result in a net loss of parking in the study area. Section 4.2.3.3

Transportation and Traffic Operations		
Comment	Commenter	Response
		describes parking mitigation measures for Build Alternative 1.
Co-locate streetcar stops with bus stops to allow riders to choose whichever option is available first.	Public	Streetcar stop platforms require a 14-inch height to allow level boarding with the floor of the streetcars. Buses require typical curb height of 6 to 8 inches. Therefore, streetcar and bus stops cannot be collocated. However, streetcar and bus stop locations are coordinated to allow convenient transfers and to eliminate delays. Configuration concepts of adjacent streetcar stop platforms and bus stops are displayed in the Final EA, Figures 2-22 and 2-28.
Alternatives present significant operating challenges to Metrobus service Shared stops/platforms should be incorporated early on in the design Retention of Metrobus stops in Benning Road corridor is essential. Ensure service to existing/relocated stops is provided safely and without delay.	WMATA	The proposed action would widen lanes to be used by buses or the streetcar from the existing 10 feet to 11 or 12 feet.
Need protected bike lanes throughout corridor. Mixed-use path not acceptable. Project must address issues identified in DDOT High Crash Intersection Site Visit 2016 Report Need to have a safe biking strip when trolley tracks exist	WABA	Build Alternatives were developed to achieve a multimodal design that addresses safety and capacity and maintains current uses within existing rights-of-way. These guidelines affect and limit some desired aspects of the project design. The Build Alternatives therefore include a shared use path between Anacostia Avenue and Minnesota Ave; this serves as a continuation of the current bike path between Oklahoma Avenue and Anacostia Avenue. The final EA identifies for each Build Alternative a bike lane option that could be implemented along Benning Road between Anacostia Avenue and 36th Street. This option eliminates one eastbound lane for vehicular traffic; east of 36th Street a shared use path would be implemented on the south side (eastbound) of the new structure over DC-295 and the CSX Railroad.

Transportation and Traffic Operations		
Comment	Commenter	Response
Overall general support for the project and transportation improvements in the corridor. Some strong support for Build Alternative 2. Some non-supportive of the project—advocate for other transit modes instead.	Public	Comments are noted.
Concerns for traffic impacts from the build alternatives, particularly related to DC-295. Why reconfigure intersections with no improvement in LOS?	Public	Comments are noted. Modification of DC-295 is not part of this EA; however, the proposed action would not preclude future safety and traffic improvements. Any proposed improvements to DC-295 would be addressed in a separate study process.
Concerns for impacts to existing transit operations in the corridor from the build alternatives, particularly as a result of breakdown, health issues, or weather conditions.	Public	<p>The streetcar extension would provide additional transit service, capacity, and connections within the H Street/ Benning Road corridor.</p> <p>Implementation of the streetcar would not significantly impact intersection Level of Service (LOS) or delay in the study area. The final EA displays existing and future LOS for study area intersections in Chapter 3, Section 3.2.3.1, and in Appendix E, Transportation Technical Memorandum. Chapter 4, Section 4.2.2.2 describes impacts to LOS and delay for critical intersection in the study area.</p> <p>In the case of breakdowns or health issues stopping streetcar service, a bus bridge would be implemented. Streetcars can operate in ice and snow conditions as vehicles can be designed or equipped with sanding capability, integral snow plows, and scrapers.</p>
The Whitlock Bridge needs to be replaced.	Public	The Whitlock Bridge would be reconstructed. The existing eastbound and westbound structures would be replaced with a modern single structure. The new structure would also include bicycle and pedestrian improvements such as a shared-use path adjacent to the eastbound lanes, as well as a sidewalk adjacent to the westbound lanes. Modification of DC-295 is not part of the EA; however, the project would not preclude future safety and traffic improvements or impede current

Transportation and Traffic Operations		
Comment	Commenter	Response
		Benning Road access and egress for DC-295.
Need bicycle infrastructure/signage for east-west connectivity. Improve travel safety for all modes.	ANC 7D07 WABA	Both Build Alternatives would include a new shared use path between Anacostia Avenue and Minnesota Avenue. Improvements to the sidewalk infrastructure are proposed in final EA east of Minnesota Avenue. No bike facilities are proposed east of Minnesota Avenue. Improvements at the Benning Road and Minnesota Avenue intersection would improve crossing safety.
Consider alternate alignment in road median	Capital Traction & Electric Co.	DDOT considered and screened multiple concept designs during the alternatives development phase of the project (Chapter 2).
Additional physical barriers for bicycle lanes. High quality walking environment needed along Benning Road, accommodating ADA access/mobility. Streetcar should consider ADA needs Implement full shared-use trail, improve pedestrian crossing safety.	DCOP Public	<p>The current 6-inch buffer was used to maintain minimum lane widths. Evaluation of alternative buffer types will occur in project design. Roadway, streetscape infrastructure, and streetcar facilities will be designed to meet requirements of the Americans with Disabilities Act of 1990 (ADA). Sidewalks, shared use paths, and streetcar stops will meet ADA width and grade requirements. Crosswalks would be provided to access median stop platforms and provide safe crossing for side platforms.</p> <p>For the curbside alignment stop platforms would be adjacent to sidewalks. For the streetcar alignment center platforms would be accessible via crosswalks and ramps from street level to the platform. Chapter 2, Figures 2-22 and 2-27 display typical streetcar stop platforms, sidewalks, and crosswalks for the curbside and median alignments. Appendix B provides more detailed plans showing sidewalks, crosswalks and streetcar stop locations.</p>
Both alternatives support plans/policies, Alt 2 is preferred Alt 1 has potential for significant conflicts with WMATA bus service	DCOP	Comments are noted.

Transportation and Traffic Operations		
Comment	Commenter	Response
Detail rationale for stop placement	DCOP	The final EA describes in Chapter 2, Section 2.3.3.4, the rationale for locating streetcar stops. Stop platform locations were identified based on operations, current and proposed geometry, accessibility, safety, and land use.
Provide 2017 O&M costs, incorporating known H Street Streetcar costs.	Committee of 100 on the Federal City	O&M costs in the Final EA have been revised to reflect 2017 cost per mile and cost per hour values. Since opening in 2016, actual operating and maintenance costs for the H Street/Benning Line have been subject to several contract adjustments associated with service changes and enhancements. Any actual costs with spending for start-up and service adjustment activities would not be necessary for the proposed streetcar extension.

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7 LIST OF PREPARERS

In support to DDOT, AECOM and its subconsultants, Nelson/Nygaard, MS Consultants, CDDI and CSMI provided environmental and design support and prepared the technical studies and EA. The project team also assisted DDOT with public and agency coordination activities. Jacobs supported DDOT during the preparation of the Final EA. The members of the FHWA, DDOT and the project team who have played key roles in these activities are listed in **Table 7-1**.

Table 7-1: List of Preparers

Name	Title
Federal Highway Administration	
Michael Hicks	Environmental Engineer
District Department of Transportation	
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ACRONYMS

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act of 1990
AIRS	Aerometric Information Retrieval System
AMI	Area Median Income
APE	Area of Potential Effect
APTA	American Public Transportation Association
AVE	Area of Visual Effect
B&P	Baltimore and Potomac
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulation
CFR	Code of Federal Regulations
CLRP	Constrained Long Range Transportation Plan
CO	Carbon monoxide
CSX	CSX Transportation/CSX Railroad
dB	Decibel
dBA	A-weighted decibel
DBH	Diameter Breast-Height
DC SHPO	District of Columbia Historic Preservation Office
DC	District of Columbia
DCIHS	District of Columbia Inventory of Historic Sites
DCRA	District of Columbia Department of Consumer and Regulatory Affairs
DDOE	District Department of the Environment
DDOT	District Department of Transportation
DFIRM	Digital Flood Insurance Rate Maps
DOE	Determination of Eligibility
DOES	District of Columbia Department of Employment Services
DOI	Department of the Interior
EA	Environmental Assessment

EDR	Environmental Data Resources, Inc.
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
ESS	Energy Storage System
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System
FR	Federal Register
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GIS	Geographic Information Systems
GLCPSS	Ground Level Continuous Power Supply System
HMIRS	Hazardous Materials Incident Report System
HRHR	High Risk Historical Records
HUD	Department of Housing and Urban Development
ICIS	Integrated Compliance Information System
IPaC	USFWS Information, Planning, and Consultation system
ips	Inches per Second
LOD	Limits of Disturbance
LOS	Level of Service
LQG	Large Quantity Generator
LUST	Leaking Underground Storage Tank
LWCF	US Land and Water Conservation Fund
MOA	Maintenance of Access
MOT	Maintenance of Traffic
MPD	Metropolitan Police Department
MPDF	Multiple Property Documentation Form
MSATS	Mobile Source Air Toxics
MUTCD	Manual on Uniform Traffic Control Devices
MVEB	Motor Vehicle Emissions Budget
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO ₂	Nitrogen dioxide

NOAA	National Oceanic and Atmospheric Administration
NonGen/NLR	Non-Generators/No Longer Regulated
NPS	National Park Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O&M	Operations and Maintenance
O ₃	Ozone
OCS	Overhead Contact System
OCTO	District of Columbia Office of the Chief Technology Officer
PADS	PCB Activity Database
Pb	Lead
PCB	Polychlorinated Biphenyl
PCN	Priority Corridor Network
PDR	Production, Distribution, and Repair
PEPCO	Potomac Electric and Power Company
PM ₁₀	Particulate matter sized 10 micrometers or less
PM _{2.5}	Particulate matter sized 2.5 micrometers or less
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RGA	Recovered Government Archive
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO ₂	Sulfur dioxide
SOME	So Others Might Eat
SWF/LF	Solid Waste Facility Listing
TARAS2	Traffic Accident Reporting and Analysis System
TAZ	Transportation Analysis Zone
TIP	Transportation Improvement Program
TPSS	Traction Power Substation
UFA	District of Columbia Urban Forestry Administration
UID	Unidentified
USACE	US Army Corps of Engineers
USC	United States Code
USDA	United States Department of Agriculture
USDOT	United States Department of Transportation
USFWS	United States Fish & Wildlife Service
USGS	United States Geological Survey
USPS	United States Postal Service

UST	Underground Storage Tank
VdB	Velocity Levels in Decibels
VIA	Visual Impact Assessment
VOC	Volatile Organic Compounds
WASA	District of Columbia Water and Sewer Authority
WMATA	Washington Metropolitan Area Transit Authority
WOUS	Waters of the United States
μips	Micro-inch per second

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11 GLOSSARY

100-year floodplain – An area with a 1% chance of being inundated in any single year.

access, accessibility – The opportunity to easily reach a destination without being impeded by physical, social, or economic barriers. Typically, accessibility is the extent to which transportation improvements make connections between geographic areas or portions of the region that were not previously well connection.

adverse effect – Defined in Section 106 of the National Historic Preservation Act (NHPA) (35 CFR 800.5(a)(1)). An adverse effect to a historic property occurs when the project under consideration alters any characteristic that qualifies the property for inclusion in the National Register of Historic Places in a manner that would diminish the integrity of the property.

affected environment – The physical features, land, area or areas to be influenced, affected, or created by a transportation improvement under consideration; also includes various social and environmental factors and conditions pertinent to an area.

Agency Coordination – Refers to the process whereby the Department of Transportation contacts, consults and maintains communication with various public and environmental resource agencies, affording such agencies an opportunity to review and comment upon specific transportation proposals.

Americans with Disabilities Act of 1990 – A civil rights law that prohibits discrimination based on disability.

aquifer – Permeable rock, sand, or gravel capable of containing or conducting groundwater.

Area of Potential Effect (APE) – The geographical area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Area of Visual Effect (AVE) – Area of project visibility.

Best Management Practices (BMPs) – Specific standards utilized during construction and design to minimize the impact on surrounding resources.

Build Alternative – Build Alternatives are alternatives that are developed at the concept level for analysis purposes that meet the project purpose and need and have the potential to be constructed.

Census Tract – A small statistical subdivision of a county defined by a local committee of census data users for the purpose of presenting census information every ten years. The primary purpose of census tracts is to provide a stable set of geographic units for the presentation of statistical data.

Clean Air Act of 1970 (CAA) – Legislation mandating the U.S. Environmental Protection Agency (EPA) to set national air quality standards to protect the public against common pollutants. State governments are required to devise clean-up plans to meet these EPA standards.

Clean Air Act Amendments of 1990 (CAAA) – Legislation requires states and the Federal government to reduce emissions from automobiles, trucks, buses, ships, barges, and consumer products, and to meet air quality standards. The legislation particularly addresses ozone, carbon monoxide (CO), and particulate matter. The legislation defines how areas are designated “attainment” and allows the EPA to classify “non-attainment” areas as those that do not meet the federal air quality standards.

Clean Water Act (CWA) - The Clean Water Act (33 U.S.C. §1251 et seq.) is a law enacted by the United States Congress in 1972 which establishes the basic structure for regulating discharges of pollutants into Waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly re-organized and expanded in 1972.

coastal plain – An area of flat, low-lying land adjacent to a seacoast and separated from the interior by other features.

Code of Federal Regulations (CFR) – The Code of Federal Regulations (CFR) annual edition is the codification of the general and permanent rules published in the Federal Register by the departments and agencies of the Federal Government. It is divided into 50 titles that represent broad areas subject to Federal regulation.

complex, soil – A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Comprehensive Plan – The general, inclusive long-range state of the future development of a community. The plan is typically a map accompanied by description and supplemented by policy statements that direct future capital improvement in an area.

Conformity – Process to assess the compliance of any transportation plan, program, or project with air quality implementation plans. The conformity process is defined by the Clean Air Act.

Council on Environmental Quality (CEQ) – Established as part of the National Environmental Policy Act of 1969 (NEPA), the council coordinates federal environmental efforts, policies, and initiatives, and ensures that federal agencies meet NEPA requirements.

CSX Transportation (CSX) - CSX is a Class I Freight Railroad which operates on the east coast of the United States from Florida to New England, as far west as Chicago, Illinois and as far north as Montreal, Canada

cumulative impact - The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.

decibel – A unit of measure of sound pressure used to describe the loudness of sound on the A-weighted scale.

Determination of Effect – A finding made by Departments of Transportation for federal actions, in consultation with the State Historic Preservation Office and the Advisory Council for Historic Preservation, which determines whether a proposed project affects a property included on or eligible for the National Register of Historic Places.

Determination of Eligibility (DOE) – The decision made by the State Historic Preservation Office regarding whether historic buildings or districts are eligible for or listed in the National Register of Historic Places.

Direct effect - Effect that occurs as a direct result of the project.

District Department of Transportation (DDOT) – DDOT is an agency within the District of Columbia that manages and maintains publicly-owned transportation infrastructure within the District.

effect – The result from an action that may be beneficial or negative.

endangered species – A species whose prospects for survival are in immediate danger based on a loss of habitat, over-exploitation, predation, competition, or disease. An endangered species requires immediate attention or extinction will likely follow.

Endangered Species Act of 1973 – Legislation developed to protect critically imperiled species from extinction as a “consequence of economic growth and development untampered by adequate concern and conservation.”

Energy Storage System (ESS) – ESS is a form of “wireless” propulsion technologies which use power sources installed on the vehicle to allow for catenary-free operations. These technologies are also referred at times as On-Board/On-Tram technologies. Vehicles using this technology are powered by batteries, super capacitors, flywheels, fuel cells, diesel and/or alternative fuel sources or a combination of these power devices. (Source: District Department of Transportation, *Union Station to Georgetown, Alternatives Analysis for Premium Transit Service Propulsion Study*, September 2013).

Environmental Assessment (EA) – When the significance of impacts of a transportation project proposal is uncertain, an EA is prepared to assist in making this determination. If it is found that significant impacts will result, the preparation of an environmental impact statement (EIS) should commence immediately.

Environmental Justice (EJ) – Efforts to avoid disproportionately high and adverse impacts on minority and low-income populations with respect to human health and the environment.

Environmental Protection Agency (EPA) – EPA is the federal source agency of air quality control

regulations affecting transportation.

Environmental Site Assessment (ESA) – An analysis which identifies potential or existing environmental contamination liabilities and which may conform to American Society of Testing and Materials (ASTM) reporting requirements and methods.

Federal Emergency Management Agency (FEMA) – FEMA is a federal agency under the US Department of Homeland Security, established under Presidential Executive Order Executive Order 12127, which coordinates the federal government’s role in preparing for, preventing, mitigating the effects of, responding to, and recovering from all domestic disasters, whether natural or man-made, including acts of terror.

Federal Highway Administration (FHWA) – FHWA is an agency under the US Department of Transportation (USDOT) which provides stewardship over the construction, maintenance and preservation of the Nation’s highways, bridges and tunnels. FHWA serves as the lead federal agency for the project in accordance with NEPA.

Federal Railroad Administration (FRA) – FRA is an agency under the USDOT which provides stewardship over the construction, maintenance and preservation of the Nation’s railways and associated bridges and tunnels.

Federal Transit Administration (FTA) – A branch of the USDOT that is the principal source of federal financial assistance to America's communities for planning, development, and improvement of public or mass transportation systems. FTA provides leadership, technical assistance, and financial resources for safe, technologically advanced public transportation to enhance mobility and accessibility, to improve the Nation's communities and natural environment, and to strengthen the national economy.

final design – The development of detailed working drawings, specifications, and estimates for transportation projects.

Finding of No Significant Impact (FONSI) – A document by a Federal agency briefly presenting the reasons why an action, not otherwise excluded (40 CFR 1508.4), will not have a significant effect on the human environment and for which an environmental impact statement therefore will not be prepared.

Geographic Information System (GIS) – A system of computer software and hardware, data, and personnel to manipulate, analyze and present geographically referenced information or data that is identified according to their locations.

ground-borne vibration – The vibration-induced levels that propagate through ground between the source and a receptor such as a building; typically assessed indoors.

Ground Level Continuous Power Supply System (GLCPSS): GLCPSS are “wireless” propulsion technologies which use ground level power sources (instead of Overhead Contact Systems (OCS)) to allow for catenary-free operations. These technologies are also referred to as Infrastructure/Wayside and/or Off-Tram technologies. These systems distribute power to the vehicle via induction. (Source: District Department of Transportation, *Union Station to Georgetown*,

Alternatives Analysis for Premium Transit Service Propulsion Study, September 2013)

habitat - The area or environment where an organism or ecological community normally lives or occurs.

human environment – Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment.

impact – Negative effect upon the natural or human environment resulting from a proposed action.

indirect effects – Impacts that can be expected to result from a given action that occurs later in time or further removed in distance; for example, induced changes to land use patterns, population density or growth rate.

Integrated Compliance Information System (ICIS): The Integrated Compliance Information System (ICIS) is a database maintained by the EPA for national enforcement and compliance program as well as National Pollutant Discharge Elimination System (NPDES) program.

land use – Classification providing information on land cover and the types of human activity occurring on a parcel of land, such as “commercial,” “industrial,” “residential,” or “open space.”

Level of Service (LOS) – A letter grade designation used to describe given roadway conditions with “A” being at or close to free-flow conditions and “F” being at or close to over-saturation of the roadway; usually based on the progression of vehicles through the green phase of a signal, driver discomfort/frustration, lost travel time, and fuel consumption.

Limits of Disturbance (LOD) – Boundary within which all construction, materials storage, grading, landscaping and related activities occurs.

logical termini – Connecting points with known features (land uses, economic areas, population concentrations, cross route locations, etc.) at either end of a proposed transportation route that enhances good planning and which serve to make the route usable. Logical termini are considered rational end points for a transportation improvement.

Low-Income Populations – Any readily identifiable group of low-income persons whose household income is at or below the U.S. Department of Health and Human Services (DHHS) poverty guidelines. For low-income populations, FTA encourages the use of a locally developed threshold, such as that used for FTA’s grant program (Public Law 112-141), which defines “low-income individual” to mean “an individual whose family income is at or below 150 percent of the poverty line.”

Metropolitan Washington Council of Governments (MWCOCG) – An independent, nonprofit association comprised of 24 local government agencies within the Metropolitan Washington area, Maryland, Virginia, the U.S. Senate, and the U.S. House of Representatives where area leaders address regional issues affecting the District, suburban Maryland, and Northern Virginia.

Minority Populations – The USDOT Order on Environmental Justice (5610.2a) and FTA Circular

4703.1 define minority populations as persons who are American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, Black (not of Hispanic Origin), and Hispanic or Latino.

mitigation – 40 CFR 1508.20 defines “mitigation” as:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

mobility – The ability to move or be moved from place to place.

Mode, Intermodal, Multimodal – Form of transportation, such as automobile, transit, bicycle, and walking. Intermodal refers to the connections between modes and multimodal refers to the availability of transportation options within a system corridor.

National Capital Planning Commission (NCPC) – NCPC is a U.S government agency that provides planning guidance for the District of Columbia and the surrounding National Capital Region.

National Environmental Policy Act (NEPA) – The National Environmental Policy Act (42 U.S.C. 4321 et seq.) is a law enacted by the United States Congress in 1969 which requires federal agencies to consider the environmental impacts of federal projects or decisions.

National Historic Preservation Act (NHPA) – The National Historic Preservation Act (16 U.S.C. 470 et seq.) is a law enacted by the United States Congress in 1966 which established a program for the preservation of historic properties in the United States. Section 106 of the NHPA requires Federal agencies to take into account the effects of their undertakings on historic properties.

National Register of Historic Places (NRHP) – A federal list of buildings, sites, districts and other properties that have a historic significance.

National Wetlands Inventory – Established by the USFWS to conduct a nationwide inventory of U.S. wetlands to provide biologists and others with information on the distribution and type of wetlands.

Navigable Waterway – Navigable waterways are surface waters under the jurisdiction of EPA and USACE which “are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide” as defined in 33 C.F.R. §328.3(a)(1); 40 C.F.R. § 230.3(s)(1).

Need – Provides the data in support of the statement of purpose.

No Build Alternative – A benchmark against which to compare other alternatives.

off-peak period – Used to describe times where travel is not at its peak, or highest level, during the day. Off-peak travel usually occurs in the midday and evenings in most cities.

Office of the Chief Technology Officer – The District of Columbia’s central technology organization responsible for the development, implementation, and maintenance of the District’s technology infrastructure.

Overhead Contact System (OCS) – OCS is a widespread form of “wired” streetcar propulsion technology which uses pantograph current collector and overhead catenary for the propulsion of streetcars. (Source: http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_07-a.pdf)

physiographic province – geographic region with characteristic subsurface rock types, structural elements, and land forms.

Priority Corridor Network (PCN) – Priority Corridor Networks are transportation corridors in the Washington, DC region which WMATA has identified with sufficient current or future potential to warrant running way improvements to support faster and more reliable bus services. Corridors with daily transit ridership over 5,000 per day were considered as candidates. Other candidates were those in fast developing corridors, where greater than average transit growth is expected.

Purpose – Defines the transportation problem to be solved and outlines goals and objectives to be included as part of the solution.

Recognized Environmental Condition (REC) – The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property.

Resource Conservation and Recovery Act (RCRA) – The Resource Conservation and Recovery Act (RCRA) of 1976, which amended the Solid Waste Disposal Act, addresses solid (Subtitle D) and hazardous (Subtitle C) waste management activities. The Hazardous and Solid Waste Amendments (HSWA) of 1984 strengthened RCRA’s waste management provisions and added Subtitle I, which governs underground storage tanks (USTs). Regulations promulgated pursuant to Subtitle C of RCRA (40 CFR Parts 260-299) establish a “cradle-to-grave” system governing hazardous waste from the point of generation to disposal.

right-of-way (ROW) – Land available for operation of transportation facilities (roadways or rail lines). The land is typically government-owned (local, state, or federal). A transportation facility may occupy all or a portion of the ROW.

Section 4(f) of the Department of Transportation Act of 1966 – Federal legislation that provides for the consideration of publicly-owned, public parks and recreational areas, wildlife and waterfowl refuges, and historic sites during the development of Federally funded transportation projects.

shared-use path – A form of infrastructure that supports multiple recreational and transportation

opportunities, including but not limited to walking, bicycling, inline skating, and wheelchair.

Special Flood Hazard Areas (SFHAs) – The land area covered by the floodwaters of the base flood is the Special Flood Hazard Area (SFHA) on National Flood Insurance Program (NFIP) maps. The SFHA is the area where the NFIP floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

State Historic Preservation Office (SHPO) – A state administrative agency responsible for carrying out consultation in accordance with the National Historic Preservation Act of 1966, as amended and other state historic preservation regulations.

streetcar – Streetcars are a form of urban mass transit which use relatively lightweight passenger railcars operating singly or in short trains, or on fixed rails in rights-of-way in shared rights-of-way.

study area – A geographic area selected and defined at the outset of environmental evaluations that is sufficiently adequate in size to address all pertinent project matters occurring within it.

threatened species – A species that may become endangered if surrounding conditions begin or continue to deteriorate.

Traction Power Substation – An electrical substation that converts electric power to an appropriate voltage, current type, and frequency to supply the streetcar with traction current.

Transportation Analysis Zone (TAZ) – a geographic area delineated by state and/or local transportation officials for tabulating traffic-related data.

transit – Generally refers to passenger service provided to the general public along established routes with fixed or variable schedules at published fares. Related terms include public transit, mass transit, public transportation, or paratransit. Transit modes include commuter rail, heavy or light transit, bus, or other vehicles designated for commercial transportation of non-related persons.

transition – In the context of rail technology, the term “transition” refers to changes in track curvature. The “transition” occurs between the points of maximum and minimum curvature along a track segment.

topography – The surface features of a place or region.

Viewer Sensitivity – The consequence of viewer exposure and viewer awareness.

Viewshed Identification – The analysis identified existing landscape units and associated key views where the transportation improvements in the AVE would be visible to visitors, pedestrians, drivers, and residents.

Visual Character – Visual character describes the physical attributes of the AVE and include elements of the natural and cultural environments.

Visual Impact Assessment – The analysis of potential visual impacts to the landscape and

landscape views resulting from a proposed transportation project.

Visual Quality – Visual quality is what viewers like and dislike about the visual character of the AVE.

Washington Metro Area Transit Authority (WMATA) – The Washington Metropolitan Area Transit Authority (WMATA), commonly referred to as Metro, is a tri-jurisdictional government agency that operates transit service in the Washington Metropolitan Area. WMATA was created by the United States Congress as an interstate compact between the District of Columbia, the State of Maryland, and the Commonwealth of Virginia.

Waters of the United States (WOUS) – The term “Waters of the United States” is defined in 40 CFR 230.3(s) as:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
 - (I) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
 - (II) (From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
 - (III) Which are used or could be used for industrial purposes by industries in interstate commerce;
4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

Wetlands – The Clean Water Act defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.”

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BENNING ROAD & BRIDGES TRANSPORTATION IMPROVEMENTS

FINAL ENVIRONMENTAL ASSESSMENT

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