11th Street Bridges

FINAL ENVIRONMENTAL IMPACT STATEMENT

Volume 1

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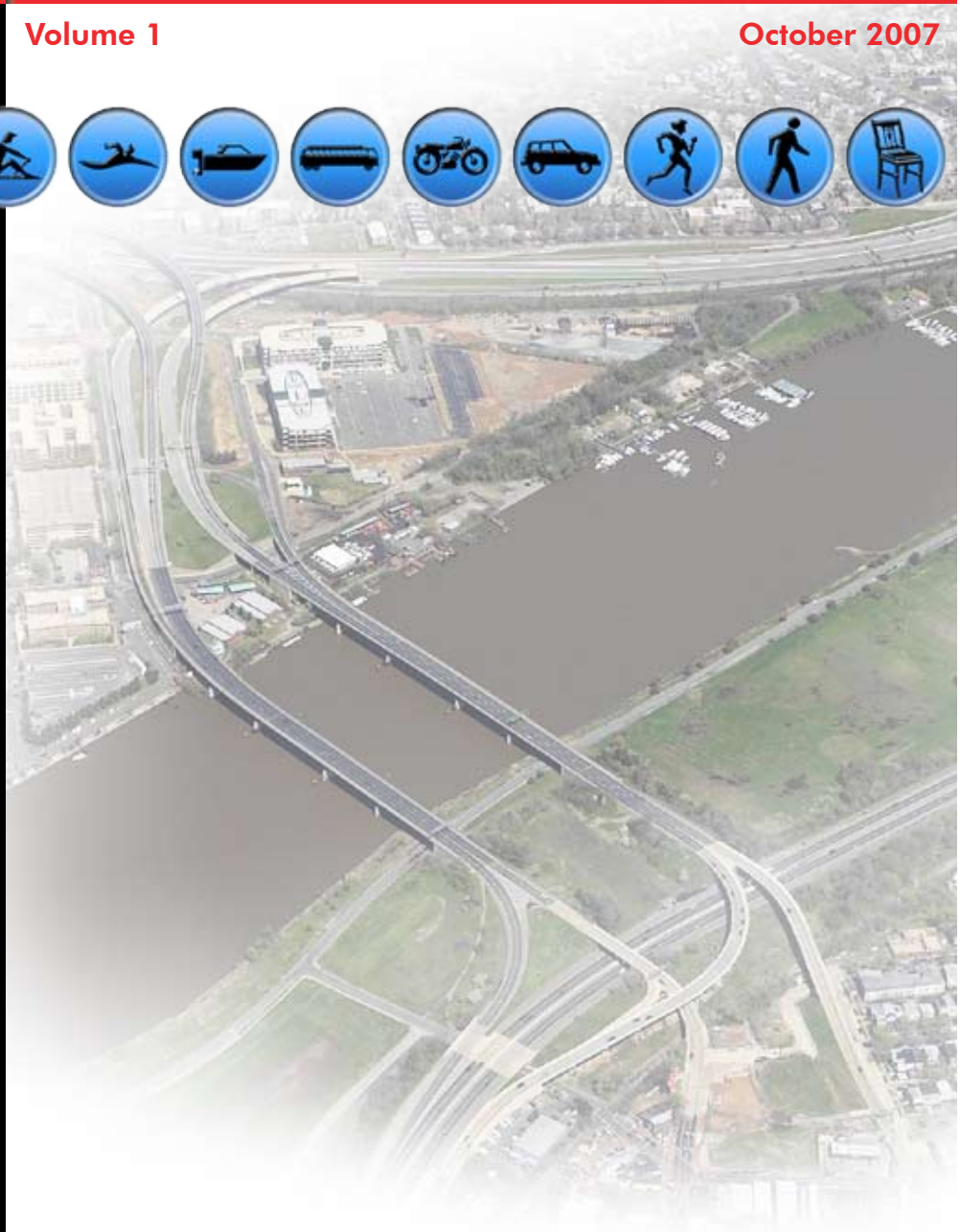

Submitted by

CH2MHILL

District Department of Transportation

District of Columbia

FHWA-DC-EIS-07-01-F

11th STREET BRIDGES

Anacostia Freeway (I-295/DC 295) to the Southeast/Southwest Freeway (I-695), Washington, DC

FINAL ENVIRONMENTAL IMPACT STATEMENT

Submitted Pursuant to: 42 U.S.C. 4332 (2) (c) and 49 U.S.C 303

By:
U.S. Department of Transportation
Federal Highway Administration
and
District of Columbia Department of Transportation

Sep 21, 07
Date of Approval

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The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) have proposed improvements to the highway connection between the Southeast/ Southwest Freeway (I-695) and the Anacostia Freeway (I-295 and DC-295) in Southeast Washington, DC. The project would replace obsolete infrastructure, provide missing freeway connections to improve traffic flow to and from downtown Washington, DC, discourage cut-through traffic on neighborhood streets, improve local access, and better link land uses across the Anacostia River. A Preferred Alternative has been identified.

This final environmental impact statement analyzes four Build Alternatives, the Preferred Alternative, and a No-Build Alternative for their potential effects on the human and natural environment. The analysis considers construction and the cumulative effects of proposed improvements.

This final environmental impact statement will be available for public review until November 20, 2007.

2 Summary

This section provides a brief overview of the 11th Street Bridges project. The proposed action, project purpose and need, other actions in the project area, alternatives considered, environmental impacts, areas of controversy, unresolved issues, and required federal actions are summarized. More detail on these issues is provided elsewhere in this Final Environmental Impact Statement (EIS).

The foldout map inside the back cover may facilitate your review.

2.1 Proposed Action

The District Department of Transportation (DDOT) in conjunction with the Federal Highway Administration (FHWA), propose to reconstruct and reconfigure the interchange of the Southeast/Southwest Freeway and the Anacostia Freeway over the Anacostia River in Southeast Washington, DC, a distance of approximately 1 mile. The key design features of the project are:

- New ramps east of the Anacostia River would connect both directions of the Anacostia Freeway with cross-river freeway bridges (Exhibit 2-1). Currently only the southern reach of the Anacostia Freeway is directly linked to the bridges.
- Local traffic would be separated from freeway traffic either by dedicating one bridge to each use or by providing physical separation of uses on each bridge. The Preferred Alternative dedicates one bridge to freeway traffic and one bridge to local traffic.
- The current freeway lane capacity of four lanes in each direction would remain unchanged. In addition, two lanes in each direction would be provided for local traffic as would enhanced facilities for bicyclists and pedestrians adjacent to the local traffic lanes. The local lanes will be designed to accommodate a streetcar if that should result from a separate project.

EXHIBIT 2-1
Missing Movements
Connections that would link the Anacostia Freeway to the east ends of the 11th Street Bridges were never built.

West of the river, the project would rehabilitate or replace portions of the Southeast Freeway from approximately 6th Street north to the 11th Street Bridges. This includes reconstruction of entrance and exit ramps and the relocation of the freeway connection to the bridges. The current ramps at N Street move to M Street. The current exit between 9th Street and 10th Street moves to 9th Street. Linkages to the redesigned Southeast Freeway Boulevard and reconstruction of portions of the surface street network in the immediate vicinity of the freeway are also included.

Crossing the river, the project includes reconstruction of the two bridges. Further engineering analysis since the DEIS confirms that pier replacement is not required. The existing piers would be reused and widened. Widened piers (upstream of the upstream structure) would be required to support the additional structure width. The remaining portions of both bridges would be replaced. The project maintains the eight existing freeway lanes and provides four local lanes across the river. By taking advantage of the two existing bridges, the project would also provide a separated, surface street river crossing with adjacent bicycle and pedestrian facilities and accommodations for transit. Three of the four build alternatives and the Preferred Alternative use separate two-way bridges for the freeway traffic and the surface street traffic. The fourth build alternative maintains the existing one-way bridge pattern and barrier separates local and freeway facilities on the same structure. In all the build cases, the bicycle and pedestrian facilities are adjacent to a lower-speed surface street.

East of the river, the project would reconfigure the interchange between the Anacostia Freeway and the bridges. The freeway would be rehabilitated from a point north of Howard Road to a point south of Pennsylvania Avenue. Neither the interchange with Howard Road nor the interchange with Pennsylvania Avenue is involved in the project. Local access to Anacostia Park would be via the revised access to the local river crossing roads in addition to the current access at Good Hope Road. Ties to three local streets—Martin Luther King, Jr. Avenue, Good Hope Road, and 13th Street—would be reconfigured, depending upon the build alternative selected.

Current freeway capacity of four lanes in each direction would remain unchanged. Two lanes in each direction would be provided for local traffic, as would enhanced facilities for bicyclists and pedestrians.

The build alternatives, including the Preferred Alternative, each accommodate wide, shared-use paths for easy walking, jogging, and bicycling that tie into existing and planned trails on both sides of the river. Park access is prominent; guide signs throughout the corridor will direct traffic to destinations within and beyond the area. Accommodating future streetcar plans into the design provides additional potential means for public transit across Anacostia River. Replacing the aging bridges with updated designs allows the introduction of "redundant safety features" that meet today's bridge safety and security standards and architecturally complement the surrounding neighborhoods.

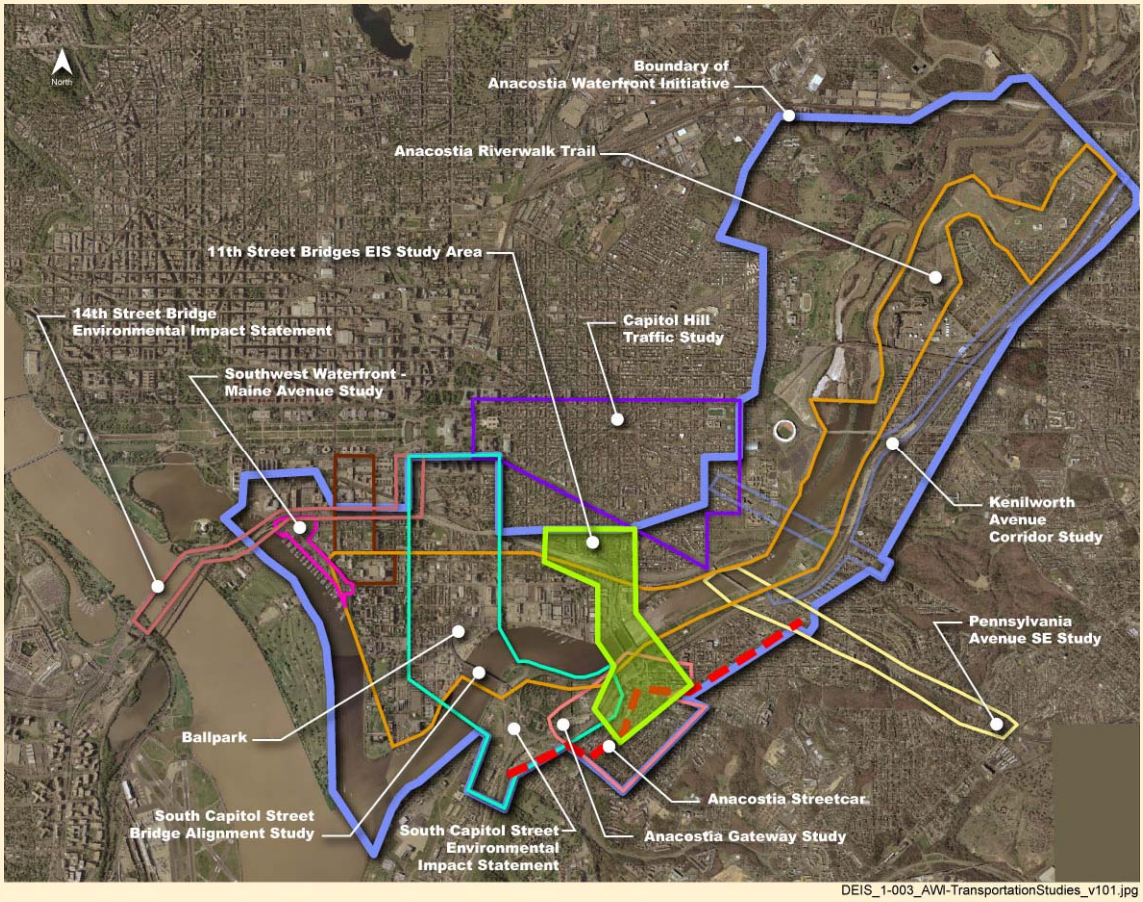
The 11th Street Bridges project is a key component in District of Columbia (DC) plans to revitalize the Anacostia riverfront. In March 2000, federal and District agencies signed an agreement forming the Anacostia Waterfront Initiative (AWI) to transform the Anacostia River into a revitalized urban waterfront.

A leading recommendation in the MAC Study was to replace the 11th Street Bridges and reconfigure the interchange east of the river to provide full directional access to the Anacostia Freeway.

The AWI fostered a number of transportation studies (see Exhibit 2-2). The Middle Anacostia River Crossings Transportation Study (MAC Study) evaluated existing and forecast mobility needs throughout the area and identified access problems caused or ignored by past transportation investments. A leading recommendation in the MAC Study was to replace the 11th Street Bridges and reconfigure the interchange east of the river to provide full directional access to the Anacostia Freeway.

The findings and recommendations in the MAC study formed the basis of the alternative development and evaluation process.

EXHIBIT 2-2
Anacostia Waterfront Initiative Transportation Studies
The 11th Street Bridges project is one of many being studied in Southeast Washington, DC.



DEIS_1-003_AWI-TransportationStudies_v101.jpg

2.2 Purpose and Need

The purpose of the 11th Street Bridges Project is to:

- Reduce congestion and improve the mobility of traffic across the Anacostia River on the 11th Street Bridges and on the local streets in the area.
- Increase the safety of vehicular, pedestrian, and bicycle traffic in the Anacostia neighborhood.
- Replace deficient infrastructure and roadway design.
- Provide an alternative evacuation route and routes for security movements in and out of the nation's capital.

The transportation needs to be met by the 11th Street Bridges project are:

- Improve Access and Reduce Congestion—Provide missing access to the Anacostia Freeway. Reduce volume of freeway traffic that spills onto the neighborhood streets due to current traffic patterns.
- Enhance Safety—Provide safe pedestrian and bicycle access across the river and to the Anacostia waterfront. Correct roadway design elements that reduce safety and result in congestion. Reduce number of vehicular crashes in the project interchanges.
- Correct Design Deficiencies—Replace bridges that are functionally and structurally obsolete. Improve signage in the project area to reduce confusion to driver.
- Augment Homeland Security—Upgrade evacuation route for the nation's capital and area military installations.

The full purpose and need of the project are discussed in Section 4.

2.3 Other Major Governmental Proposed Actions

A number of other government and private developments are taking place in the general vicinity of the 11th Street Bridges project. Other major transportation projects include the realignment and other improvements to South Capitol Street and the Frederick Douglass Bridge, the Anacostia Streetcar, and the District's Great Streets program. The District intends to remove the ramps connecting the 11th Street Bridges to the portion of the Southeast/ Southwest Freeway leading to Barney Circle and replace the roadway with what is described as the Southeast Freeway Boulevard. The scope and timing of other transportation projects in the study area are identified in the AWI Transportation Master Plan.

> The District intends to remove the ramps connecting the 11th Street Bridges to the portion of the Southeast/Southwest Freeway leading to Barney Circle and replace the roadway with what is described as the Southeast Freeway Boulevard.

A prominent project that is not transportation-related is the new baseball park in the area bounded by N Street, Potomac Avenue, 1st Street, and South Capitol Street.

Along M Street, new developments include "The Yards" (formerly known as the Southeast Federal Center), and Waterfront Park as well as the Arthur Capper/Carrollsburg Development. A new headquarters building for the U.S. Department of Transportation (USDOT) is part of the "The Yards." Maritime Plaza has three privately developed buildings planned in addition to the two buildings now standing. Well-defined plans for private development for residential, commercial, and office uses of a substantial portion of the available land in the area between M Street and the Southeast/Southwest Freeway were the subject of recent front-page newspaper coverage in the *Washington Post* (2005).

East of the river, major proposals include the planned Anacostia Gateway Government Center building, the Anacostia Streetcar, and the Great Streets transportation/economic development. The General Services Administration (GSA) is redeveloping the St. Elizabeths Hospital site in anticipation of 14,000 jobs with the U.S. Coast Guard and Department of Homeland Security. Also anticipated is the development of Poplar Point as a mixed-use facility, although no specific development plans have been approved for this site.

2.4 Reasonable Alternatives Considered

The build alternatives and the Preferred Alternative evolved from an iterative process involving engineering, planning, and environmental inputs; review and comment by stakeholders, including the public; refinement and revision; and eventual screening of the alternatives presented in this Final EIS. Project planning and design criteria were developed in consultation with key stakeholders, including FHWA, National Park Service (NPS), U.S. Army Corps of Engineers (USACOE), U.S. Coast Guard, DDOT, and others.

Each of the alternatives being studied in this Final EIS has been developed to a similar level of detail to enable a reasonable comparison of each alternative. The Preferred Alternative identified in this Final EIS was selected after careful consideration and evaluation of comments received on the Draft EIS. It is a hybrid alternative of Build Alternative I west of the river and Build Alternative II east of the river. Additional detail on the selection of the Preferred Alternative can be found in Section 5.2.5.

The Preferred Alternative identified in this Final EIS was selected after careful consideration and evaluation of comments received on the Draft EIS. It is a hybrid alternative of Build Alternative I west of the river and Build Alternative II east of the river. Additional detail on the selection of the Preferred Alternative can be found in Section 5.2.5.

The alternatives for this project were developed to:

- Construct missing ramps that would link the Southeast/Southwest Freeway and the Anacostia Freeway to the east end of the 11th Street Bridges.
- Reduce the volume of freeway traffic that spills onto the neighborhood streets due to current traffic patterns.

- Accommodate safe pedestrian and bicycle access across the river and to the Anacostia waterfront.
- Replace the 40-year-old bridges that are functionally and structurally obsolete.

Under each alternative, including the Preferred Alternative, the number of freeway lanes entering and leaving the project area (Southeast/ Southwest Freeway, I-295, and the Anacostia Freeway) would remain the same.

Under each alternative, including the Preferred Alternative, the number of freeway lanes entering and leaving the project area (Southeast/Southwest Freeway, I-295, and the Anacostia Freeway) would remain the same. The provision of lanes to accommodate merging traffic and the separation of local and freeway traffic would result in an increase in the number of lanes at some locations, but not at the limits of the project. Therefore, the lane capacity of the freeway system serving this area of Washington, DC would not change. Currently the 11th Street Bridges accommodate four lanes of freeway traffic in each direction across the Anacostia River. Similarly, each of the alternatives would accommodate four lanes of freeway traffic in each direction. Each alternative provides for the physical separation of two lanes of local (non-freeway) traffic in each direction across the river. These additional local lanes would remove the bottlenecks at the 11th Street crossing and improve local access across the river, but would not increase through-put or the lane capacity of the existing freeway system.

Each alternative (including the No-Build) assumes that the Southeast/Southwest Freeway between 11th Street and Barney Circle would be downgraded to a boulevard, as outlined in the MAC Study. In addition, the direct ramps between the 11th Street Bridges and this section of the Southeast/Southwest Freeway would be eliminated. These modifications are being completed by DDOT as a separate project.

The 11th Street Bridges and connecting roadways are located in a highly developed urban area surrounded by constraints on each side of the river. These constraints include long-standing, established residential neighborhoods, Washington Navy Yard, parks and recreational lands, and a navigable waterway. Given these constraints and the direction set forth in the MAC Study, the project team developed a range of improvement concepts to meet the project purpose and need while minimizing the project footprint. A primary goal driving the alternatives development and screening was to stay within the existing right-of-way as much as possible and practical, thus minimizing impacts to the project surroundings.

A No-Build Alternative and five build alternatives, including the Preferred Alternative, were selected for further study and consideration in this Final EIS. Each of the build alternatives, including the Preferred Alternative, meets the purpose and need for the project and is the result of the extensive public and agency coordination.

A primary goal driving the alternatives development and screening was to stay within the existing right-of-way as much as possible and practical, thus minimizing impacts to the project surroundings.

2.4.1 No-Build Alternative

The No-Build Alternative would contain no new major construction resulting from a project action, although other planned and committed projects in the area would move forward. Improvements implemented under this alternative would be limited to short-term restoration and maintenance of the existing freeway and the river-crossing bridges. The inherent structural deficiencies of the Anacostia river-crossing bridges would not be corrected. Pedestrian and bicycle facilities in the project area would remain in poor condition and the connectivity of existing facilities would still be lacking. The proposed ramps to and from Anacostia Freeway north of the 11th Street Bridges complex would not be connected to the 11th Street Bridge crossings, and existing geometric and operational deficiencies would remain in place. These deficiencies are expected to result in increased travel on neighborhood streets, increased traffic congestion throughout the project area, and an increased number of traffic crashes. The No-Build Alternative would not meet the purpose and need of the project.

The No-Build Alternative would contain no new major construction resulting from a project action, although other planned and committed projects in the area would move forward. The No-Build Alternative would not meet the purpose and need of the project.

2.4.2 Build Alternatives

All of the build alternatives have common features and elements that address the current transportation problems and reflect the project's context and purpose and need. Exhibits 2-3 and 2-3A show the build alternatives examined in this Final EIS. They all use the same design criteria. They all provide the same basic traffic service by providing eight freeway lanes and four local lanes over the Anacostia River along the same basic alignment as the current crossings. They all achieve separation of freeway traffic from local street traffic, and they all provide a safe river crossing for pedestrians and bicyclists.

Unique Features of Build Alternatives

Build Alternatives II, III, IV, and the Preferred Alternative provide a service interchange with the Anacostia Freeway that is not provided in Build Alternative I.

Build Alternative I would depress the Anacostia Freeway in a tunnel approximately 230 feet long and 10 feet below the water level of the Anacostia River. Doing so would lower the overall height of the Anacostia Freeway interchange complex by approximately 30 feet relative to the other build alternatives.

Build Alternatives I, II, III, and the Preferred Alternative each would provide a reconstructed eight-lane freeway bridge along the alignment of the existing 11th Street Bridge as well as a local four-lane bridge crossing on the current alignment of the Officer Welsh bridge. Both of these structures would accommodate two-way traffic on each structure. Pedestrian and bike facilities would be adjacent to the local travel lanes.

EXHIBIT 2-3
Build Alternatives
The build alternatives have very similar alignments and share many features.

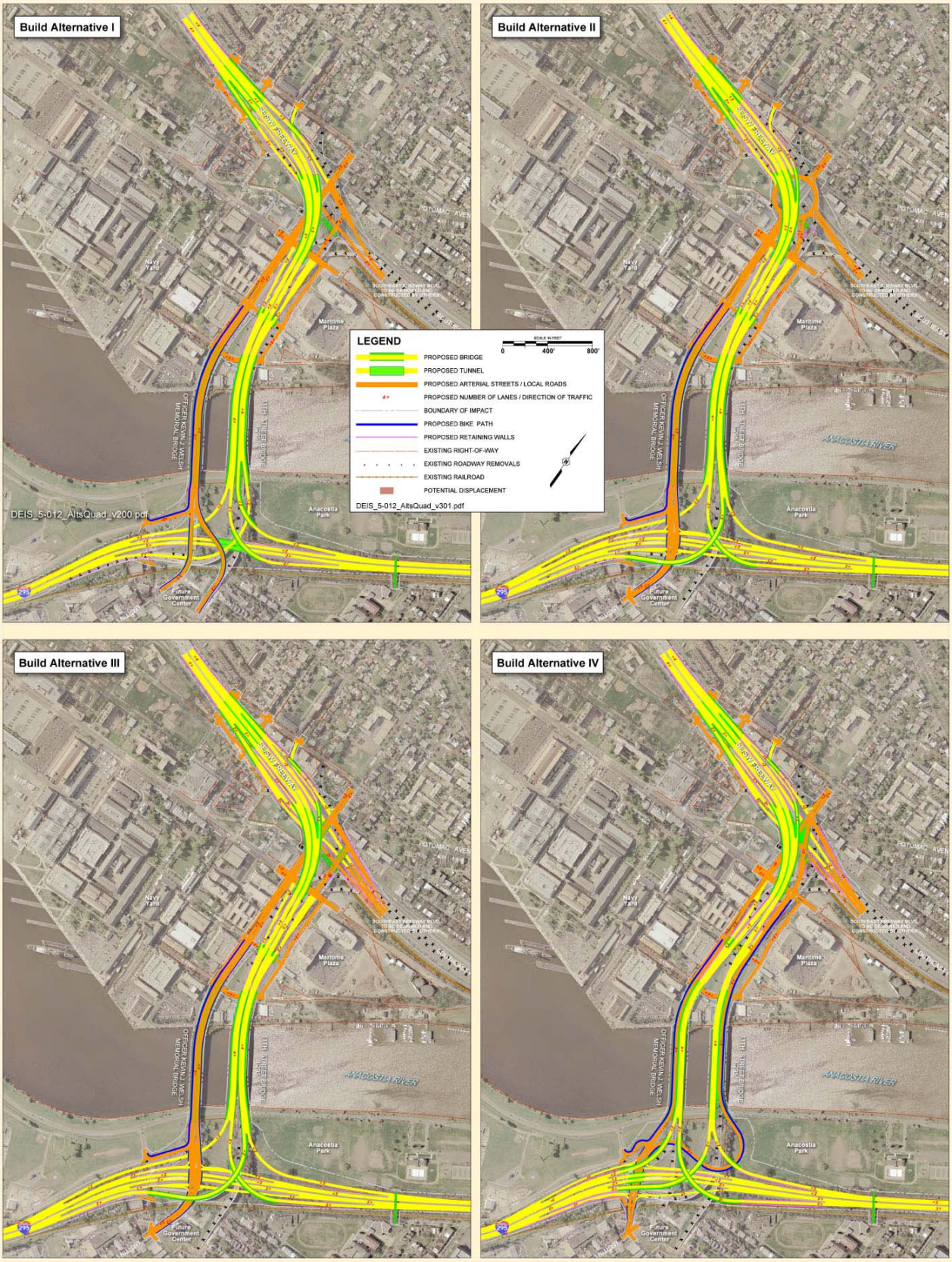
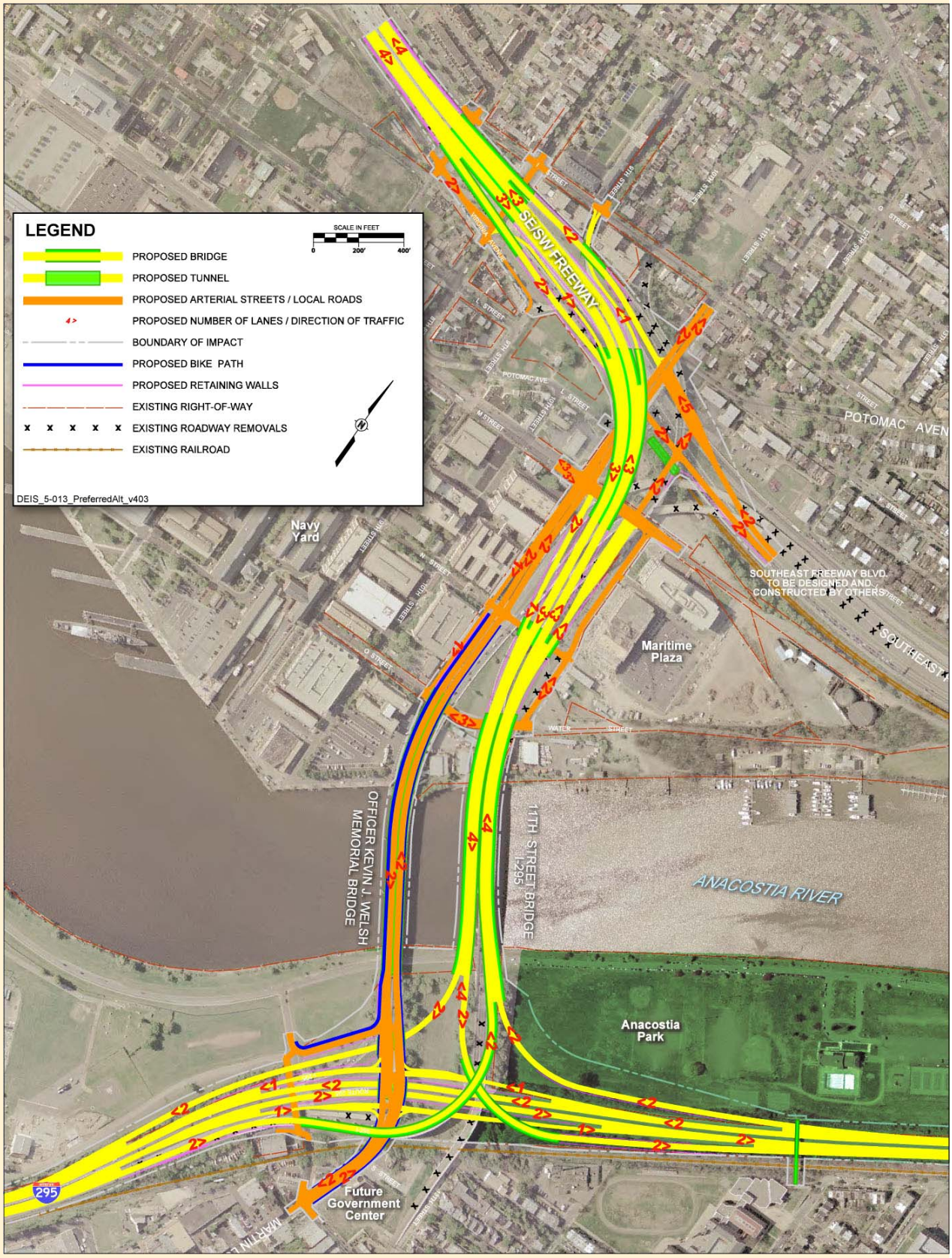


EXHIBIT 2-3A
Preferred Alternative
The Preferred Alternative was selected after careful consideration and evaluation of comments received on the Draft EIS.



Build Alternative IV would have a barrier that separates local and freeway traffic on eight freeway lanes and four local lanes. Both of these structures accommodate one-way traffic on each structure. Pedestrian and bicycle facilities would be adjacent to the local travel lanes.

In Build Alternative I and the Preferred Alternative, the Southeast/Southwest Freeway, Southeast Freeway Boulevard and 11th Street would connect through at-grade intersections on the local street grid. Continuity of traffic from the Southeast/Southwest Freeway is eliminated and traffic going from the Southeast/Southwest Freeway to the Southeast Freeway Boulevard must go through a traffic signal.

In Build Alternative II, these facilities would connect through a traffic circle. Under this alternative, intersecting roadways with the circle would be controlled by traffic signals. Continuity of traffic from the Southeast/Southwest Freeway would be eliminated and traffic going from the Southeast/Southwest Freeway to Southeast Freeway Boulevard would go through a traffic signal.

In Build Alternatives III and IV, the continuity of traffic from the Southeast/Southwest Freeway to Southeast Freeway Boulevard would be maintained and traffic would continue free-flow via a provided underpass. Interchanging traffic to/from 11th Street from either facility would be served via at-grade intersections at 11th Street.

Build Alternatives I, II, III, and the Preferred Alternative maintain two-way traffic on both 11th and 12th Streets within the study area. Because of the river-crossing bridge configuration, Build Alternative IV requires that 11th Street (eastbound) and 12th Street (westbound) operate as one-way roadways between approximately K Street and the Anacostia River.

All the build alternatives have a number of other differences and similarities in design, appearance, and traffic operations. Those listed above are the major differentiators. Additional detail is provided in Section 5.

2.5 Environmental Impacts

Environmental impacts associated with the 11th Street Bridge project are limited and generally the same for all proposed build alternatives. From an environmental perspective, there is little reason to prefer one alternative to another. Exhibit 2-4 summarizes the environmental impacts that the remaining sections of this Final EIS detail. Few issues examined show any meaningful impact levels. Key issues and findings include:

- No alternative would cause a localized violation of air quality criteria. All emissions would be within the regional air quality conformity budget.
- Safety concerns will affect Anacostia Community Boathouse Association (ACBA) operations during the construction of any alternatives. The mitigation plan for maintaining ACBA operations during construction is detailed in Section 7.3.5.

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Air Quality emissions						
CO emission rates (lbs/ day)	1,817	2,007	1,902	2,044	1,944	1,974
NOx emission rates (lbs/day)	88	97	92	99	94	95
VOC emission rates (lbs/day)	102	113	107	115	109	111
$PM_{2.5}$ emission rates (lbs/ day)	7	8	7	8	7	7
8-hr CO concentrations						
M Street/ 11th Street	2.3 ppm	2.7 ppm	2.6 ppm	2.7 ppm	2.5 ppm	2.6 ppm
N Street/ 11th Street	2.2 ppm	2.3 ppm	2.3 ppm	2.3 ppm	2.1 ppm	2.3 ppm
Southeast Fwy Blvd/ 12th Street	N/A	2.1 ppm	2.4 ppm	2.0 ppm	2.1 ppm	2.1 ppm
Southeast/Southwest Freeway/ 11th Street	N/A	2.3 ppm	2.4 ppm	2.1 ppm	2.1 ppm	2.3 ppm
Good Hope Rd/ M. L. King, Jr., Ave	2.3 ppm	2.1 ppm	2.3 ppm	2.2 ppm	2.2 ppm	2.3 ppm
Good Hope Rd/ Minnesota Ave	2.1 ppm	2.0 ppm	2.1 ppm	2.1 ppm	2.1 ppm	2.1 ppm
	No exceedance of the NAAQS (9.0 ppm)	No exceedance of the NAAQS (9.0 ppm)	No exceedance of the NAAQS (9.0 ppm)	No exceedance of the NAAQS (9.0 ppm)	No exceedance of the NAAQS (9.0 ppm)	No exceedance of the NAAQS (9.0 ppm)

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Construction air quality	No construction emissions	Construction emissions local and limited to the construction duration All alternatives comparable	Construction emissions local and limited to the construction duration All alternatives comparable	Construction emissions local and limited to the construction duration All alternatives comparable	Construction emissions local and limited to the construction duration All alternatives comparable	Construction emissions local and limited to the construction duration All alternatives comparable
Regional air quality impact	No negative impact to regional air quality	No negative impact to regional air quality All alternatives comparable	No negative impact to regional air quality All alternatives comparable	No negative impact to regional air quality All alternatives comparable	No negative impact to regional air quality All alternatives comparable	No negative impact to regional air quality All alternatives comparable
ACBA buildings	Improve community center with available funds	Disrupt operations during construction Improve community center with available funds	Disrupt operations during construction Improve community center with available funds	Disrupt operations during construction Improve community center with available funds	Disrupt operations during construction Improve community center with available funds	Disrupt operations during construction Improve community center with available funds
Paleontological Resources	No change	Potential resources at depths greater than 20 feet in area where Anacostia Freeway depressed Potential resources where piers are sunk to depths greater than 20 feet, but effect identical for all alternatives	Potential resources where piers are sunk to depths greater than 20 feet, but effect identical for all alternatives	Potential resources where piers are sunk to depths greater than 20 feet, but effect identical for all alternatives	Potential resources where piers are sunk to depths greater than 20 feet, but effect identical for all alternatives	Potential resources where piers are sunk to depths greater than 20 feet, but effect identical for all alternatives

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Prehistoric sites on or eligible for the National Register	No change	Potential for impact to buried resources. Need to review final design and construction plans All alternatives comparable	Potential for impact to buried resources. Need to review final design and construction plans All alternatives comparable	Potential for impact to buried resources. Need to review final design and construction plans All alternatives comparable	Potential for impact to buried resources. Need to review final design and construction plans All alternatives comparable	Potential for impact to buried resources. Need to review final design and construction plans All alternatives comparable
Historic structures on or eligible for the National Register	No change	2.4 acres of eligible Anacostia Park converted to highway use	3.5 acres of eligible Anacostia Park converted to highway use	3.5 acres of eligible Anacostia Park converted to highway use	3.3 acres of eligible Anacostia Park converted to highway use	1.5 acres of eligible Anacostia Park converted to highway use
Noise (average readings)						
Fairlawn/16th St	69.1 dBA	70.4 dBA	73.1 dBA	73.1 dBA	74.2 dBA	73.0 dBA
Ridge Pl/13th St	62.1 dBA	63.0 dBA	63.7 dBA	63.7 dBA	67.1 dBA	63.6 dBA
Anacostia Park	63.4 dBA	63.4 dBA	65.4 dBA	65.4 dBA	70.5 dBA	65.3 dBA
Virginia Ave Park	62.8 dBA	66.5 dBA	68.4 dBA	68.0 dBA	68.7 dBA	66.5 dBA
Marine Barracks	64.6 dBA	65.9 dBA	69.1 dBA	68.3 dBA	68.0 dBA	65.9 dBA
Hopkins Apartments	64.5 dBA	65.8 dBA	67.8 dBA	68.4 dBA	66.8 dBA	65.7 dBA
Overall	64.1 dBA	65.7 dBA	67.7 dBA	67.7 dBA	68.8 dBA	66.4 dBA
Noise Abatement Threshold	N/A	66.0 dBA	66.0 dBA	66.0 dBA	66.0 dBA	66.0 dBA

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Vibration	No change	No structural damage because pile driving more than 100 feet from structures Annoyance within 400 feet of pile driving All alternatives comparable	No structural damage because pile driving more than 100 feet from structures Annoyance within 400 feet of pile driving All alternatives comparable	No structural damage because pile driving more than 100 feet from structures Annoyance within 400 feet of pile driving All alternatives comparable	No structural damage because pile driving more than 100 feet from structures Annoyance within 400 feet of pile driving All alternatives comparable	No structural damage because pile driving more than 100 feet from structures Annoyance within 400 feet of pile driving All alternatives comparable
Total land area footprint	73 acres	81 acres	85 acres	85 acres	85 acres	82 acres
Anacostia Park land converted to highway use	None	2.4 acres east of river	3.5 acres east of river	3.5 acres east of river	3.3 acres east of river	1.5 acres east of river
Virginia Avenue Park land converted to highway use	None	None	0.2 acre	0.4 acre	0.4 acre	None
Section 4(f)	No change	Net Benefit 6(f) Programmatic Agreement applicable for Anacostia Park	Net Benefit 6(f) Programmatic Agreement applicable for both parks	Net Benefit 6(f) Programmatic Agreement applicable for both parks	Net Benefit 6(f) Programmatic Agreement applicable for both parks	Net Benefit 6(f) Programmatic Agreement applicable for Anacostia Park

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Environmental Justice	Worsened congestion on local streets disproportionately affecting adjacent minority and low-income populations, particularly east of river, lengthening duration of most congested time of day, attendant safety, noise, and air quality concerns on neighborhood streets	Impacts focus near existing highway and adjacent minority and low-income populations Benefit of reduced traffic on local streets and improved access to park and transportation network focused on minority and low-income populations east of river Portion of the parking lot of the Hopkins Apartments converted to highway use.	Impacts focus near existing highway and adjacent minority and low-income populations Benefit of reduced traffic on local streets and improved access to park and transportation network focused on minority and low-income populations east of river Portion of the parking lot of the Hopkins Apartments converted to highway use.	Impacts focus near existing highway and adjacent minority and low-income populations Benefit of reduced traffic on local streets and improved access to park and transportation network focused on minority and low-income populations east of river Portion of the parking lot of the Hopkins Apartments converted to highway use	Impacts focus near existing highway and adjacent minority and low-income populations Benefit of reduced traffic on local streets and improved access to park and transportation network focused on minority and low-income populations east of river Portion of the parking lot of the Hopkins Apartments converted to highway use	Impacts focus near existing highway and adjacent minority and low-income populations Benefit of reduced traffic on local streets and improved access to park and transportation network focused on minority and low-income populations east of river Portion of the parking lot of the Hopkins Apartments converted to highway use
Congestion on minor arterials including Minnesota Avenue, Good Hope Road, and Martin Luther King, Jr. Avenue	Continued and worsened congestion with duration of most congested time of day increasing	Noticeable reduction in use of local streets by through traffic. Additional capacity available. Slightly lower volumes without new Anacostia access	Noticeable reduction in use of local streets by through traffic. Additional capacity available. Alternatives II, III, IV, and the Preferred Alternative comparable	Noticeable reduction in use of local streets by through traffic. Additional capacity available. Alternatives II, III, IV, and the Preferred Alternative comparable	Noticeable reduction in use of local streets by through traffic. Additional capacity available. Alternatives II, III, IV, and the Preferred Alternative comparable	Noticeable reduction in use of local streets by through traffic. Additional capacity available. Alternatives II, III, IV, and the Preferred Alternative comparable

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Congestion on principal arterial Pennsylvania Avenue	Pennsylvania Avenue will operate at maximum capacity All alternatives comparable	Pennsylvania Avenue will operate at maximum capacity. Reduced traffic from Pennsylvania Avenue outbound to Anacostia Freeway All alternatives comparable	Pennsylvania Avenue will operate at maximum capacity. Reduced traffic from Pennsylvania Avenue outbound to Anacostia Freeway All alternatives comparable	Pennsylvania Avenue will operate at maximum capacity. Reduced traffic from Pennsylvania Avenue outbound to Anacostia Freeway All alternatives comparable	Pennsylvania Avenue will operate at maximum capacity. Reduced traffic from Pennsylvania Avenue outbound to Anacostia Freeway All alternatives comparable	Pennsylvania Avenue will operate at maximum capacity. Reduced traffic from Pennsylvania Avenue outbound to Anacostia Freeway All alternatives comparable
M Street Traffic Operations	Traffic grows from 15,000 vpd to 28,000 vpd	Traffic volumes increase to 38,000 vpd 11th and M Streets operate at LOS E	Traffic volumes increase to 38,000 vpd 11th and M Streets operate at LOS D	Traffic volumes increase to 38,000 vpd 11th and M Streets operate at LOS D	Traffic volumes increase to 35,000 vpd 11th and M Streets operate at LOS D	Traffic volumes increase to 38,000 vpd 11th and M Streets operate at LOS D
11th Street Traffic Operations	Traffic grows from 13,000 vpd to 14,000 vpd	Traffic volumes increase to 19,000 vpd 11th and M Streets operate at LOS E	Traffic volumes increase to 19,000 vpd Traffic circle operates at LOS F	Traffic volumes increase to 19,000 vpd 11th and M Streets operate at LOS D	Traffic volumes increase to 17,000 vpd 11th and M Streets operate at LOS D	Traffic volumes increase to 19,000 vpd 11th and M Streets operate at LOS D
Endangered Species	No change	Received a "Not Likely to Adversely Affect" opinion for shortnose sturgeon All alternatives comparable	Received a "Not Likely to Adversely Affect" opinion for shortnose sturgeon All alternatives comparable	Received a "Not Likely to Adversely Affect" opinion for shortnose sturgeon All alternatives comparable	Received a "Not Likely to Adversely Affect" opinion for shortnose sturgeon All alternatives comparable	Received a "Not Likely to Adversely Affect" opinion for shortnose sturgeon All alternatives comparable

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Anacostia River	No change	Widen piers of north bridge All alternatives are comparable in area of impact to widen piers	Widen piers of north bridge All alternatives are comparable in area of impact to widen piers	Widen piers of north bridge All alternatives are comparable in area of impact to widen piers	Widen piers of both bridges All alternatives are comparable in area of impact to widen piers	Widen piers of north bridge All alternatives are comparable in area of impact to widen piers
Wetlands	No change	0.17 acre impact	0.34 acre impact	0.34 acre impact	0.30 acre impact	0.07 acre impact
Terrestrial Habitats	No change	Minor impact to areas adjacent existing highway All alternatives comparable	Minor impact to areas adjacent existing highway All alternatives comparable	Minor impact to areas adjacent existing highway All alternatives comparable	Minor impact to areas adjacent existing highway All alternatives comparable	Minor impact to areas adjacent existing highway All alternatives comparable
Stormwater Management	No change	Low impact stormwater management planned for all alternatives	Low impact stormwater management planned for all alternatives	Low impact stormwater management planned for all alternatives	Low impact stormwater management planned for all alternatives	Low impact stormwater management planned for all alternatives
Consistency with local plans	No change	Improvements are consistent with objectives of the neighborhoods and the District	Improvements are consistent with objectives of the neighborhoods and the District	Improvements are consistent with objectives of the neighborhoods and the District	Improvements are consistent with objectives of the neighborhoods and the District	Improvements are consistent with objectives of the neighborhoods and the District
Local Economy	No change	Reduced congestion would make access to businesses and attractions more convenient All alternatives comparable	Reduced congestion would make access to businesses and attractions more convenient All alternatives comparable	Reduced congestion would make access to businesses and attractions more convenient All alternatives comparable	Reduced congestion would make access to businesses and attractions more convenient All alternatives comparable	Reduced congestion would make access to businesses and attractions more convenient All alternatives comparable

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Public Services						
Utilities	No change	Select local utilities relocated. No impact to residents or businesses	Select local utilities relocated. No impact to residents or businesses	Select local utilities relocated. No impact to residents or businesses	Select local utilities relocated. No impact to residents or businesses	Select local utilities relocated. No impact to residents or businesses
Emergency Response	Continued and worsened congestion with increased duration of most congested time of day will result in service degradation	Reduced traffic on east-side streets could improve EMS response times All alternatives comparable	Reduced traffic on east-side streets could improve EMS response times All alternatives comparable	Reduced traffic on east-side streets could improve EMS response times All alternatives comparable	Reduced traffic on east-side streets could improve EMS response times All alternatives comparable	Reduced traffic on east-side streets could improve EMS response times All alternatives comparable
Transit	No change	Minor schedule and stop location shifts possible	Minor schedule and stop location shifts possible	Minor schedule and stop location shifts possible	Minor schedule and stop location shifts possible	Minor schedule and stop location shifts possible
Evacuation Route	Continued and worsened congestion with increased duration of most congested time of day could affect emergency evacuation	Redundant bridge design more likely to survive accident or attack Reduced congestion would aid evacuation All alternatives are comparable	Redundant bridge design more likely to survive accident or attack Reduced congestion would aid evacuation All alternatives are comparable	Redundant bridge design more likely to survive accident or attack Reduced congestion would aid evacuation All alternatives are comparable	Redundant bridge design more likely to survive accident or attack Reduced congestion would aid evacuation All alternatives are comparable	Redundant bridge design more likely to survive accident or attack Reduced congestion would aid evacuation All alternatives are comparable

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Hazardous sites	Clean-up continues as planned	Contaminated materials are present and require health and safety plan and compliance with state and federal regulations All alternatives comparable	Contaminated materials are present and require health and safety plan and compliance with state and federal regulations All alternatives comparable	Contaminated materials are present and require health and safety plan and compliance with state and federal regulations All alternatives comparable	Contaminated materials are present and require health and safety plan and compliance with state and federal regulations All alternatives comparable	Contaminated materials are present and require health and safety plan and compliance with state and federal regulations All alternatives comparable
Views from Anacostia neighborhoods	No change	Lowered ramps less visible than existing Most of 13th Street ramp retained	Higher ramps visible from more distant locations 13th Street ramp eliminated	Higher ramps visible from more distant locations 13th Street ramp eliminated	Higher ramps visible from more distant locations 13th Street and Martin Luther King, Jr. Avenue ramps eliminated	Higher ramps visible from more distant locations 13th Street ramp eliminated
Views from Anacostia Park	High point about 55 feet above sea level Existing bridge rusted and unattractive No change (typical)	High point about 40 feet above sea level Lower structures on combination of earth embankments and piers less prominent than No-Build Bridges to have aesthetics and amenities of AWI design standards	High point about 76 feet above sea level Higher structures on combination of earth embankments and piers more prominent than No-Build Bridges to have aesthetics and amenities of AWI design standards	High point about 76 feet above sea level Higher structures on combination of earth embankments and piers more prominent than No-Build Bridges to have aesthetics and amenities of AWI design standards	High point about 63 feet above sea level Higher structures on combination of earth embankments and piers more prominent than No-Build Bridges to have aesthetics and amenities of AWI design standards	High point about 76 feet above sea level Higher structures on combination of earth embankments and piers more prominent than No-Build Bridges to have aesthetics and amenities of AWI design standards

EXHIBIT 2-4
Adverse and Beneficial Environmental Impacts
Summary of adverse and beneficial environmental impacts of the 11th Street Bridges project detailed in the Final EIS

Criteria	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Access to Anacostia Park	No change	East side vehicle access from local Officer Welsh bridge instead of at Good Hope Road Bicycle and pedestrian access from both local bridges and Good Hope Road Improved and safer access for cars, pedestrians, and bicycles from west side	East side vehicle access from local Officer Welsh bridge instead of at Good Hope Road Bicycle and pedestrian access from both local bridges and Good Hope Road Improved and safer access for cars, pedestrians, and bicycles from west side	East side vehicle access from local Officer Welsh bridge instead of at Good Hope Road Bicycle and pedestrian access from both local bridges and Good Hope Road Improved and safer access for cars, pedestrians, and bicycles from west side	Slightly improved vehicle access from east side at Good Hope Road Bicycle and pedestrian access from both local bridges and Good Hope Road Improved and safer access for cars, pedestrians, and bicycles from west side	East side access for vehicles, bicycles, and pedestrians from local Officer Welsh bridge and at Good Hope Road Improved and safer access for cars, pedestrians, and bicycles from west side
Construction Cost (2007 dollars)	N/A	$465,000,000	$465,000,000	$480,000,000	$500,000,000	$465,000,000

Note: CO = carbon monoxide; NO_x = nitrogen oxide; VOC = volatile organic compound; PM = particulate matter; ppm = parts per million; NAAQS = National Ambient Air Quality Standards; dBA = A-weighted decibel; vpd = vehicles per day; LOS = level of service; EMS = emergency medical services

- Noise levels would exceed Noise Abatement Criteria (NAC) in at least one location with any alternative (including No-Build). Build Alternative I has slightly lower average forecast noise levels and Build Alternative IV has slightly higher levels.

Environmental impacts associated with the 11th Street Bridges project are limited and generally the same for all build alternatives.

- Unavoidable use of park and recreation lands qualify under the Net Benefit 6(f) Programmatic Agreement. Final agreements with NPS are detailed in Section 9 and Appendix H.
- The National Marine Fisheries Service (NMFS) has issued a "Not Likely to Adversely Affect" opinion for the only endangered species of interest in the area, the shortnose sturgeon.
- The few adverse impacts are primarily temporary and related to construction operations and traffic in areas in close proximity to the project. Mitigation to reduce adverse impacts is proposed.

2.6 Areas of Controversy

The following issues have generated the greatest amount of public discussion through the alternatives development process.

2.6.1 Impact to the Fairlawn Neighborhood

Residents of the Fairlawn neighborhood, which is adjacent to the existing 13th Street on ramp and the freeway, have expressed a concern that including on- and off-ramps to the Anacostia Freeway would attract additional commuter and potentially truck traffic onto Good Hope Road and 13th Street. Commuter traffic on Good Hope Road currently uses 13th Street to access the westbound ramps to the 11th Street Bridges and Southeast/ Southwest Freeway. While some residents have expressed concerns about the risks of increased traffic on what are essentially neighborhood streets, some residents have said that they would like more convenient access to the Anacostia Freeway.

In response to public concerns, there is no service interchange to the Anacostia Freeway with the Build Alternative I design. Review of the forecast traffic data indicates that any of the build alternatives would reduce traffic volumes on local streets such as Good Hope Road, Martin Luther King, Jr. Avenue, 13th Street, and Minnesota Avenue. Even with the service interchange provided, traffic volumes on these streets would be substantially lower than in the No-Build Alternative.

Following publication of the Draft EIS, several Fairlawn residents expressed a preference for Build Alternative II because it would remove the ramp at 13th Street and provide access to the Anacostia Freeway.

2.6.2 Increased Travel Times to Downtown from Anacostia

Some representatives of businesses in Anacostia are concerned that separating local and freeway traffic on the new bridges would result in less-convenient access from Anacostia to downtown or Virginia destinations via the Southeast/Southwest Freeway. That could harm efforts to attract new businesses to Anacostia, which advertises a 15-minute drive to downtown.

Operational analysis indicates that projected travel times between the Southeast/Southwest Freeway and Anacostia would be lower in each of the build alternatives than they would be with the No-Build Alternative during peak periods.

2.6.3 New Commuters from the Capital Beltway/Wilson Bridge - New Congestion and More Commuter Traffic on Local Streets

Comments made at public meetings reflected a concern about the project attracting new trips to the area from the Capital Beltway and the Wilson Bridge. The concerns focused around additional congestion and increased commuter traffic on local streets, resulting from the 11th Street Bridges project.

Review of the forecast traffic data indicates that the project would largely redistribute trips within the study area and not induce additional trips from outside the area. The increase in traffic volumes across the 11th Street Bridges is primarily a redistribution of trips in the study area. Traffic volumes outside a 1-mile radius of the 11th Street Bridges would not be substantially affected in either direction. There are no changes to forecast traffic volumes on the Capital Beltway or the Wilson Bridge with the No-Build Alternative or any Build Alternative.

2.6.4 Short- and Long-Term Impacts to ACBA Buildings

The two buildings subleased by the ACBA from DDOT are located directly between the Officer Welsh bridge and the 11th Street Bridge. Based on refined engineering analysis, combined with additional field survey data, it has been determined that construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternative site during the period of construction. The District of Columbia, in close cooperation with DDOT, NPS, AWC, and the ACBA, has designated a site for the purpose. See Appendix H.

Impacts on operations of the boathouse are likely during construction. The potential for falling debris could pose safety hazards for boathouse operations. Current parking areas could be used for construction staging. Water passage under one or more of the arches could be closed off for construction around the piers.

DDOT supports keeping boathouse operations in the current location because it is a key feature of the AWI "Boathouse Row" concept for the western shoreline. Having a watchful presence under the bridges, on weekends and evenings as well as weekdays, is also good for

bridge security. DDOT will maintain boathouse operations at the current site following construction.

Further, DDOT has committed to maintaining ACBA operations during construction. Maintaining operations includes meeting, storage, and maintenance areas; access to the water; and sufficient channels in the river to use the area effectively. Those commitments are detailed in Section 7.3.5.

2.6.5 Access to Washington Navy Yard

Washington Navy Yard has expressed a concern about the change in access patterns in and out of their gates during the morning and evening peak periods. Currently, the 11th Street Bridges provide direct on- and off-ramp access to the N Street Gate.

Each build alternative would provide access to the freeway bridges at M Street. The conversion of 12th Street to two-way travel would accommodate traffic coming off the 11th Street Bridges destined for the N Street Gate through a series of right turns. Additionally, three of the four build alternatives and the Preferred Alternative would provide a service interchange east of the river, connecting traffic from the N Street Gate with the local network. Operation of existing gates would be maintained for each of the build alternatives.

2.7 Unresolved Issue

The only unresolved issue for the Preferred Alternative is obtaining a permit from the U.S. Coast Guard, which is required for the reconstruction of the river crossing bridges. Continued coordination with the Coast Guard indicates that permits for construction will not be issued earlier than 1 year from an anticipated construction date.

2.8 Required Other Federal Actions

A number of actions are required before final project approval would occur, including the review and approval of this environmental document:

- NMFS has issued a "Not Likely to Adversely Affect" opinion for the shortnose sturgeon. See Appendix F.
- Section 9 Rivers and Harbors Act—Coast Guard requires a Section 9 permit and an approved environmental document, among other requirements.
- Section 10 Rivers and Harbors Act—Permits are issued by USACOE for any work in, over, or under navigable waters of the United States. USACOE can authorize activities by a variety of permit types and will make the determination on what type of permit is needed following formal application.
- Section 404 of the Clean Water Act—Establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. USACOE

administers this section. The proposed project could be authorized under a Nationwide Permit or may require an Individual Department of the Army Permit, depending on the selected alternative and the impacts to the Anacostia and wetlands.

- Section 401 Water Quality Certification—Provided by the Water Quality Division of the District's Environmental Health Administration. This permit is the District's confirmation of the USACOE Section 404 Permit, and the District's opportunity to add specific conditions to meet the District's water quality standards.
- National Pollution Discharge Elimination System (NPDES) Permits—Required for stormwater discharge from construction sites. The U.S. Environmental Protection Agency (EPA), Region III, is the permitting authority for the NPDES program in the District. The District Water Quality Division must also review and approve plans for stormwater management and sediment and erosion control in accordance with District water quality regulations.
- National Historic Preservation Act Consultation (Section 106) —Requires FHWA and DDOT to consult with the State Historic Preservation Office (SHPO) to ensure that cultural resources are identified and to obtain the formal opinion of the office that important cultural resources will not be lost or damaged during construction, or prepare a Memorandum of Agreement on how to manage resources. Appendix J includes a Memorandum of Agreement for the 11th Street Bridges project. The Memorandum of Agreement establishes protocols for dealing with potential archaeological findings during construction. It also establishes mitigation for adverse effects to Anacostia Park.
- Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property Consultation—Requires the concurrence of NPS for Anacostia Park and DPR for Virginia Avenue Park that the project will have a net beneficial effect on the resource. Appendix H includes a Net-Benefit Concurrence letter for Anacostia Park from NPS. Appendix I includes a Net-Benefit Concurrence letter from DPR although refined engineering allows avoidance of Virginia Avenue Park so a determination of a net benefit is no longer necessary.
- Land and Water Conservation Fund Act of 1965 Consultation (Section 6(f))—Additional engineering analysis has resulted in no land being taken in Virginia Avenue Park. No Section 6(f) consultation is required.
- National Capital Planning Commission (NCPC) Design Review—Requires that conceptual bridge designs be submitted for NCPC review.

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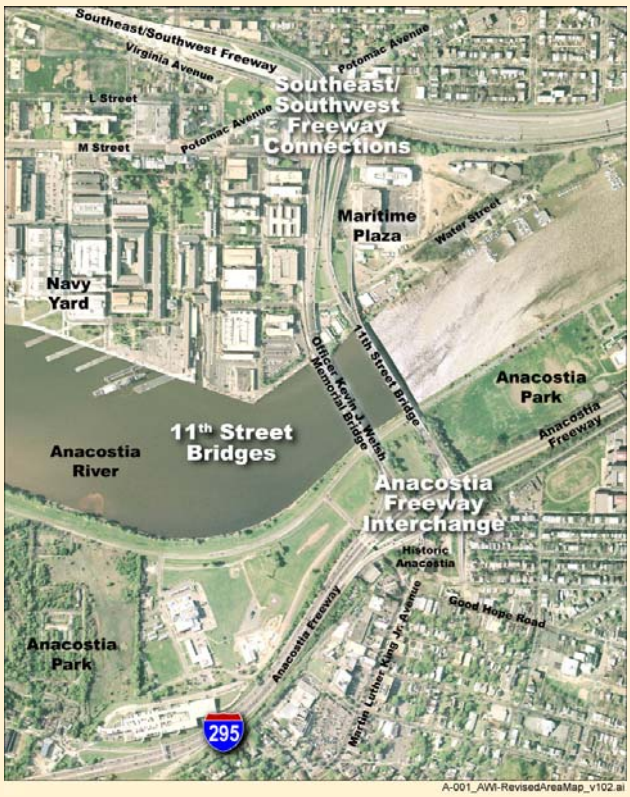
4 Purpose and Need

The District Department of Transportation (DDOT) and the Federal Highway Administration (FHWA) have initiated a project to improve the highway connection between the Southeast/Southwest Freeway (I-695) and the Anacostia Freeway (I-295 and DC-295) in Southeast Washington, DC (Exhibit 4-1)1. The project, one of several recommended by the Middle Anacostia River Crossings Transportation Study (MAC Study), would replace obsolete infrastructure, provide missing freeway connections to improve traffic flow to and from downtown Washington, DC, discourage cut-through traffic on neighborhood streets, improve local access, and better link land uses across the Anacostia River.

EXHIBIT 4-1
The 11th Street Bridges Project Study Area
The 11th Street Bridges, which include the 11th Street Bridge and the Officer Kevin J. Welsh Memorial Bridge, cross the Anacostia River in southeast Washington, DC.



The MAC Study was part of the larger Anacostia Waterfront Initiative (AWI), a partnership between the federal and District governments to renovate the Anacostia River area. DDOT's active role in the AWI takes in a number of transportation projects including the 11th Street Bridges project, the South Capitol Street project, the Anacostia Riverwalk Trail project, and the Kenilworth Avenue Corridor Study.

When the Southeast/Southwest Freeway was built in the mid-1960s, regional plans expected it to extend across the river and then join the Anacostia Freeway. However, these plans were abandoned, and today there is no direct connection between the Southeast/ Southwest Freeway and the Anacostia Freeway to the north of the 11th Street Bridge

1 Freeway names and interstate designations in the area can be complex. Interstate signage refers to both I-295 and I-395. There is no signage for I-695. In common usage, the highway that parallels the river on the north and west side is known as the Southeast/Southwest Freeway. The highway that parallels the river on the south and east side is known as the Anacostia Freeway.

complex. Because of this, traffic is forced to use neighborhood streets to access the 11th Street Bridge complex and cross the Anacostia River. The result is increased traffic on local neighborhood streets such as Martin Luther King, Jr. Avenue, Good Hope Road, Pennsylvania Avenue, and Minnesota Avenue.

The existing 11th Street Bridge/Anacostia Freeway interchange does not allow traffic east of the Anacostia River to enter the Anacostia Freeway at this location. Drivers may cross the 11th Street Bridge toward downtown Washington, DC or return, but they cannot enter or leave the Anacostia Freeway without taking neighborhood streets to adjacent interchanges at Pennsylvania Avenue, Howard Road, or South Capitol Street.

The project does not include adding capacity to the freeway system.

The MAC Study evaluated existing traffic conditions and mobility-improvement options and identified a number of short-term and long-term improvements (DDOT, 2005a). A set of improvements that logically make a complete project have been grouped as the 11th Street Bridges project. Those improvements include completing the 11th Street Bridges ramps to the Anacostia Freeway, separating the interstate traffic from the local traffic, and improving riverfront access, signs, and bicycle/pedestrian and transit access.

A separate DDOT study, documented in the *Anacostia Waterfront Initiative Transportation Master Plan*, reviewed 21 projects under consideration along the waterfront and determined the independent utility of each (DDOT, 2005b). The 11th Street Bridges project is included on that list of projects with independent utility.

Because the project involves reconfiguring the ramps on either shore, but does not involve adding capacity to the freeway system, the project termini are where the ramps merge back into the existing freeway (see Exhibit 4-2).

The project would replace the 40-year-old pair of bridges across the Anacostia River, eliminating the structural deficiencies and

EXHIBIT 4-2
Proposed Build Alternatives Footprint and Project Termini
Project footprint and termini correspond closely to the location of existing highways and bridges that the project replaces.

providing needed safety enhancements to the bridge and approach ramp structures. The design of the replacement bridges will incorporate the ability to accommodate potential future use by alternative transportation modes, such as buses or perhaps streetcars. The project will not decide routes for these services, but rather will consider the use of these modes in the design of the structures.

4.1 Purpose of the Project

The purpose of the 11th Street Bridges project is to:

- Reduce congestion and improve the mobility of traffic across the Anacostia River on the 11th Street Bridges and on the local streets in the area.
- Increase the safety of vehicular, pedestrian, and bicycle traffic in the Anacostia neighborhood.
- Replace deficient infrastructure and roadway design.
- Provide an alternative evacuation route and routes for security movements in and out of the nation's capital.

4.2 Transportation Needs for the Project

The transportation needs to be met by the 11th Street Bridges project are:

- Improve Access and Reduce Congestion—Provide missing access to the Anacostia Freeway. Reduce the volume of freeway traffic that spills onto the neighborhood streets due to current traffic patterns.
- Enhance Safety—Provide safe pedestrian and bicycle access across the river and to the Anacostia waterfront. Correct roadway design elements that reduce safety and result in congestion. Reduce the number of vehicular crashes in the project interchanges.
- Correct Design Deficiencies—Replace bridges that are functionally and structurally obsolete. Improve the signage in the project area to reduce confusion to drivers.
- Augment Homeland Security—Upgrade evacuation route for the nation's capital and area military installations.

4.2.1 Improve Access and Reduce Congestion

Provide Missing Highway Links

One objective of the project, identified in the MAC Study, is providing full access between the two freeways and to the local streets, communities, and recreational facilities in the project area (Exhibit 4-3). This can be accomplished by providing the links between the northern reaches of the Anacostia Freeway and the cross-river freeway bridge.

The Anacostia Freeway is congested, with segments at or approaching operational failure during both the morning and evening rush hours.

EXHIBIT 4-3
Missing Movements
Access ramps that would link the Anacostia Freeway to the east ends of the 11th Street Bridges were never built.

Keeping the regional traffic on the freeways by providing the missing movements will reduce local street congestion because commuters who create their own paths to overcome the missing movements now divert through neighborhoods and create noticeable congestion on surface streets, particularly during rush hours.

Reducing Congestion and Improving Mobility

Level of Service (LOS) is a common way to describe congestion. The levels range from "A" (free-flowing) to "F" (total congestion or failure). The Anacostia Freeway is congested, with segments at or approaching operational failure during both the morning and evening rush hours. Exhibit 4-4 shows congested freeway segments in the outbound direction during the evening peak hour. Traffic operations during the morning peak hour are largely reversed, with congestion on inbound segments of the freeway. The project will help balance the traffic flow and take advantage of available capacity at the 11th Street crossings by reducing the weaving and forced lane-change maneuvers that result from the current design.

EXHIBIT 4-4
Existing Freeway Operations
Existing (2004) freeways are congested during peak hours. This exhibit shows congested operations outbound during the evening peak hour.

Improving Bicycle and Pedestrian Access

The AWI identified bicycle and pedestrian accessibility to the Anacostia riverfront and to a route across the river as a key component of improving this corridor. Multiple local

and regional trails currently converge or are planned to converge on the Anacostia riverfront. The project will improve access for bicyclists and pedestrians by providing appropriately designed pathways across the river that link to the existing and planned trail network.

4.2.2 Enhancing Safety

Improving Vehicle Safety

During 2000–2002 (the most recent period for which crash records are available), the Anacostia Freeway–11th Street Bridges interchange and the Southeast/Southwest Freeway–11th Street Bridges interchange had the largest number of crashes in the study corridor. Traffic crossing the bridge from the western side of the river at 11th Street and trying to reach the left exit on the eastern side to Martin Luther King, Jr. Avenue, must weave through two lanes of traffic that is exiting to the Anacostia Freeway. Westbound traffic crossing the bridge from 13th Street, SE and headed downtown must weave through traffic from the Anacostia Freeway that is exiting to locations on the western side of the river. These forced lane-change maneuvers increase traffic turbulence and frequently result in increased vehicle crashes.

Enhancing Pedestrian and Bicycle Access

Narrow shoulders and sidewalks, like those shown in Exhibit 4-5, currently limit the potential for bikes and pedestrians to cross the Anacostia River and access the recreational facilities along both its banks. The project will provide safe and efficient connections to these planned facilities.

4.2.3 Correcting Bridge and Roadway Design Deficiencies

The existing river crossing bridges were built about 40 years ago to the standards in place then. As such, they have non-redundant, two-girder cross-sections and use pin-and-hanger assemblies to support suspended spans. Current standards require structural redundancies, or backup supports, to decrease the potential for bridge collapse, should one of the two girders fail. In addition, some of the approach ramp structures connecting to the Southeast/ Southwest Freeway have reached the end of their useful lives and need to be replaced. They have multiple cracked welds and need extensive repairs.

EXHIBIT 4-5
Existing Bicycle and Pedestrian Facilities on the 11th Street Bridge
Bicycle and pedestrian access on the 11th Street Bridge is narrow and separated from high-speed traffic by only a raised curb.

Improving sections of the Anacostia Freeway and Southeast/Southwest Freeway to meet current roadway design standards is also a project objective. Examples of current deficiencies include inadequate lengths for acceleration and deceleration lanes, substandard shoulder widths, and poor guide signing.

Short deceleration lanes result in traffic slowing while still in the through-travel lanes, creating a potential safety problem at freeway exits. The deceleration lane exiting to I Street from the 11th Street Bridge is shorter than the design value recommended by the American Association of State Highway and Transportation Officials (AASHTO).

EXHIBIT 4-6
Existing Bridges
Narrow or non-existent shoulders across the bridges affect pedestrian and vehicle safety and the carrying capacity of the roadway.

A-003_D958mw_v202

Short acceleration lanes result in slow-moving traffic trying to merge with traffic moving at highway speeds, which also poses a safety issue. The length of the acceleration ramps to the Officer Welsh bridge are both less than that recommended by AASHTO.

Shoulder widths across the 11th Street Bridges are substandard (Exhibit 4-6). Narrow shoulders can negatively affect the traffic-carrying capacity of a roadway and can also reduce roadway safety. The right shoulder width along the 11th Street Bridges ranges from 0 to 6 feet and does not provide an opportunity for vehicles to pull off the roadway safely in an emergency.

Directional signs throughout the corridor are confusing, missing, or poorly placed. Drivers who do not have the adequate warning provided by proper signs tend to make erratic lane and speed changes as they try to travel their desired routes.

4.2.4 Augment Defense, Homeland Security, and Other National Objectives

The Southeast/Southwest Freeway–11th Street Bridges–Anacostia Freeway is an important evacuation route between downtown Washington, DC and key military installations. The corridor provides a route for evacuation or movement of security resources and our nation's leaders to and from military installations at Andrews Air Force Base, Bolling Air Force Base, Anacostia Naval Station, and Washington Navy Yard. The existing non-redundant design of the bridges means that an incident affecting only one beam might render either bridge unusable. Modern design provides for redundancy.

The corridor is also an alternative pathway for foreign dignitaries to visit the nation's capital. The aging structure does not provide the best image available for the nation.

4.3 Other Goals of the Project

Other goals of the project include the following:

- Incorporation of the recommendations for a transportation system as identified in the AWI
- Revitalization of the Anacostia waterfront area

The AWI is a partnership between the federal and District governments to transform the Anacostia River area into a world-class urban waterfront. With Washington, DC's downtown nearly built out, the city is growing eastward toward and across the Anacostia River. The District is committed to re-centering its growth along the Anacostia River and improving long-neglected parks, environmental features, and infrastructure in the area. The 11th Street Bridges project falls within the context of the AWI and other planning activities within the project area.

The vision of the AWI is of a clean and vibrant waterfront with parks, recreational facilities, and urban waterfront settings (Exhibit 4-7). The AWI seeks to ensure that the social and economic benefits derived from a revitalized waterfront are shared by those neighborhoods and people living along the Anacostia River.

EXHIBIT 4-7
Anacostia Waterfront Initiative
A conceptual drawing of the Anacostia Waterfront Initiative shows the two new 11th Street Bridges at the center.

Achieving this vision entails private investment as well as public initiative. The investment is already being made; for example, the site of the new Washington Nationals baseball stadium is about 1 mile south and west of the 11th Street Bridges project. Well-defined plans for private development for residential, commercial, and office uses of a substantial portion of the available land in the vicinity were the subject of recent front-page newspaper coverage in the *Washington Post* (2005).

DDOT plays a key role in this effort and has established an AWI team to work exclusively on transportation projects within the AWI area. DDOT's vision is to create a transportation system in the AWI area that:

- Is environmentally sustainable
- Moves people via public transit, streetcars, bike and pedestrian trails, and automobiles
- Improves community access
- Supports and enhances the economic and environmental health of Washington, DC
- Improves waterfront access and use

- Strengthens neighborhood character and increases access among communities
- Integrates the area with the downtown area and the rest of Washington, DC
- Emphasizes the history and uniqueness of the Anacostia waterfront

Another specific goal of the Anacostia Waterfront Initiative is to improve the water quality and overall health of the Anacostia River, one of the most polluted waterways in the United States. Low-impact and sustainable development techniques, consistent with the AWI, will be incorporated into all transportation projects in the area with the goal of reducing pollution runoff to the river and improving overall water quality. The AWI Transportation Architecture Design Standards (DDOT, 2005c) has an extensive treatment of architectural standards, including low-impact development for stormwater management that will be used as appropriate on the 11th Street Bridges project.

5 Alternatives

This section of the Final Environmental Impact Statement (EIS) provides background information on how and why reasonable alternatives were selected for detailed study, summarizes public outreach efforts, describes how public input was used in the study process, discusses why alternatives were eliminated from consideration during the alternatives development process, and presents the Preferred Alternative.

The fold-out map inside the back cover may facilitate your review.

Each of the alternatives being studied in this Final EIS has been developed to a comparable level of detail to enable a reasonable comparison of each alternative. A Preferred Alternative has been identified in this Final EIS. A decision on the Preferred Alternative was made after comments on the Draft EIS and comments received at the public hearings were fully considered and evaluated.

5.1 Background

The 11th Street Bridges project falls within the context of the AWI, which was started in 2000 by Mayor Anthony Williams in coordination with 20 District and federal agencies. Preliminary engineering and transportation planning studies conducted by DDOT, including the MAC Study, Anacostia Gateway Study, and the Pennsylvania Avenue Southeast Study, evaluated a wide range of transportation improvements including the future needs for vehicular, transit, pedestrian, and bicycle mobility and safety. These studies screened broad improvement concepts (such as off-alignment concepts) and determined that the most important and cost-effective improvements in the 11th Street Bridges study area would be to provide the missing connections between the 11th Street Bridges and the Anacostia Freeway and to separate local and regional traffic to reduce the number of conflict points, allowing better efficiency with improved local access between neighborhoods. This project begins with those recommendations by developing and evaluating improvement concepts to achieve the AWI goals.

Each of the alternatives being studied in this Final EIS has been developed to a comparable level of detail to enable a reasonable comparison of each alternative.

Based on further technical studies, input from the community, and input from resource agency stakeholders, roadway and structural alternatives were developed and refined.

The alternatives for this project were developed to:

- Construct missing access ramps between the Southeast/Southwest Freeway and the Anacostia Freeway to the north of the 11th Street Bridges.
- Reduce the volume of freeway traffic that spills onto the neighborhood streets due to current traffic patterns.
- Accommodate safe pedestrian and bicycle access across the river and to the Anacostia waterfront.
- Replace the 40-year-old bridges that are functionally and structurally obsolete.

The number of freeway lanes entering and leaving the project area would remain the same.

Under each alternative, the number of freeway lanes entering and leaving the project area (Southeast/Southwest Freeway, I-295, and the Anacostia Freeway) would remain the same. Therefore, the lane capacity of the freeway system serving this area of Washington, DC and the neighborhoods east of the river would not change. Currently, the 11th Street Bridges accommodate four lanes of freeway traffic in each direction across the Anacostia River.

The 11th Street Bridges and connecting roadways are located in a highly developed urban area surrounded by constraints on each side of the river. Given these constraints, the project team developed a range of improvement concepts to meet the project purpose and need while minimizing the project footprint.

Similarly, each of the alternatives would accommodate four lanes of freeway traffic in each direction. Each alternative provides for the physical separation of two lanes of local (non-freeway) traffic in each direction across the river. These improvements would remove the bottlenecks at the 11th Street crossing and improve local access across the river. The number of freeway lanes entering and leaving the project area would remain the same.

Each alternative (including the No-Build) assumes that the Southeast/Southwest Freeway between 11th Street and Barney Circle would be downgraded to a boulevard, as outlined in the MAC Study. In addition, the direct ramps between the 11th Street Bridges and this section of the freeway would be eliminated. These modifications are being completed by DDOT as a separate project.

The 11th Street Bridges and connecting roadways are located in a highly developed urban area surrounded by constraints on each side of the river. These constraints include long-standing, established residential neighborhoods, Washington Navy Yard, parks and recreational lands, and a navigable waterway. Given these constraints and the direction set forth in the MAC Study, the project team developed range of improvement concepts to meet the project purpose and need while minimizing the project footprint. A primary goal driving the alternatives development and screening was to stay within the existing right-of-way as much as possible and practical, thus minimizing impacts to the project surroundings.

5.2 Alternatives Evaluated in the Final EIS

A No-Build Alternative, four build alternatives, and the Preferred Alternative were selected for further study and consideration. Each of the build alternatives and the Preferred Alternative meets the purpose and need for the project and is the result of the extensive public and agency coordination.

5.2.1 No-Build Alternative

The No-Build Alternative would contain no new major construction resulting from a project action, although other planned and committed projects in the area would move forward. Improvements implemented under this alternative would be limited to short-term restoration and maintenance of the existing freeway and the river-crossing bridges. The inherent structural deficiencies of the Anacostia river-crossing bridges would not be corrected. Pedestrian and bicycle facilities in the project area would remain in poor condition, and the connectivity of existing facilities would still be lacking. The proposed ramps to and from Anacostia Freeway north of the 11th Street Bridges complex would not be connected to the 11th Street Bridge crossings, and existing geometric and operational deficiencies would remain in place. These deficiencies are expected to result in increased travel on neighborhood streets, increased traffic congestion throughout the project area, and an increased number of traffic crashes. The No-Build Alternative would not meet the purpose and need of the project.

For the No-Build Alternative, current deficiencies would remain in place. These deficiencies are expected to result in increased travel on neighborhood streets, increased traffic congestion throughout the project area, and an increased number of traffic crashes.

5.2.2 Transportation System Management Alternative

Transportation System Management (TSM) focuses on improving the operational efficiency of transportation systems without major system improvements such as adding lanes. TSM strategies at intersections can include signage and lighting, bus turnouts, improved channelization of traffic, and access management. TSM signal enhancements include signal timing optimization, signal equipment upgrades, and system interconnection. Freeway TSM strategies can include signing and pavement striping improvements, traffic surveillance and control equipment, and incident management programs. These examples of TSM improvements can improve traffic flow and operations at intersections, on arterial streets, and on freeways.

TSM strategies are a component of each alternative.

Previous studies, including the MAC Study, evaluated TSM strategies and concluded that these strategies should be considered as a component of an improvement, but were not adequate or viable as stand-alone concepts to meet the needs of the study.

This study incorporated basic TSM strategies as enhancements to the concepts that require minimal capital investment. The operational analyses of the No-Build and the build alternatives incorporate TSM strategies such as:

- Maximizing the progression of surface street traffic entering and exiting the freeway through the use of optimized signal timing and phasing.
- Modifying lane arrangements and intersection striping to provide the most efficient traffic flow through existing and proposed intersections. Under the No-Build Alternative, changes to lane arrangements were only considered if they could be accommodated within the existing right of way. In other words, new turning lanes that required widening existing intersections beyond the current right-of-way were not considered as TSM enhancements.

The build alternatives all provide similar flexibility for future freeway and arterial system TSM enhancements.

5.2.3 Overview of the Build Alternatives

All of the build alternatives have common features and elements that address the current transportation problems and reflect the project's context and purpose and need. See Exhibits 5-1 through 5-5. They are all designed to the same design criteria, which improve current design deficiencies. They all provide the same basic traffic service by providing eight freeway lanes and four local lanes over the Anacostia River along the same basic alignment as the current crossings. They all achieve separation of freeway traffic from local street traffic, and they all provide a safe river crossing for pedestrians and bicyclists.

The alternatives treat the existing street system and freeway network identically, in a manner consistent with current long-term plans. This includes the maintenance of existing freeway lane capacity along both the Anacostia Freeway and the Southeast/Southwest Freeway at the project area limits. Every alternative is designed to be compatible with the proposed conversion of a segment of the Southeast/Southwest Freeway to a surface arterial (referred to as Southeast Freeway Boulevard). This includes, in all cases, the proposed removal of freeway ramps to/from Pennsylvania Avenue along the Southeast/Southwest Freeway west of the river.

Every build alternative is designed to provide direct ramp connections, which do not currently exist, from the Anacostia Freeway north of 11th Street to I-295 over the Anacostia River. Every build alternative provides common ramp and access schemes for traffic west of the river. In every build alternative, ramps are provided for traffic from the east to M Street, with a second ramp pair from the east serving 8th and 9th Streets. Also, access to the street system is provided for traffic from the west to 11th Street in all build alternatives.

All of the build alternatives have common features and elements. They differ in how they separate local and freeway traffic, provide local access east of the river, and link I-295 and the local street system west of the river.

EXHIBIT 5-1
Build Alternative I
West of the river, Build Alternative I connects the Southeast/Southwest Freeway to Southeast Freeway Boulevard through at-grade intersections. East of the river, part of the Anacostia Freeway is tunneled beneath the new ramps.

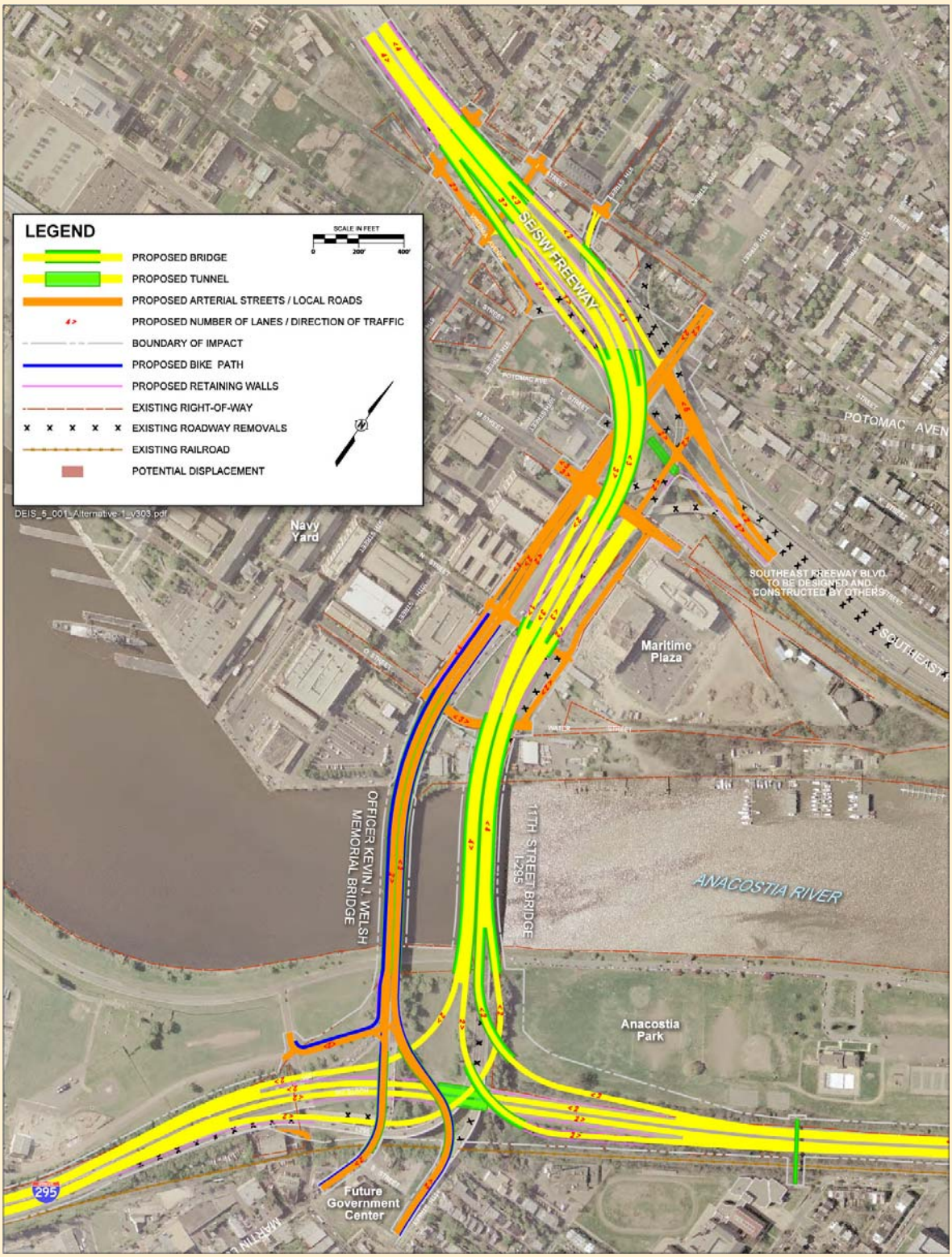


EXHIBIT 5-2
Build Alternative II
Build Alternative II introduces a traffic circle west of the river. East of the river, an interchange is provided between the Anacostia Freeway and an extension to Martin Luther King, Jr. Avenue.

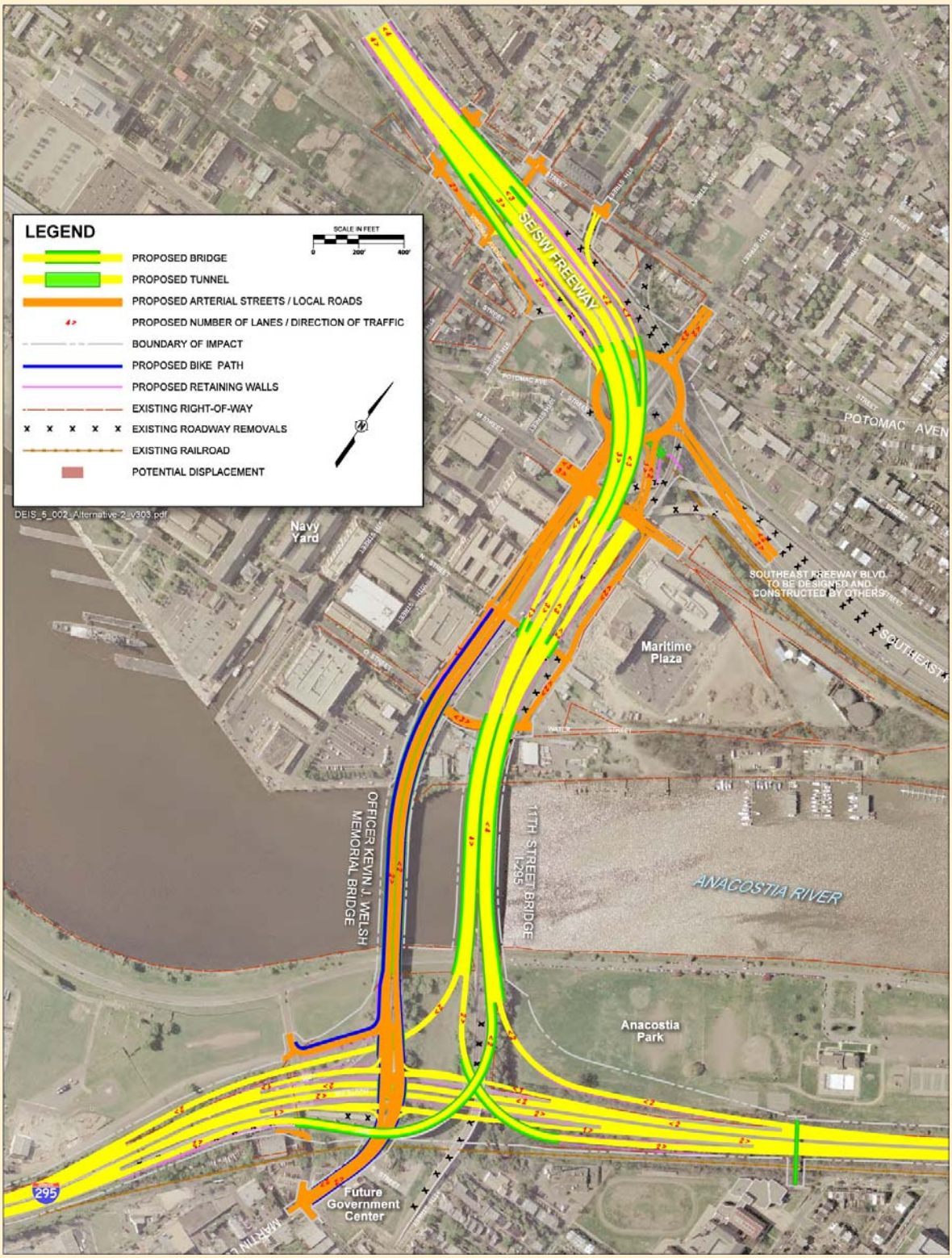


EXHIBIT 5-3
Build Alternative III
An underpass directly connects the Southeast/Southwest Freeway with Southeast Freeway Boulevard in Build Alternative III. East of the river, the configuration is identical to Build Alternative II.

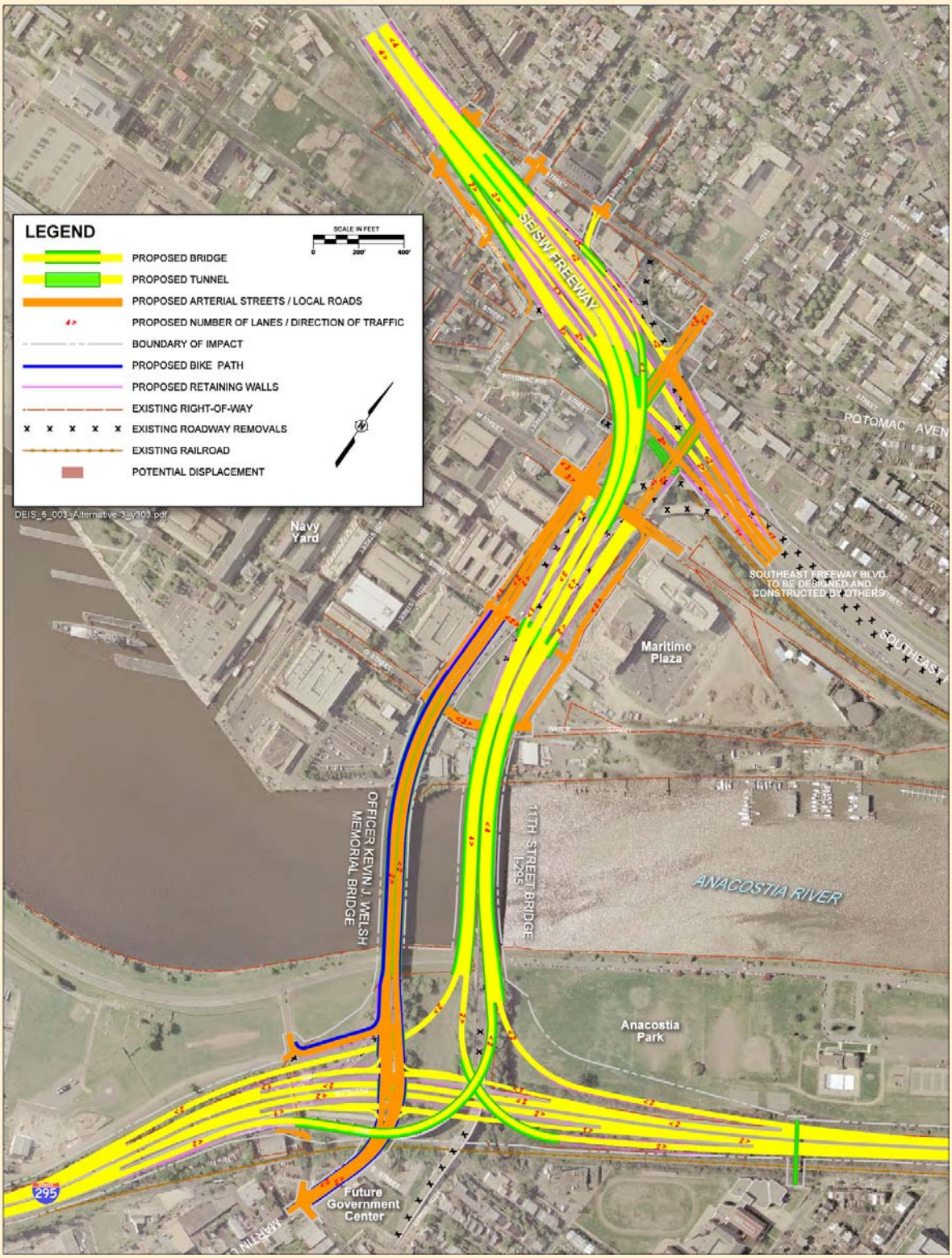


EXHIBIT 5-4
Build Alternative IV
Build Alternative IV maintains the existing one-way configuration of the river bridges. An underpass directly connects the Southeast/Southwest Freeway with Southeast Freeway Boulevard west of the river. East of the river, an extension to Good Hope Road connects local traffic to the Anacostia Freeway and the bridges.

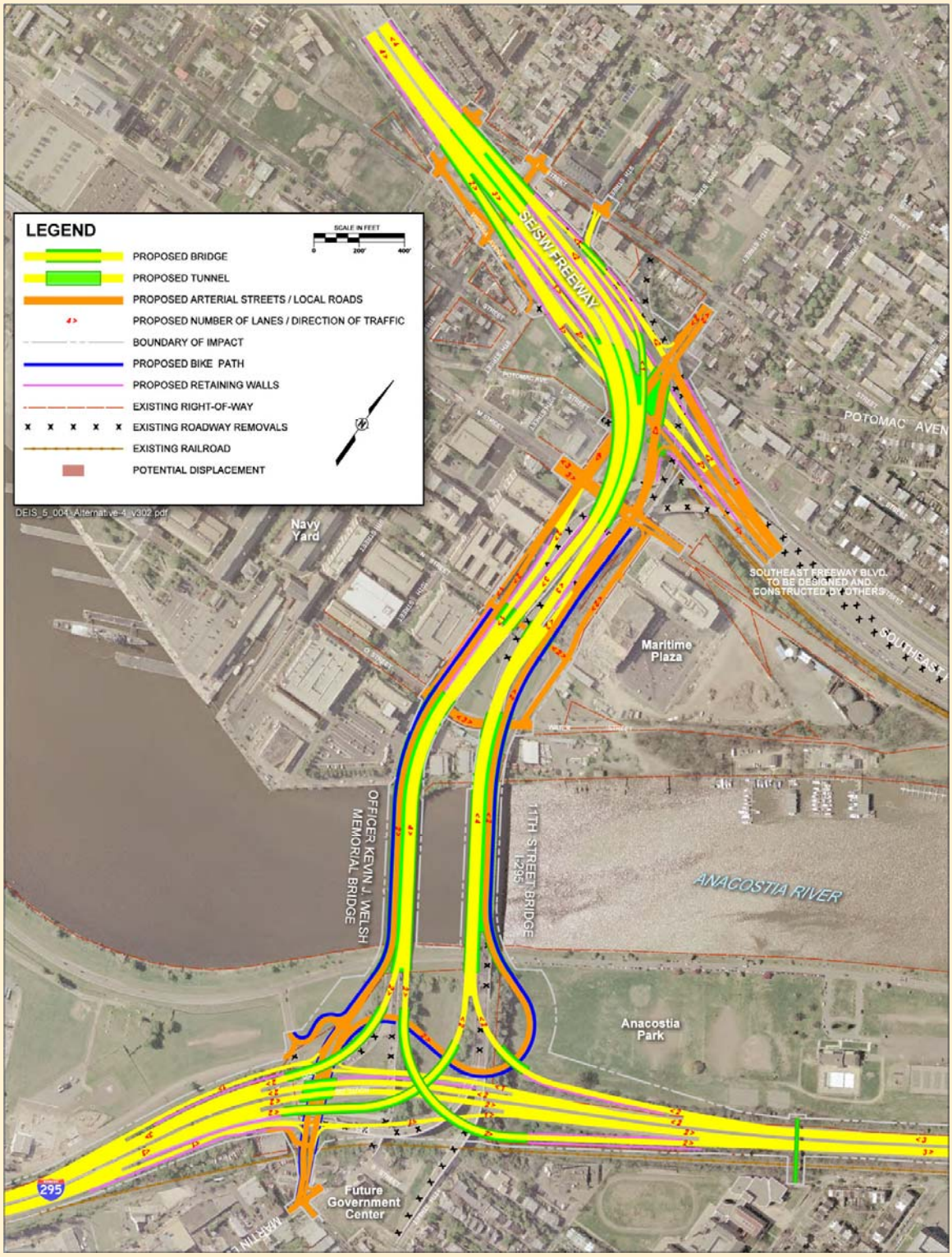
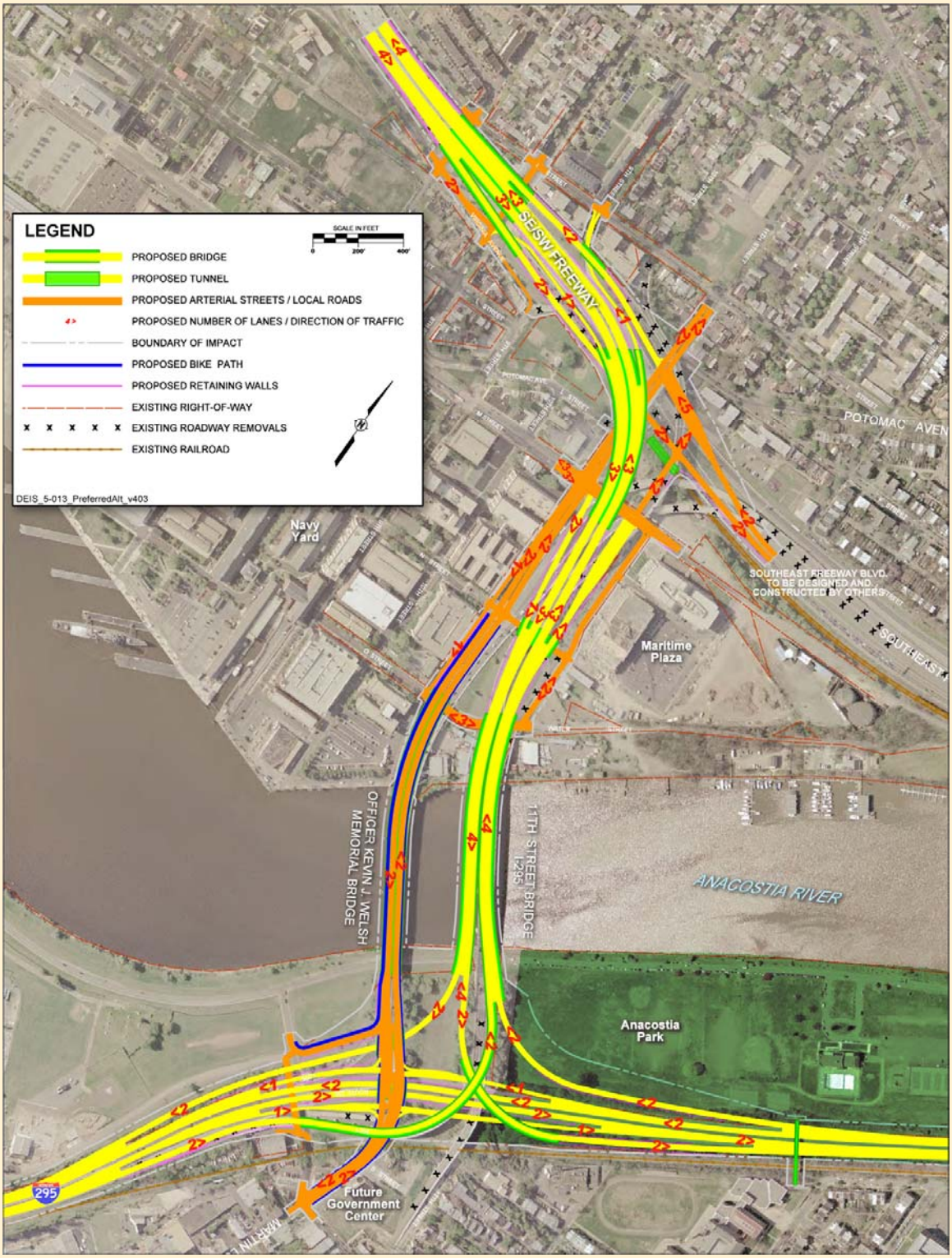


EXHIBIT 5-5
Preferred Alternative
West of the river, the Preferred Alternative connects the Southeast/Southwest Freeway to Southeast Freeway Boulevard through at-grade intersections. East of the river, an interchange is provided between the Anacostia Freeway and an extension to Martin Luther King, Jr. Avenue.



The alignment and footprint of each build alternative are similar, reflecting the constraints within the project limits. These include the Anacostia River, Anacostia Park, and Virginia Avenue Park, located between 9th Street, Potomac Avenue, L Street, 11th Street, and Southeast/Southwest Freeway.

In each case, design of the roadway alignments, cross-section, and interchanges reflect the need to bridge the river to preserve 28 feet of vertical clearance for river traffic, and to avoid or minimize the right-of-way conflicts with parkland and other surrounding properties. Every build alternative includes some measure of encroachment on Anacostia Park property.

5.2.4 Differences Among the Build Alternatives

The four build alternatives and the Preferred Alternative differ primarily with respect to various schemes for local access east of the river, the manner in which local and freeway traffic is separated, and how the local street system west of the river ties to I-295. These and other differences between the build alternatives are discussed below.

Build Alternative I does not provide a direct access from Anacostia to I-295/ Anacostia Freeway.

Service Interchange with the Anacostia Freeway

Build Alternative I (Exhibit 5-6) would not provide a direct access for traffic from the historic Anacostia neighborhood to the Anacostia Freeway. Access from the neighborhood to the Anacostia Freeway would continue to be via the Howard Road interchange, Pennsylvania Avenue, or the Suitland Parkway.

Build Alternatives II, III, IV, and the Preferred Alternative would provide a new local interchange to/from the Anacostia Freeway and the Officer Welsh bridge. This new interchange would provide direct access to historic Anacostia via Martin Luther King, Jr. Avenue as well as secondary and redundant access to the Navy Yard, Maritime Plaza, and other destinations on the western banks of the river. The proposed interchange is advantageous in maintaining traffic during construction, because multiple paths for cross-river traffic are provided.

Anacostia Freeway Tunnel

Build Alternative I would depress the north- and southbound lanes of the Anacostia Freeway in a tunnel approximately 10 feet below the water level of the Anacostia River. Doing so would lower the overall height of the Anacostia Freeway interchange complex by approximately 30 feet relative to the other build alternatives. Providing a tunnel on the Anacostia Freeway would preclude a local interchange at this location and make it more difficult and costly to maintain north-south traffic on this route.

Build Alternatives II, III, IV, and the Preferred Alternative would not feature a tunnel on the Anacostia Freeway. The overall height of the Anacostia Freeway interchange complex for these alternatives would be approximately 30 feet higher than Build Alternative I (Exhibit 5-7).

EXHIBIT 5-6

Build Alternative Interchange Configurations East of the River

Build Alternative I (upper image) provides direct access from Anacostia to the river crossing, and places a portion of the Anacostia Freeway below grade, but does not include a local interchange to the Anacostia Freeway.

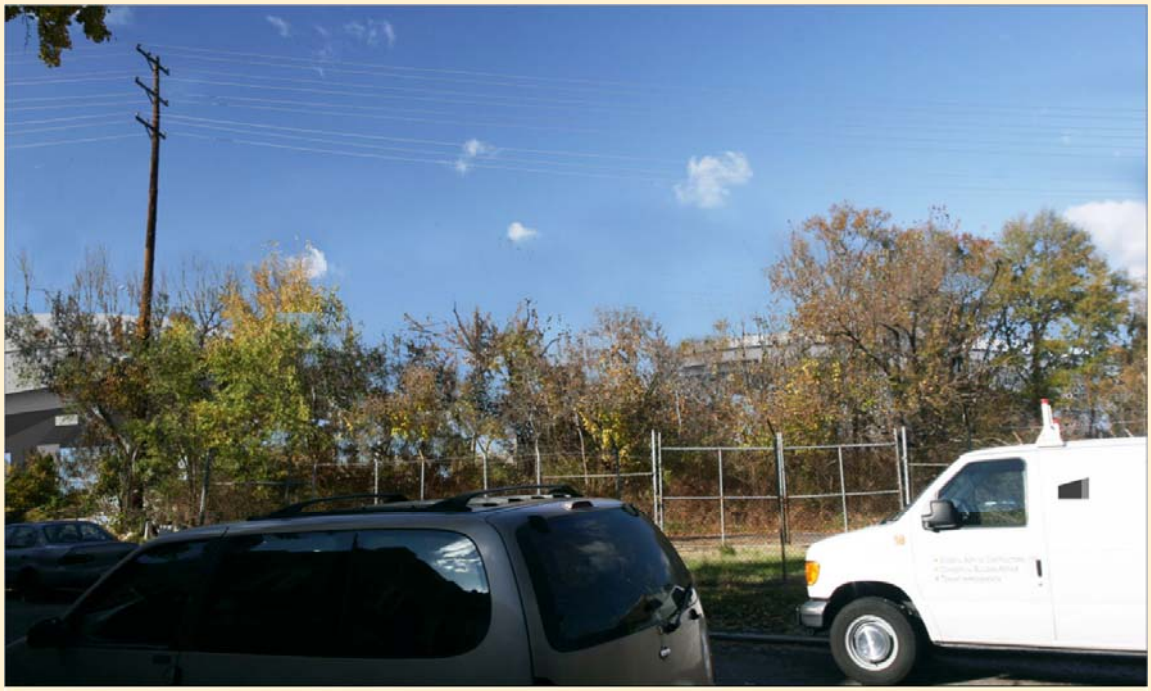
Build Alternatives II, III, and the Preferred Alternative (lower image) all provide direct access to the river crossing and a local interchange to the Anacostia Freeway.

Build Alternative I without Local Interchange

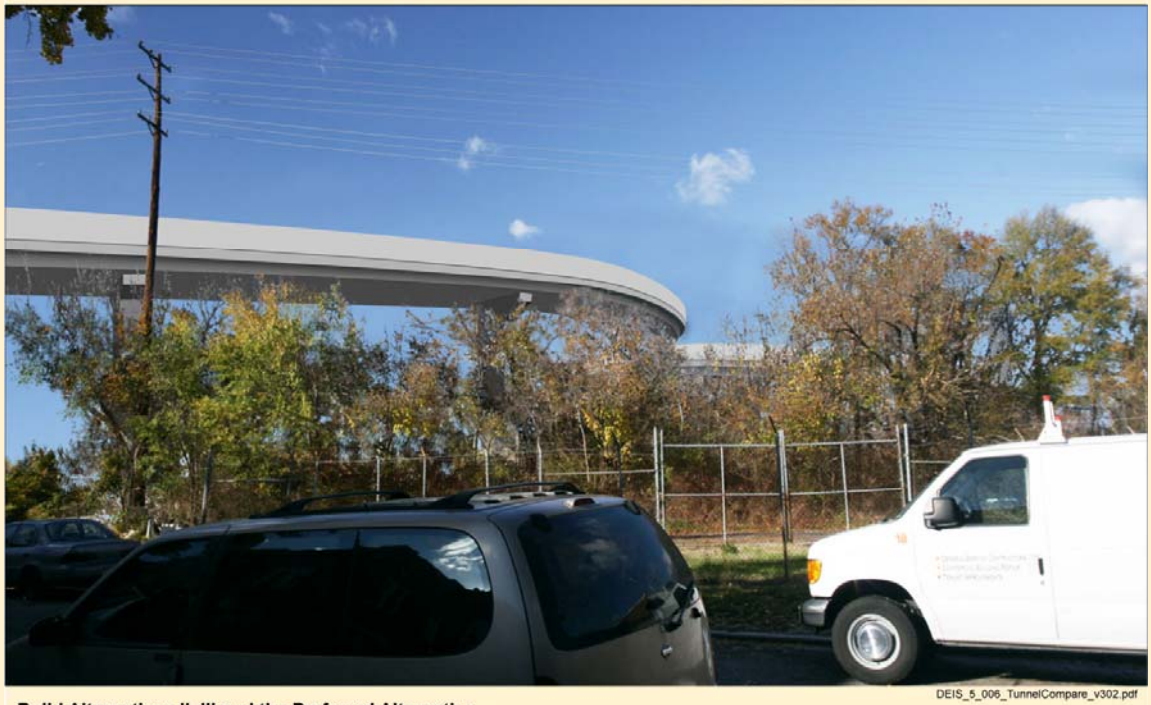
Build Alternatives II, III and the Preferred Alternative with Local Interchange

DEIS_5_005_WestInterchangeCompare_v305.pdf

EXHIBIT 5-7
View of Build Alternatives from Ridge Place
Build Alternative I (upper image) features a tunnel on the Anacostia Freeway that would reduce the height of the interchange by approximately 30 feet. Build Alternatives II, III, and the Preferred Alternative (lower image) do not include a tunnel on the Anacostia Freeway.



Build Alternative I



DEIS_5_006_TunnelCompare_v302.pdf

Build Alternatives II, III and the Preferred Alternative

Separation of Local and Freeway Traffic

Build Alternatives I, II, III, and the Preferred Alternative each would provide a new eight-lane freeway bridge along the alignment of the existing 11th Street Bridge as well as a new, local four-lane bridge crossing on the current alignment of the Officer Welsh bridge. Both of these structures would accommodate two-way traffic. Pedestrian and bike facilities would be adjacent to the local travel lanes. See Exhibit 5-8.

Build Alternative IV would barrier separate local and freeway traffic on eight freeway lanes and four local lanes. Both of these structures accommodate one-way traffic on each structure. Pedestrian and bicycle facilities would be adjacent to the local travel lanes; however, because of the lane configuration, upriver views would be provided with Build Alternative IV. See Exhibit 5-8.

Local Access West of the River

In Build Alternative I and the Preferred Alternative, the Southeast/Southwest Freeway, Southeast Freeway Boulevard, and 11th Street would connect through at-grade intersections on the local street grid. Continuity of traffic from the Southeast/Southwest Freeway is eliminated and traffic going from the Southeast/Southwest Freeway to the Southeast Freeway Boulevard must go through a traffic signal.

In Build Alternative II, these facilities would connect through a traffic circle. Under this alternative, intersecting roadways with the circle would be controlled by traffic signals. Continuity of traffic from the Southeast/Southwest Freeway would be eliminated and traffic going from the Southeast/Southwest Freeway to the Southeast Freeway Boulevard would go through a traffic signal.

In Build Alternatives III and IV, the continuity of traffic from the Southeast/Southwest Freeway to Southeast Freeway Boulevard would be maintained and traffic would continue free-flow via a provided underpass. Interchanging traffic to/from 11th Street from either facility would be served via at-grade intersections at 11th Street.

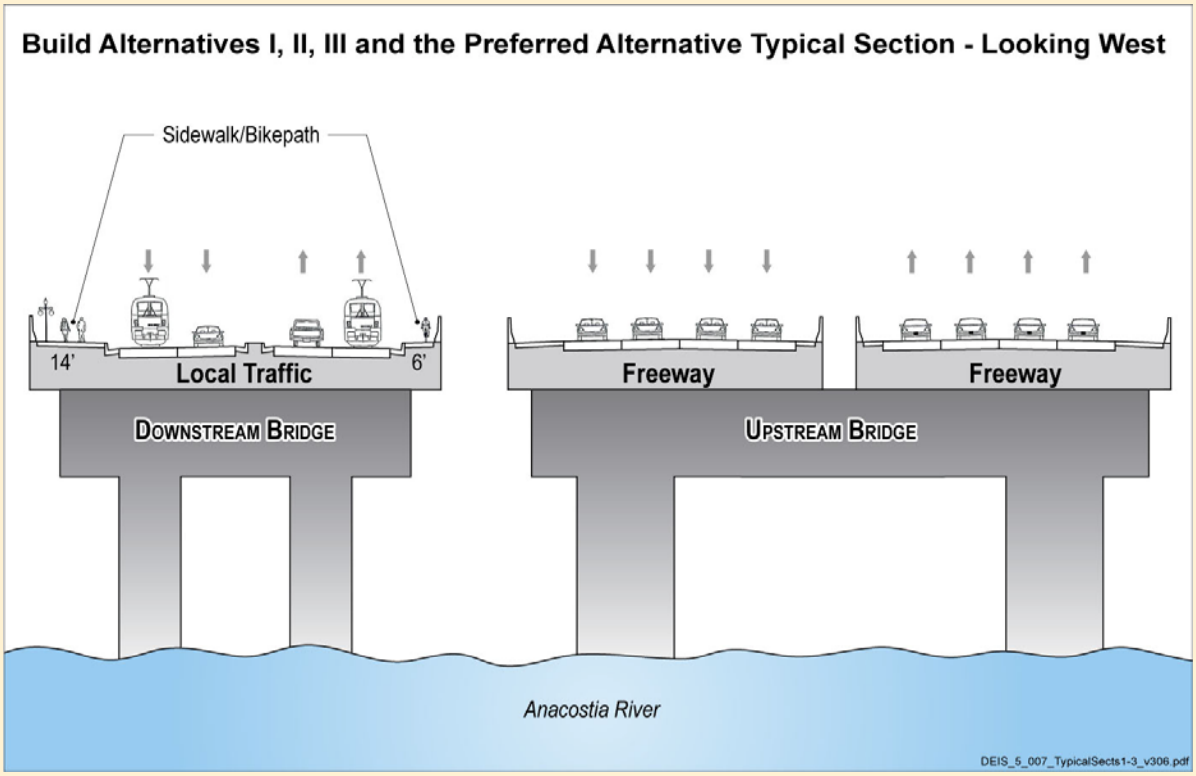
Performance differences between the alternatives are seen in traffic operations and property impacts. Build Alternatives I, III, IV, and the Preferred Alternative would provide acceptable traffic operations at crossroad intersections, while congestion is expected with Build Alternative II (see Exhibit 5-9).

Traffic Operations on 11th and 12th Streets

Build Alternatives I, II, III, and the Preferred Alternative would maintain two-way traffic on both 11th and 12th Streets within the study area.

Because of the river-crossing bridge configuration, Build Alternative IV requires that 11th Street (eastbound) and 12th Street (westbound) operate as one-way roadways between approximately K Street and the Anacostia Freeway. This one-way configuration would produce localized circulation and access patterns to Maritime Plaza and the Navy Yard that differ from the other build alternatives (see Exhibit 5-10).

EXHIBIT 5-8
Typical Build Alternative Cross Sections Over the River
Build Alternatives I, II, III, and the Preferred Alternative (upper image) provide pedestrian and bicycle facilities on the local (downstream) bridge, while in Alternative IV, they are on the outside of both the upstream and downstream bridges.



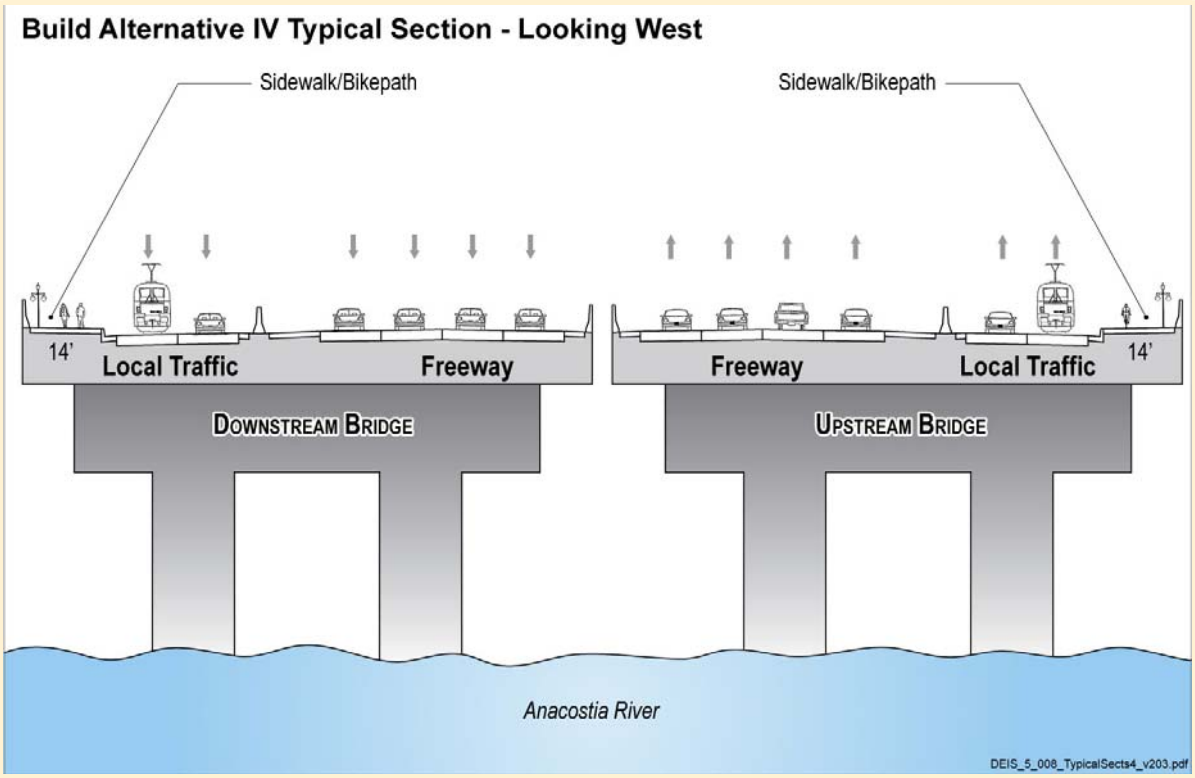


EXHIBIT 5-9

Build Alternative Intersection Configurations West of the River

Build Alternative I and the Preferred Alternative use at-grade intersections to handle traffic on local streets. Build Alternative II replaces these with a traffic circle, but would be more prone to congestion than other alternatives. Build Alternatives III and IV separate traffic with an underpass, providing the best traffic operations on local streets.

Build Alternative I and the Preferred Alternative

Build Alternative II

Build Alternative III

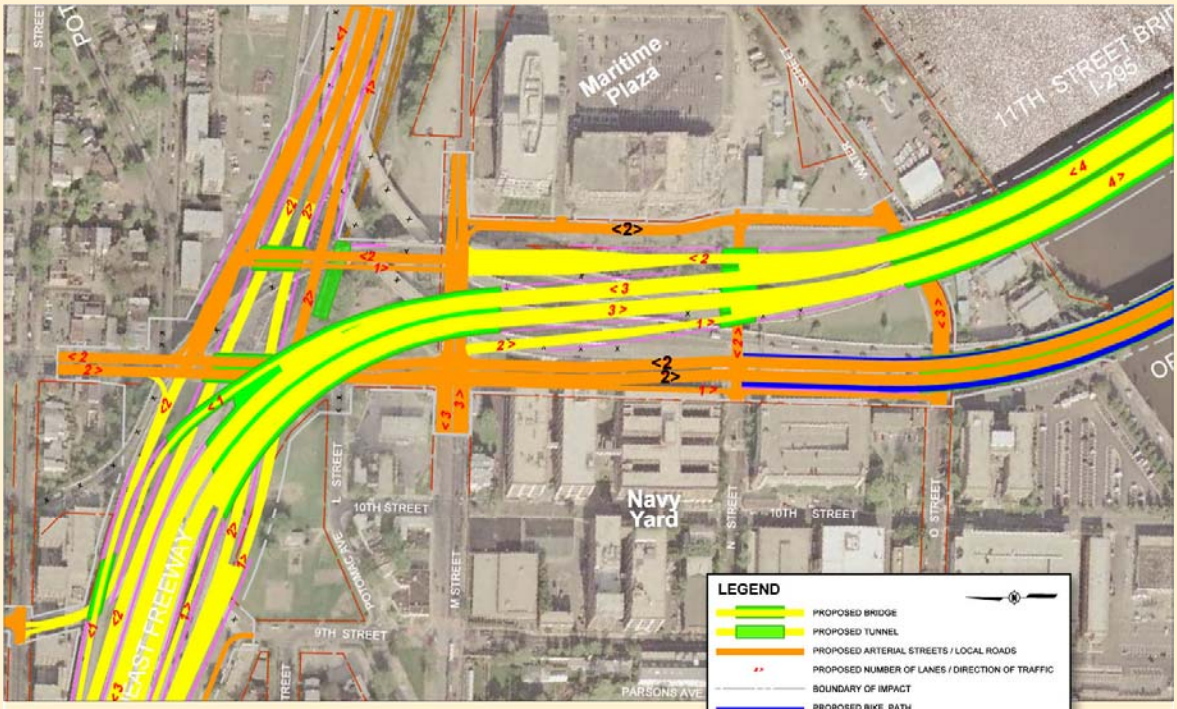
Build Alternative IV

DEIS_5_009_BarneyC-Underpass_v306.pdf

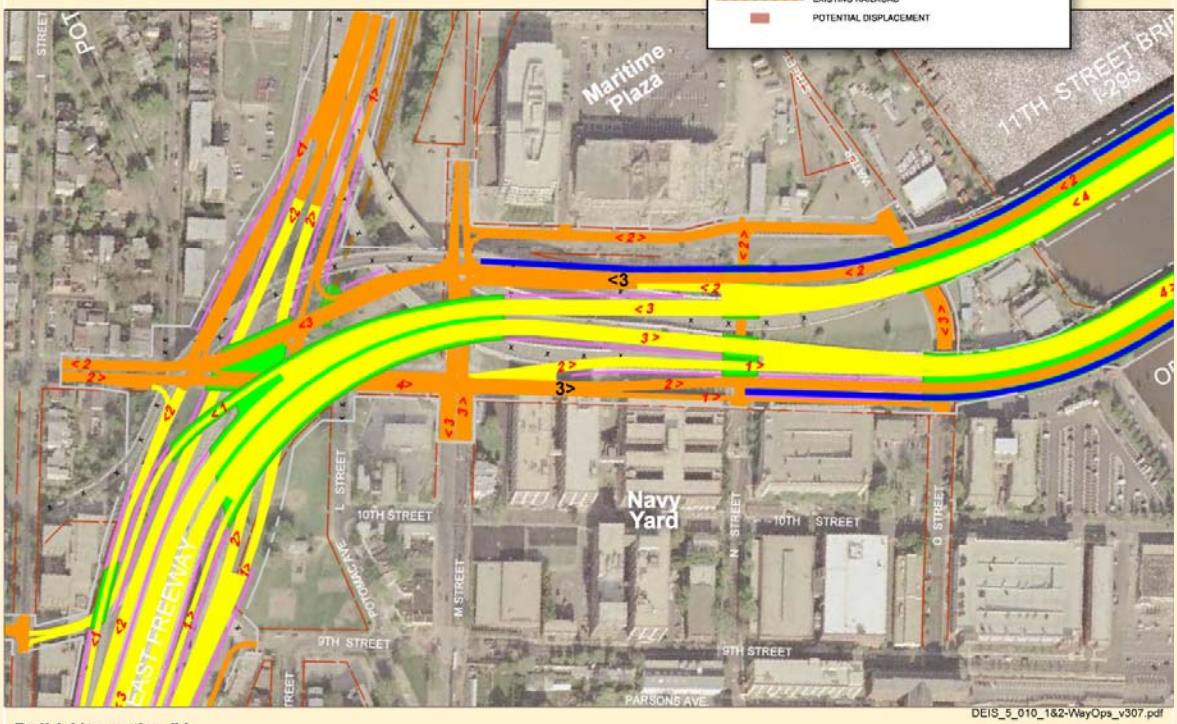
EXHIBIT 5-10

Differences in Build Alternative Local Street Configurations West of the River

Bridge configuration dictates whether 11th and 12th Streets are one-way or two-way. Build Alternatives I, II, III, and the Preferred Alternative would allow two-way traffic operations on both 11th and 12th Streets, while Build Alternative IV continues one-way traffic operations on a portion of both 11th and 12th Streets.



Build Alternatives, I, II, III and the Preferred Alternative



DEIS_5_010_1&2-WayOps_v307.pdf

Build Alternative IV

Maintenance of Traffic During Construction

Based on the engineering information available at this stage of the project, construction phasing concepts were developed for each of the build alternatives. All of the build alternatives would be constructed in phases to maintain traffic during construction.

All of the build alternatives would be constructed in phases to maintain traffic during construction. Construction of each of the build alternatives would take approximately 5 years using typical construction practices.

The early phases of construction would concentrate on building the new roadways or bridges necessary for the alternative. As these new facilities are completed, traffic would be shifted to them while the existing ramps, roadways, and bridges would be reconstructed and/or removed.

Construction of each of the build alternatives would take approximately 5 years using typical construction practices (8 hours/day, 5 days/week, no work on weekends or holidays, construction continues year round).

The following common assumptions and objectives were used as guidelines to steer the development of the construction phasing concept for each of the build alternatives:

- Maintain three lanes of traffic in each direction across the Anacostia River.
- At least two lanes of traffic in each direction will be maintained on the Anacostia Freeway and I-295 through the project area.
- The phasing concepts were developed to minimize the amount of temporary roadway and temporary structures required during construction.
- The phasing concepts were developed to minimize traffic detours through neighborhoods on both sides of the river.
- The phasing concepts were developed to construct the missing ramps serving the Anacostia Freeway on the east side of the river in the earliest possible phases.
- System ramp traffic may be re-directed through signalized intersections during construction.

See Exhibit 8-21 for details on construction phasing.

Build Alternative I would require the construction of costly temporary structures on the east side of the river. In order to maintain two lanes of traffic in each direction on the Anacostia Freeway, three temporary ramp and roadway structures would be required to accommodate lowering the mainline profile by approximately 25 feet and constructing the tunnel.

Under Build Alternative I, construction of the missing ramps serving eastbound traffic crossing the river to the northbound Anacostia Freeway early in the project would be difficult because of the tunnel construction required to lower the Anacostia Freeway.

Under Build Alternative I, construction of the missing ramps serving eastbound traffic crossing the river to the northbound Anacostia Freeway early in the project would be

difficult because of the tunnel construction required to lower the Anacostia Freeway. This movement could be provided via a temporary connection that would be constructed on the future Anacostia Gateway Government Center property.

Build Alternatives II, III, and the Preferred Alternative would require fewer temporary roadway connections and ramp structures than Build Alternatives I and IV.

Under Build Alternatives II, III, and the Preferred Alternative, traffic traveling from northbound I-295 across the river would be detoured through the new service interchange and across the new local bridge and to 11th Street to access the Southeast/Southwest Freeway. This temporary connection would likely remain in place for 2 years while the new ramp and the new bridges across the river are being constructed.

Build Alternatives II, III, and the Preferred Alternative would allow the completion of the missing ramps serving the Anacostia Freeway to be open to traffic at the end of the second year of construction.

Build Alternatives II, III, and the Preferred Alternative would allow the completion of the missing ramps serving the Anacostia Freeway to be open to traffic at the end of the second year of construction.

Construction of Build Alternative IV would be the most difficult from a construction phasing and maintenance of traffic standpoint. Build Alternatives I through III and the Preferred Alternative ultimately provide eight freeway lanes across the river on the north bridge and four local lanes on the southern bridge. Build Alternative IV would provide six lanes (four freeway and two local) on both the north and south crossing. Under Build Alternative IV, the existing bridges cannot be partially widened during construction. One bridge would be removed while the other maintains traffic across the river. Under this scenario, only two lanes of traffic in each direction could be maintained across the river while the first river-crossing bridge is under construction (during construction).

Build Alternative IV could be constructed in 5 years, but the construction would require more sub-stages and traffic shifts and would have numerous low-speed (10 mph) temporary ramps.

Build Alternative IV could be constructed in 5 years, but the construction would require more sub-stages and traffic shifts and would have numerous low-speed (10 mph) temporary ramps.

The construction phasing plan and maintenance of traffic plans for the preferred alternative will be further developed and refined during the detailed engineering phase of the project and some of the basic assumptions may change.

DDOT has selected a Preferred Alternative by carefully considering the purpose and need statement, public and agency input, environmental impacts, and engineering studies that were completed for the 11th Street Bridges project.

5.2.5 Selection of the Preferred Alternative

DDOT has selected a Preferred Alternative by carefully considering the purpose and need statement, public and agency input, environmental impacts, and engineering studies that were completed for the 11th Street Bridges project. This section summarizes the

selection of the DDOT Preferred Alternative that will move forward into preliminary engineering. As the Preferred Alternative is further detailed and engineered, DDOT will continue to engage and coordinate with and seek input from key public and agency stakeholders.

The build and No-Build alternatives were evaluated based on the following factors:

- Compatibility with the project purpose and need
- Public and agency comments and input
- Engineering, operations, and constructability issues
- Comparison of social, economic, and environmental impacts

In selecting a Preferred Alternative, it is possible to mix and match concepts on the east and west sides of the river with certain build alternatives. The configuration of the river crossing bridges in Build Alternatives I, II, and III are compatible with each other and provide the flexibility to mix and match east-and west-side concepts. The match line for Build Alternatives I, II, and III is generally the west bank of the Anacostia River. For example, Build Alternative I on the east side of the river could be paired up with either Build Alternative II or III on the west side of the river. This mix–and-match flexibility allows the development of a hybrid alternative that meets the community needs on each side of the river. The one-way river crossing configuration of Build Alternative IV prevents it from being mixed and matched with any of the other alternatives.

In selecting a Preferred Alternative, it is possible to mix and match concepts on the east and west sides of the river with certain build alternatives.

Summary of Public and Agency Comments

The build alternatives evolved from an iterative process involving engineering, planning, and environmental inputs; review and comment by stakeholders; refinement and revision; and eventual screening to the alternatives evaluated in this Final EIS.

Alternative concepts were presented to and reviewed by a wide range of stakeholders between September 15, 2005 and August 28, 2006. Based on comments and feedback provided, concepts were dropped from consideration, new concepts were investigated, and concepts were refined and revised. A summary of key engineering, public, and agency issues that played a role in the development of alternatives is provided in Section 5.3.

Additional comments were received from public and agency stakeholders on the alternatives presented in the Draft EIS. All comments on the Draft EIS were reviewed and considered as part of the Preferred Alternative selection process. In some cases, commenters expressed a preference and/or opinion; these comments were noted. In other cases, comments led to alternative refinements and/or more detail provided in this Final EIS. A brief overview of the comments received is provided below.

Summary of Public Comments. Comments received from public organizations and individuals covered a wide range of issues. An overview of all public comments received on the Draft EIS is provided in Section 12.4.2. Individual responses to all public comments received on the Draft EIS are provided in Appendix L.

Impacts to the operations of ACBA and its upstream boathouse building and impacts to traffic made up the largest volume of public comments received. Additional comments were largely related to pedestrian and bicycle access, preference of one alternative over another, and issues related to the EIS process.

Summary of Agency Comments. Comments received from government agencies generally focused on the resources for which each agency is responsible. An overview of all agency comments received on the Draft EIS is provided in Section 12.4.1. Individual responses to all agency comments received on the Draft EIS are provided in Appendix L.

Many of the agency comments included requests for additional detail on mitigation measures proposed as part of the 11th Street Bridges project. Mitigation measures for each resource area are detailed in Section 7.

Preferred Alternative Selection Decision Process

Key decision factors in the selection of a Preferred Alternative are detailed below. As noted earlier, the configuration of the river crossing bridges in Build Alternatives I, II, and III are compatible with each other and provide the flexibility to mix and match concepts on the east and west sides of the river. The decision process centered on four key issues and answering four key questions:

- Build or No-Build alternative. Is a build alternative needed to meet the project purpose and need?
- Separation of freeway and local traffic. Should separate and distinct freeway and local bridges (with two-way traffic on each) or combined freeway and local bridges (with one-way traffic on each) be provided?
- Service interchange with the Anacostia Freeway. Is new access at the Anacostia Freeway and Martin Luther King, Jr. Avenue a desirable feature of a build alternative?
- Local access west of the river. Should access to the local street system be provided through at-grade intersections, a traffic circle, or at-grade intersections combined with an underpass?

Answering each of these key questions allowed a systematic decision-making process to be followed. How and why each of these questions were answered is described below. The resulting identification of the Preferred Alternative is also described.

Elimination of the No-Build Alternative. The No-Build Alternative would contain no new major construction resulting from a project action. Improvements implemented under this alternative would be limited to short-term restoration and maintenance of existing

Because the No-Build Alternative would not fully meet the project purpose and need, it was eliminated from further consideration.

infrastructure. The inherent structural deficiencies of the Anacostia River crossing bridges would not be corrected. Pedestrian and bicycle facilities in the project area would remain in poor condition, and connectivity of existing facilities would be lacking. The proposed ramps to and from the Anacostia Freeway north of the 11th Street Bridges complex would not be connected to the 11th Street Bridge crossings, and existing geometric and operational deficiencies would remain in place. The No-Build Alternative would provide an alternative evacuation route and route for security movements in and out of the nation's capital.

Because the No-Build Alternative would not fully meet the project purpose and need, it was eliminated from further consideration. Refer to Section 4 for a complete discussion of the project purpose and need.

Elimination of Build Alternative IV. Build Alternative IV reflects the project context and meets the purpose and need while providing combined freeway and local bridges with one-way traffic on each structure (see Figure 5-4). Pedestrian and bicycle groups expressed a preference for Build Alternative IV because the proposed cross-section over the river incorporated a 14-foot multi-use trail adjacent to local travel lanes on both structures. Other build alternatives incorporated a total multi-use trail width of 20 feet adjacent to local travel lanes on the downstream structure only.

Because of the magnitude of the impact to Anacostia Park, the relative difficulty in staging and constructing Build Alternative IV under traffic, cost, and stakeholder input, Build Alternative IV was eliminated from further consideration.

Build Alternative IV would require 3.3 acres of land from the Anacostia Park on the east side of the river and would be the most costly to construct. Because of the configuration of the bridges, which maintain one-way operation in each direction of travel, Build Alternative IV would be the most difficult to stage during construction and would require the most temporary connections. Overall maintenance of traffic during construction would be the most difficult to achieve. Only two lanes in each direction across the river bridges would remain open, as opposed to three lanes in each direction under Build Alternatives I, II, and III. In addition, public input and feedback were largely in support of providing a distinct freeway and local bridge across the Anacostia River, not the combined concept illustrated in Build Alternative IV.

The primary difference among east of the river build alternatives is the new service interchange between the Anacostia Freeway and Martin Luther King, Jr. Avenue.

Because of the relative difficulty in staging and constructing Build Alternative IV under traffic, cost, and stakeholder input, Build Alternative IV was eliminated from further consideration.

East of the River Build Alternatives. The primary difference among east of the river build alternatives is the new service interchange between the Anacostia Freeway and Martin Luther King, Jr. Avenue. Build Alternative I would not

provide the new service interchange, while Build Alternatives II and III each would do so. Build Alternatives II and III are identical east of the river.

Elimination of Build Alternative I East of the River. Build Alternative I (Exhibit 5-1) would depress a section of the Anacostia Freeway in the vicinity of the 11th Street Bridge complex. Consequently, it results in the lowest overall height of the east interchange of the build alternatives. Build Alternative I would require 2.4 acres of land from Anacostia Park. Because a new service interchange is not provided as part of Build Alternative I, forecast traffic on neighborhood streets east of the river (Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue) are the lowest of any of the build alternatives.

Build Alternative I would be the most difficult option to construct from several perspectives. First, the tunnel on the Anacostia Freeway would be difficult to construct under traffic, would likely result in more utility conflicts, and would increase the risk of uncovering archaeological and/or paleontological resources. Second, not providing a service interchange makes it more difficult to maintain traffic during construction. In addition, the lack of a new interchange does not provide additional access options for Anacostia neighborhoods and businesses, Washington Navy Yard, Maritime Plaza, and other local land uses. Finally, Build Alternative I would not address the concerns of the Fairlawn community to relocate access away from 13th Street. The public has indicated support for a new interchange; however, it was desired that the new access be located farther away from existing residential neighborhoods.

Because of stakeholder input and the difficulty in staging and constructing it under traffic, Build Alternative I east of the river was eliminated from further consideration.

Selection of Build Alternatives II/III East of the River. As noted earlier, Build Alternatives II and III (Exhibits 5-2 and 5-3) are identical east of the river. Both respond to the community desires of additional access to the Anacostia neighborhoods and businesses and other local land uses. In addition, these alternatives remove access from 13th Street and relocate it farther from residential communities, a strong desire expressed by the Fairlawn neighborhood residents. Both build alternatives also provide additional flexibility for maintaining traffic during construction by providing a new service interchange.

Because of stakeholder input and the difficulty in staging and constructing it under traffic, Build Alternative I east of the river was eliminated from further consideration.

Build Alternatives II and III require 3.5 acres of land from Anacostia Park. Both build alternatives require a higher overall height for the east interchange because there is no tunnel proposed for the Anacostia Freeway mainline. Finally, traffic forecasts on neighborhood streets east of the river (Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue) are the higher than for Build Alternative I, but still lower than existing conditions.

Based on stakeholder input expressing the desire for a new interchange to the historic Anacostia area and the increased flexibility in constructing these alternatives, Build Alternatives II and III, which are identical, were selected as the preferred option east of the river.

Based on stakeholder input expressing the desire for a new interchange to the historic Anacostia area and the increased flexibility in constructing these alternatives, Build Alternatives II and III, which are identical, were selected as the preferred option east of the river.

West of the River Build Alternatives. The primary difference among west of the river build alternatives is how access is provided between the freeway and the local street system. Build Alternative I provides access through at-grade intersections; Build Alternative II provides access through a traffic circle; and Build Alternative III provides access through at-grade intersections combined with an underpass.

Elimination of Build Alternative III West of the River. Build Alternative III (Exhibit 5-3) would provide a direct connection via an underpass between the Southeast/Southwest Freeway and the proposed Southeast Freeway Boulevard to Pennsylvania Avenue. Interchanging traffic to/from 11th Street would be served via at-grade intersections. This alternative results in the best operational performance of west-side intersections.

The primary difference among west of the river build alternatives is how access is provided between the freeway and the local street system.

Build Alternative III would have the greatest impact to Virginia Avenue Park, requiring 0.4 acre of parkland, and does not promote DDOT's desire to downgrade the connection between the Southeast/Southwest Freeway and Pennsylvania Avenue to a boulevard facility. Community input, particularly from Capitol Hill residents, has been opposed to the underpass feature of Build Alternative III because it is seen as promoting alternative paths to Pennsylvania Avenue.

Based on stakeholder input and to promote DDOT's desire to downgrade the connection between the Southeast/Southwest Freeway and Pennsylvania Avenue to a boulevard facility, Build Alternative III west of the river was eliminated from further consideration.

Based on stakeholder input and to promote DDOT's desire to downgrade the connection between the Southeast/Southwest Freeway and Pennsylvania Avenue to a boulevard facility, Build Alternative III west of the river was eliminated from further consideration.

Elimination of Build Alternative II West of the River. Build Alternative II (Exhibit 5-2) west of the river provides access to/from the Southeast/Southwest Freeway through a traffic circle. Based on stakeholder input, the traffic circle was incorporated as an "urban design" feature of Build Alternative II and was envisioned as a way to calm traffic along 11th Street.

Build Alternative II requires 0.2 acre of land from Virginia Avenue Park. Use of the traffic circle results in congested traffic operations at key intersections on the west side of the river, and is the least desirable option for pedestrians and bicyclists to traverse. Community feedback on the traffic circle was mixed when

engineering studies indicated that the Southeast/Southwest Freeway would need to go over the traffic circle instead of under it, as originally envisioned by the community.

Because of the poor traffic performance, difficulties posed to pedestrians and bicycles, and stakeholder feedback, Build Alternative II west of the river was eliminated from further consideration.

Because of the poor traffic performance, difficulties posed to pedestrians and bicycles, and stakeholder feedback, Build Alternative II west of the river was eliminated from further consideration.

Selection of Build Alternative I West of the River. Build Alternative I (Exhibit 5-1) west of the river provides access to/from the Southeast/Southwest Freeway through at-grade intersections on 11th Street. Build Alternative I does not require land from Virginia Avenue Park and provides acceptable traffic operations at west-side intersections.

Based on stakeholder input and the fact that it provides acceptable surface street traffic operations while avoiding impact to Virginia Avenue Park, Build Alternative I was selected as the preferred option west of the river.

Based on stakeholder input and the fact that it provides acceptable surface street traffic operations while minimizing impact to Virginia Avenue Park, Build Alternative I was selected as the preferred option west of the river.

Description of the Preferred Alternative

The Preferred Alternative, shown in Exhibit 5-5, is a hybrid combination of Build Alternatives II and III (which are identical on the east side of the river) and Build Alternative I on the west side of the river. The Preferred Alternative reflects the project context and meets the project purpose and need. It improves current design deficiencies, achieves a separation of local and freeway traffic, and provides a safer river crossing for pedestrians and bicyclists. The Preferred Alternative also provides direct ramp connections to/from the Anacostia Freeway north of the 11th Street Bridge complex. On the east side of the river, a new service interchange between the Anacostia Freeway and Martin Luther King Jr., Avenue would be provided. On the west side of the river, the Preferred Alternative provides access to/from the Southeast/Southwest Freeway and the local street grid through at-grade intersections.

The Preferred Alternative reflects the project context and meets the purpose and need of the project.

Impacts of the Preferred Alternative

While the Preferred Alternative is a hybrid combination of Build Alternatives II and III (which are identical on the east side of the river) and Build Alternative I on the west side of the river, it does not introduce any new impacts that were not already evaluated as part of the Draft EIS. In some cases, impacts to a given resource are the lowest of the alternatives considered and evaluated. In other cases, impacts to a given resource are the highest of the alternatives considered and evaluated. An additional refinement to the Preferred Alternative is a further reduction to the Area of Impact to Anacostia Park. In

The Preferred Alternative does not introduce any new impacts that were not already evaluated as part of the Draft EIS.

response to the NPS desire for retaining walls in the area north of the bridges and east of the river, the number of acres needed from the park for the ramp construction is 1.5. Details on the impacts of the Preferred Alternative are provided in Section 7 (Environmental Consequences) and Section 8 (Traffic and Transportation Analysis).

5.3 Build Alternatives Development Process

The build alternatives evolved from an iterative process involving engineering, planning, and environmental inputs; review and comment by stakeholders; refinement and revision; and eventual screening to the alternatives presented in this Final EIS. Project planning and design criteria were developed in consultation with key stakeholders such as FHWA, U.S. Army Corps of Engineers (USACOE), U.S. Coast Guard, and DDOT.

Sufficient design detail was developed to establish an understanding of the physical footprint, cost, traffic operations, and other aspects of the plans. These were presented to, and evaluated and reviewed by a range of stakeholders in various meetings held between September 15, 2005, and August 28, 2006. Stakeholders who reviewed and commented on the alternatives included federal, District, and local agencies, as well as public and private stakeholders affected by the project. Particular emphasis was given to comments from those living in the study area. Based on this process, concepts were dropped from consideration, new concepts investigated, and concepts revised and refined. Four roadway build alternatives and the Preferred Alternative emerged from the alternative development and refinement process.

Stakeholders who reviewed and commented on the alternatives included federal, District, and local agencies, as well as public and private stakeholders affected by the project.

River-crossing bridge type solutions also emerged from engineering studies of the existing bridges. The primary drivers were identifying the most cost-effective structures given design parameters (length, height, and span), and construction requirements (working in the river). Five technically feasible river-crossing bridge types emerged from the engineering studies. The selection of a river crossing bridge type is independent of the roadway alternative selected, as any bridge type is compatible with each roadway alternative.

A complete summary of the public involvement/agency involvement program can be found in Section 12.

Below is an overview of engineering, public, and agency issues that played a key role in the development of alternatives:

- Separation of freeway and local traffic
- Provision of missing ramp movements
- Access between Anacostia Freeway/I-295 and the Anacostia neighborhoods
- Access to the Southeast/Southwest Freeway from Anacostia

- River-crossing connections to the Anacostia street system
- Access to Anacostia Park
- Minimize impacts to Anacostia Park
- Minimize impacts to Virginia Avenue Park
- Impact to Anacostia Community Boathouse Association (ACBA) buildings
- Minimize visual impact of the facility
- Pedestrian/Bicycle facilities
- Connection to Capitol Hill Street Network
- Capitol Hill ramp configuration
- Traffic operations on the freeway and local street system
  - Traffic operations on 11th and 12th Streets
  - Continuity of Potomac Avenue
  - Capacity on interstate roadways
  - Continuity of interstate facilities
- Engineering design criteria
- Treatment of Southeast Freeway Boulevard
- Incorporation of streetcar transit
- Minimize property impacts
- Anacostia River navigation
- River structure type

These guiding factors and how they were addressed during the development phase are described in more detail in the following pages.

Separation of Freeway and Local Traffic

Consistent with the purpose and need statement for the project, and building upon earlier DDOT planning efforts, all of the build alternatives separate local traffic from freeway traffic over the river.

Two distinct options have been carried forward—two separate two-way bridges and two separate one-way bridges with barrier-separated local and freeway traffic.

Provision of Missing Ramp Movements

Consistent with the purpose and need statement for the project, and building upon earlier DDOT planning efforts, all of the build alternatives provide missing ramp connections from the 11th Street Bridges complex to/from the Anacostia Freeway north of the bridges.

This objective was a primary driver of the project and received widespread public support.

Access between Anacostia Freeway/I-295 and the Anacostia Neighborhoods (New Interchange with Anacostia Freeway)

Provision of a new access point to the historic Anacostia area was an objective identified in earlier DDOT planning efforts. Initial concepts presented a variety of options to provide a new local interchange access between the Anacostia neighborhoods and the Anacostia

Freeway/I-295. Initial public reaction to a new interchange at this location was mixed. There was concern that a new interchange would draw additional traffic to neighborhoods east of the river. Many supported a new access point to the Anacostia Freeway, but expressed a desire to locate the access as far away as possible from the Fairlawn community.

Provision of additional access has the advantage of reducing out-of-direction travel on neighborhood streets in order to reach the Anacostia Freeway. Having direct access from the Anacostia Freeway also provides for redundant movements across the river on both the local and freeway spans, depending on the ultimate destination. This redundancy addresses security goals of the project. Provison of this connection is also advantageous in maintaining traffic operations during construction. Provision of direct access to the Anacostia Freeway does result in slightly higher forecast average daily traffic volumes on Martin Luther King, Jr. Avenue compared to the build alternative that does not provide a new access point; however, even with an interchange, forecast volumes are still lower than existing traffic volumes and lower than the No-Build Alternative.

Direct freeway ramp access from Anacostia to the Southeast/ Southwest Freeway was investigated during initial alternatives development. Alternatives that maintained this connection resulted in additional right-of-way impacts to Anacostia Park and were eliminated from further consideration.

Access to the Southeast/Southwest Freeway from Anacostia

Maintaining direct access to/from the historic Anacostia neighborhoods via the Southeast/Southwest Freeway was a goal of merchants along Martin Luther King, Jr. Avenue. There was concern that travel times to/from downtown would increase substantially without this connection.

Direct freeway ramp access from Anacostia to the Southeast/Southwest Freeway was investigated during initial alternatives development. Alternatives that maintained this connection resulted in additional right-of-way impacts to Anacostia Park. Because of these impacts, the decision was made to focus new access to/from the Anacostia Freeway from Anacostia. Access connections would still be maintained to the Southeast/Southwest Freeway, but would be via the local street system. Appropriate signage will be provided to direct traffic to the appropriate destinations.

River-crossing Connections to the Anacostia Street System

Three separate connections to the Anacostia neighborhood streets via the local bridge were presented—a one-way pair connection with Martin Luther King, Jr. Avenue and 13th Street and two-way connections with either Martin Luther King, Jr. Avenue or Good Hope Road. Variations reflect potential street configurations being examined in other DDOT study efforts. Each of the local street configurations can work with the build alternatives.

DDOT has subsequently converted Martin Luther King, Jr. Avenue to two-way operation. The Preferred Alternative reflects this configuration.

Access to Anacostia Park

Access to Anacostia Park from the Anacostia neighborhoods was essential to all of the proposed alternatives. Each of the build alternatives provides a connection from/to the Anacostia neighborhood and Anacostia Park via a new local bridge. For Build Alternatives I-IV, vehicular access to the park would be relocated from the existing Good Hope Road underpass under I-295 to the new connection from the local bridge across the Anacostia River. Based on agency input, for the Preferred Alternative, vehicle, bicycle, and pedestrian access will be maintained at both the local bridge and Good Hope Road.

Access to Anacostia Park from the Anacostia neighborhoods was essential to all of the proposed alternatives.

Minimize Impacts to Anacostia Park

Construction of the new interchange ramps connecting the river-crossing bridges with the Anacostia Freeway north of the 11th Street Bridges would require additional right-of-way from Anacostia Park. Alternatives that included these ramps and completely avoided impacts to the parkland were developed and dismissed. Such an alternative would shift the interchange to the east and have impacts to a school and require relocations in the Anacostia neighborhood between Good Hope Road, 13th Street, and 17th Street. The project team worked closely with the National Park Service (NPS) to develop alternatives that meet the purpose and need and minimize impacts to the park. Coordination with the NPS will continue as DDOT completes detailed engineering studies for the Preferred Alternative. Details of the Net Benefits 4(f) Programmatic agreement with NPS can be found in Appendix H.

Minimize Impacts to Virginia Avenue Park

The proposed concepts were developed to minimize impacts to Virginia Avenue Park. Right-of-way impacts to the park vary according to the interchange ramp configurations between the Southeast/Southwest Freeway and Barney Circle. Each of the alternatives avoid or minimize impacts to the parkland by shifting the alignment of the Southeast/Southwest Freeway to the north of the park, constructing interchange ramps as close together as possible, and constructing retaining walls to minimize the amount of right-of-way required. Right-of-way impacts to the park are discussed in Section 9, although the Preferred Alternative does not require right-of-way from Virginia Avenue Park.

Impact to ACBA Buildings

The Draft EIS noted that Build Alternatives I, II, and II might affect one of the buildings used by ACBA. During the public comment period, additional survey data were collected, and further engineering studies of potential impacts to the ACBA buildings were completed. The study team concluded that construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternate site during the period of construction. The District of

Columbia and NPS, in cooperation with DDOT and ACBA, has designated a site for this purpose.

Minimize Visual Impact of the Facility

Communities on the east side of the river are concerned about the aesthetics and the height of the proposed interchange ramps connecting the 11th Street Bridges to the Anacostia Freeway north of the river crossing. A number of concepts were developed to reduce the height of the new ramps and bridges. Build Alternative I would depress the Anacostia Freeway into a tunnel under the interchange ramps to reduce the overall height of the interchange bridges (see Exhibit 5-7). Tunneling a portion of the Anacostia Freeway would reduce the overall height of the interchange by approximately 25 to 30 feet relative to non-tunnel alternatives. Conversely, provision of a tunnel makes it more difficult and costly to maintain traffic during construction (potentially resulting in only one lane of traffic on the Anacostia Freeway during construction) and precludes the provision of a local interchange to the historic Anacostia area.

Pedestrian/Bicycle Facilities

Improved pedestrian and bicycle access across the river and within the study area was identified by the majority of stakeholders as a key concern. Each of the proposed alternatives would improve the bicycle and pedestrian facilities on the proposed crossings.

Each of the proposed alternatives would improve the bicycle and pedestrian facilities on the proposed crossings.

Pedestrian and bicycle facilities would be provided adjacent to the local, lower speed, travel lanes on all bridge crossings (see Exhibit 5-8). Improving connectivity to recreational trails and neighborhood facilities is a key goal of the project.

Connection to Capitol Hill Street Network

A number of concepts were developed to connect the river-crossing bridges and the Southeast/Southwest Freeway with the future Southeast Freeway Boulevard. These included intersections, a traffic circle/roundabout, and an underpass. While the intersection form varies by alternative, general access would be maintained at the same location across alternatives.

Performance differences among the alternatives are seen in traffic operations. Lower quality off-system traffic operations are expected with the traffic circle relative to the other intersection options. The Preferred Alternative would not require property from a housing complex parking lot.

Capitol Hill Ramp Configuration

Multiple interchange ramp combinations were developed, some including two or three pairs of ramps linking the Southeast/Southwest Freeway and local streets on the west side of the river.

For ramp configurations west of the river, it was agreed that one set of ramps would connect M Street to the new river-crossing bridge and two sets of ramps would be constructed to connect the Southeast/Southwest Freeway to the local street system between 8th Street and 11th Street.

For each alternative developed, maintenance of access to the Navy Yard, Maritime Plaza, and other land uses in the vicinity was a driving factor.

Traffic Operations on 11th and 12th Streets

Alternatives were developed that included both one-way and two-way operation on 11th and 12th Streets. For each alternative developed, maintenance of access to the Navy Yard, Maritime Plaza, and other land uses in the vicinity was a driving factor. The configurations of 11th and 12th Streets investigated yielded a variety of localized circulation and access patterns to land uses. All options investigated maintain access to existing land use.

Continuity of Potomac Avenue

The DC Office of Planning has a long-term vision to re-connect Potomac Avenue between K Street and L Street. Doing so would require relocation of the Hopkins Apartments public housing. Relocation of this facility is not part of the 11th Street Bridges project.

Build Alternative II would support continuity of Potomac Avenue (through a traffic circle). Other build alternatives could provide an indirect connection of Potomac Avenue (via 12th Street) if the Hopkins Apartment property were acquired by others.

Lane Capacity on Interstate Roadways

New lane capacity on the freeway facilities feeding the 11th Street Bridge complex is not part of this project and current plans do not include widening or freeway expansion.

New lane capacity on the freeway facilities feeding the 11th Street Bridge complex is not part of this project and current plans do not include widening or freeway expansion. Provision of additional lanes across the river is a result of reconfiguring the twin bridges to provide two-way operation and provision of auxiliary lanes across the river to improve safety and operations. DDOT's long-standing policy is to emphasize transportation solutions that focus on transit and street system operations. Lane expansion of the interstate and freeway system is not planned or envisioned because it was considered impractical based on the potential impact to existing facilities.

Continuity of Interstate Facilities

An alternative that provides continuity for I-295 was considered. This alternative would involve re-orienting the interchange and mainline ramp configurations along the Anacostia Freeway to provide route continuity for I-295 traffic crossing the river.

This alternative was dropped from consideration for two reasons. First, continuity of I-295 was not considered to be of primary importance, as the designation of I-295 as a route ends west of the Anacostia River (the Southeast/Southwest Freeway carries an I-695 designation).

Second, the Anacostia Freeway carries substantial north-south traffic as a through facility and is viewed locally as the continuous facility.

Engineering Design Criteria

Basic design criteria were developed to guide the alternatives development process. These criteria are based on reference to both the AASHTO Green Book (*A Policy on Geometric Design of Highways and Streets*) and the DDOT *Design Manual*. Given the highly developed and urban project surroundings and the desire to minimize impacts of the project, the criteria recommended are compatible with minimum criteria per the *Green Book* for freeway and ramp facilities. The design criteria reflect a freeway mainline design speed of 50 mph and a minimum ramp design speed of 35 mph.

Treatment of Southeast Freeway Boulevard

Based on current DDOT plans, the alternatives reflect that a section of the Southeast/ Southwest Freeway between 11th Street and Pennsylvania Avenue will be downgraded to a boulevard, with the alignment of the boulevard to be determined by others as part of a later project. In addition, the build alternatives reflect the planned removal of ramps between the 11th Street Bridge complex and the Southeast/Southwest Freeway toward Barney Circle.

All of the build alternatives provide for potential future streetcar operation on the local lanes of the river-crossing bridges. The viability of streetcar transit is not being decided by this project.

Incorporation of Streetcar Transit

DDOT studies are underway to determine the feasibility of and a preferred route for streetcar transit vehicles. These vehicles would operate in shared lanes with passenger cars, trucks, and buses. To date, feasibility of streetcar transit and a preferred route have not been determined as part of studies by others.

All of the build alternatives provide for potential future streetcar operation on the local lanes of the river-crossing bridges.

The project alternatives were developed to meet the project purpose and need while striving to stay within the existing right-of-way to the extent practical and possible.

Minimize Property Impacts

The 11th Street Bridges and connecting roadways are located in a highly developed urban area surrounded by constraints on each side of the river. These constraints include long-standing established residential neighborhoods, Washington Navy Yard, parks and recreational lands, and a navigable waterway. The project alternatives were developed to meet the project purpose and need while striving to stay within the existing right-of-way to the extent practical and possible. Retaining walls and bridge structures were used to minimize impacts to adjacent public and private properties.

Anacostia River Navigation

The existing 28 feet of vertical clearance for river navigation at mean high water (MHW) (elevation +2.9 on District Datum) at the channel would be maintained with all build alternatives. Consultation with the U.S. Coast Guard is continuing to reaffirm the required vertical and horizontal clearances of the replacement structures.

River Structure Type

Structure concepts were examined that maintained the existing span arrangements and used the existing foundations to minimize required construction in the Anacostia River. Alternative structure types for the bridges were evaluated for compatibility with the project alternative geometry and load capacity of existing foundations. Five compatible structure types were identified:

- Steel plate girder
- Steel box girder
- Steel deck truss
- Steel delta frame
- Steel tied arch (center span only)

Each of these bridge types is compatible and interchangeable with each of the build roadway alternatives.

5.4 Construction Activities Anticipated

Exhibit 5-11 shows the limits of construction for the alternatives. The limits of construction are similar, but would vary slightly depending on the interchange designs. All of the four build alternatives and the Preferred Alternative would cross the river at the same location, essentially on the existing alignment. All of the alternatives are constrained to fit in a developed urban area, to avoid encroachment on existing historic districts, to avoid impacts to homes or businesses, or to minimize harm to park and recreation areas.

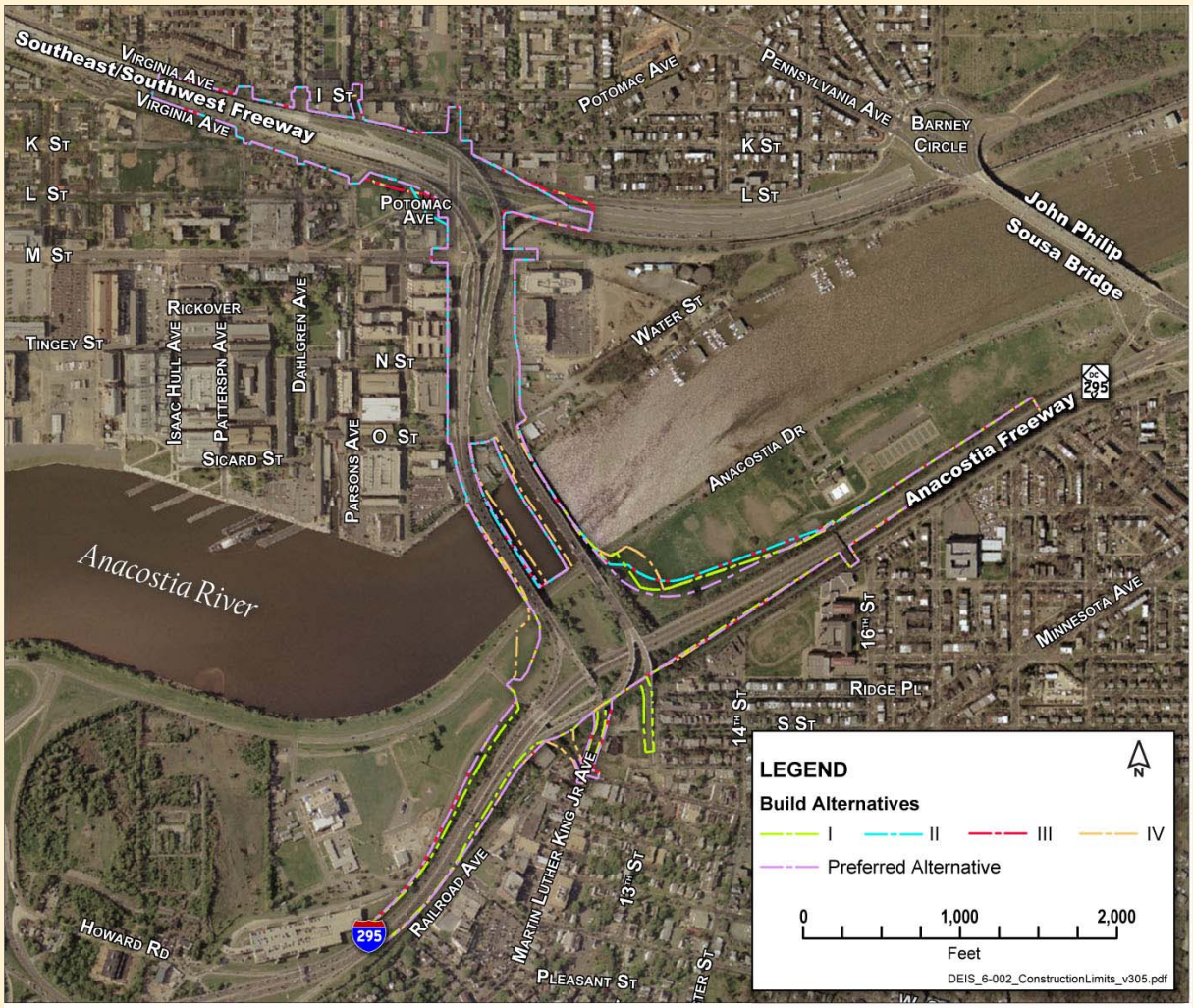
5.4.1 Interchange Construction

Reconstruction of the interchanges would include regrading and expanding the roadway embankments, replacing all existing pavement, and installing new structures.

5.4.2 In-Water Pier Construction

Each of the two existing river crossing bridges have four piers in the river (eight piers total). The existing piers would be reused in the construction of the new decks. For the Preferred Alternative, the deck of the upstream crossing would need to be expanded. To support the expanded deck on the upstream structure, widened piers would be supported by foundations adjacent to the existing ones. The reconstructed bridges would continue to have four piers in the river at their current locations.

EXHIBIT 5-11
Build Alternatives' Construction Limits
The construction limits of the Build Alternatives are similar and correspond closely to the existing right-of-way.



The river is deep enough to allow construction of the piers and bridges from barges, which would avoid the cost and impacts to the river from having to construct a temporary causeway. Final bridge construction techniques will be determined during the design phase of the project.

The widened piers of the upstream structure would have foundations placed at the water level on top of new pilings, sometimes referred to as a "floating foundation" design. This design limits impacts to the river bed to the locations of the pilings and was preferred by the U.S. Coast Guard to reduce the risk of vessels striking invisible, underwater structures. The pilings would be one of two kinds:

1. Concrete pilings in drilled shafts. The shafts would be temporarily lined with a hollow steel casing. A steel rebar "cage" would be inserted, and tremie concrete (which cures under water) poured into the pipe. Dewatering occurs as the concrete fills the hole and

forces the water out. The pipe is extracted as the concrete is poured in, up to a point just below the bottom of the river. A form would be used above the stream bottom to complete the piling to the necessary height.

2. Driven pilings:
   a. Steel "H" pilings would be driven into the river bottom, extending upwards to the mean high water elevation, and the concrete foundation formed on top of them.
   b. Pipe pilings would be driven into the river bottom, extending upwards to the MHW elevation, and the concrete foundation formed on top of them.

The piling alternative will be selected during final design.

5.4.3 In Water Bridge Demolition

The decks of the existing bridges will be demolished using a top-down method, which is essentially construction in reverse. The pavement and deck would be removed, and then the superstructure removed in pieces. The bridges will not be demolished by explosives, because that action could damage the piers that will be reused.

Because the existing piers will be reused, the upper portions of the existing pier walls will be removed and the pier walls reconstructed. No disturbance of the sediments in the river would be required for the renovation of the existing piers. A form box would be installed to allow the construction area of the pier to be dewatered to accommodate required construction activities. The form box would be attached to the pier 4 to 5 feet below the water elevation, sealed, and then dewatered.

The water that is pumped from inside the form box will be surface water because the area only needs be dewatered to a depth of 4–5 feet below the normal river level. There is a low risk of spreading contaminants from this approach.

Initially, the existing pier walls would be removed to an elevation above the MHW level in segments. This portion of the demolition can be accomplished in the dry using horizontal saws. The contractor would be required to provide methods for containment and disposal of the effluent from the sawing operation.

The form box would then be placed around the pier. Within the box, the pier wall would be removed to an existing construction joint a few feet below the MHW level. This portion of the pier wall would likely be removed using pneumatic hammers. Small explosive charges will not be used to break the wall into pieces in order to minimize risk of damage to the remaining pier structure. The removed stone-masonry and concrete would be contained in the form box, which can then be removed and disposed of offsite.

5.4.4 Dredging

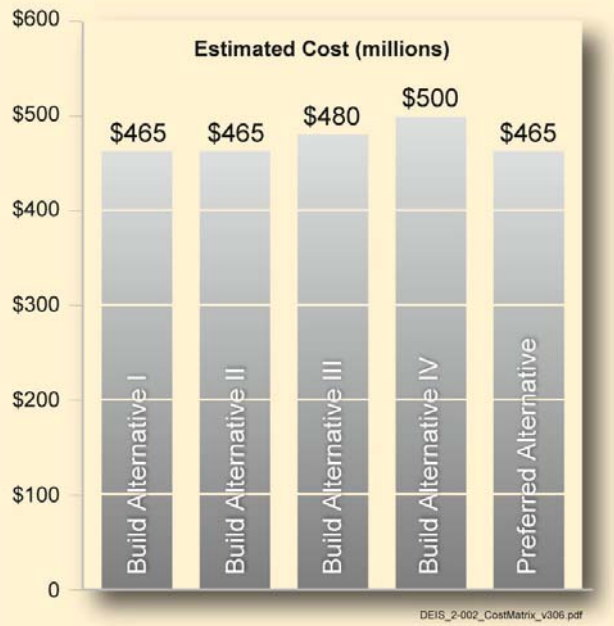
Dredging will not be required during construction operations. The conceptual design of the bridge includes minimizing disturbance of the river sediments because of known

contamination. The existing piers will be reused during reconstruction and the existing water depths are sufficient for construction activities, including construction from barges.

5.5 Construction Cost Estimates

Based on information available, relative construction cost estimates in current dollars (see Exhibit 5-12) were prepared for each of the build alternatives. These estimates provide a basis for cost comparisons between the four build alternatives. Additional cost estimates will be prepared during detailed engineering of the Preferred Alternative.

EXHIBIT 5-12
Build Alternatives Cost Estimates (Current Dollars)
Cost estimates for all the Build Alternatives are similar.



6 Affected Environment

The 11th Street Bridges are located in the southeast section of Washington, DC. The project area is shown in the foldout map located at the back of this volume.

6.1 Land Use

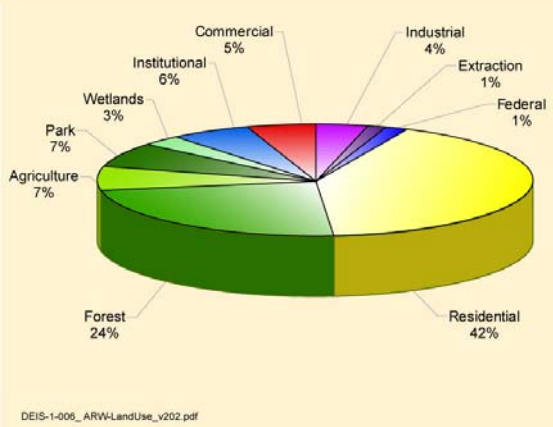
The foldout map inside the back cover may facilitate your review.

The Lower Anacostia River watershed is one of the most heavily populated and developed urban areas in the Chesapeake Bay region, with more than 80 percent of the area already developed (Exhibit 6-1). Changes to the natural features of the watershed began as early as the 18th century. Agriculture was a predominant land use in the 18th and 19th centuries, but signs of agriculture are virtually nonexistent in the area today (Metropolitan Washington Council of Governments [MWCOG], 2005).

- Much of the land within and surrounding the study area is densely developed with residential, commercial, government, and light industrial uses (Exhibit 6-2). The most significant open space is Anacostia Park along the south bank of the Anacostia River. Limited areas of open space are found in small parks within the residential areas.

6.1.1 Political Boundaries and the Study Area

EXHIBIT 6-1
Land Use in the Anacostia River Watershed
Residential uses are the single largest land use in the watershed.



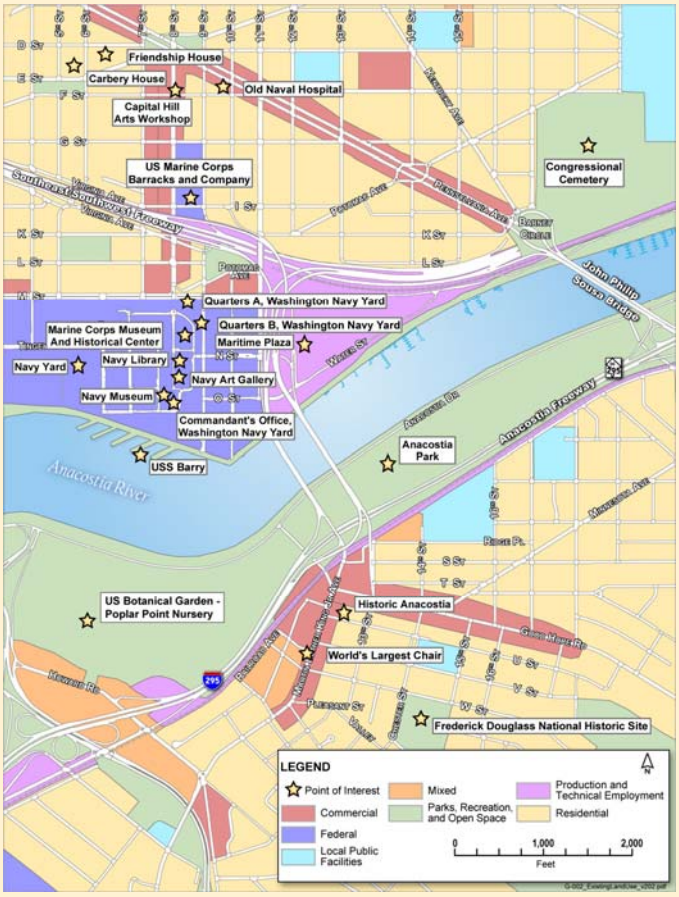
Source: MWCOG, 2005

The District of Columbia (DC) is historically divided into quadrants based on an area's geographic relationship to the U.S. Capitol and wards and neighborhood associations. Eight wards and five at-large seats are the basis for the legislative branch of government within the District—the Council. The 8 wards are comprised of 37 Advisory Neighborhood Commissions (ANCs), with Commissioners elected to their ANC by neighborhood Single Member Districts (SMDs). This breakdown of land area into basic political units provides an avenue for the more than 120 District neighborhoods to remain actively involved in policies and programs for which the District government has responsibility.

The ANCs present their opinions and recommendations on issues such as transportation, recreation, economic development, and zoning, as well as the District's annual budget to the District government agencies, the executive branch, and the Council.

The 11th Street Bridges study area is located in parts of Wards 6, 7, and 8 on the east and west sides of the Anacostia River (see Exhibit 6-3). The neighborhoods within the study area include Lincoln Park, Hill East, Near Southeast, and Navy Yard (Ward 6); Fairlawn (Ward 7); and Anacostia, Hillsdale, and Barry Farm (Ward 8).

EXHIBIT 6-2
Existing Study Area Land Use and Landmarks
Land use in the study area is diverse.



6.1.2 Land Use West of the River

Southeast Capitol Hill

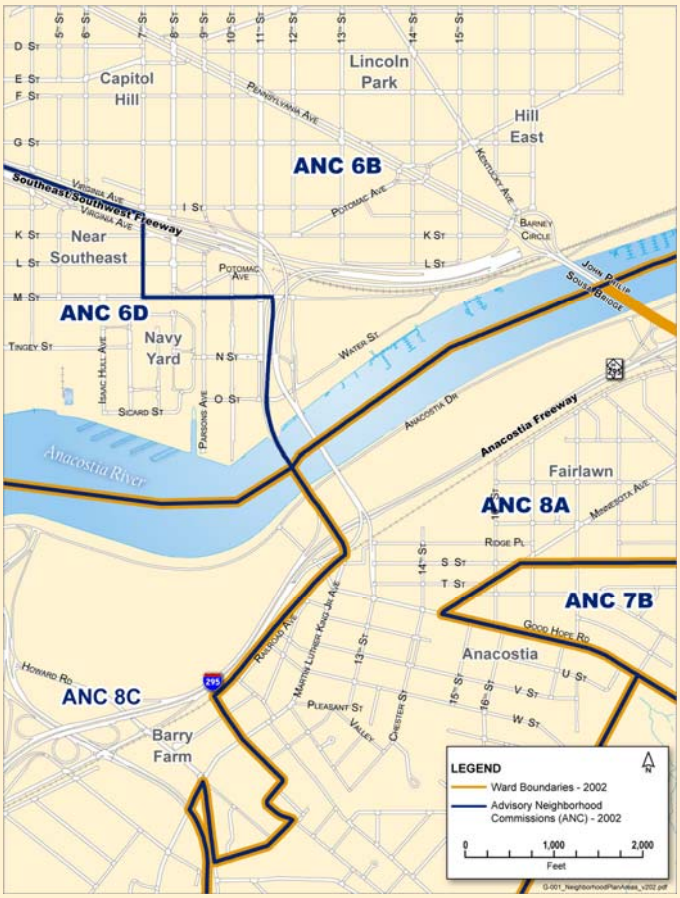
The area west of the Anacostia River is known as Southeast Capitol Hill, which is within Ward 6. The neighborhoods that lie partially or completely within this portion of the project include Capitol Hill, Hill East, Near Southeast, and Navy Yard (Exhibit 6-3). Six principal corridors traverse the west side neighborhoods: 8th Street, 11th Street, M Street, Pennsylvania Avenue, Potomac Avenue, and Kentucky Avenue. The 11th Street Bridges are located immediately east of the Navy Yard.

A brief description of the land uses within the categories used by the DC Office of Tax and Revenue, Real Property Tax Administration (RPTA) is found below.

Parks, Recreation, and Open Space

Although a large percentage of land west of the river is identified as parks, recreation and open space, there is a relatively small amount of this land use in the immediate study area. A thin strip of Anacostia Park is located under the 11th Street Bridges and extends along the river east of Water Street. With the exception of the ACBA buildings, there are no developed facilities within this portion of the park, although additional facilities are located both upstream and downstream of the bridge on the west side. Upstream from the ACBA buildings is the docking station for river dredging and debris cleanup equipment. Farther

EXHIBIT 6-3
Study Area Neighborhoods, Wards, and Advisory Neighborhood Commissions
The 11th Street Bridges project is located in Wards 6 and 8.



upstream, there are a number of marinas. Another park in the west study area is Virginia Avenue Park, a small neighborhood park located between K Street and Virginia Avenue.

West of the Southeast/Southwest Freeway, there is a park and recreation area within the Marine Barracks area.

Commercial/Industrial

The District's oldest commercial area, Barracks Row, is a six-block-long historic corridor that links Pennsylvania Avenue to M Street and the Navy Yard. In an effort to revitalize the area, merchants on Barracks Row joined forces in the early 1990s to create the Barracks Row Business Alliance, which later formed the Barracks Row Main Street program as a 501(c)(3) organization. In May 2005, the National Trust for Historic Preservation announced that Barracks Row Main Street won one of the 2005 Great American Main Street Awards for its revitalization of the 8th Street, SE commercial area.

North of the 11th Street Bridges, between Water Street and M Street, is Maritime Plaza, a 12-acre office park. The first phase of Maritime Plaza (200,000 square feet [ft^2]) was completed in October 2001, and the second phase (145,000 ft^2) was completed in January 2003. "The Yards" (formerly known as the Southeast Federal Center), opened in April 2007 and houses, among others, the U.S. Department of Transportation. Other locations of commercial activity are found south of 11th Street within the largely residential area, along M Street, and west of the Southeast/Southwest Freeway, along 8th Street and Pennsylvania Avenue.

Industrial uses are found on 8th and 11th Streets adjacent to (east of) the Southeast/Southwest Freeway. An active CSX rail line passes through the study area west of the Anacostia River. The tracks pass along the east side of the Southeast/Southwest Freeway and cross the Anacostia River upstream of the project area.

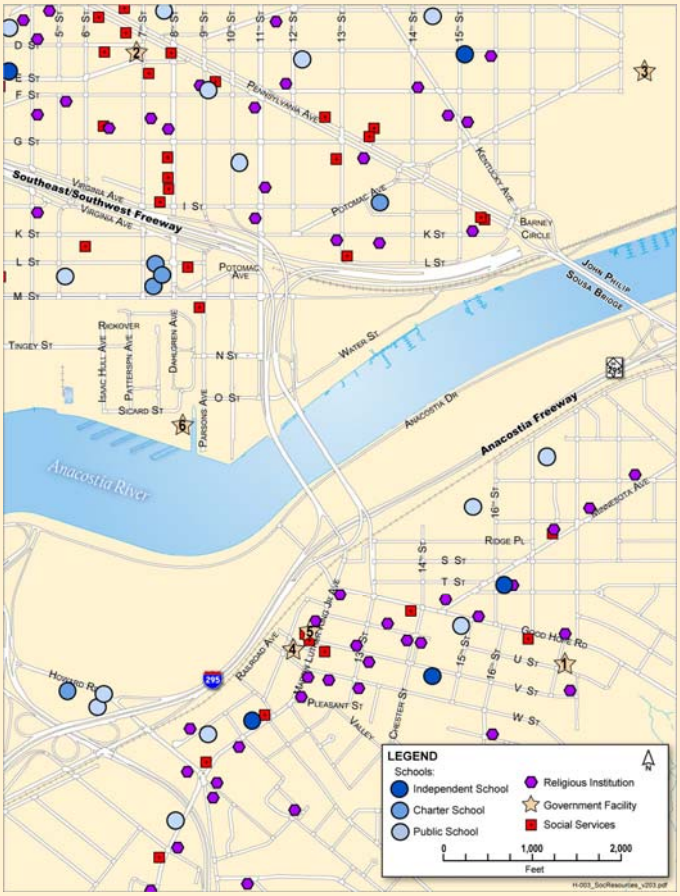
Barracks Row Main Street won one of the 2005 Great American Main Street Awards for its revitalization of the 8th Street, SE commercial area.

Federal

The 70-acre Navy Yard is the oldest U.S. Navy shore facility. It is bordered on the east by 10th Street, on the west by the General Services Administration (GSA) buildings, on the south by the Anacostia River, and on the north by M Street. The Navy Yard, which employees approximately 10,000 Navy employees and 5,000 private contractors, is home to a variety of activities, including the headquarters of Naval District Washington (NDW) (Washington, DC Marketing Center, 2004). The NDW functions as the military coordinator for most of the Navy units in the Washington, Northern Virginia, and Maryland areas. The Navy Yard has been designated a National Historical Landmark by the NPS and features the Navy Museum.

North of the Southeast/Southwest Freeway along 8th and 9th Streets are the Marine Barracks, the "Oldest Post of the Corps." The Commandant's House at the north end of the barracks was completed in 1806 and is the only original building still standing. It is the oldest public building in continuous use in the nation's capital. The rest of the barracks was rebuilt between 1900 and 1907. Both the barracks site and the Commandant's House were designated National Historic Places by the U.S. Department of the Interior in 1976. The Barracks have been expanded to accommodate new housing for 300 Marine personnel, as well as a public park and recreational facilities open to the public (National Capital Planning Commission [NCPC], 1997).

EXHIBIT 6-4
Study Area Social Resources
Social resources are dispersed throughout the study area.



Residential

The neighborhoods in Ward 6 are characterized predominantly by moderate-density residential development. The dominant land use along the west side of 11th Street is residential. The north side of M Street is also primarily a residential area. This area includes the Arthur Capper/Carrollsburg development. West of the Southeast/Southwest Freeway there is a large area of residential development, in the area surrounding (and including) the Marine Barracks. The social services and community facilities serving the residential areas are located primarily north of the Southeast/Southwest Freeway (Exhibit 6-4).

6.1.3 Land Use East of the River

Anacostia

The area east of the Anacostia River is generally known as Anacostia. There are four neighborhoods in this area, a small portion of Hillsdale, part of Barry Farm, a significant area of Fairlawn, and historic Anacostia (Exhibit 6-3). These neighborhoods are parts of the District's Wards 7 and 8. The historic Anacostia neighborhood, located at the end of the 11th Street Bridges, includes the following landmarks Fort Stanton, Garfield Heights, Anacostia Park, St. Elizabeths Hospital, the Frederick Douglass National Historic Site, and a Smithsonian museum.

Exhibit 6-4 details the location of social and community resources in the area, which are highly concentrated along Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue.

A description of the land uses east of the river is provided below. The description focuses on land uses along the three primary roads that serve the 11th Street Bridges east of the river, Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue. These areas were shown on Exhibit 6-2.

Martin Luther King, Jr. Avenue Corridor

Beginning at the edge of the Anacostia River, Anacostia Park is the first land use encountered. Anacostia Park, which encompasses nearly 1,200 acres and approximately 11 miles of shoreline, is one of the District's largest parks, extending from the Frederick Douglass Bridge up to the Maryland/District of Columbia border. Operated by NPS, Anacostia Park is home to a variety of recreational and outdoor activities. Community facilities within the park include a swimming pool, field house, pavilion and picnic area, and boat ramps. While currently part of the national park system, a substantial portion of the area from north of the 11th Street Bridges downstream to the Douglass Bridge has been included in land swap legislation that has been introduced in Congress. If the legislation passes, the District would own and manage the area, known as Poplar Point, subject to several restrictions that include designating at least 70 of the 110 acres as recreational use. The remaining land could be developed for other purposes.

Beyond the park along Martin Luther King, Jr. Avenue, Anacostia contains a high density of commercial and retail land uses, along with vacant sites. Retail businesses and social services along this corridor include office space, banks, restaurants, the Anacostia Animal Clinic; the Max Robinson Center, providing medical and mental health care; Birney Elementary School; Clara Mohammad School; and a few religious institutions/churches such as Bethel Christian Fellowship Church. Approaching the south end of Martin Luther King, Jr. Avenue, the land use is dominated by residential land uses, including single-family homes and apartment homes. Just beyond the study area are the Smithsonian Anacostia Museum and Center for African American History and Culture.

Good Hope Road Corridor

Northeast of the vacant property at the intersection of Good Hope and Martin Luther King, Jr. Avenue, land uses transition to light industrial and commercial uses, along with office and retail space, and a number of vacant buildings. Some of the uses include financial offices, hair salons, restaurants, and general offices. There are churches located along this corridor, a funeral home, Ketcham Elementary School, and the Anacostia Neighborhood Library.

Minnesota Avenue Corridor

Along the northeastern portion of the study area, traveling along Minnesota Avenue, the land use is primarily residential. There is also a church, Ambassador Baptist, located near Good Hope Road.

Outside of the Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue corridors, land uses along other neighborhood streets east of the river are predominantly residential. Along U, V, and W Streets, churches, stores, and school facilities are scattered throughout the residential neighborhood. South of W Street, the land use is all residential. Apartment complexes, as well as townhomes and single-family homes, make up this area.

The inactive CSX Blue Plains spur line parallels the Anacostia Freeway and the entire length of the east side of the Anacostia River.

6.1.4 Development Activity and Trends

New development, including redevelopment of existing parcels, is occurring throughout the District. While a considerable amount of the activity remains focused on the central business district, developers are looking farther into District neighborhoods to find new opportunities. A significant amount of development has been or is being developed in Wards 6, 7, and 8, including nearly 14,000 new or renovated residential units. In Ward 8, almost 7,500 residential units have either been completed or are in the development process, more than in any other ward except for Ward 6. The following sections provide a detailed listing of ongoing developments in the project study area (Exhibit 6-5).

West of the River

The following are some of the recently completed and planned major developments west of the Anacostia River:

- Construction of new office buildings on M Street, SE.
- Completion of Phase I of the Maritime Plaza development on the former Washington Gas site. The Maritime Plaza will ultimately feature 800,000 ft^2 of office space and a 250-room hotel.
- Completion of streetscape improvements along M Street, SE.

EXHIBIT 6-5
Planned Area Development/Redevelopment
There are major projects planned on both sides of the Anacostia River.

- Award of a $35-million Housing Opportunities for People Everywhere (HOPE VI) grant to the DC Housing Authority to revitalize the Arthur Capper/ Carrollsburg Development.
- Redevelopment of "The Yards" (adjacent to the Navy Yard) for private, mixed use development. Planned projects include an urban waterfront with retail uses, plazas, and an esplanade and riverfront drive that would link the adjacent neighborhoods. The complete project will encompass 40 acres, 1.8 million ft² of office space, 2,800 residential units, 160,000-350,000 ft² of retail, and a 5.5-acre riverfront park. The project is to be completed in three phases over 10 to 20 years. The first phase of construction, 400 residential units, is planned to begin in 2007.
- Expansion of the Marine Barracks to provide new housing for 300 personnel, as well as park and recreational facilities.
- Extension of the Capitol Hill Historic District to include the blocks east of 7th Street, SE and north of M Street, SE.
- Planned streetscape improvement on 7th Street, SE at Pennsylvania Avenue and 8th Street from Pennsylvania Avenue to M Street, SE.
- Demolition of the DC Housing Authority's Kentucky Courts public housing property to develop 40 new, mixed-income townhouses.

In response to the Navy Yard expansion, more than 1.2 million ft² of new office space has been completed since 2001 along M Street for private defense contractors. The famous Blue Castle building (a local landmark since the late 1800s, located at 770 M Street, SE) will be redeveloped for retail. Hotel and apartment projects in this area are also in the planning phase.

According to a July 15, 2004, *Washington Post* article, "Betting Big on Near Southeast," the Washington, DC Office of Planning foresees the following in the next 2 decades:

- The area's residential population will increase from 1,850 to more than 11,000.
- Employment in the area will rise from about 19,000 today, concentrated in or close to the Navy Yard, to more than 96,000.
- Space occupied by retailers and restaurants will increase from less than 50,000 ft^2 to approximately 750,000 ft^2, much of it spread throughout the area in mandated ground-floor retail stores.

East of the River

The DC Main Streets program was created in 2002 to support the establishment and implementation of lasting, comprehensive revitalization initiatives in the District's traditional neighborhood business districts. The goal is to support retail investment in the District through retaining and expanding existing businesses and recruiting new ones. The Anacostia Main Street Initiative is a part of the Main Streets program. The commercial boundaries of this area are the 1100 to 1500 blocks of Good Hope Road, SE, and the 1800 to 2200 blocks of Martin Luther King, Jr. Avenue, SE. The proposed district includes the "Big Chair," a widely recognized focal point of the business district of Anacostia.

> The goal of the DC Main Streets program is to support retail investment through retaining and expanding existing businesses and recruiting new ones. The Anacostia Main Street Initiative is part of this program.

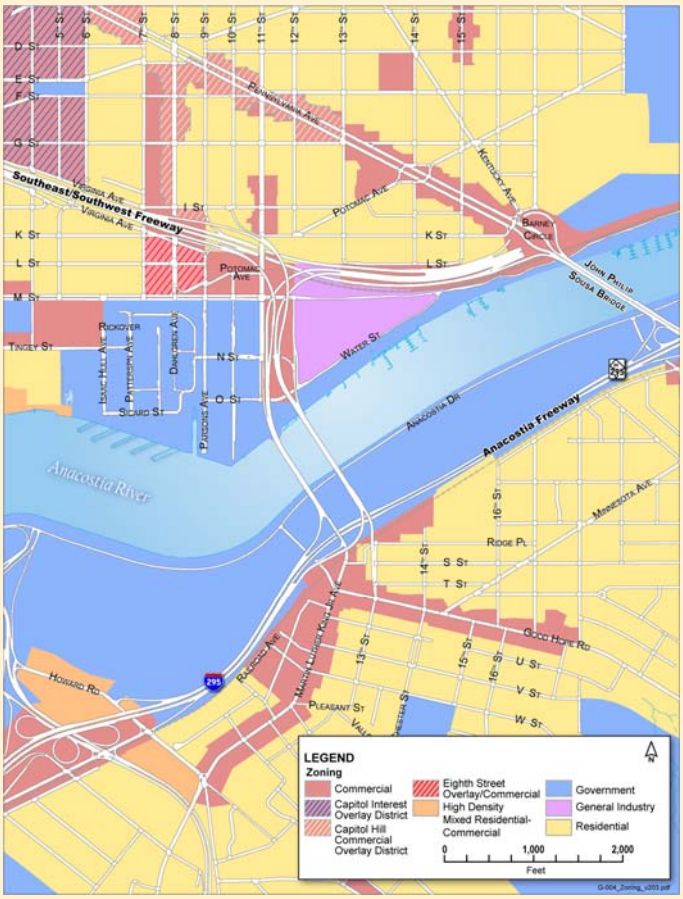
The new Anacostia Gateway Government Center development and Martin Luther King, Jr. Avenue development planned for the area will serve as a catalyst for neighborhood business revitalization. The Anacostia Gateway Government Center project includes a 260,000-ft^2 government center that will be home to DDOT and a 63,000-ft^2 private office building being developed by the Anacostia Economic Development Corporation (AEDC) and DRI Partners. The development will be located at the corner of Good Hope Road and Martin Luther King, Jr. Avenue and will offer 17,000 ft^2 of retail space. An additional 20,000 ft^2 of retail space is being developed by the AEDC and Douglas Development Corporation as a mixed-use complex adjacent to the Anacostia Gateway Government Center.

In addition to the commercial, office, and retail developments, housing developments are on the rise as well. More than 1,000 new residential units have been built in and near Anacostia in the last few years (Washington, DC Marketing Center, 2004). According to a recent *Washington Post* article, "Since 2000, more new housing developments, totaling nearly 8,000 units, have been built in the area – which includes the neighborhoods of Anacostia, Barry Farms, Congress Heights and Shipley Terrace – than anywhere else in the District except near downtown."

6.1.5 Zoning

Zoning within the project area includes industrial, commercial, retail, residential, government, the Capitol Hill commercial overall district, and the Capitol Interest Overlay District (Exhibit 6-6). Generally, these zones allow a variety of potential uses at different densities throughout the project area. The code specifies allowable uses, as well as standards for parking and building size, shape, and location within each zone.

EXHIBIT 6-6
Existing Study Area Zoning
The waterfront along both sides of the river is primarily zoned for government use.



The following zones, as described in the DC Municipal Regulations (Title 11 Zoning), are located in the project area.

Zoning Districts

C-2-A—Commercial District, Medium Density: Permits matter-of-right, low-density development, including office, retail, and residential uses to a maximum lot occupancy of 60 percent for residential use (in other words, 60 percent of the total occupancy can be for residential use), a maximum floor area ratio (FAR) of 2.5 for residential use and 1.5 FAR for other permitted uses, and a maximum height of 50 feet. FAR is the total floor area on a zoning lot divided by the lot area of that zoning lot. For example, a building containing 20,000 ft² of floor area on a zoning lot of 10,000 ft² has a FAR of 2.0.

C-3-A—Commercial District, Medium Bulk: Permits matter-of-right development for major retail and office uses to a maximum lot occupancy of 75 percent for residential use, a maximum FAR of 4.0 for residential and 2.5 FAR for other permitted uses, and a maximum height of 65 feet.

C-M-1—Industrial District, Low Bulk: Permits development of low-bulk commercial and light-manufacturing uses to a maximum FAR of 3.0, and a maximum height of three stories/40 feet, with standards of external effects and new residential prohibited.

C-M-2—Industrial District, Medium Bulk: Permits development of medium-bulk commercial and light manufacturing uses to a maximum FAR of 4.0, and a maximum height of 60 feet, with standards of external effects and new residential prohibited.

M—General Industry: Permits general industrial uses to a maximum FAR of 6.0, and a maximum height of 90 feet, with standards of external effects and new residential prohibited.

R-3—Residence Districts, Row Dwellings: Permits matter-of-right development of single-family residential uses (including detached, semi-detached, and row dwellings), churches and public schools with a maximum lot width of 20 feet, a minimum lot area of 2,000 ft^2, a maximum lot occupancy of 60 percent for row dwellings; a minimum lot width of 30 feet and a minimum lot area of 3,000 ft^2 and 40 percent lot occupancy for semi-detached structures; a minimum lot width of 40 feet and a minimum lot area of 4,000 ft^2 and 40 percent lot occupancy for detached structure; and a maximum height of three stories/40 feet.

R-4—Residence Districts, Row Dwellings, Conversions, and Apartments: Permits matter-of-right development of single-family residential uses (including detached, semi-detached, row dwellings, and flats), churches, and public schools with a minimum lot width of 18 feet, a minimum lot area of 1,800 ft^2 and a maximum lot occupancy of 60 percent for row dwellings, churches, and flats; a minimum lot width of 30 feet and a minimum lot area of 3,000 ft^2 for semi-detached structures; a minimum lot width of 40 feet and a minimum lot area of 4,000 ft^2 and 40 percent lot occupancy for all other structures; and a maximum height of three stories/40 feet. Conversions of existing buildings to apartments are permitted for lots with a minimum lot area of 900 ft^2 per dwelling unit.

R-5-B—Moderate Density: Permits matter-of-right moderate development of general residential uses, including single-family dwellings, flats, and apartment buildings, to a maximum lot occupancy of 60 percent, a maximum FAR of 1.8, and a maximum height of 50 feet.

Overlay Districts

CAP—Capitol Interest District: Permits development of uses that are consistent with the U.S. Capitol Master Plan, to a maximum FAR of 1.8, and a maximum height of three stories/40 feet. This district is mapped in combination with other districts.

CHC—Capitol Hill Commercial: Established along the principal commercial corridors in the Capitol Hill Historic District to provide incentives for small office and retail development for all permitted uses. Except in the CAP Overlay District, the CHC Overlay will increase the maximum permitted FAR to 3.0 for all permitted uses, allowing 100 percent commercial occupancy as a matter of right. In the CAP Overlay District, the CHC Overlay will increase the maximum permitted FAR to 2.5 for all permitted uses. A planned unit development in the CHC Overlay District may not exceed the maximum FAR permitted in that district. The CHC Overlay does not affect the underlying C-2-A or CAP Overlay height limitations or any other applicable area or use restriction.

NC—Neighborhood Commercial: Permits design and use provisions to encourage viability, attractiveness, and continuation of neighborhood commercial areas. This district is mapped in combination with the following districts:

- CP - Cleveland Park
- WP - Woodley Park
- MW - Macomb-Wisconsin
- ES - Eighth Street, SE

GOV—Government: The other zoning designation in the area is GOV, Government. As described in the District of Columbia Municipal Regulations, Chapter 1, The Zoning Regulations, Section 106.4,

> *…properties owned by the Government of the United States and used for or intended to be used for a Federal public building or use and properties owned by the Government of the District of Columbia in the Central Area (as set forth in D.C. Official Code 2-1004(c) (formerly codified at D.C. Code 1-2004(c) (1999 Repl.)), are not included in any zone district.*

In addition, Section 106.5 states,

> *Properties of the District of Columbia Government shall be subject to zoning; provided: (a) Any governmental land or building uses that were either in existence or were substantially planned, documented and invested in prior to May 23, 1990, shall not be subject to zoning; (b) With regard to the properties referenced in paragraph (a) of this subsection, any change or expansion in the use of land or buildings or any new construction or additions to buildings shall be subject to zoning; and (c) District of Columbia public buildings in the Central Area shall be exempt from zoning but shall continue to require approval of the National Capital Planning Commission, pursuant to 5(c) of the National Capital Planning Act of 1952, approved July 111, 1952 (66 Stat. 781, 788; D.C. Official Code 2-1004(c) (formerly codified at D.C. Code 1-2004(c) (1999 Repl.).*

6.1.6 Local Plans and Policies

Several local plans and policies would apply to the proposed project at a general level. These plans and policies are described in this section.

In planning for the Washington, DC waterfront, the AWI was created. The AWI brought together the 20 federal and District agencies that own or control land along the Anacostia River to sign the AWI Memorandum of Understanding, creating a partnership between the federal and District governments to transform the Anacostia River waterfront. One of the themes of the AWI is to restore the river.

Anacostia Waterfront Initiative

In planning for the Washington, DC waterfront, the AWI was created. The AWI brought together the 20 federal and District agencies that own or control land along the Anacostia River to sign the AWI Memorandum of Understanding (MOU), creating a partnership between the federal and District governments to transform the Anacostia River waterfront. One of the themes of the AWI is to restore the river.

Under the leadership of the DC Office of Planning, the AWI partnership has produced an AWI Framework Plan to guide the revitalization effort. Additionally, eight Target Areas within the physical land boundaries of the Framework Plan have been studied in detail, producing visions and plans that reflect the themes of the AWI. The Framework and Target Area plans have been developed in a public process over the last 3 years that has engaged more than 5,000 participants.

Organized according to the five AWI themes, the Framework Plan identifies new places for people to live, work, enjoy nature, and celebrate Washington's local and national heritage along the Anacostia River. As discussed in the plan, the five AWI themes are:

- ***Restore: A Clean and Active River*** – The AWI charts the course for environmental healing and the rejuvenation of water-dependent activities on the Anacostia River. Pollution must be mitigated, runoff controlled, streams and wetlands restored, and water activities promoted.
- ***Connect: Eliminating Barriers and Gaining Access*** – The AWI reconsiders the design of transportation infrastructure in order to gain access to waterfront lands and better serve waterfront neighborhoods. The community must be able to get to the waterfront on beautiful streets and bridges that become gateways to the river's parks and amenities.
- ***Play: A Great Riverfront Park System*** – The AWI creates a system of interconnected and continuous waterfront parks that will be linked by the Anacostia Riverwalk and Trail. The Anacostia River Parks system will rival the great waterfront parks of the world and provide open space for adjoining neighborhoods, the city, and the nation.
- ***Celebrate: Cultural Destinations of Distinct Character*** – The AWI enhances and protects the distinct character of regional destinations along the waterfront. This will help create a vibrant waterfront that celebrates the cultural heritage of the river's neighborhoods, the city, and the nation.
- ***Live: Building Strong Waterfront Neighborhoods*** – The AWI promotes sustainable economic development and re-connects the city to the river through new neighborhoods and the waterfront park system by creating opportunities to live, work, and play along the river. (District of Columbia, 2003)

Near Southeast

The vision for the Near Southeast area will create:

> *…an active, transit-oriented neighborhood with a combination of mixed-income housing, offices, retail uses, and cultural destinations. The area will contain a network of public spaces, including parks, waterfront esplanades, and maritime piers that are linked together by the Anacostia Riverwalk. (DC Office of Planning, 2003)*

Poplar Point

Poplar Point's vision includes:

> *…serving as a green gateway to the Anacostia River and the River Parks System, Poplar Point will be a showcase of ecological restoration, culture, history, and community. With strong connections to commercial activity in Historic Anacostia, the Point will be a catalyst for neighborhood economic development. (DC Office of Planning, 2003)*

Anacostia Park

Anacostia Park's vision states:

> *"As the centerpiece of the Anacostia River Parks, Anacostia Park will feature peerless waterfront parks in both natural and urban settings." (DC Office of Planning, 2003)*

Anacostia Transit Area Strategic Investment and Development Plan

More than $150 million in public investment and several million dollars more of private investment have been committed for various projects in the Anacostia neighborhood and neighboring communities. The Office of Planning, in cooperation with local residents, property owners, and other stakeholders, completed the Anacostia Transit Area Strategic Investment and Development Plan to guide this investment in ways that revitalize the Anacostia neighborhood and focus on the needs and vision of local residents and businesses.

The AWI Framework Plan and the Anacostia Transit Area Strategic Investment and Development Plan provide a 10-year framework to guide community, private sector, and public agency actions and investments to revitalize the Anacostia Metro station area. The primary goals of this effort are to:

- Capture the value of the rapid transit system to spur housing, retail, and other development opportunities in the neighborhood.
- Support and encourage productive use of underutilized sites within an easy walking distance of transit facilities.
- Improve neighborhood quality of life by providing local quality retail, diverse housing options, employment opportunities, neighborhood safety, improved transportation, and enhanced public facilities.

The Plan envisions four distinct nodes of activity – each interconnected to serve distinct needs within the neighborhood and build from each area's natural assets. A different vision guides development and investment within each node. The nodes include Metro, W Street, Gateway, and Poplar Point.

East of the River Initiative

The Office of Planning, in conjunction with the Department of Housing and Community Development, commissioned an East of the River Redevelopment Planning, Marketing, and

Implementation Development Strategy. The area covered is everything east of the Anacostia River within the District. The primary goal of this initiative is to provide guidelines for the future development of the area east of the river, with specific emphasis on expanded job opportunities, commercial and retail services, new and rehabilitated housing, and improved infrastructure. The vision for the initiative includes the following:

- Create clean, safe, and healthy neighborhoods for residents of all income levels.
- Expand the city's economic growth across the river.
- Strengthen and preserve the unique character of neighborhoods east of the river.

The target area of the East of the River project is much larger than the 11th Street Bridges project; therefore, the following Targets for Revitalization (as part of the East of the River Project) are encompassed in a much larger land mass than what is being focused on in this report:

- Two new commercial centers
- 2,500 new housing units
- 9,000 rehab units
- Two government center sites
- More than 650 new jobs
- Four learning centers
- Two school renovations
- 20 recreation center enhancements
- Expansion of Capital Communities public safety program

Extending the Legacy is a planning document prepared by NCPC addressing the issue of the Monumental Core. The Monumental Core is defined as the symbolic heart of the nation as well as the national gathering place, and the economic center of Washington, DC. The goal of the plan is to reclaim the city's waterfront and to redefine the Monumental Core to include portions of North, South, and East Capitol streets. It is not a policy document, but more a physical plan of the District.

NCPC defines it as a large, general picture of future physical development. In regards to the 11th Street Bridges project, *Extending the Legacy* includes a revitalization of Anacostia and the Southeast quadrant of the city. According to the plan, the most ambitious initiative is the redevelopment of South Capitol/M Street. Along with new businesses in the area, the plan will revitalize the area with cosmetic improvements such as trees, benches, and sidewalks. It is anticipated that this development will spill over into the Anacostia area.

The NCPC document *Memorials and Museum Master Plan* identifies 20 "prime sites" and 80 "other candidates sites." The area between the existing bridges east of the river is identified as candidate site 64. The area between the existing bridges west of the river is identified as candidate site 69. Both locations are part of the 80 other candidate sites.

Citywide Strategic Plan

The Citywide Strategic Plan is the comprehensive management tool of the District government that enables residents to set priorities and to help develop innovative approaches to long-standing problems and challenges. The Citywide Strategic Plan requires a 2-year cycle. The first Citizen Summit in 1999 asked citizens to establish the highest priorities for the city and to begin an extensive neighborhood planning process. In response to those five citywide priorities, a draft strategic plan was developed. That plan was shared with community leaders, employees, labor unions, and others in a series of forums. Using feedback from these groups, revisions were made to the Plan, which was unveiled at the Citizen Summit II in 2001.

Neighborhood planning focuses planning efforts on residents' vision for their neighborhoods. Just as the city needs a plan, each neighborhood needs a plan to ensure that its priorities are met and unique qualities are preserved. One neighborhood planning coordinator works in each ward of the District to coordinate the development of Strategic Neighborhood Action Plans (SNAPs) and the combined ideas of adjacent neighborhoods. Planning coordinators also lead community outreach and update ward plans every 4 years.

Neighborhood planning coordinators help neighborhoods find the best way to achieve their goals. They build SNAPs on previous work and existing plans in neighborhoods and ensure that project plans are implemented. The planning coordinators encourage partnerships and the active participation of residents, agency decision-makers, community, and business leaders.

SNAPs have been prepared for Neighborhood Clusters 26, 27, 28, 34, and 37—all located in the study area (DC Office of Planning, 2002).

District of Columbia Comprehensive Plan

The District of Columbia Comprehensive Plan provides policy and planning guidance on the physical development and redevelopment of the District. The first Comprehensive Plan was adopted in 1984 and 1985. The plan is updated periodically, most recently in 1998 and 1999. The Office of Planning is in the process of updating the current Comprehensive Plan. The Comprehensive Plan covers a range of issues, including land use, economic development, housing, environmental protection, transportation, public facilities, urban design, historic preservation, and human services.

It also guides the District's zoning laws, which in turn affects how property may be used, the types of uses allowed in residential and commercial areas, and the amount of parking that must be provided. The Comprehensive Plan is a legally required document, which includes District Elements—prepared by the DC Office of Planning—and Federal Elements—prepared by the NCPC. In August 2004, NCPC approved the Federal Elements of the Comprehensive Plan, which govern development on federally owned properties in the District. District law requires the Comprehensive Plan to include a map of the entire city showing how land will be used in the future, as well as written goals and policies guiding future development.

The land use goal described in the Comprehensive Plan states:

> *It is the goal of the District to assure the efficient use of land resources within legal economic, fiscal, environmental, and other public policy constraints to meet neighborhood, community, and District-wide needs, and to help foster other District goals.*

The Comprehensive Plan identifies specific plans for each ward in the District. Portions of Ward 6 and Ward 8 are encompassed in the project area. The Ward 6 plan (DC Office of Planning, 1999) identifies specific objectives for land use in the area, including:

- *To maintain the general level of the existing Ward 6 residential uses, densities and heights, and to improve the physical condition of Ward 6 through the provisions of functional, efficient and attractive residential, commercial and open space areas*
- *To minimize conflicts between the various land uses in Ward 6 and to promote healthy residential environments through selective renewal, rehabilitation and neighborhood revitalization programs*
- *To locate the more intensive and active land uses in areas of Ward 6 that, by virtue of existing and planned infrastructures, can accommodate and support those types of uses and to monitor development and redevelopment adjacent to designated historic districts to ensure compatibility.*

The Ward 8 Plan (DC Office of Planning, 1999) also identified specific objectives for land use:

- *Encourage the effective use and rehabilitation of existing housing stock and the upgrading of nonresidential structures*
- *Promote healthy and secure residential and nonresidential environments through selective renewal, rehabilitation and neighborhood revitalization programs*
- *Increase employment and economic development opportunities and improve the physical condition of the ward through the provision of functional, efficient and attractive commercial, residential, industrial, and open space environments*
- *Minimize existing and potential conflicts between transportation facilities and adjacent land uses*
- *Minimize existing and potential conflicts between residential uses and nonresidential uses*
- *Locate more intensive land uses in areas of the ward which, by virtue of existing or planned infrastructure, can accommodate and support these uses*
- *Promote and enhance the ward's low-density character, open spaces, and stable neighborhoods*
- *Increase the supply of child care facilities in residential and commercial areas within the ward*
- *Relate land use decisions, as applicable, to Comprehensive Plan provisions, to revise the Zoning Regulations to reflect appropriate use changes in the ward, and to establish procedures for monitoring public and private land use actions for consistency with the Comprehensive Plan Land Use Element and accompanying plan maps.*

6.1.7 Regional Plans

Long-range Transportation Plan for the National Capital Region

This official long-range transportation plan for the National Capital Region identifies the capital improvements, studies, actions, and strategies that the region proposes to carry out by the year 2030. It is "financially constrained" to include only projects that the region can afford to build and operate during the 2004-2030 period. The plan is updated at least every 3 years. The document summarizes regional plans and programs as of December 17, 2003.

The proposal for the 11th Street Bridges project is consistent with the long-range transportation plan and the goals of the TPB vision.

In 1998, the National Capital Region Transportation Planning Board (TPB), the designated metropolitan planning organization for the Washington region, unanimously adopted its long-range transportation Vision, which is the transportation policy framework intended to guide regional transportation investments into the new century. It contains eight goals and associated objectives and strategies that will help the region reach those goals. The TPB Vision incorporates all of the planning factors specified in federal law and regulations.

It is important to note that the goals and objectives of the TPB Vision, which include the planning factors, are designed to guide long-range planning at the system level. The goals of this document (MWCOG, 2004a) are as follows:

> ***Goal 1.*** *The Washington metropolitan region's transportation system will provide reasonable access at reasonable cost to everyone in the region.*
>
> ***Goal 2.*** *The Washington metropolitan region will develop, implement, and maintain an interconnected transportation system that enhances quality of life and promotes a strong and growing economy throughout the entire region, including a healthy regional core and dynamic regional activity centers with a mix of jobs, housing, and services in a walkable environment.*
>
> ***Goal 3.*** *The Washington metropolitan region's transportation system will give priority to management, performance, maintenance, and safety of all modes and facilities.*
>
> ***Goal 4.*** *The Washington metropolitan region will use the best available technology to maximize system effectiveness.*
>
> ***Goal 5.*** *The Washington metropolitan region will plan and develop a transportation system that enhances and protects the region's natural environmental quality, cultural and historic resources, and communities.*
>
> ***Goal 6.*** *The Washington metropolitan region will achieve better interjurisdictional coordination of transportation and land use planning.*
>
> ***Goal 7.*** *The Washington metropolitan region will achieve an enhanced funding mechanism(s) for regional and local transportation system priorities that cannot be implemented with current and forecasted federal, state, and local funding.*

Goal 8. *The Washington metropolitan region will support options for international and inter-regional travel and commerce.*

Transportation Improvement Program for the Washington Metropolitan Region FY 2006-2011

The Transportation Improvement Program (TIP) is prepared each year by the National Capital Region TPB. The TIP serves several purposes. It is an expression of intent to implement specific facilities and projects in the constrained long-range plan through the selection of priority projects during the initial 6-year period of the plan. It provides a medium for local elected officials, agency staffs, and interested members of the public to review and comment on the priorities assigned to the selected projects. It also satisfies one of the requirements of FHWA and Federal Transit Administration for the continuing transportation planning process of this region. These requirements form the basis for certification of the process that is essential to ensure continued federal financial assistance for Washington-area transportation improvements. Finally, the TIP establishes eligibility for federal funding for those projects selected for implementation during the first program year, known as the Annual Element of the program.

This document is a multi-modal listing of the public transit, highway and high-occupancy vehicle (HOV), bicycle and pedestrian improvements as well as ridesharing programs and transportation emission reduction measures for which the obligation of funds has been programmed. It documents the cost, implementation phasing, sources and types of funds, and describes each project included in the program.

It identifies a priority list of projects and project segments to be carried out with federal funding under the Transportation Equity Act for the 21st Century (TEA-21). It is normally updated every year by the TPB.

The 11th Street Bridges project is listed in the Transportation Improvement Tables, in the Surface Transportation Capital section. Listed under the heading of "Bridge," the project description states, "Replace the deteriorating bridges and ramps at the river crossing near 11th Street, SE and the connections to the Anacostia and Southeast/Southwest Freeways to meet the future needs of the traveling public and to meet the goals of the Anacostia Waterfront Initiative." The total funding allocation is $261,000,000 and the completion date is 2013.

6.2 Social Cohesion

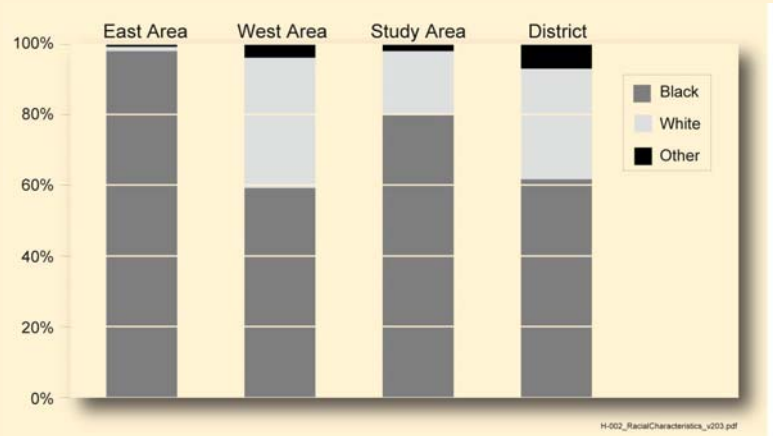
The study area consists of a diverse mix of government installations, commercial uses, light industrial facilities, and residential units. In the past decade, residential population in the study area increased while the District's overall population declined. This population is predominantly black/African-American, although the proportion of white and Latino residents has increased during the 1990-2000 inter-Census period. The study

The social and economic cohesion of the neighborhoods and businesses on both sides of the river will be enhanced by providing improved local access for pedestrians and bicyclists as well as auto traffic.

area also has a higher proportion of persons living below the federal Health and Human Services poverty guidelines compared to the District overall.

While the broad social and economic characteristics of neighborhoods east and west of the Anacostia River have similarities, the two sides of the river differ more noticeably when studied closely. Exhibit 6-7 highlights the differences in racial composition on each side of the river. The population on the eastern, or Anacostia, side of the river is almost exclusively African-American (98 percent). The western side is 59 percent African-American and resembles the composition of the District overall (61 percent).

EXHIBIT 6-7
Districtwide and Study Area Racial Characteristics
The 2000 Census shows that racial characteristics on the east and west sides of the Anacostia River differ from one another and from the District as a whole.



6.2.1 Neighborhood Cohesion

Community cohesion for the Southeast area is quite strong. Land uses, population characteristics, public facilities, community services, and special landmarks all help define these neighborhoods. Transportation services and infrastructure define accessibility within among the neighborhoods.

Key aspects of cohesion are the connectivity of land uses, facilities, services, population, and the interrelationships between these elements that define the human environment. The residential communities in the study area have a diverse heritage, particularly African American. Special events are celebrated in the community, and residents share general concerns for preserving the unique residential neighborhood and commercial district areas within their communities.

Various groups of people use different portions of the study area. In the Capitol Hill area, there is a good mix of residential and retail land uses. This allows for a mixed population in terms of office workers, residents, tourists/visitors, and others. There may only be segments of this population present during weekday business hours, special events, or the tourist season.

6.2.2 Population and Demographics

The most comprehensive source of demographic information for the study area is published by the U.S. Bureau of the Census. The following sections describe characteristics of the study area and compare them to those of the District overall. These characteristics include total population, race and ethnicity, language, age, household status, income, disability, housing, and transit dependency. Detailed statistics are also provided. In this section, census

data were summarized for Census Tracts covering the entire study area. Because census tract boundaries and the study area boundaries do not exactly correspond, the result is the inclusion of data which extend beyond the study area.

Population, Race, and Ethnicity

The study area's population has slightly increased over the previous decade. By comparison, the population of the District overall has decreased over the same time period.

The study area, though located in the densely developed Southeast quadrant of Washington, DC, comprises only a small portion of the total District population. The population of the study area in 2000 was an estimated 28,381, or approximately 5 percent of the total 572,059 residents in the District (see Exhibit 6-8). The study area's population has slightly increased over the previous decade. By comparison, the population of the District overall has decreased over the same time period.

Exhibit 6-8 illustrates the racial diversity across the District's and the study area's populations. In 2000, the overall District's population was approximately 31 percent White and 69 percent Non-White. Within the study area, the racial mix shifts to approximately 18 percent White, and 82 percent Non-White. Of the Non-White population, Black/African-Americans, Asian/Pacific Islanders, and Hispanics composed approximately 81, 1, and 1 percent of the population, respectively.

EXHIBIT 6-8
Districtwide and Study Area Race and Ethnic Characteristics, 1990 and 2000
Racial and ethnic characteristics have changed little in the last decade.

Area	Total Population	Race[1] Ethnicity[2]					
		White	Black/African Am	Am Ind & AK Native	Asian & Pacific Islander	Other	Hispanic or Latino
1990 Census							
Study Area	27,924	4,858 (17%)	22,657 (81%)	65 (0.2%)	221 (1%)	123 (0.4%)	402 (1%)
Washington, DC	606,900	179,667 (30%)	399,604 (66%)	1,446 (0.2%)	11,214 (2%)	14,949 (3%)	32,710 (5%)
2000 Census							
Study Area	28,381	5,036 (18%)	22,432 (80%)	73 (0.2%)	303 (1%)	169 (1%)	518 (2%)
Washington, DC	572,059	176,101 (31%)	343,312 (60%)	1,713 (0.3%)	15537 (3%)	21,950 (4%)	44,953 (8%)

Source: U.S. Census (1990, 2000)

Notes:
[1]The definitions for racial groups used by the U.S. Census changed between 1990 and 2000. In 1990, the groups were (1) White, (2) Black, (3) American Indian, Eskimo, and Aleut, (4) Asian or Pacific Islander, and (5) Other. In 2000, the groups were (1) White, (2) Black/African-American, (3) American Indian/Alaska Native, (4) Asian, (5) Native Hawaiian/Pacific Islander, (6) Other, and (7) Two or More Races. For purposes of comparison in the table, groups have been combined. Percentages may not sum to 100 due to rounding.
[2]The category Hispanic or Latino is not a racial group, but an ethnic identity, and persons may be of any race. The racial statistics for Hispanic or Latino people are included in the race categories in the previous columns.

Another U.S. Census characteristic that measures ethnic diversity is the primary language spoken in the home. Exhibit 6-9 shows the four general language categories reported for census tract block groups in both 1990 and 2000. These included English only, Spanish, Asian and Pacific Islander, and other languages. In addition, the U.S. Census collected data about whether households were linguistically isolated from the community due to the lack of an adult in the household who had a good command of the English language.

The 2000 statistics show that 91 percent of the study area households spoke only English at home and only 1 percent of the households were linguistically isolated. These ratios are consistent with the District overall and have not substantially changed over the last decade.

EXHIBIT 6-9
Districtwide and Study Area Language Characteristics, 1990 and 2000
English only households predominate the study area and the District.

Area	Households Predicted	English Only	Spanish	Asian & Pacific Islander	Other Languages	Linguistically Isolated
1990 Census						
Study Area	11,173	10,339 (93%)	395 (4%)	77 (1%)	362 (3%)	101 (1%)
Washington, DC	249,034	210,751 (85%)	16,823 (7%)	3,414 (1%)	18,046 (8%)	7,577 (3%)
2000 Census						
Study Area	12,143	11,087 (91%)	578 (5%)	64 (1%)	414 (3%)	91 (1%)
Washington, DC	248,590	201,324 (81%)	22,498 (9%)	5,031 (2%)	6,356 (3%)	10,305 (4%)

Source: U.S. Census (1990, 2000)

Note: A linguistically isolated household is one in which no member 14 years or older speaks only English or speaks a non-English language and speaks English "very well." These statistics are based on a sample survey, not the 100 percent census; Therefore the number of households is predicted and not the actual number of households. Percentages may not sum to 100 due to the excluded data.

Population Characteristics within the Study Area

Exhibit 6-10 compares the populations on each side of the Anacostia River, within the study area, to the study area as a whole, and to the overall District population.

East of the Anacostia River, 97 percent of the study area population is Black/African-American, compared to 58 percent west of the river. By contrast, 80 percent of the study area as a whole, and 60 percent of the overall District population is Black/African-American. While the entire study area is inhabited primarily by people categorized by the Census Bureau as a minority group, the majority of Black/African-Americans in the study area live east of the Anacostia River.

EXHIBIT 6-10
Districtwide and Study Area Population Characteristics within Study Area, 2000
The population characteristics vary substantially within the study area.

Area	Total Pop	Race[1] Ethnicity[2]					
		White	Black/African Am	Am Ind & Ak Native	Asian & Pacific Islander	Other	Hispanic Or Latino
Study Area (Western Side)	13,117	4,839 (37%)	7,624 (58%)	45 (0.3%)	258 (2%)	139 (1%)	374 (3%)
Study Area (Eastern Side)	15,264	197 (1%)	14,808 (97%)	28 (0.2%)	45 (0.3%)	30 (0.2%)	144 (1%)
Study Area (Total)	28,381	5,036 (18%)	22,432 (80%)	73 (0.2%)	303 (1%)	169 (1%)	518 (2%)
Washington, DC	572,059	176,101 (31%)	343, 312 (60%)	1,713 (0.3%)	15,537 (3%)	21,950 (4%)	44,953 (8%)

Source: U.S. Census (2000)

Notes:
[1]The definitions for racial groups used by the U.S. Census changed between 1990 and 2000. In 1990, the groups were (1) White, (2) Black, (3) American Indian, Eskimo, and Aleut, (4) Asian or Pacific Islander, and (5) Other. In 2000, the groups were (1) White, (2) Black/African-American, (3) American Indian/Alaska Native, (4) Asian, (5) Native Hawaiian/Pacific Islander, (6) Other, and (7) Two or More Races. For purposes of comparison in the table, groups have been combined. Percentages may not sum to 100 due to rounding.
[2]The category Hispanic or Latino is not a racial group, but an ethnic identity, and persons may be of any race. The racial statistics for Hispanic or Latino people are included in the race categories in the previous columns.

6.2.3 Age Characteristics

The age characteristics of the study area population are very similar to those of the District. The 2000 statistics illustrate that 65 percent of the study area's population was between 18 and 64 years of age. This compares to 68 percent in the District overall. Only 10 percent of the study area population is 65 or older, consistent with the District's 12 percent. It is worth noting that the age characteristics in the study area and the District have not substantially changed over the past decade (Exhibit 6-11).

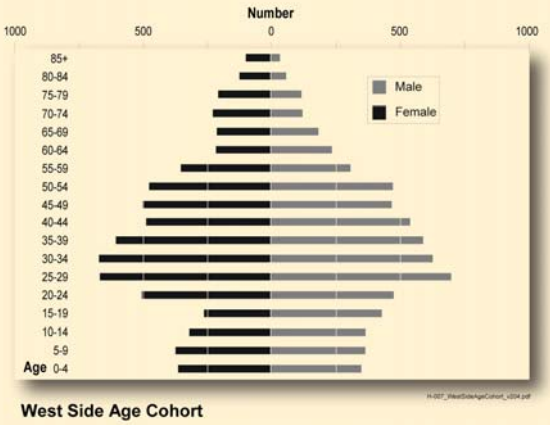
EXHIBIT 6-11
Districtwide and Study Area Age Characteristics, 1990 and 2000
The age characteristics have remained constant in the last decade.

Area	Total Population	0-4 Years	5-17 Years	18-64 Years	65 Years And Older
1990 Census					
Study Area	27,924	2,084 (7%)	4,283 (15%)	18,707 (67%)	2,850 (10%)
Washington, DC	606,900	37,351 (6%)	79,741 (13%)	411,961 (68%)	77,847 (13%)
2000 Census					
Study Area	28,381	2,023 (7%)	5,255 (19%)	18,311 (65%)	2,792 (10%)
Washington, DC	572,059	32,536 (6%)	82,456 (14%)	387,169 (68%)	69,898 (12%)

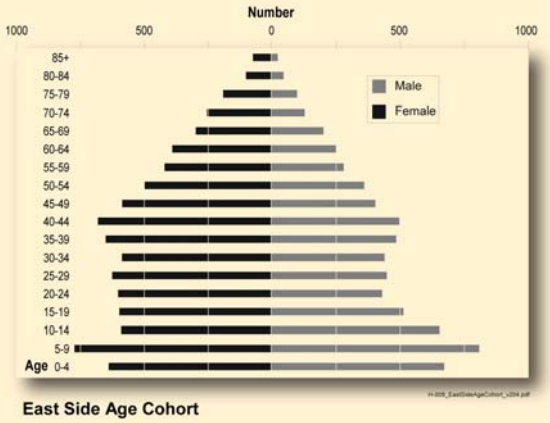
Source: U.S. Census (1990, 2000)

Note: Percentages and totals may not sum to 100 due to rounding.

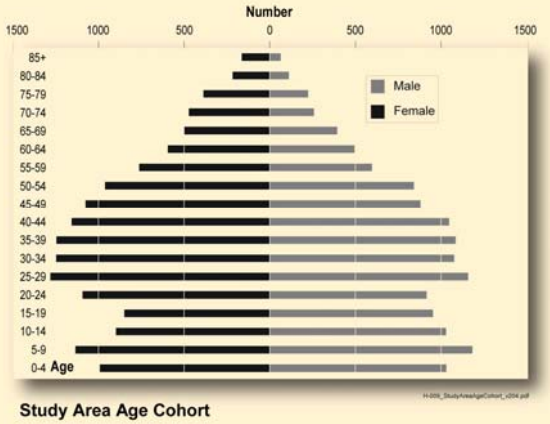
EXHIBIT 6-12
Study Area Age Cohorts
The West Side age cohort shows a preponderance of males in the younger cohorts, while the East Side cohort shows a higher proportion of women in the younger cohorts. In the study area overall, there is a reasonably balanced sex distribution in younger cohorts.



West Side Age Cohort



East Side Age Cohort



Study Area Age Cohort

Exhibit 6-12 breaks down the study area population by age and sex cohorts east and west of the river and for the entire study area.

West of the river, there are a disproportionate number of males in the 15-19 age group. While this higher number of males can be attributed to the Marine Barracks, located on this side of the Anacostia River, there are also fewer females in this age group, relative to adjacent age groups. Other than in the 15-19 age group, the number of males and females in each age group are similar until age 70. In total, males and females are equally represented, as they each account for 50 percent of the population. Two-thirds of the potential workforce west of the river (age groups 25-64) is in the 25-44 age group.

East of the river, the female population is consistently more numerous than the corresponding age male population. In general, women comprise 55 percent of the study area population east of the Anacostia River. There are consistently 15-20 percent more females than males in all but one age group. Beyond the age of 74, the difference increases rapidly. Two-thirds of the potential workforce east of the river (age groups 25-64) is in the 25-44 age group, and almost 60 percent of the potential workforce is female.

Within the entire study area, there is a general sustainability, although there is a noticeable shortage of 10- to 29-year-olds in the area. There are slightly more women than men in most cohorts, with the overall population showing that 53 percent are female and 47 percent are male. Two-thirds of the workforce (25-64) is younger (25-44).

Overall, the workforce shows some bias to females, particularly in the older segment where they are 56 percent of the total.

6.2.4 Household Characteristics

The similarity of population ages in the study area and the District do not reflect the differences in household characteristics. The study area household characteristics are notably higher across all categories (with the exception of one-person households) from those in Washington, DC (see Exhibit 6-13). In 1990, the U.S. Census reported that approximately 35 percent of the households in the study area were one-person households, 32 percent were families with children, and 55 percent were family households. In contrast, District households were approximately 42 percent one-person households, 25 percent were families with children, and 49 percent were family households. Using the 2000 census statistics for the study area, the average number of persons per household is approximately 2.51, compared to 2.30 in the 1990 census. In the study area, households with elderly members increased by approximately 40 percent between 1990 and 2000. Today, the proportion of elderly persons in the study area is approximately 3 percent higher than that of the District.

EXHIBIT 6-13
Districtwide and Study Area Household Characteristics, 1990 and 2000
Household characteristics remained relatively constant from 1990 to 2000. The most notable change is the increase in elderly households.

Area	Households	One-Person Households	Family Households	Families With Children	Single-Parent Families With Children	Elderly Households
1990 Census						
Study Area	11,106	3,907 (35%)	6,161 (55%)	3,535 (32%)	2,430 (22%)	1,101 (10%)
Washington, DC	249,634	103,626 (42%)	122,087 (49%)	63,644 (25%)	36,454 (15%)	23,948 (10%)
2000 Census						
Study Area	12,106	4,640 (38%)	6,189 (51%)	3,669 (30%)	2,767 (23%)	2,731 (23%)
Washington, DC	248,338	108,744 (44%)	114,166 (46%)	49,104 (20%)	28,363 (11%)	48,501 (20%)

Source: U.S. Census (1990, 2000)

Note: Families are households with more than one person related by blood or marriage or adoption. Families with children are households with one or more child less than 18 years of age residing at home. Elderly households have at least one member 65 years or older.

6.2.5 Income Characteristics

Income statistics for the study area show another aspect of the diversity of the residents in the study area. In all income categories, the study area residents are reporting less income

than the residents of the District overall, as detailed in Exhibit 6-14. Over a decade ago, the median income of households in the study area was considerably less than the median income of households in Washington, DC. In 1990 and 2000, the median income of the study area and District increased at roughly the same rate. There was an almost equal increase in the study area and District per capita income levels, by approximately $10,000. The District exceeded the study area's per capita income by approximately $4,000 in both 1990 and 2000.

Even though the median household income rose in the study area, a substantial number of low-income persons also live there. In 1990, an estimated 14 percent of households in the study area received public assistance and 22 percent of the population lived at or below the poverty level. Both levels are approximately 5 percent higher than for District households and residents. Over the decade, there was a slight trend for both the study area and the District to have a smaller proportion of households reliant upon public assistance. However, the percent of the population living at or below the poverty level has increased by 8 percent for the study area and remained at approximately 17 to 20 percent for the District.

Median household incomes of the study area have increased at approximately the same rate as those of the city. This could imply a growing number of middle-income households, but is unlikely because of the conflicting increase of the population living at or below the poverty level.

EXHIBIT 6-14
Districtwide and Study Area Income Characteristics, 1990 and 2000
Median household incomes in the study area have increased at approximately the same rate as those in the District. The percentage of population below the poverty level has increased in the study area over this time.

Area	Households	Median Household Income	Per Capita Income	Households with Public Assistance	Population at or below the Poverty Level
1990 Census					
Study Area	11,173	$23, 892	$14,687	1,585 (14%)	5,972 (22%)
Washington, DC	249,034	$30,727	$18,881	22,253 (9%)	96,278 (17%)
2000 Census					
Study Area	12,143	$32,962	$24,466	1,175 (10%)	8,410 (30%)
Washington, DC	248,590	$40,127	$28,659	13,664 (6%)	109,500 (20%)

Source: U.S. Census (1990, 2000)

Note: Income statistics for the 1990 Census are for year 1989 and statistics for the 2000 Census are for year 1999.

6.2.6 Disabled Persons

The 2000 Census estimated the number of persons with disabilities residing in the study area based on responses to questions on the census short form. Respondents were asked if they had any of the following long-term conditions: (1) blindness, deafness, or a severe

vision or hearing impairment (sensory disability) or (2) a condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying (physical disability). In addition, respondents were asked if they had a physical, mental, or emotional condition that made it difficult to perform certain activities, including (a) learning, remembering, or concentrating (mental disability); (b) dressing, bathing, or getting around inside the home (self-care disability); (c) going outside the home alone to shop or visit a doctor's office (go-outside-the-home disability); and (d) working at a job or business (employment disability).

Respondents could report more than one type of disability, and the disabilities could cause limitations to one or more activities. Not all limitations, however, can be assumed to affect the mobility of persons. Moreover, children 5 to 15 years of age generally have family members who assist them. As such, it is not appropriate to report all persons with all disabilities as representative of persons with mobility limitations.

The best statistic to describe disabled persons with mobility limitations is the number of persons 16 years and older who have a disability that affects their ability to go outside of the home alone. Exhibit 6-15 presents these statistics for the study area and Washington, DC. In 2000, an estimated 1,068 persons, or approximately 11 percent of the study area population, had mobility limitations.

EXHIBIT 6-15
Districtwide and Study Area Disabled Persons with Mobility Limitations, 2000
The study area has a similar percentage of disabled persons as the District.

Area	Population	Population 16 Years or Older With Disability	Percentage of Total Population
Study Area	28,381	3,068	11%
Washington, DC	572,059	50,599	9%

Source: U.S. Census (2000)

6.2.7 Transit Dependency

The 2000 Census reported means of transportation available to households. Respondents were allowed to report the number of vehicles available for personal use (as opposed to vehicles only available for business or work that might be kept at home). For the study area, a large proportion of households had no vehicle available for personal use (see Exhibit 6-16). Without a vehicle available, these residents must rely upon public sources (trains, buses, and taxis) for most of their transportation needs.

EXHIBIT 6-16
Districtwide and Study Area Transit-Dependent Households, 2000
The study area and the District overall are comparable in percent dependent on transit.

Area	Dwellings	Occupied	No Vehicle Available	Percent
Study Area	13,641	12,106	5,215	43%
Washington, DC	274,845	248,338	91,699	37%

Source: U.S. Census (2000)

6.2.8 Housing

This section describes the characteristics of housing in the study area. General housing, as well as subsidized and special-needs housing, are described. Sources of information include the U.S. Census Bureau and the DC Housing Authority.

General Characteristics

Over the past decade, residential housing construction has increased, compared to previous decades. While developments have expanded the housing opportunities and diversified the types of housing available within the study area, the racial composition has remained the same. The Black/African-American population has remained a majority throughout the past decade in both the study area and the District. Much of the residential development has occurred in the last 5 years and is therefore not reflected in the 2000 census figures.

Exhibit 6-17 indicates that between 1990 and 2000, the total number of dwellings in the study area increased by approximately 6 percent, or 843 units. This increase, however, does not reflect the very recent residential developments that have taken place. Compared to the District overall, the study area has a larger number of residents who rent rather than own their dwellings. However, there is still a substantial difference in the number of owners and renters in the District. This would generally be expected due to the high cost of real estate and the lower median income of households.

EXHIBIT 6-17
Districtwide and Study Area Housing Characteristics, 1990 and 2000
Housing characteristics in the District and the study area have not substantially changed in the last 10 years.

Area	Total Dwellings	Vacant	Occupied	Own	Rent	Other Non-Institutional Group
1990 Census						
Study Area	12,798	1,692 (13%)	11,106 (87%)	3,748 (29%)	7,358 (57%)	1,106
Washington, DC	278,489	28,855 (10%)	249,634 (90%)	97,108 (35%)	152,526 (55%)	27,647
2000 Census						
Study Area	13,641	1,535 (11%)	12,106 (89%)	4,215 (31%)	7,891 (58%)	570
Washington, DC	274,845	26,507 (10%)	248,338 (90%)	101,214 (37%)	147,124 (54%)	27,598

Source: U.S. Census (1990, 2000)

Note: Other non-institutional group housing includes college dorms, military quarters, and other non-institutional group quarters such as emergency shelters.

One of the outstanding features of these housing figures is how much they have stayed relatively constant between 1990 and 2000. The study area home ownership rates still lag behind those of the District.

Another notable statistic is the 50 percent decrease in the number of study area residents living in non-institutional group housing, including college dorms, military quarters, and emergency shelters.

EXHIBIT 6-18
Study Area Subsidized and Special Needs Housing
Public housing is more prominent west of the river.

Subsidized and Special Needs Housing

There are several government-subsidized housing properties in the study area. These developments include low-cost housing for low-income families, senior housing, and transitional and long-term residential services. Subsidized rental housing properties within the study area are listed in Exhibit 6-18. In total, there are currently approximately 1,731 subsidized units in the study area. The Washington, DC Housing Authority operates these facilities. The District government, other state and federal government agencies, and non-profit organizations also operate social services in the vicinity for residents of these developments (see Section 6.2.9).

The Arthur Capper/Carrollsburg Development was recently awarded a $34.9-million revitalization grant by the U.S. Department of Housing and Urban Development. This 23-acre, 758-unit public housing complex is located in the Near Southeast neighborhood. The neighborhood is near the Anacostia River and Capitol Hill. The revitalization strategy for this development will be to demolish and replace the units with 707 public housing units, 525 affordable rental units, and 330 market-rate homes for purchase, for a total of 1,562 new units.

6.2.9 Community Services and Facilities

Community services and facilities in the study area include police, fire, and emergency response services, hospitals/primary care facilities, emergency evacuation routes, community centers (places for public meetings or activities), educational facilities, and religious, cultural, and social institutions.

Law Enforcement Services

The Metropolitan Police Department is the primary law enforcement agency for the District; it is also one of the largest police agencies in the United States. The study area includes portions of three of the seven police districts that serve the District. Exhibit 6-19 depicts the district boundaries and the First District substation located in the study area.

EXHIBIT 6-19
Study Area Emergency Services
Emergency services are distributed on both sides of the Anacostia River.

The First District is operationally divided into two areas: east and west. The study area is within the eastern part of the First District and is served by Substation 1D-1. The Substation area within the study area includes the Navy Yard and the Capitol Hill neighborhood. The Sixth District covers portions of the Northeast (east of the Anacostia River) and Southeast quadrants of the city. The Seventh District covers much of the Southeast quadrant of the city, including the neighborhoods of Anacostia.

In general, police units patrol within their respective district boundaries. However, at times units assist other district units, and during major incidents they often cross district lines. Adequate access across the Anacostia River is critical to the District police department in performing its duties.

Fire and Emergency Response Services

The District of Columbia Fire/Emergency Medical Services Department provides fire and ambulance service in the District. Within the study area, three fire stations provide first response to fire and medical emergencies (Exhibit 6-19). Engine Station 8 contains a fire engine, medic unit, ambulance, and the office of the 2nd Battalion Chief. Engine Station 15

contains a fire engine, medic unit, cave-in unit, and the office of the 3rd Battalion Chief. Engine Station 18 has a fire engine and ambulance.

Emergency fire and medical units are dispatched from a centralized 911 command center. Generally, the station nearest to the call site is dispatched to the incident; however, units can be dispatched from other stations if units closer to the incident are not available.

Additionally, during large events multiple engine companies may respond to a single incident. The 11th Street Bridges are a key access point into the Capitol Hill area and the Anacostia area of the District and are essential for allowing fire and emergency medical units to move through the area.

Hospitals and Medical Clinics

The District of Columbia's health care delivery system continues to undergo changes that began in 2001 when the District privatized the city's public hospital and ambulatory clinics and created the DC Healthcare Alliance.

The District has approximately 4,500 operation beds to serve its population. Inside the study area there are four primary care centers plus one facility that provides comprehensive HIV/AIDS related services. See Exhibit 6-20 for a list of services by facility and Exhibit 6-19 for a map of these facilities. Additional medical facilities are located outside the study area. Residents from and around the study area can access the medical facilities inside and outside the study area boundaries. The ability to easily travel across the Anacostia River is vital to accessing these needed services.

EXHIBIT 6-20
Study Area Medical Facilities
There are five hospitals and clinics in the study area.

Facility	Service Type
Abundant Life Clinic	Life Services, HIV/AIDS Treatment and Counseling
Anacostia Community Health Center	Pediatrics, Cardiology, Ophthalmology, Dermatology, HIV/AID, Podiatry, OB-GYN, other primary care
DC General Ambulatory Care	Pediatrics, Cardiology, Ophthalmology, Dermatology, HIV/AID, Podiatry, OB-GYN, other primary care
Family and Medical Counseling	Pediatrics, Cardiology, Ophthalmology, Dermatology, HIV/AID, Podiatry, OB-GYN, other primary care
Good Hope Health Care	Pediatrics, Cardiology, Ophthalmology, Dermatology, HIV/AID, Podiatry, OB-GYN, other primary care

Sources:
Unity Health Care, 2005-2006; DC Care Consortium, 2005-2006; Family and Medical Counseling Services, Inc., 2005-2006; and DC General Ambulatory and Emergency Care Centers, 2005-2006

Evacuation Routes

The District of Columbia Emergency Management Agency provides coordination and support of the city's response to emergencies and natural and manmade disasters. The

agency also serves as the central communications point during regional emergencies, conducts an assessment of resources and capabilities for emergencies, provides public awareness and outreach programs, and provides 24-hour emergency operations center capabilities.

Should an event occur that would lead to the evacuation of all or part of the District, evacuation routes have been established. These routes assist in moving people away from the event while also allowing needed emergency response services access to the affected areas. The evacuation routes within the study area are depicted in Exhibit 6-19.

The 11th Street Bridges serve the Southeast/Southwest Freeway I-295, and the Anacostia Freeway for the evacuation of the Southeast quadrant of the District. The bridges are critical choke points of the District's evacuation plan. Without the 11th Street Bridges or the John Philip Sousa Bridge to the east, effective evacuation of Southeast would be severely compromised.

The 11th Street bridges, Southeast Freeway, I-295, and the Anacostia Freeway serve as evacuation routes for Washington, DC.

Linkages to Community Facilities

While there are no formal community centers in the study area, several facilities offer the same types of amenities. There are two libraries in the study area, one located west of the Anacostia River on 7th Street, and the other east of the river on Good Hope Road (currently being renovated). In addition, several public and private schools accommodate public meetings and other public activities. Finally, the most significant community meeting resources are the religious institutions. Currently, 60 such institutions (see Exhibit 6-4) serve many community facility needs for the approximately 28,000 study area residents.

Cultural and Social Institutions

The District overall has a large number of formal community centers, performing arts centers, and late-night recreational program centers. Within the study area, many schools, churches, libraries, and museums offer meeting rooms, but there are no formal community centers. The Capitol Hill Arts Workshop is the closest example of a performing arts center within the study area.

The study area's community landmarks and museums attract residents from across the District, as well as business visitors, tourists, and others. Many events and/or sites are open during the daytime and evening hours on weekdays, as well as on weekends. The museums in the area are open daily, and exhibits change on a periodic basis.

These institutions are not concentrated in any particular neighborhood of the study area. Each neighborhood has its own sites that draw visitors. The District is well known for its historical, social, and cultural attractions. West of the Anacostia River, the Navy Yard, a large historical site, houses the Navy Museum. Across the Southeast/Southwest Freeway from the Navy Yard are the Marine Barracks and the Commandant's House. Barracks Row is Capitol Hill's oldest commercial corridor. Farther north, the Congressional Cemetery overlooks the Anacostia River.

East of the river, Anacostia Park is 1,200 acres of open space and recreation fields/facilities along the waterfront, managed by NPS. The park is site of the 1937 "Bonus Army" march where 10,000 World War I veterans had camped. In historic Anacostia, the World's Largest Chair sits at the corner of Martin Luther King, Jr. Avenue and V Street. On W Street, the National Park Service operates the Frederick Douglass National Historic Site. Just east of the study area, the Smithsonian Institute's Anacostia Museum hosts various exhibits on the area's history.

Educational Facilities

While there are no colleges or universities located in the study area, there are several public, independent, and charter schools. Exhibit 6-4 shows the schools in the study area.

The District of Columbia School District has 15 facilities in the study area: 11 elementary schools, 2 middle/junior high schools, 1 senior high school, and 1 alternative education center. Approximately 6,036 students are enrolled in these schools. Three of these facilities are used for other educational purposes as well. One of the elementary schools is also used as a special education facility. A separate facility for special education is operated by the school district and the DC Department of Human Services.

Charter schools in the District are governed by the DC Public Charter School Board. In the study area, five charter schools use three separate facilities. Three of the schools share a common school space. Total enrollment is approximately 2,106 students, ranging in grades from pre-school to twelfth grade.

Five independent schools are located in the study area that are either non-denominational or have a specific religious affiliation. Each of these schools offers pre-kindergarten classes and all but two schools offer classes through the eighth grade. The other two schools offer classes through the fourth and sixth grades.

Religious Institutions and Cemeteries

Various religious institutions are located in the study area. For the purposes of this study, the 60 identified religious institutions (Exhibit 6-4) are defined as places of worship, meditation, or gathering places for members. All 60 institutions are categorized as Christian, and are dispersed across the study area, with 37 located east of the river and 23 west of the river.

There are three notable churches in the Anacostia neighborhood. The Campbell African Methodist Episcopal (AME) Church, founded in 1890, was created to accommodate the overflow from its mother church, Allen Chapel, now Allen African Methodist Episcopal Church. Macedonia Baptist Church is considered the oldest black Baptist church in Anacostia. Saint Teresa of Avila Catholic Church was completed in 1879, and as the first Catholic Church east of the Anacostia River, is considered the mother Roman Catholic Church of Southeast Washington.

Members of these religious institutions are geographically dispersed. Some live in nearby residential areas, while others travel a significant distance to the place of worship.

There is one cemetery in the study area west of the Anacostia River. At the northern boundary of Capitol Hill, the Congressional Cemetery is owned by Christ Church, located on G Street. The entrance to the cemetery is on E Street. Occupying 32.5 acres, the cemetery overlooks the Anacostia River.

6.2.10 Social and Employment Services

Exhibit 6-21 lists the many public and non-profit social service providers located within the study area. As evidenced by their names, the organizations provide a range of social services. These include hot meals, food bank services, drop-in hygiene facilities, clothing, employment and mental health counseling, legal services, youth services, and family services, as well as referrals for other social services. Because many of the providers offer a number of services at one location, it is difficult to place individual providers into a single category. Many focus on serving low-income, minority, and homeless persons living in the study area. They are supported by a variety of public, private, and non-profit organizations.

EXHIBIT 6-21
Study Area Social and Employment Service Providers
There are more than 70 social and employment providers in the study area.

Advocates for Justice and Education – Parent and Youth Seminar	Heads Up – Program for Appropriate Technology and Health
Anacostia Center for Psychotherapy and Counseling	Higher Aspirations Academy – Advanced Concentration Evening Study
Action to Rehabilitate Community Housing (ARCH) – Thomas Adams Duckenfield Legal Assistance Program	Higher Aspirations Academy – High School Leadership Program
ARCH – Youthbuild Program	Higher Aspirations Academy – Learning Tree of Greater Washington
Association of Jewish Aging Services	Higher Aspirations Academy – Undergraduate Support
Board of Child Care	Holy Comforter – St. Cyprian Community Action Group
Capitol Hill Group Ministry – Congregation-Based Shelter	Jenkins Hill Child Development Center – Educational Day Care Program
Capitol Hill Group Ministry – Families First/Ujamaa House	Kidsafe – VIP Project
Capitol Hill Groups Ministry – Karibu Family Support	Matthew Memorial Baptist Church – My Sister's House
Capitol Hill Group Ministry – Mentors for Youth	Max Robinson Center – HIV Antibody Testing and Counseling
Capitol Hill Group Ministry – Mission Possible	Max Robinson Center – Mental Health Services
Capitol Hill Group Ministry – Social Service Emergency Assistance	Max Robinson Center – Vocational Rehabilitation Counseling
Capitol Hill Group Ministry – Youth Empowerment Program	Max Robinson Center – Whitman Walker – Case Management
Center for Mental Health – Children's Intensive Services Program	Medlantic Clinical Research Center – Diabetes Prevention Program
Center for Mental Health – Outpatient Program	Metro TeenAIDS – Freestyle Drop-in Center
Commodity Supplemental Food Program Administrative Office	Navy – Marine Corps Relief Society – Budget & Credit Counseling
Community Connections – SE	Navy – Marine Corps Relief Society – Emergency

EXHIBIT 6-21
Study Area Social and Employment Service Providers
There are more than 70 social and employment providers in the study area.

	Financial Assistance
Community Family Life Services – Employment and Training Services	New Life Corporation
Community Partnership – Hypothermia Hotline	Nursing Unlimited Services
Community Partnership – Shelter Hotline	Project 2000
Community Partnership for the Prevention of Homelessness	Sasha Bruce Youthwork – Family Ties Project
DC Bar PSAC Advice and Referral Clinic – Max Robinson Center	Sasha Bruce Youthwork - REACH
DC Center for Independent Living – Anacostia Satellite Site	Sasha Bruce Youthwork - SAFAH
DC General Hospital (DCG) Inpatient Medical Services	Selma Levine School of Music – Southeast Site
DCG – DHS – IMA – Anacostia Service Center	Sexual Minority Youth Assistance League
DCG – State Rehabilitation Council	Social Security Administration – Anacostia Professional Building
DCG – Statewide Independent Living Advisory Council	SOME – Jeremiah House
Electronic Benefits Transfer Office – Anacostia	St. Monica's Episcopal Church – Senior Citizens Center
Far Southeast Family Strengthening Collaborative	Strive DC
Food and Friends – AIDS Nutritional Programs	Unity Health Care – Bethlehem Clinic
Friend of Tyler School	UPO – Anacostia – EAF
Friendship House Association – Apprenticeship and Jobs Training	Us Helping Us
Friendship House Association – Community Services	Whitman-Walker Clinic – Max Robinson Center – Primary Medical Services
Friendship House Association – DC Kids Program	Whitman-Walker Clinic – Max Robinson Center – Access Services
Friendship House Association – Mental Health Rehabilitation	Whitman-Walker Clinic – Max Robinson Center – Day Treatment
Friendship House Association – Parenting Plus Program	Whitman-Walker Clinic – Max Robinson Center – Dental Services
Friendship House Association – Senior Network	YWCA – DC Child Development Center
Heads Up – AmeriCorps Youth Program	

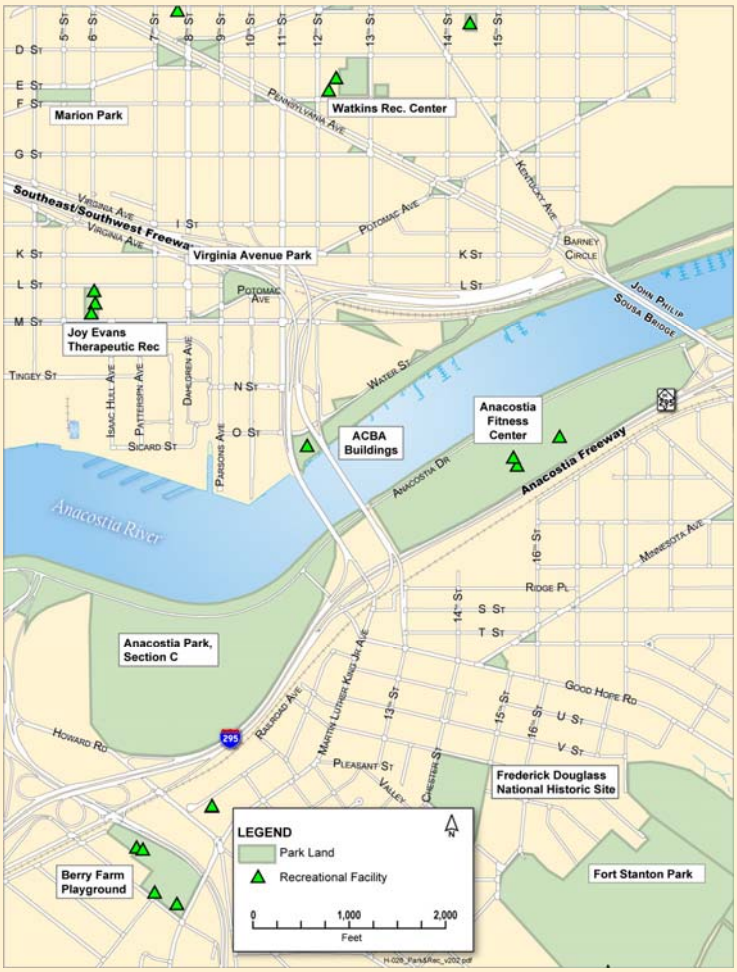
Source: DC GIS, 2005-2006

6.2.11 Parks and Recreational Facilities

There are several parks and recreation facilities in the study area that are an important component of community cohesion, that the current highway footprint affects, and that the build alternatives may affect still more. Parks and recreational facilities discussed in this section reflect facility and planning perspectives found on the DC Department of Parks and Recreation (DPR) website and information contained in the DPR Master Plan. Parks and sites with designated public access within the study area are shown on Exhibit 6-22. Parks and recreation facilities in the study area are owned and maintained by DPR or NPS.

While most of the parks and recreation centers in the study area are District-owned and maintained, the largest, Anacostia Park, is owned by NPS. Anacostia Park encompasses

EXHIBIT 6-22
Study Area Parks and Recreational Facilities
Parks and recreation opportunities are distributed throughout the study area.



more than 1,200 acres and is one of the District's largest recreation areas. There are hundreds of acres on both sides of the river available to the public for recreational activities. The existing highway bisects the park at the 11th Street Bridges.

Within the area, Anacostia Park hosts three concession-operated marinas, four boat clubs, and a public boat ramp that provides access to the tidal Anacostia River for recreational boating.

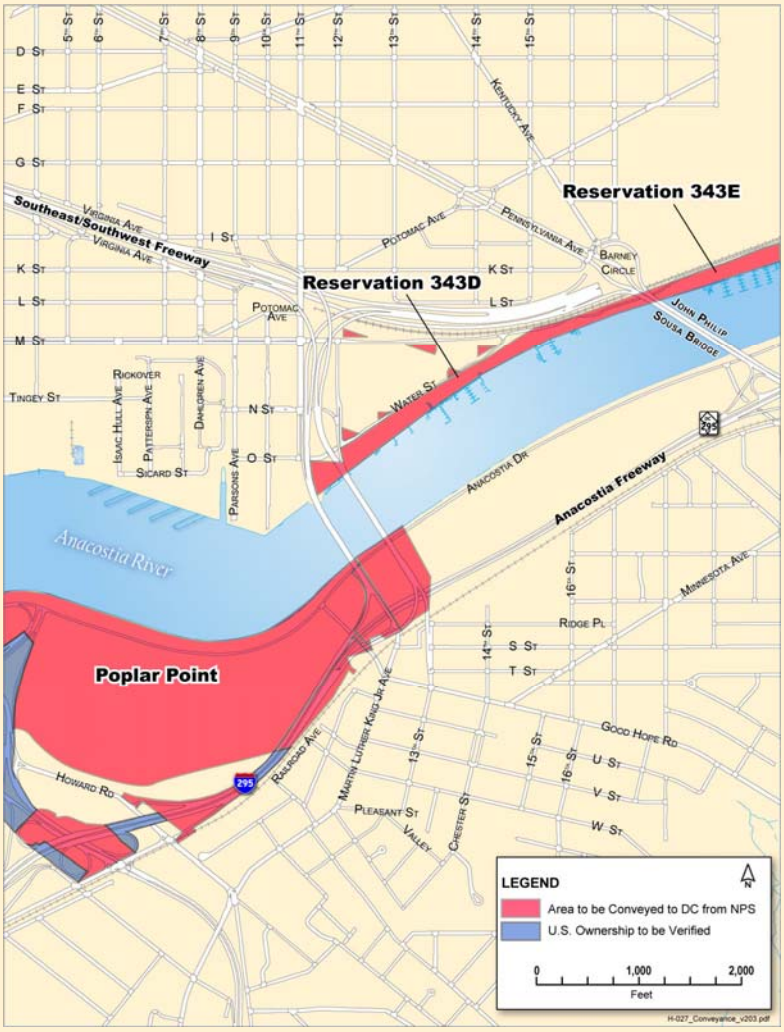
The ACBA operates out of two buildings between the 11th Street Bridges on the west side of the river. The buildings sit on land currently owned by NPS, leased to the District. The District then sublets the property to the ACBA.

Good Hope Road and Howard Road are the primary study area entrances to Anacostia Park east of the river, while 11th Street, 12th Street, O Street, and Water Street form the access routes to the park property west of the river.

In December 2006, the legislature signed House Resolution (H.R.) 3699, the Federal and District of Columbia Government Real Property Act of 2005, that will facilitate the utilization, development, and redevelopment of property in the District of Columbia. The legislation provides for conveyance of park and recreational properties by the United States Government to the District of Columbia. While the legislation was signed in December 2006, actual transfer requires a number of details to be resolved and the transfer is not expected to be complete before late 2007. The properties within and nearby the study area are shown on Exhibit 6-23. According to the U.S. Department of the Interior:

> *…the conveyance of several of the properties to the District in H.R. 3699 is the culmination of a multi-year, multi-entity public planning effort to revitalize the District as set forth in the Anacostia Waterfront Framework Plan.* (Hoffman, 2005)

EXHIBIT 6-23
National Park Service Land Conveyance in the Study Area
Land in the study area that is included in the proposed land transfer legislation.



The transfer includes parkland located on the east side of the river from Poplar Point to north of the 11th Street Bridges to the District. The future mix of uses on this land has not been determined although the majority is to remain in recreation use while some land will probably be housing, office, or commercial uses. No final usage plan exists. The existing 11th Street Bridges bisect this parcel near its upstream boundary.

One of the properties for which title is to be conveyed to the District is the narrow stretch of Anacostia Park west of the river. Besides being home to the ACBA, this narrow strip of land is occupied by District Public Works facilities, USACOE facilities, District Water and Sewer Authority facilities, four boat clubs, and the Anacostia Marina. The 11th Street Bridges bisect this area just upstream of the Navy Yard and straddle the boathouse buildings. Conveyance of title to the District will allow the District to redevelop and enhance the boathouse and marina facilities as well as to permit additional users on this property.

Until the transfer is completed, the land on both sides of the river will probably continue the current recreation and office uses with maintenance and enhancements. Current uses west of the river are also expected to continue unchanged, although much of the maintenance of this area is the responsibility of the various users of the areas.

Virginia Avenue Park is located west of 11th Street in the shadow of the Southeast/ Southwest Freeway and is managed by DPR for passive recreation. A portion of this small (2.63 acres) park provides space for community gardens, while another portion has recently been refurbished to include lighting, a mosaic of the Washington Monument, and a grove of

cherry trees. The area under the freeway is used by a District vendor to store maintenance equipment.

DPR is working to develop a comprehensive 5-year agency master plan for the District owned and managed facilities. The master plan will analyze current athletic and enrichment programs, and make recommendations for new programming opportunities. District park revitalization is a master plan priority, covering approximately 1,000 acres of District-owned and managed land, including 4 large District parks, 73 recreational centers, 22 swimming pools, and more than 400 neighborhood and triangle parks. Triangle parks are areas of public open space found throughout Washington, DC and are located at the intersection of three streets. These parks are usually used for passive recreation and are usually unnamed.

6.2.12 Government Institutions

Few government institutions are located within the study area (see Exhibit 6-4). DC General Hospital, at the northwest edge of the study area, has been the site of public health facilities since the mid-19th century. The Washington Infirmary, the first public hospital established in 1806, was moved here in 1846. It was renamed the Washington Asylum and housed the city's poorest patients. It also served as a work house for people convicted of minor crimes. Later, a smallpox hospital, quarantine station, disinfection plant, and crematory were also located in this area. With the construction of a new building, the health care facility became the Gallinger Municipal Hospital in 1922, and was renamed District of Columbia General Hospital in 1953. The only public hospital in the city, DC General continues to serve a large patient population. The DC Jail is located just southeast of the hospital complex. The new USDOT headquarters opened in April 2007 at "The Yards" (formerly known as the Southeast Federal Center).

The largest government institution in the study area is the Washington Navy Yard, located on the west side of the Anacostia River. Details about the Navy Yard were presented in Section 6.1.2.

6.3 Economic Activity

The District of Columbia economy is relatively healthy, with a reliance on government as the principal employer (34 percent). In December 2005, Districtwide unemployment was 5.9 percent, slightly higher than the nationwide level. However, east of the Anacostia River, in Wards 7 and 8, the unemployment level during the same period was 9.5 percent. In Ward 8, the rate was 15.8 percent. Combine this with the 27 percent of households in the study area that have a household incomes of less than $10,000 per year and it becomes apparent that although the District's economy is healthy, there is room for improvement within the study area.

Several current development activities may result in greater economic opportunities in the area. The newly opened development, "The Yards," houses the U.S. Department of Transportation (USDOT) and other federal offices in addition to retail and residential uses,

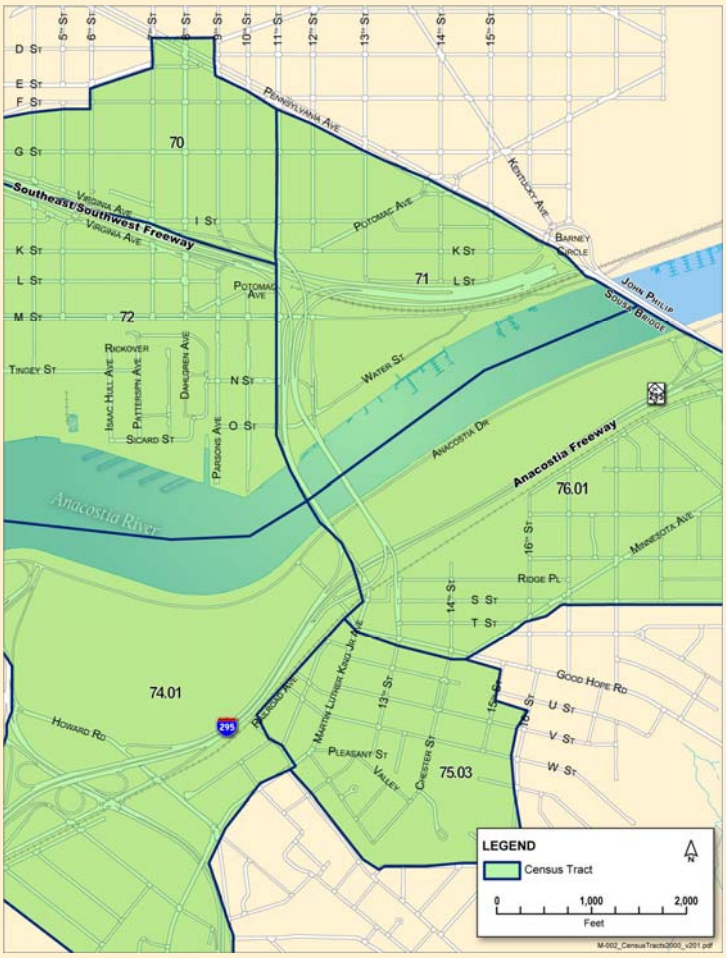
and brings additional activity and demand for goods and services. Maritime Plaza has already opened two of five planned buildings that include office and commercial uses. In Anacostia, a new building to house DDOT headquarters and other office and retail uses is expected. The Salvation Army plans to break ground on a five-story multipurpose building on Martin Luther King, Jr. Avenue. A proposed land transfer between the District and federal governments would encourage additional residential, office, commercial, and recreation development in the Poplar Point area.

6.3.1 General Characteristics

The District supports a diversified economic base, including government, manufacturing, and various service industries. The District is well-known for its strong business environment. It is a major hub for the greater Washington, DC region, providing jobs, housing, transportation, and entertainment.

Economic data from the U.S. Census Bureau provides an overview of the local economy within the District. Data specific to the study area is provided by Census tract. The study area data provided in this section includes information about tracts 70, 71, 72, 74.01, 75.03 and 76.01 from the 2000 U.S. Census (Exhibit 6-24).

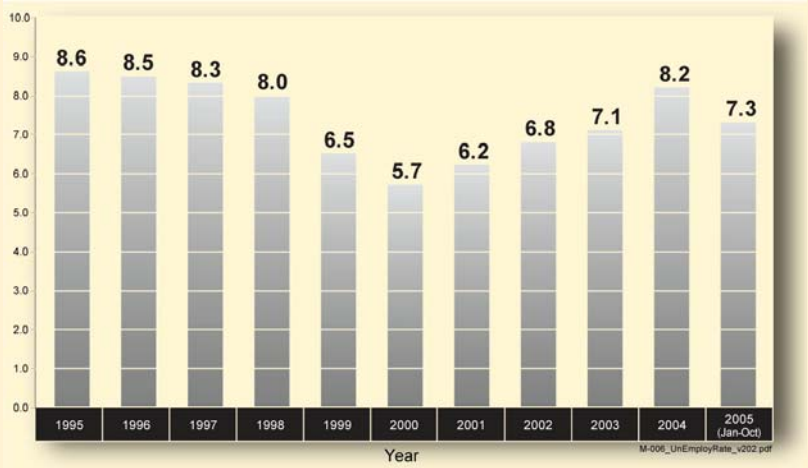
EXHIBIT 6-24
Study Area Census Tracts, 2000
Six Census tracts cover the study area.



6.3.2 Unemployment and Poverty

The U.S. Department of Labor, Bureau of Labor Statistics, indicates that between January and August 2005, the District of Columbia had an unemployment rate of 7.3 percent. This was an 11 percent decrease from the unemployment rate of 8.2 percent in 2004. As Exhibit 6-25 shows, the unemployment rate for the District has fluctuated over the past decade, with a high of 8.6 percent in 1995, to a low of 5.7 percent in 2000. The current employment rate of 5.9 (District of Columbia, 2005a) is higher than the national average of 4.6 percent (U.S. Department of Labor, Bureau of Labor and Statistics, 2005-2006).

EXHIBIT 6-25
Unemployment Rates in the District, 1995-2005
District unemployment was at its lowest in 2000.



Source: U.S. Department of Labor, Bureau of Labor Statistics, 2005-2006

Unemployment figures for the study area are not available from the 2000 census. However, unemployment or underemployment rates can be inferred by analyzing poverty rates. According to the U.S. Census Bureau, approximately 20 percent of the population in the District lived below the poverty level. In the study area, the percentage of residents living below the poverty level was approximately 37.5 percent. Most of these residents were adults aged 18 or higher.

This would presume then that the study area adult population also had a higher unemployment or at least a higher underemployment rate than the District's overall population. Exhibit 6-26 indicates that according to 2000 census data, more than 10,400 persons in the study area were living at or above the poverty level.

EXHIBIT 6-26
Study Area Residents Above and Below the Poverty Level
More than 37 percent of the study area residents live below the poverty level.

	Tract 70	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Number of Residents Living Below the Poverty Level							
Under 5 years	25	173	99	224	184	95	800
5 years	-	41	32	53	34	41	201
6 to 11 years	29	239	146	391	153	53	1,011
12 to 17 years	19	160	148	250	136	96	809
18 to 64 years	170	463	530	750	473	579	2,965
65 to 74 years	-	58	117	40	13	76	304
75 years and over	8	46	74	21	21	15	185
Total	251	1,180	1,146	1,729	1,014	955	6,275
Number of Residents Living At or Above the Poverty Level							
Under 5 years	57	97	3	89	92	190	528
5 years	9	8	18	17	20	73	145
6 to 11 years	26	138	44	179	163	288	838
12 to 17 years	14	149	54	142	192	272	823
18 to 64 years	1,387	1,091	510	752	1,038	2,360	7,138
65 to 74 years	35	92	42	40	98	264	571

EXHIBIT 6-26
Study Area Residents Above and Below the Poverty Level
More than 37 percent of the study area residents live below the poverty level.

	Tract 70	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Number of Residents Living Below the Poverty Level							
75 years and over	77	20	29	48	82	138	394
Total	1,605	1,595	700	1,267	1,685	3,585	10,437

Source: U.S. Census Bureau, 2000, based on sample data.

6.3.3 Employment by Industry

Exhibit 6-27 shows the distribution of employment by industry sector as of December 2005. With about 34 percent of the total workforce, the government (federal, state, and local) is the largest employment sector. Various private industries employ the remaining 66 percent of the workforce. Most government-sector workers in the District are employed by the federal government (191,400 employees), representing approximately 83 percent of all government employees.

Professional and business services employ approximately 148,700 persons, or approximately 22 percent of the total workforce. Education and health services comprise the third-largest industry sector, employing approximately 96,800 employees, or 14 percent of the District workforce.

Comparable information for the six study area census tracts was not available for the years 2000 or 2004. However, data from the 1990 Census did provide employment type information by tract (Exhibit 6-28). While a direct comparison cannot be made, inferences can be established. For the study area, Professional and Related Services (Health Services, Educational Services, Other Professional and Related Services, and Public Administration [government]) made up approximately 44 percent of the employment base. Retail Trade, Transportation, and Business and Repair Services were also large sectors.

EXHIBIT 6-27
District Employment by Industry (December 2005)
Government is the largest employer in the District.

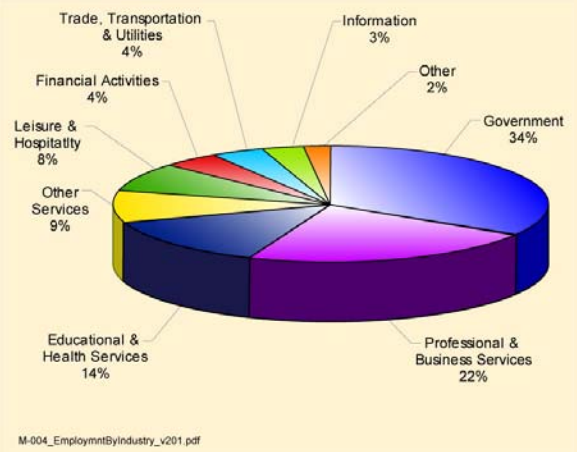


EXHIBIT 6-28
Study Area Employment Type by Census Tract
More than 18 percent of study area residents are employed in public administration.

Employment Type	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Agriculture, forestry, and fisheries	-	-	-	-	21	21
Mining	-	-	-	-	-	-
Construction	64	-	73	65	138	340
Manufacturing, nondurable goods	35	13	23	32	109	212
Manufacturing, durable goods	7	-	8	7	33	55
Transportation	79	33	53	75	198	438
Communications and other public utilities	53	20	36	37	64	210
Wholesale trade	28	-	8	31	55	122
Retail trade	84	51	148	139	262	684
Finance, insurance, and real estate	64	7	44	91	159	365
Business and repair services	85	54	67	118	104	428
Personal services	72	33	42	70	107	324
Entertainment and recreation services	24	7	31	4	39	105
Professional and Related Services						
Health services	104	63	59	85	231	542
Educational services	68	18	43	68	202	399
Other professional and related services	135	15	84	71	263	568
Public administration	212	72	107	144	556	1,091
Total	1,114	386	826	1,037	2,541	5,904

Source: *US Census Bureau, 1990, based on sample data.*

6.3.4 Household Income

Exhibit 6-29 provides household income characteristics for the study area census tracts. Based on 2000 U.S. Census sample data, 27 percent of households from the six study area census tracts had a total household income of $10,000 or less. A total of 54 percent of households had a total household income of $30,000 or less. Only 8 percent of households had an income exceeding $100,000.

EXHIBIT 6-29
Study Area Household Income, 2000
Household incomes in the study area vary greatly.

Income	Number of Households						
	Tract 70	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Less than $10,000	55	356	483	358	231	286	1,769
$10,000 to $19,999	64	134	137	182	200	234	951
$20,000 to $29,999	81	131	88	139	126	312	877

EXHIBIT 6-29
Study Area Household Income, 2000
Household incomes in the study area vary greatly.

Income	Number of Households						
	Tract 70	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Less than $10,000	55	356	483	358	231	286	1,769
$10,000 to $19,999	64	134	137	182	200	234	951
$30,000 to $39,999	119	103	28	110	92	310	762
$40,000 to $49,999	73	46	37	30	49	205	440
$50,000 to $59,999	71	92	20	19	31	157	390
$60,000 to $74,999	135	70	35	22	72	109	443
$75,000 to $99,999	201	44	12	24	51	123	455
$100,000+	245	105	19	15	56	120	560
Total	1,044	1,081	859	899	908	1,856	6,647
Median Household Income (dollars)	67,109	25,022	8,089	14,083	21,402	32,930	

Source: U.S. Census Bureau, 2000, based on sample data.

Of interest in the study area is Tract 72's low median income. This is largely due to the relatively few households in this tract. It is primarily made up of the Navy Yard and has the lowest number of households in the study area. More than half of those living in Tract 72 earn less than $10,000 per year. This contrasts sharply with Tract 70, immediately north of Tract 72, where more than half the households earn more than $60,000 per year. Tract 70 is the southeastern part of the Capitol Hill area, and its population tends to hold higher-earning jobs than other parts of the study area. Tract 74.01 also has a low median household income, at $14,083 per household. This area has struggled to maintain economic investment and also includes several government installations, limiting the opportunities for higher incomes and number of households in the area. Efforts are underway to reinvest in these areas and to bring more households and higher-earning jobs to the study area.

6.3.5 Travel Time to Work

Sample data from the 2000 Census indicate that 68 percent of the study area population travels to work in 34 minutes or less. Only 195 persons worked at home, less than 4 percent of the total. This indicates that most study area residents work relatively close to their homes.

6.3.6 Means of Transportation to Work

More than 47 percent of study area residents commuted to work via automobile (car, truck, or van), with 30 percent of these carpooling (Exhibit 6-30). Of the more than 40 percent of commuters who traveled to work via public transportation, the breakdown by public transportation mode is as follows:

- Bus: 45 percent
- Subway: 53 percent
- Railroad: 1 percent
- Taxi: 1 percent

EXHIBIT 6-30
Study Area Means of Transportation to Work, 2000
More people in the study area get to work by car, truck, or van than any other means.

Transportation Means	Tract 70	Tract 71	Tract 72	Tract 74.01	Tract 75.03	Tract 76.01	Total
Car, truck, or van:	667	355	115	141	406	959	2,643
Drove alone	450	267	95	97	252	692	1,853
Carpooled	217	88	20	44	154	267	790
Public transportation:	531	362	133	283	359	567	2,235
Bus or trolley bus	24	116	82	132	235	411	1,000
Subway or elevated	472	246	51	146	124	156	1,195
Railroad	17	-	-	-	-	-	17
Taxicab	18	-	-	5	-	-	23
Motorcycle	-	-	-	-	-	-	-
Bicycle	34	17	-	-	-	-	51
Walked	210	38	41	68	20	28	405
Other means	8	19	-	-	10	24	61
Worked at home	131	22	7	14	8	13	195
Total	1,581	813	296	506	803	1,591	5,590

Source: U.S. Census Bureau, 2000, based on sample data.

6.3.7 Economic Development Goals, Objectives, and Initiatives

More information about recently completed and proposed development in and adjacent to the study area that will influence economic conditions is found in Section 6.1, Land Use. The Land Use section also discusses the local and regional plans and policies designed to foster economic growth in the study area and the larger region.

6.4 Air Quality

6.4.1 Air Quality Standards

Air quality in the project area is regulated by the U.S. Environmental Protection Agency (EPA) and District of Columbia Department of Health (DDOH) Bureau of Environmental Quality, Air Quality Division. The 11th Street Bridges lie in the Metropolitan Washington Air Quality Committee Region, which encompasses the District of Columbia and counties in Maryland (Montgomery, Prince Georges, Frederick, Calvert, and Charles) and Virginia (Arlington, Fairfax, Loudoun, Prince William, and Stafford).

Under the requirements of the Clean Air Act (CAA), EPA has established National Ambient Air Quality Standards (NAAQS) for six criteria pollutants—ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM_{10} and $PM_{2.5}$), lead, and sulfur dioxide (SO_2). The standards applicable to transportation projects are summarized in Exhibit 6-31 and include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air.

Areas that meet the NAAQS for a criteria pollutant are designated as being "in attainment;" areas where a criteria pollutant level exceeds the NAAQS are designated as being "in nonattainment." Ozone nonattainment areas are categorized based on the severity of their pollution problem—marginal, moderate, serious, severe, or extreme. The District, including the study area, has a status of moderate nonattainment for the 8-hour ozone standard and nonattainment for the 1997 $PM_{2.5}$ standard. On October 17, 2006, EPA issued a final rule adopting a lower 24-hour air quality standard for $PM_{2.5}$ (from 65 $\mu g/m^3$ to 35 $\mu g/m^3$) and keeping the annual standard unchanged at 15.0 $\mu g/m^3$. Based on the current schedule EPA has laid out for designations under the revised $PM_{2.5}$ standard, transportation conformity will not apply until April 2010. The 1-hour ozone standard was revoked in June 2005 and is no longer applicable in the District. The area is also a maintenance area for CO. A maintenance area is any geographic region in the United States that was previously designated as nonattainment and subsequently redesignated to attainment, subject to the requirement to develop a maintenance plan under section 175A of the CAA, as amended. The Washington, DC area is in attainment for all other criteria pollutants.

> …. the region within which the bridges are located has been designated an ozone and $PM_{2.5}$ nonattainment area.

Nonattainment and maintenance areas are required to show that proposed roadway projects requiring federal funding and/or approval must demonstrate compliance with EPA's Transportation Conformity Rule (40 CFR Part 93). Conformity is demonstrated by showing that the project would not cause or contribute to any new violation of any NAAQS, increase the frequency or severity of any existing NAAQS violations, or delay timely attainment of the NAAQS.

EXHIBIT 6-31
National Ambient Air Quality Standards and Washington, DC Monitoring Data
Air quality is monitored at select locations throughout the District.

Pollutant and Averaging Time	2004 Monitored Data	Monitoring Site Location	Primary Standard (ppm)	Secondary Standard (ppm)
Carbon Monoxide 8- hour concentration[a] 1- hour concentration[a]	2.4 ppm 3.4 ppm	C&P Telephone	9 ppm 35 ppm	None
Nitrogen Dioxide Annual Arithmetic Mean[b]	0.022 ppm	McMillan Reservoir	0.053 ppm	Same as primary
Ozone[c] 8- hour concentration[d] 1- hour concentration	0.089 ppm 0.113 ppm	McMillan Reservoir	0.085 ppm 0.125 ppm	Same as primary
Particulate Matter PM2.5: Annual Arithmetic Mean[e] 24- hour Maximum[f] PM10: Annual Arithmetic Mean[e] 24- hour Maximum[a]	14.5μg/m^3 50 μg/m^3 27 μg/m^3 60 μg/m^3	Park Services[g] River Terrace[g]	15 μg/m^3 35 μg/m^3 ([h]) 50 μg/m^3 150 μg/m^3	Same as primary

Source: *MWCOG, 2005*

Notes:
a Not to be exceeded more than once in a given year at any monitor; monitored by the second highest 8-hour daily concentration.
b Not to be exceeded at any monitor.
c The 1-hour standard was revoked in June 2005 and is no longer applicable in the District.
d The fourth highest daily concentration each year (averaged over 3 consecutive years) is not to exceed the standard.
e The 3-year average of the weighted annual mean concentration at each monitor must not exceed the standard.
f The 3-year average of the 98th percentile at each monitor must not exceed the standard.
g The monitored data for the 24-hour maximum standard for PM_{10} and $PM_{2.5}$ are not provided for individual monitoring locations. Data shown are an average of all monitoring locations in the Washington, DC area.
h Standard was revised from 65 μg/m^3 to 35 μg/m^3 on October 17, 2006 and became effective December 18, 2006.

ppm = parts per million
μg/m^3 = micrograms per cubic meter

Monitoring Air Quality

Air quality data for the District are monitored by MWCOG at representative sites throughout the District and region. The most recent available data (for year 2004) from nearby monitoring stations were used to describe the existing ambient air quality around the Washington, DC region. Exhibit 6-31 summarizes the local ambient air quality from selected monitoring stations nearest the 11th Street Bridges. However, any conclusions about the monitoring data must account for data collected from all monitoring stations in the area. On a regional basis, measured ambient air concentrations were well below the NAAQS except for ozone (8-hour standard) and $PM_{2.5}$ (annual standard). Section 6.4.4, Air Pollution Trends, discusses the regional monitoring data in further detail.

A violation of the NAAQS may threaten federal funding of transportation projects, and proposed roadway projects requiring federal funding and/or approval must demonstrate compliance with EPA's Transportation Conformity Rule (40 CFR Part 93). Conformity is demonstrated by showing that the project would not cause or contribute to any new violation of any NAAQS, increase the frequency or severity of any existing NAAQS violations, or delay timely attainment of the NAAQS.

6.4.2 Pollutants of Concern

Ozone (Nitrogen Oxides and Volatile Organic Compounds)

Ozone, a highly toxic form of oxygen, is a colorless, odorless gas found in the atmosphere. Ozone exists naturally in the stratosphere, the earth's upper atmosphere, where it shields the earth from the sun's ultraviolet rays. However, ground-level ozone is an air pollutant. It is created by a series of reactions between volatile organic compounds (VOCs) and nitrogen oxides (NO_x) (called ozone precursors) in the presence of sunlight and elevated temperatures. Precursor sources are typically man-made and include industrial and automobile emissions; commercial products such as paints, insecticides, and cleaners; and the evaporation of gasoline from gasoline- and diesel-powered engines. Plants and trees also emit VOCs, which generate a favorable reaction with NO_x to create ozone (MWCOG, 2005b).

Ozone irritates the eyes and can cause respiratory tract inflammation, particularly during heavy physical activity. It can reduce the lung function of healthy people during exercise, and increase the lungs' susceptibility to infections and allergens, particularly in vulnerable populations such as asthmatics and the elderly. Additionally, ozone can damage crops, trees, paint, fabric, and synthetic rubber products.

Because ground-level ozone requires higher temperatures to form, ground-level ozone concentrations only increase during the warmer months of the year. In the metropolitan Washington, DC region, almost all elevated ground-level ozone concentrations are recorded between May through September, during afternoon or early evening hours (MWCOG, August 2005b).

Because NO_x and VOCs are also released from sources hundreds of miles away, these transported emissions contribute to ground-level ozone in this region and elsewhere in the eastern Unites States. For these reasons, the effects of the proposed project on ozone levels are considered only on a regional, or mesoscale, basis. Ozone concentrations are modeled regionally by MWCOG to demonstrate regional transportation conformity to the State Implementation Plan.

Particulate Matter

Particulate matter is a broad class of air pollutants that exist as microscopic liquid droplets or solids suspended in air, with a wide range of sizes and chemical composition (nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as pollen or mold spores). Particulate matter is emitted by natural and man-made sources. The

broadest class of particulate matter is total suspended particulates (TSP), which includes all particulate matter within the air. The two types of particles the region is required to monitor are PM_{10} and $PM_{2.5}$. PM_{10} refers to particles less than 10 microns in diameter. $PM_{2.5}$ refers to particles less than 2.5 microns in diameter. PM_{10} typically results from wood burning, fossil fuels burning, unpaved roads, and industrial plants, with a significant amount generated from soil and/or dust that becomes airborne due to vehicles, wind, or construction. $PM_{2.5}$ typically results from fuel combustion (from motor vehicles, power generation, and industrial facilities), residential fireplaces, and wood stoves. $PM_{2.5}$ particles also form in the atmosphere from gases such as sulfur dioxide, nitrogen oxides, and VOCs (DDOH, 2005a).

Respiratory problems are the typical health issue resulting from exposure to particulate matter. These pollutants are known to cause nose and throat irritation, lung damage, and bronchitis. Children, the elderly, and people suffering from heart or lung disease are especially at risk (DDOH, 2005). Small particles less than 10 microns in diameter pose the greatest problems because they can travel deep into the lungs and may even move into the bloodstream. Particulate matter is a major cause of reduced visibility in many regions and national parks, and it can also cause damage to building materials (MWCOG, 2005a).

Changes to the operations of the roadway network in the study area may affect localized PM_{10}/$PM_{2.5}$ levels as a result of changes in tailpipe emissions (from both the diesel trucks and gasoline-fueled automobiles and vans) and the amount of dust that would be re-entrained into the air from the tires of vehicles traveling within the corridor. Because the project area has been designated a $PM_{2.5}$ nonattainment area, a $PM_{2.5}$ analysis must be conducted on a localized, or microscale, basis. Total regional $PM_{2.5}$ emissions are also predicted.

Carbon Monoxide (CO)

CO is a colorless, odorless, gas produced mostly by the incomplete combustion of fossil fuels (that is, gasoline, diesel, natural gas, and coal) in automobiles, buses, engines, and boilers (DDOH, 2005a). Other sources of CO emissions include industrial processes (including metals processing and chemical manufacturing), residential wood burning, and natural sources such as forest fires (MWCOG, 2005a). Concentration levels are usually highest in densely packed spaces with poor ventilation, such as a parking lot, tunnel, or busy traffic intersection (DDOH, 2005a).

CO interferes with the blood's ability to transport oxygen to tissue and organs, mostly affecting the cardiovascular and nervous systems. This can cause slower reflexes, confusion, headaches, fatigue, and drowsiness. It can also reduce visual perception and coordination, making some simple activities (such as reading and exercising) difficult (DDOH, 2005a).

In urban areas, motor vehicles are often the source of more than 90 percent of the CO emissions (EPA, 2005a). Concentrations tend to be elevated in winter months as a result of thermal inversions (where air pollutants are trapped near the ground beneath a layer of warm air) in combination with the "cold starting" of automobile engines. Areas of high CO concentrations are usually localized and occur near congested roadways and intersections in

fall and winter. Consequently, CO concentrations must be predicted on a localized, or microscale, basis. CO emissions are also modeled on a regional scale.

Hazardous Air Pollutants

Also known as toxic air pollutants, hazardous air pollutants (HAPs) are those pollutants known or suspected to cause serious health effects such as cancer, adverse reproductive effects or birth defects, or adverse environmental effects. These health effects can include damage to the immune system, as well as neurological, reproductive (for example, reduced fertility), developmental, respiratory, and other health problems. People are exposed to HAPs by various mechanisms, such as breathing contaminated air; drinking water contaminated by toxic air pollutants; eating contaminated food products, such as fish from contaminated waters or fruits and vegetables grown in contaminated soil; or touching contaminated soil, dust, or water (for example, during recreational use of contaminated water bodies) (EPA, 2005b).

Of the 187 HAPs on the CAA list, 33 present the greatest threat to public health in the largest number of urban areas. In a 2001 rulemaking, EPA identified 21 air toxic compounds emitted from mobile sources (listed in Exhibit 6-32). Mobile source air toxics are compounds emitted from highway vehicles and nonroad equipment that are known to cause cancer or other serious health and environmental effects (EPA, 2005c). Some toxic compounds are present in gasoline and are emitted to the air when gasoline evaporates or passes through the engine as unburned fuel. Other toxic pollutants are generated from the incomplete combustion of compounds in gasoline or through undergoing chemical reactions in the atmosphere (EPA, 1994a).

Greenhouse Gases

Greenhouse gases (GHGs) are compounds found in the earth's atmosphere that trap outgoing terrestrial radiation and warm the earth's atmosphere. Some emissions of GHGs occur naturally (water vapor, carbon dioxide, methane, nitrous oxide, and ozone), while others result from human activities (hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). Population growth, fossil fuel burning, and deforestation are some of the activities that have added to the levels of most of these naturally occurring gases. Each GHG differs in its ability to absorb heat in the atmosphere (EPA, 2005d).

Carbon dioxide is the primary GHG released as a result of fossil fuel burning (oil, natural gas, and coal) for power generation and in transportation. Some emissions of methane and nitrous oxide also result from stationary and mobile combustion. Historically, fossil fuel-burning activities have accounted for about three-quarters of global warming potential (GWP)-weighted GHG emissions. Fossil fuel combustion from mobile sources, such as automobiles, represents approximately one-third of those energy-related emissions (EPA, 2005d).

EXHIBIT 6-32
Mobile Source Hazardous Air Pollutants
These compounds are emitted from highway vehicles and non-road equipment.

Pollutants		
Acetaldehyde	DPM + DEOG	MTBE
Acrolein	Ethylbenzene	Naphthalene
Arsenic Compounds[a]	Formaldehyde	Nickel Compounds[a]
Benzene	n–Hexane	POM[c]
1,3-Butadiene	Lead Compounds[a]	Styrene
Chromium Compounds[a]	Manganese Compounds[a]	Toluene
Dioxin/Furans[b]	Mercury Compounds[a]	Xylene

Source: EPA, 2005c

Notes:
[a] Although the various metal compounds generally differ in their toxicity, the onroad mobile source inventory contains emissions estimates for total metal compounds (that is, the sum of all forms).
[b] This entry refers to two large groups of chlorinated compounds. In assessing their cancer risks, their quantitative potencies are usually derived from that of the most toxic, 2,3,7,8-tetrachlorodibenzodioxin.
[c] Polycyclic Organic Matter includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100 degrees centigrade.

DPM = diesel particulate matter DEOG = diesel exhaust organic gases
MTBE = methyl tertiary butyl ether POM = polycyclic organic matter

6.4.3 Climate and Air Quality

Weather directly influences air quality. Important meteorological factors include wind speed and direction, atmospheric stability, temperature, sunlight intensity, and mixing depth. Typical wind patterns for the project area are listed in Exhibit 6-33. Temperature inversions, which are associated with higher air pollution concentrations, occur when warmer air overlies cooler air. Average monthly temperatures (taken at the Ronald Reagan Washington National Airport) are listed in Exhibit 6-33. During temperature inversions in late fall and winter, particulates and CO from fireplaces, wood stoves, and vehicle sources can be trapped close to the ground, which can lead to violations of the NAAQS.

In the Washington, DC area, the highest ozone concentrations occur from mid-May until mid-September, typically known as the ozone season, when urban emissions are converted to ozone in the presence of intense sunlight and high temperatures. Ozone concentrations are quite dependent on meteorological conditions. Temperatures above 85ºF, light winds, and stagnant air systems contribute to the formation of unhealthy ozone levels. Hot, dry summers can produce long periods of elevated ozone concentrations, while ozone production can be limited during cool and wet summers. Typically, ozone levels escalate rapidly before noontime, peak in the afternoon, and taper off when the sun goes down (MWCOG, 2004).

EXHIBIT 6-33
Average Monthly Meteorological Data in the Washington, DC Area
On average, winds are out of the south 8 months of the year.

Meteorological Data	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High temp (ºF)	42	46	56	67	76	85	89	87	80	69	58	47
Low temp (ºF)	27	29	38	46	57	67	71	70	62	50	41	32
Wind speed (mph)	10	11	11	11	10	9	9	9	9	9	10	10
Wind direction (from the)	NW	NW	NW	South	South	South	South	South	South	South	South	NW

Source: *Weather Underground, 2005*
ºF = degrees Fahrenheit; mph = miles per hour

While ozone within the region is caused primarily by emissions generated within the region, it also is carried into the metropolitan area by winds from elsewhere. Research conducted through the Ozone Transport Commission, and the Ozone Transport Assessment Group provides evidence that ozone formed in other parts of the country may drift into and affect air quality in the Washington region (MWCOG, 2004b).

MWCOG, in conjunction with the Maryland Department of the Environment, Virginia Department of Environmental Quality, and DDOH, through the Air-Watch website, issues a daily Air Quality Index (AQI) for reporting daily air quality and the associated health effects that might be of concern for the population. EPA calculates the AQI for five major air pollutants regulated by the CAA: ground-level ozone, PM, CO, SO_2, and NO_2. The AQI is measured on a scale of 0 to 300. The higher the AQI value is, the greater the level of air pollution and the greater the health concern. The AQI is divided into five color-coded categories to describe air quality: good, moderate, unhealthy to sensitive populations, unhealthy, and very unhealthy. Each category corresponds to a different level of health concern. An AQI value of 100 generally corresponds to the national air quality standard for the pollutant that EPA has established to protect public health. AQI values below 100 are generally thought of as satisfactory, while AQI values above 100 are considered to be unhealthy (Air-Watch, 2005).

EPA uses a scale of 0 to 500 and incorporates an additional color code for hazardous air quality. The Washington, DC region does not monitor such extreme levels of air pollution and therefore this category is not included in its AQI (Air-Watch, 2005).

In the 2005 ozone season, air quality was declared "unhealthy for sensitive groups" in the Washington, DC area 19 times under the 8-hour ozone standard and twice under the daily peak PM standard (MWCOG, 2005b).

$PM_{2.5}$, or fine particles, is also often affected by seasonal weather conditions. $PM_{2.5}$ values in the eastern half of the United States are typically higher from July to September. In this

Air emissions in the Washington, DC area have dropped over the last 10 years and air quality is improving. The average number of days with unhealthy ozone levels has been reduced and one pollutant, lead, is no longer monitored.

calendar quarter, sulfates are more readily formed from SO_2 emissions from power plants in the region.

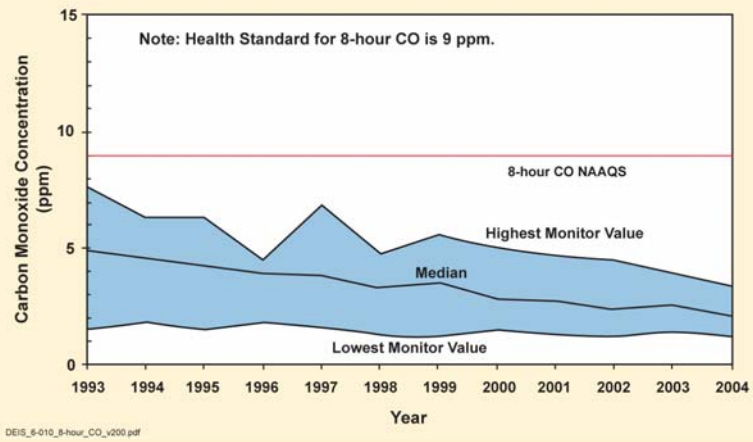
The time of year also influences daily fine particle patterns. Unlike daily ozone levels, which are usually elevated in the summer, daily $PM_{2.5}$ values at some locations can be high at any time of the year (EPA, 2004).

6.4.4 Air Pollution Trends

Nationwide, air pollutant emissions from motor vehicles have dropped considerably since 1970, even as vehicle travel has increased rapidly (EPA, 1994b). Regionally, air pollutant emissions have followed similar patterns. Air emissions in the Washington, DC area have dropped over the last 10 years and air quality is improving. The average number of days with unhealthy ozone levels has been reduced and one pollutant, lead, is no longer monitored in Washington, DC, because concentrations consistently remain well below the NAAQS.

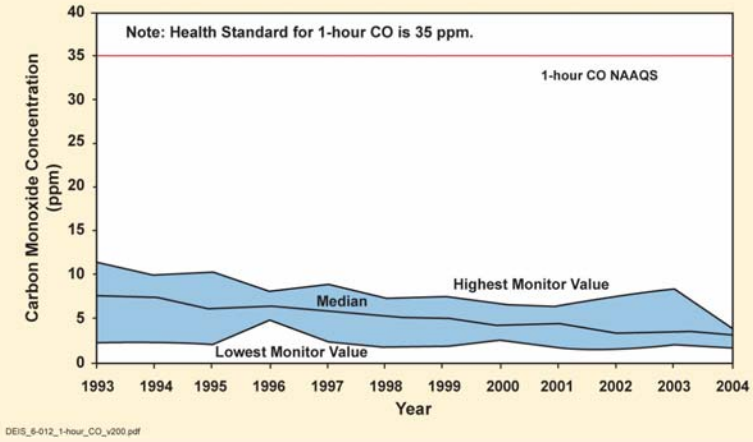
While the average weekday vehicle miles traveled in the metropolitan Washington, DC region has increased, pollutant emissions associated with transportation sources have decreased. CO is the criteria pollutant most closely tied to transportation. Regionally and locally, the maximum

EXHIBIT 6-34
Carbon Monoxide Second High 8-Hour Concentrations, Washington, DC Region, 1993-2004
Eight-hour concentrations are below NAAQS and have been steadily decreasing since 1999.



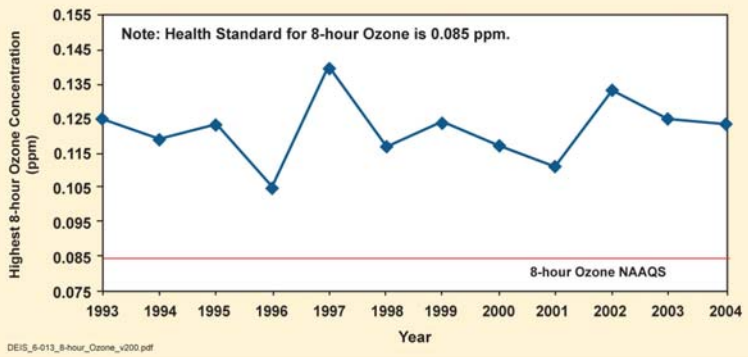
Source: Data obtained from MWCOG, 2005a.

EXHIBIT 6-35
Carbon Monoxide Second High 1-Hour Concentrations, Washington, DC Region, 1993-2004
One-hour concentrations are well below NAAQS.



Source: Data obtained from MWCOG, 2005a.

EXHIBIT 6-36
Peak 8-hour Ozone Concentrations, Washington, DC Region, 1993-2004
Ozone concentrations continue to be above the NAAQS.



Source: Data obtained from MWCOG, 2005a.

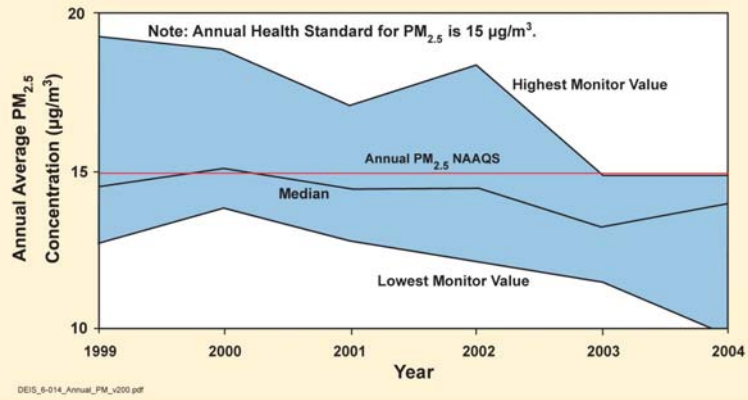
measured CO concentrations (for both the 8-hour and 1-hour standard) have been well below the federal standards over the past 10 years (Exhibits 6-34 and 6-35). Other transportation-related pollutants, such as ozone, still remain above the standards (Exhibit 6-36). Ozone concentrations for the region have exceeded the 8-hour standard every year since 1993.

Exhibits 6-37 and 6-38 show the regional trend analysis for $PM_{2.5}$. However, unlike CO and ozone, the sampling data do not begin until 1999. While regional concentrations exceed the annual federal standard shown in Exhibit 6-39, a general downward trend is evident. Concentrations have been below the 24-hour standard since 2000. No exceedances of the NAAQS for the remaining criteria pollutants were recorded in the Washington area between 1993 and 2004.

MWCOG recently completed a regional conformity analysis that evaluated the air quality conditions in the area for Constrained Long-Range Plan (CLRP) and TIP for the metropolitan Washington, DC region through 2030. The TIP lists the specific transportation facilities and projects in the CLRP that will be implemented during the initial 6-year period of the plan. The recently completed emission analysis includes updates to reflect new EPA emission requirements, including the Tier II vehicle standards. The revised emission budget from the report is shown in Exhibit 6-39 (MWCOG, 2005c).

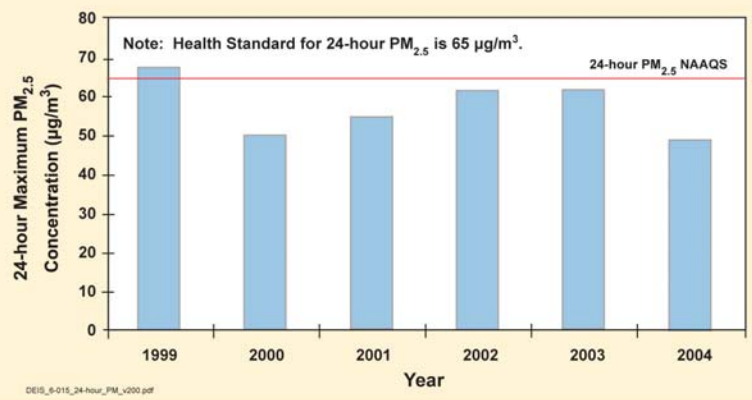
Because there are no mobile source emissions budgets for fine particles at this point, the relevant emissions test is that direct $PM_{2.5}$ and precursor NO_X emissions in each plan and program action scenario (forecast year) are not greater than base-year 2002 emissions (MWCOG, 2005d).

EXHIBIT 6-37
$PM_{2.5}$ Annual Average Concentrations, Washington, DC Region, 1999-2004
Annual average concentrations of particulate matter are improving.



Source: Data obtained from MWCOG, 2005a.

EXHIBIT 6-38
$PM_{2.5}$ 24-hour Maximum Concentrations, Washington, DC Region, 1999-2004
Since 2000, 24-hour maximum concentrations of particulate matter have been below the NAAQS.



Source: *Data obtained from MWCOG, 2005a.*

Based on the conformity reports, future transportation emissions are expected to be below the transportation emission budgets. The downward trend in CO and $PM_{2.5}$ is expected to continue for the metropolitan area through 2020, but is expected to begin increasing again by 2030. For ozone precursors, the future trend shows emissions leveling off through 2030.

6.5 Noise

6.5.1 Study Methods and Procedures

The noise evaluation began with the identification of sensitive receptors and noise study areas. Existing noise measurements were recorded, for general information, and for use in validating noise prediction models.

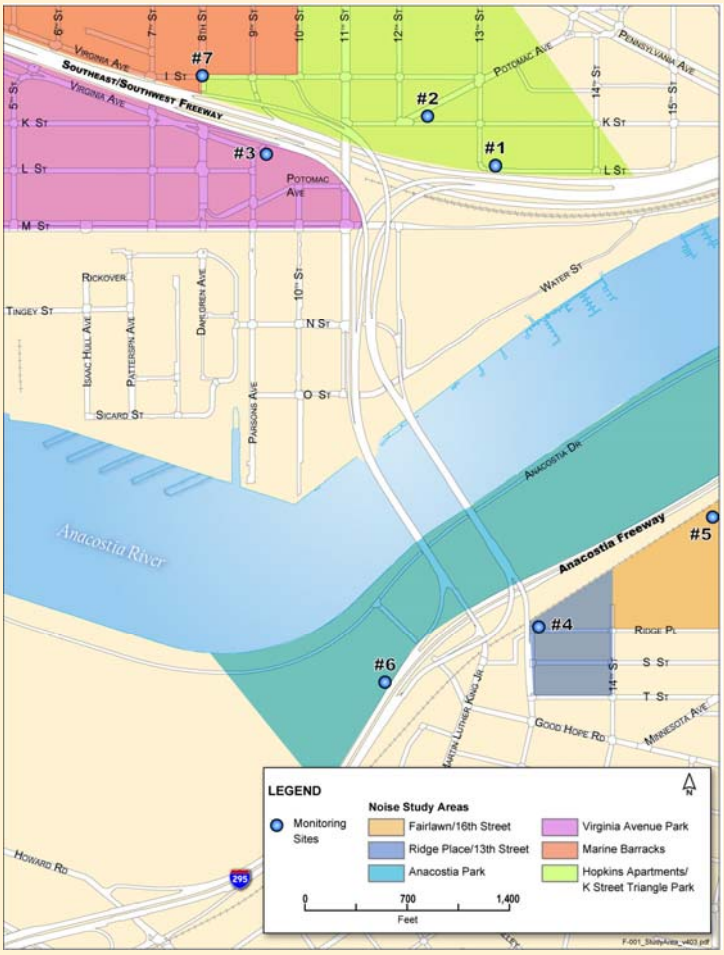
Based on field reconnaissance, three noise study areas (Exhibit 6-40) were selected on each side of the Anacostia River for evaluation. These areas encompass the sensitive receptors potentially affected by the alternatives being developed for the 11th Street Bridges project. West of the river, the sites include the Virginia Avenue Park Noise Study Area, the Marine Barracks Noise Study Area, and the Hopkins Residential Complex/K Street Triangle Park

EXHIBIT 6-39
Forecast 2030 Air Pollutant Emission Projections
All forecast emissions are below the emission budget for each of the projected years.

2005 CLRP and FY 2006-2011 TIP (tpd)				
Pollutant	**Emission Budget**	**2010 Forecast**	**2020 Forecast**	**2030 Forecast**
CO (Winter)	1671.5	722.76	589.92	611.81
VOCs	97.40	65.41	40.01	38.75
NO_X	234.70	138.60	48.90	37.58
$PM_{2.5}$*	1,651**	933	766	800

Source: *MWCOG, 2005c*
* Fine Particles ($PM_{2.5}$) Standards Air Quality Conformity Assessment (MWCOG, 2005d)
** Lacking other standards, base-year 2002 emissions have been used as a budget
tpd = tons per day

EXHIBIT 6-40
Noise Study Areas and Monitoring Sites
Noise monitoring sites are located throughout the study area.



Noise Study Area. East of the river, the sites include the Fairlawn/16th Street Noise Study Area, the Ridge Place/13th Street Noise Study Area, and the Anacostia Park Noise Study Area.

6.5.2 Noise Study Areas

Virginia Avenue Park Noise Study Area

This area features Virginia Avenue Park, the Kapp DC Key Academy, and U.S. Marine housing, as well as interspersed individual commercial and residential uses. Virginia Avenue Park is one of the District's 71 community/ recreational centers, and an important element in the city's recreation plan. Virginia Avenue Park includes community gardens and picnic areas. In the vicinity of the Virginia Avenue Park noise study area, the Southeast/Southwest Freeway is an elevated highway curving toward the 11th Street Bridges. The elevated roadway is visible throughout this area. The lower portions of the roadway are composed of mechanically stabilized earth/embankment (MSE) walls with decorative panels. The taller sections are supported by piers. The presence of educational, recreational and residential uses in this location led to the creation of this noise study area.

Washington Navy Yard is not considered a noise-sensitive area and was not included in this noise study. The facility most closely resembles a self-contained business park. Because commercial and office uses are typically considered less-sensitive noise resources, because Washington Navy Yard is shielded by a high security wall, and because Virginia Avenue Park is between the freeway and the Navy Yard, it was excluded from the Virginia Avenue Park noise study area.

Marine Barracks Noise Study Area

The Marine Barracks is a brick-walled compound of low (2- to 2- 1/2-story) structures. These facilities are the focal point of this area. For the most part, development has occurred

in a way to mirror the visual footprint of the Marine Barracks. Townhouse and commercial development predominate. The commercial strip on 8th Street is known as Barracks Row. The balance of the area is residential. The visual landscape of this area (toward the Southeast/Southwest Freeway) is similar to that described in the Virginia Avenue Park noise study area—elevated roadways composed of MSE walls with decorative panels. The presence of numerous densely populated residential uses led to the identification of the Marine Barracks Noise Study Area.

Hopkins Apartments/K Street Triangle Park Noise Study Area

While immediately adjacent to the Marine Barracks noise study area, this area is unique. Most of the area is shielded from the Southeast/Southwest Freeway by the Hopkins residential complex and a newer Marine Barracks facility. Both facilities front on K Street and back up on the Southeast/Southwest Freeway. They are large multi-story buildings that effectively shield this portion of the neighborhood from the highway. However, both Hopkins and the Marine barracks are residential units.

Adjacent to the Hopkins/Marine buildings, two of the 11th Street Bridges ramps descend toward the eastbound portion the Southeast/Southwest Freeway. This portion of the freeway extends toward (and ends at) the Barney Circle. The highway is depressed below street level. In this area, the ramps that take traffic from Anacostia toward the westbound portions of the Southeast/Southwest Freeway are also present. These elevated ramps are the tallest of the interchange complex.

The K Street Triangle Park is a small sliver of parkland owned by DDOT and administered by DPR. It is centrally located between the Hopkins/Marine buildings and the balance of the neighborhood. Amenities are limited to benches. John Tyler School is also located in the general vicinity, approximately one fully developed city block from the nearest roadway associated with the 11th Street Bridges.

Its unique setting and the presence of numerous immediately adjacent residential uses (and nearby recreational/educational uses) led to the creation of the Hopkins Residential Complex/K Street Triangle Park noise study area.

Fairlawn/16th Street Noise Study Area

Residential areas typically are noise-sensitive land uses, and a group of row houses abuts the Anacostia Freeway, separated from it by a rail line and a narrow wooded strip. The Anacostia Freeway in this area is slightly depressed, relative to the residences. In addition to the area's residences, Anacostia Senior High School is located near the intersection of Fairlawn and 16th Streets. The balance of the area land uses is commercial or industrial, which are generally not considered noise-sensitive.

Ridge Place/13th Street Noise Study Area

Ridge Place and 13th Street are separated from the Anacostia Freeway by a rail line that parallels the freeway. The freeway itself is generally not visible from most residences in this

area, although ramps from 13th Street are visible. The proximity of these roadway elements to an existing residential neighborhood and the potential for noise effects resulting from project alternatives led to the identification of this location as a noise study area.

Anacostia Park Noise Study Area

Anacostia Park is one of Washington, DC's largest and most important recreation areas. Along the eastern bank of the river, the park extends the length of the study area and is approximately 800 feet wide. In general, the eastern portion of Anacostia Park is dedicated to passive recreation, such as ball playing, picnicking, and waterfront recreation. Along the western bank of the river, Anacostia Park ends at Washington Navy Yard, at a point approximately midway between the 11th Street Bridges. Within the study area, the parkland on the western side of the Anacostia River is relatively narrow (roughly 400 feet wide) and typically is used for boathouses or marinas.

For the noise analysis, the Anacostia Park's sensitive receptors were limited to the recreation areas on the Anacostia (eastern) side of the river. Within the study area, the parkland on the western side of the Anacostia River is used primarily for marinas and other quasi-commercial purposes. These areas also have limited public access. Because these uses are generally not considered noise-sensitive land uses, this area was excluded from further analysis.

Noise Monitoring Sites

Short-term noise-level measurements (15 minutes in duration) were conducted within the six noise study areas to verify the accuracy of FHWA's Traffic Noise Model in predicting noise levels. Measurement equipment consisted of a Quest 1800 noise monitor. This instrumentation complies with the requirements of American National Standards Institute (ANSI) and the International Electrotechnical Commission (IEC) for Type I (precision) sound-level equipment.

Traffic noise-level measurements were conducted at seven locations (Exhibit 6-44). The monitoring locations are representative of the most sensitive and closest receptors to the project's proposed roadway improvements.

Monitoring Site #1: Located near the corner of L Street and 13th Street, this monitoring site is next to the Hopkins Residential Complex. It also represents the front-row receptors in the Hopkins Residential Complex/K Street Triangle Park noise study area.

Monitoring Site #2: Located at the K Street Triangle Park, this location represents the receptors located behind the large buildings that front on the Southeast/Southwest Freeway. This site is principally important as a measure of ambient city noise.

Monitoring Site #3: Located within the Virginia Avenue Park.

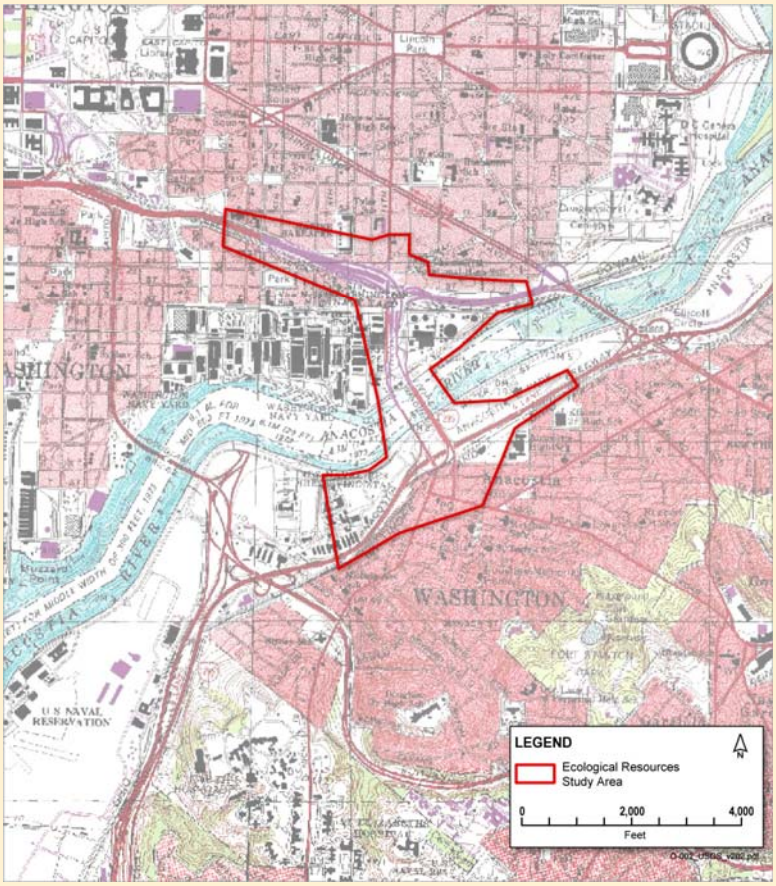
Monitoring Site #4: Located at the Fihankra Place apartments, this monitoring site represents the receptors within the Ridge Place/13th Street noise study area.

Monitoring Site #5: Located at 1601 Fairlawn Avenue, this monitoring site is a front-row receptor for the Fairlawn/16th Street noise study area.

Monitoring Site #6: Located at the border of a soccer field and Anacostia Park headquarters. The data from this location support the Anacostia Park noise study area.

Monitoring Site #7: Located at 708 I Street, this monitoring location is adjacent to an elevated portion of the Southeast/Southwest Freeway. This location is representative of the receptors in the Marine Barracks noise study area.

EXHIBIT 6-41
USGS Map Highlighting the 11th Street Bridges Ecological Study Area
The ecological study area closely follows the regional highway system.



The noise levels obtained during the traffic noise measurements are found in Appendix C. The data sheets for the on-site monitoring are contained in Attachment 1, Appendix C.

6.6 Water Quality

The Anacostia River is the only water body in the project area, based on a review of the United States Geological Survey (USGS) quadrangle maps (Exhibit 6-41) and aerial photos, and confirmed in the field. Because of government and community interest in restoring the river, it has been studied extensively. Data collection by DDOH, the Anacostia Watershed Toxics Alliance (AWTA)[1], and other sources is ongoing, and the available data are current.

[1] AWTA is an EPA-led voluntary partnership of organizations working to evaluate contamination in the Anacostia River.

The discussion of water quality and aquatic biota in this section draws on documentation available from these sources; therefore, a visual inspection of the river from its banks and by boat was performed. Additional field studies of water quality and aquatic biota were deemed unnecessary.

6.6.1 Anacostia River Hydrology

The Anacostia River joins the Potomac River approximately 108 miles upstream of the Chesapeake Bay. The river's watershed drains a predominately urban area that encompasses approximately 176 square miles in Maryland and the District of Columbia.

The Anacostia is completely a freshwater body, but it is tidally influenced. The tidal reach of the river extends 8.4 miles from its mouth to the confluence of the Northwest and Northeast Branches approximately 6 river miles above the 11th Street Bridges. Flow in this reach of the Anacostia River is heavily influenced by tides and behaves much like a tidally influenced lake, with 3-foot tidal fluctuations (Scatena, 1986). In dry weather, the river's flow is primarily driven by tidal currents, whereas during storms the river contains a unidirectional, downstream flow. The average tidal prism, or volume of water exchanged during a tidal cycle, was estimated at roughly 20 percent of the river volume reported by Scatena (1986), while the average inflow during a comparable 12-hour time period was only 1 percent of the river volume.

The two major tributaries to the Anacostia River are the Northwest and Northeast Branches. Together these streams drain 129 square miles, or 73 percent, of the area within the Anacostia River watershed. Numerous tributaries feed into each of these branches (Exhibit 6-42).

Lower Beaverdam Creek and Watts Branch contribute to the tidally influenced portion of the Anacostia River

EXHIBIT 6-42
Regional Streams and Rivers
Several streams feed the lower reaches of the Anacostia River.

following the Northwest and Northeast Branches. Drainage to the remainder of the tidally influenced river is controlled by streams whose final reaches are generally enclosed in storm sewer systems, such as Hickey Run, Pope Branch, and Fort Dupont Creek.

An investigation by the Space and Naval Warfare Systems Center, San Diego (SPAWAR) (Katz et al., 2001) characterized the river's bathymetry, tidal mixing, current velocities, and flushing time. The tidally influenced Anacostia River is generally 3.3 to 6.6 feet deep from Bladensburg to about the 11th Street Bridge, and 9.8 to 19.7 feet deep from the 11th Street Bridge to the river mouth. As expected, water flow in the river was found to be dominated by tides. Water levels changed as a standing tidal wave, meaning that water levels rose and fell nearly simultaneously throughout the entire river. Current velocities were primarily directed along the axis of the channel and were relatively homogeneous throughout the water column. Maximum current velocities along the length of the river were 30 centimeters per second (cm/s) in the vicinity of the CSX railroad bridge (upstream of the Sousa Bridge/ Pennsylvania Avenue). In contrast, the maximum flow in the lower river at the South Capitol Street Bridge and in the upper river at the New York Avenue Bridge was only 10 cm/s. These variations in current velocity result from changes in the river's cross-section and from a decrease in the tidal prism volume toward the head of the river. The cross-section of the river is greatest near the South Capitol Street Bridge, where the lowest maximum velocity was measured.

The net flow at the river mouth was calculated at 4.9 cubic meters per second during a cross-section survey conducted over one full tidal cycle in July 2000, compared to an average inflow of 3.1 cubic meters per second at the Northeast and Northwest Branches for the same time period. The difference in flow between the two points indicates that there was an additional 37 percent discharge to the river coming from non-gauged flows, the source of which includes stormwater sheet flow, sewer outfalls, and groundwater. At the time of sampling, the water column was well mixed, with little horizontal or vertical variation observed in the dissolved oxygen, conductivity, and other parameters. There was evidence of some vertical stratification in the lower river after a storm event.

The flushing time of the river was modeled separately using two types of water exchange mechanisms: tidal prism volume and inflow at the riverhead. The tidal prism model estimated the flushing time of the river to be 23 days, and the river inflow model estimated a flushing time of 28 days (Katz et al., 2001).

6.6.2 Water and Sediment Quality

The Anacostia River has a long history of contamination from human wastes and hazardous materials. Industrial and urban activities and development throughout the watershed have increasingly degraded the river and caused the substantial loss of tidal wetlands and marshes. As a result, only approximately 5 percent of the original tidal wetlands remain along the shoreline. Because of these impacts, the river can no longer filter substances and is a sink for contaminants (AWTA and Anacostia Watershed Restoration Commission [AWRC], 2002). Because of the level of contamination, the Anacostia River has been

Because of the level of contamination, the Anacostia River has been designated one of three high-priority regions of concern within the Chesapeake Bay Region by the Chesapeake Bay Program.

designated one of three high-priority regions of concern within the Chesapeake Bay Region by the Chesapeake Bay Program.

The Anacostia River is listed on DDOH's List of Impaired Waterbodies (DDOH, 2003). This list is based on an assessment of waters to provide individual beneficial uses including aquatic life support, fish consumption, shellfish harvesting, and drinking water supply. DDOH has declared fish consumption health advisories with restrictions on bottom-feeding species and game fish. Liver tumor prevalence in bottom-dwelling brown bullheads is as high as has been reported in contaminated areas of the Great Lakes. These lesions appear to result from exposure to carcinogens in the sediments (AWTA and AWRC, 2002).

EPA also lists the Lower Anacostia River on its 2002 List of Impaired Waters. EPA documents the impairments listed for the Upper and Lower Anacostia River on its website, which is summarized in Exhibit 6-43.

EXHIBIT 6-43
EPA Impairment List for the Lower and Upper Anacostia River
Impairments do not vary greatly above and below the Pennsylvania Avenue Bridge.

Impairment	Lower Anacostia (below the Pennsylvania Avenue Bridge)	Upper Anacostia (above the Pennsylvania Avenue Bridge)
Priority organics	Bis(2-ethylhexyl)phthalate, chrysene, organics	Tetrachloroethylene, organics
Pathogens	Bacteria	Bacteria
Metals	Metals, mercury, selenium	Metals, arsenic, selenium
Pesticides	DDE, DDT, Heptaclor	DDE, DDT, Dieldrin
Organic enrichment/ low dissolved oxygen	Biological Oxygen Demand	Biological Oxygen Demand
Sediment/siltation	Suspended solids	Suspended solids
Oil and grease	Oil and grease	Oil and grease
Dioxins	Dioxins	Dioxins
Chlorine	Chlorine	Chlorine

Modified from the EPA *Cycle 2002 Listed Water Information for the Lower and Lower Anacostia River, State Impairments Tables*, 2002 Section 303(d) List Fact Sheet for the District of Columbia, available at http://oaspub.epa.gov/waters/state_rept.control?p_state=DC.
DDE = dichlorodiphenyldichloroethylene; DDT = dichlorodiphenyltrichloroethane

6.6.3 Contaminant Inputs

The primary routes for contaminants to enter any reach of the Anacostia River are through surface water inputs (dissolved and/or suspended particulate form), groundwater, or

sediment transport into that reach from another portion of the river. There are two main types of surface water inputs: either movement within the river from adjacent reaches (upstream or downstream in the case of the Anacostia) or direct inputs to that reach from outside sources, such as tributaries, outfalls, wastewater treatment plants, permitted discharge facilities, or other non-permitted sources (AWTA and AWRC, 2002).

Studies have shown that significant amounts of contaminants enter the tidally influenced Anacostia River from the Northwest and Northeast Branches, especially in particulate form, and that the movement of suspended particulate matter from the upper river is likely an important transport mechanism (AWTA and AWRC, 2002).

A sediment trend analysis for the Anacostia River conducted in 2001 revealed that the Northwest and Northeast Branches are the predominant source s for sediment transport to the lower tidal portion of the river (GeoSea Consulting, 2001). The stretch of the river from the Bladensburg area to the CSX railroad bridge was identified as an area of dynamic equilibrium, in which finer sediments from upriver move through the system much like a conveyor belt. From the CSX railroad bridge to the 11th Street Bridges, the transport zone mixes with a deposition zone, which then becomes a total deposition zone downstream of the 11th Street Bridges. This area is where the river widens and depth increases, allowing energy to dissipate and fine particulates to settle.

Approximately 30 stormwater outfalls discharge directly into the tidally influenced reach of the Anacostia River (MWCOG, 1997). Stormwater in the District of Columbia is managed in two systems: a combined sewer system (CSS) and separate storm sewer systems. The District of Columbia Water and Sewer Authority (WASA) manages these systems. Much of the information about the stormwater management systems in this section comes from the WASA website.

Before the advent of sanitary wastewater treatment, storm and sanitary wastewater discharged into a CSS that would discharge directly to surface waters. According to the WASA website, the practice of combining storm and sanitary sewers ended in the early 1900s, when the practice of constructing only separate sewers began.

The existing CSS remained in service, and the discharge of raw industrial and residential sewage to the river was a source of significant contamination. Over the years, actions have been taken to retrofit the existing CSS, routing sanitary flows to treatment facilities and separating stormwater and sanitary wastewater. From the 1950s through the 1990s, portions of the CSS were separated and new treatment facilities were constructed to treat sanitary wastewater. Approximately two-thirds of the District now drains to separate systems, where the sanitary wastewater flows to wastewater treatment facilities and stormwater drains separately to surface waters. The remaining one-third of the District continues to drain into the CSS.

In the CSS during dry periods or small rain events, all stormwater and sanitary wastewater flow together and are treated at the Blue Plains Wastewater Treatment Plant. During larger events, when the combined volume of the storm and sanitary waters exceeds the capacity of

the system, the excess stormwater and raw sewage (residential and industrial) discharges directly to the river by way of combined sewer overflows (CSOs). The frequency and amount of overflow to the river varies with each CSO, depending on the drainage area and the capacity of the system. The amount of rainfall that begins overflow also varies with each CSO (Exhibit 6-44).

Combined and separate systems drain separate portions of the study area (Exhibit 6-45). Most of the western portion of the study area, and approximately one-third of the eastern portion, fall within CSS-drained areas. In heavier storms, stormwater from these areas may discharge to the river by way of six CSOs along the west bank of the river (which drain a total area of more than 2 square miles), and three CSOs along the east bank (which drain a total area of approximately 0.5 square mile).

EXHIBIT 6-44
Summary of Combined Sewer Outfalls in the Study Area, 4th Quarter 2004 to 3rd Quarter 2005
Study area CSOs will overflow with one inch or less of rainfall.

NPDES Outfall Number	Description	Amount of Rainfall per Storm Event Needed to Cause Overflow (inches)	Number of Overflow Occurrences	Total CSO Overflow Volume (million gallons)	Average Duration of Overflow (hours)
005	Chicago Street and Railroad Station SE	0.2	50	25.4	5.0
006	Good Hope Road, West of Nichols Ave, SE	1.0	11	0.3	0.7
007	13th Street and Ridge Place, SE	0.3	46	63.1	4.4
012	North of main Sewage Pumping Station (Tiber Creek)	0.7	11	62.3	0.9
013	4th and M Streets	0.4	24	15.7	3.5
014	6th and M Streets	0.4	37	62.2	4.5
015	9th and M Streets	0.8	18	2.9	1.5
016	12th and M Streets	0.5	22	24.8	2.5
017	14th and M Streets	0.4	24	35.6	2.7
018	Barney Circle and Pennsylvania Avenue, SE	0.4	25	11.9	3.0

Source: *WASA, 2005*

WASA has developed a 20-year control plan that calls for the construction of large underground storage tunnels. The tunnels will temporarily store combined overflows during heavy rain and meter this flow out to the wastewater treatment facilities over time. These tunnels are expected to reduce the CSOs to the Anacostia River by 98 percent.

Runoff from the bridges drains directly to the river. Portions of the study area not drained by the CSS drain overland to the river or by way of separate storm sewer systems. There are two separate storm outfalls on the east side of the river, upstream of the 11th Street Bridge, that collect some of the flow from the project area.

EXHIBIT 6-45
Study Area Sewer Outfalls
An extensive SSO and CSO system drains the area and discharges to the river.

While stormwater runoff is relatively "clean" compared to raw sewage, it still contains a number of contaminants, particularly in urban areas. The amount and type of contaminants in urban stormwater runoff are affected by various factors, such as land use and population density (FHWA, 2006). Major sources of contaminants in urban stormwater runoff are normal operation of vehicles (wear of frictional parts such as tires and brakes), fluid leakage from vehicles, animal feces, trash, debris, and atmospheric deposition. As a result, stormwater runoff from roadways and urban environments can carry a number of pollutants, including suspended solids, volatile compounds, oil and grease, nutrients (nitrates, nitrites, and phosphorus compounds), metals (namely copper, zinc, and lead), and fecal coliform bacteria.

6.6.4 Water Column Contamination

Arsenic, polychlorinated biphenyls (PCBs), heptachlor, DDE, and DDT are constituents of potential concern in surface water (AWTA and AWRC, 2002). The surface water data collected by AWTA show that the Anacostia River has been impaired by multiple sources of contaminants. In particular polycyclic aromatic hydrocarbons (PAHs) are present in surface water inputs into the lower Anacostia River. Hickey Run has a history of chronic and episodic petroleum hydrocarbon pollution.

These contaminants can have lethal and sublethal impacts on the biota of the river. Contaminants have differential impacts on species, and therefore can affect the diversity of the aquatic biota by reducing the populations of sensitive species. Studies have shown that the exposure of phytoplankton to mercury and PCBs can cause a significant reduction in photosynthesis and a shift in the diversity. This effect can lead to a general population reduction of the affected species, but also in the food availability for lower herbivores, and in turn higher organisms in the food chain. DDT and DDE are known to accumulate in the food chain and cause reproductive failure in fish-eating birds. Metals, notably mercury, are also known to bio-accumulate and cause neurological damage. Besides ecosystem impacts, there are potential health hazards for the human population through eating contaminated game fish and primary contact recreation.

Velinsky et al. (1999) collected water samples in the Anacostia River before and after storm events to analyze the effects of stormwater runoff on ambient water concentrations of trace

metals and PCBs. Concentrations of many trace metals increased after storm events, with the most substantial increases occurring after rainfall greater than 0.6 inch during a 24-hour period. PCB concentrations also increased after rainfall events, but not as consistently nor with as great a magnitude.

A monitoring project was conducted from 1995 to 1996 to sample water at the USGS gauging stations on the Northwest and Northeast Branches and estimate the mass loading of contaminants entering the tidally influenced Anacostia River (ICPRB, 1997). Both storm and non-storm flow samples were collected throughout the monitoring period. Concentrations of metals were generally higher in the Northwest Branch than in the Northeast Branch, but because flows in the Northwest Branch were lower, the total mass loading of metals was similar between the watersheds. Overall flow-weighted mean concentrations of total PAHs at the Northwest and Northeast Branches were 6.4 and 2.6 milligrams per liter, respectively, with 40 percent higher total loads from the Northwest Branch. PCB concentrations were measured at 21 and 60 nanograms per liter in the Northwest and Northeast Branches, respectively. Total loading of PCBs was approximately five times higher in the Northeast Branch.

A study by SPAWAR in July 2000 found the highest concentrations of total suspended solids (TSS) measured in surface water (20 to 33 milligrams per liter) in the middle portion of the river between the top of Kingman Lake and the CSX railroad bridge (Katz et al., 2001). TSS generally reduce the penetration of sunlight into the water column, which in turn affects the photosynthesis and population of phytoplankton at a basic level of the food chain. The source of elevated TSS in this area of the river may be related to the highest flow velocities and shallowest depths, causing re-suspension of sediment. Velinsky et al. (1999) found similar results during a series of monitoring events, with TSS concentrations generally highest in the middle portion of the river near the CSX railroad bridge. A decrease in TSS concentrations at high tide, slack water suggests that some of the material may be depositing out at these low-flow conditions (Katz et al., 2001).

A visual inspection of the river near the 11th Street Bridges by boat was performed on November 15, 2005. The river was turbid throughout the reach from about 1,200 feet above the 11th Street Bridge to downstream of the South Capitol Street Bridge.

6.6.5 Sediment Contamination

The extensive data that AWTA has collected show that the Anacostia River has been affected by multiple sources of contaminants. PAHs in particular have been shown to be ubiquitous in the river sediments. Similarly, PCBs and heavy metals are abundant in the sediments of the river.

Six specific Areas of Contamination (AOCs), sometimes called hot-spots, in the lower Anacostia River are known to have particularly high concentrations of contaminants (see Exhibit 6-46):

AOC 1. The area of the O Street pumping station CSO, across from Poplar Point – PAHs, PCBs, and metals

AOC 2. Upstream from the CSX railroad bridge to the Northwest Boundary Swirl Facility's outfall – PAHs and PCBs

AOC 3. Near the Washington Gas & Light facilities (west bank of the river), between the 11th Street and CSX bridges - PAHs

AOC 4. The area around the Stickfoot sewer outfall on Poplar Point – PAHs and PCBs

AOC 5. Near the northern boundary of the PEPCO Benning Road power-generating station and, to a lesser degree, downstream from the Benning Road Bridge – PCBs

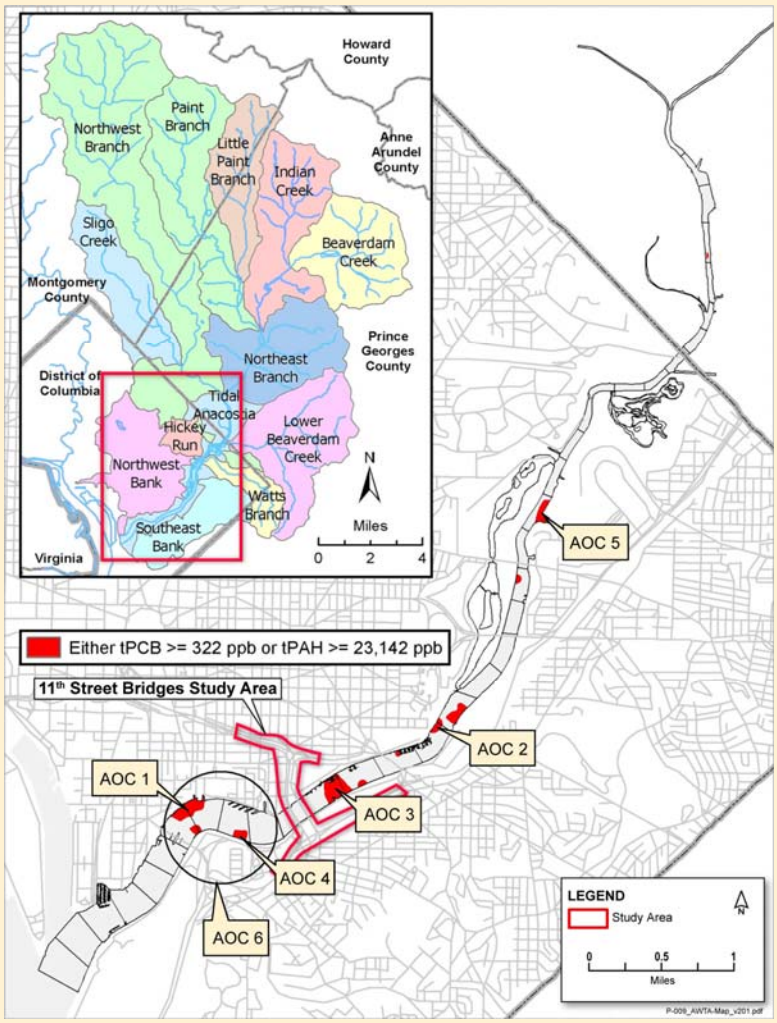
AOC 6. A large portion of the lower river that encompasses the area in between AOC 1 and AOC 4 and within the depositional zone of the lower river, extending roughly between the South Capitol and 11th Street Bridges

PCB—AWTA supported two major surveys of sediment contamination in the Anacostia River. These surveys indicate that PCB concentrations in the sediments of the entire Anacostia River are above freshwater threshold effects levels (TELs) — that is, benchmark values above which there is a higher probability of observing adverse biological effects. The levels of PCBs varied, with higher concentrations in the vicinity of the O Street pumping station CSO and across the river to Poplar Point; upstream of the Stickfoot sewer outfall on Poplar Point; upstream from the CSX railroad bridge; near the northern boundary of the PEPCO Benning Road power-generating station; and, to a lesser degree, downstream from the Benning Road Bridge (AWTA and AWRC, 2002).

A distinct shift in the relative composition of PCBs is observed throughout the river. PCBs in the upper portion of the river are proportionately less highly chlorinated with lower molecular weights, while those in the lower reaches characteristically have a greater proportion of higher molecular weight PCBs. The shift appears to occur in an area just above the 11th Street Bridge, which is co-incident with a shift to more fine-grained sediment. In one additional river reach, from lower Bladensburg Marina to Fort Lincoln, sediment PCBs appear to be predominated by heavier PCBs. Because of variations in the pattern of high- weight to low-weight PCBs within areas dominated by fine-grained sediments, this overall trend through the entire river does not appear to be entirely an artifact of grain-size partitioning (AWTA and AWRC, 2002).

PAH—The AWTA results showed that PAH contamination is ubiquitous in the river. Only two samples of sandy material (near Bladensberg) contained PAH levels that did not exceed TEL benchmark values. Four locations in the lower reaches of the river contain sediments with elevated concentrations of PAHs relative to other locations within the river. These include the vicinity of the O Street pumping station CSO; around the Stickfoot sewer outfall on Poplar Point; upstream from the CSX railroad bridge to the Northwest Boundary Swirl Facility's outfall; and near Washington Gas & Light facilities, near the 11th Street Bridge. With the exception of the Stickfoot sewer area, sediment in the other three locales all contained PAHs greater than levels associated with a high probability of observing adverse effects, and the entire river system has concentrations greater than those associated with reproductive impairment and cancerous conditions in some bottom fish (AWTA and AWRC, 2002).

EXHIBIT 6-46
Areas of Contamination
Areas of contamination in the Anacostia River within the District are partially the result of local sources and partially the result of upstream sources.



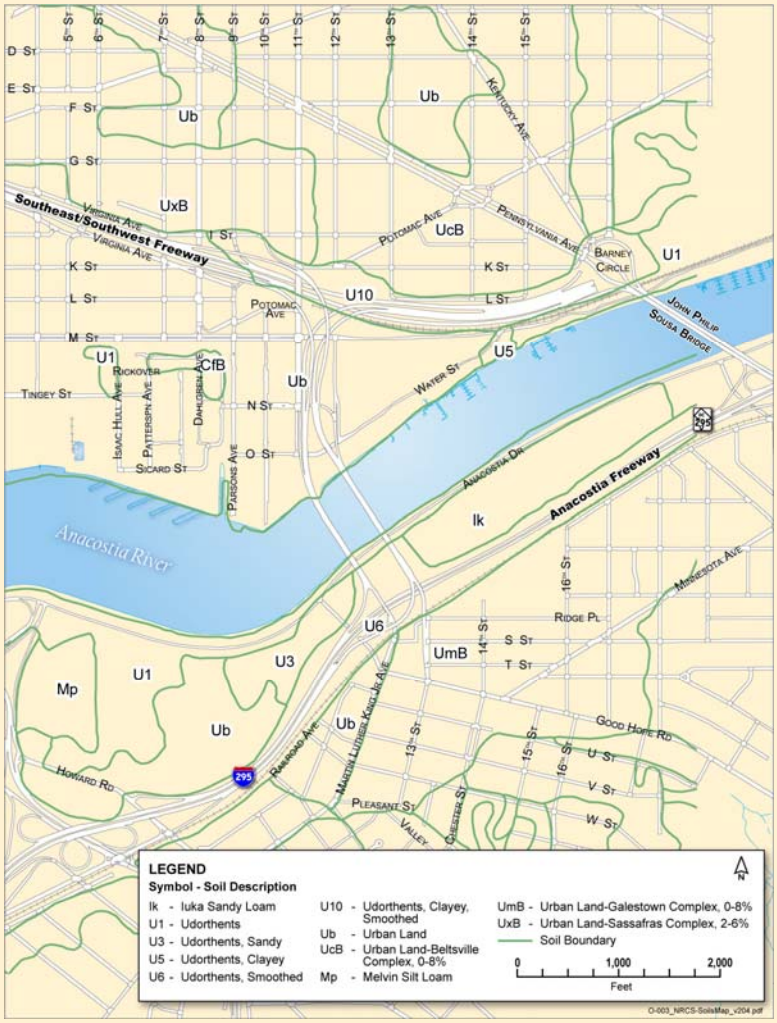
Source: AWTA and AWRC, 2002

Metals—Metal concentrations in Anacostia River sediments display general distribution patterns similar to PAH patterns. That is, concentrations are higher in the lower portion of the river. For copper, lead, and mercury, mean values are above TELs. Concentrations in the lower river are generally above thresholds associated with a high probability of adverse biological effects, or probable effect levels.

6.7 Soils

According to the Soil Survey of District of Columbia (Natural Resources Conservation Service [NRCS], 1976), coastal plain sediments of gravel, sand, silt, and clay, 300 to 500 feet deep, overlie saprolite bedrock (soft, weathered metamorphic rock) in the study area. Areas adjacent to the river are classified as alluvium, while areas farther from the river are classified as river terrace and include larger components (such as boulders).

EXHIBIT 6-47
Soils in the Study Area (NRCS Soils)
Urban land and Udorthents make up one-third of the study area.



Ten soil types are present within the study area (Exhibit 6-47). All but one of these are classified as urban land or an urban land complex, indicating the historic disturbance of the soils by human activities. The soils occur on slopes of 0 to 8 percent, and range from well drained to poorly drained.

None of the 10 soil types in the study area is hydric. However, Iuka soil is a hydric inclusion soil, containing approximately 15 percent inclusions of the hydric soil types of Fluvaquents-Udifluvents complex, poorly drained Bibb sandy loam, and poorly drained Fallsington sandy loam.

Urban land (Ub) and Udorthents (U1, U3, U5, U6, and U10) comprise approximately one-third of the study area. The soil survey describes these soils as heterogeneous, earthy fill material that was placed over various soils to create sites suitable for buildings and roads. As a result, much of these units are covered by buildings and other impervious surfaces. The fill material comprises a mixture of organic and inorganic waste from human activity and sandy, gravelly, clayey, silty, or micaceous soil material. Earthy fill comprises most of

the fill material in these areas, although in some areas the fill is composed of non-soil materials such as bricks, trash, wire, metal, boards, cinders, and concrete. The variability of the composition of the fill leads to highly variable soil characteristics. Areas containing only small amounts of coarse fragments are generally high in fertility and available water capacity and have good potential for lawns and landscaping.

Urban land complexes of well-drained Galestown, Beltsville, and Sassafras soil types occupy 62 percent of the study area. These areas retain some characteristics of the original soils, but have been altered by grading for housing, commercial, and industrial land uses. Approximately 20 percent of these soil units are relatively undisturbed, the remainder having been disturbed by cutting or filling, or covered by impervious surfaces. These soils are typically well drained to somewhat excessively drained and have a seasonal high water table greater than 6 feet below the surface.

The relatively undisturbed Iuka sandy loam (Ik) unit in Anacostia Park, north of the 11th Street Bridges, comprises the remaining 5 percent of the study area. Iuka sandy loam is nearly level, moderately well-drained soil on floodplains. Permeability is moderate and runoff is slow. This soil is subject to common but brief flooding and a seasonal high water table that is 1 to 3 feet below the surface between December and April.

6.8 Wetlands

6.8.1 Previous Wetland Studies

Two previous wetland inventories relate to the study area. The information provided by these inventories is summarized in the following sections and mapped in Exhibit 6-48.

District of Columbia Wetland Conservation Plan

The inventory of wetlands in District of Columbia Wetland Conservation Plan (District of Columbia, 1997) shows three wetlands near the 11th Street Bridges. This inventory included a desktop review and field reconnaissance survey of wetlands within the District. Before field investigations began, a preliminary wetlands map was prepared through review of U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Maps, Soil Survey maps, and previous wetland studies in the District.

The first of the three wetlands is Wetland 27, a 1-acre palustrine forested wetland (PF01B) west of the river, approximately 700 feet north of the 11th Street Bridge (see Exhibit 6-48). Dominant species reported for this wetland are red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), box elder (*Acer negundo*), poison ivy (*Toxicodendron radicans*), and arrowwood (*Viburnum dentatum*). This wetland was identified as having average relative value, with fair diversity and quality, but poor functional viability under this relative-value ranking scheme.

EXHIBIT 6-48
Study Area Wetlands
Known wetlands in the study area were identified during inventories for the District of Columbia Conservation Plan, the Anacostia Riverwalk Environmental Assessment, and the 11th Street Bridges project.

Wetland 29 was identified as a palustrine emergent, persistent, seasonal (PEM1C) wetland covering a reported 0.01 acre, although the area as shown on the map is approximately 0.15 acre. Dominant species reported for this wetland were arrowhead (*Sagittaria* sp.) and sedges (*Carex* spp.). Wetland 29 was listed as having low diversity, quality, and functional viability.

Wetland 30 was classified as a border of riverine, emergent vegetation (R1EM2N) along the east bank of the river. Dominant plants listed for this area include swamp loosestrife (*Lythrum salicaria*), sweet flag (*Acorus calamus*), yellow flag (*Iris pseudoacorus*), silky dogwood (*Cornus amomum*), silver maple (*Acer saccharinum*), marsh hibiscus (*Hibiscus moscheutos*), weeping willow (*Salix babylonica*), three-square (*Scirpus americanus*), cattail (*Typha latifolia*), and reed canary grass (*Phalaris arundinacea*).

Anacostia Riverwalk Environmental Assessment

NPS, in collaboration with DDOT, prepared an Environmental Assessment (EA) for the proposed Anacostia Riverwalk Trail (NPS, 2004). The purpose of this EA was to evaluate the potential effects resulting from construction of multi-use trails along both the west and east sides of the Anacostia River. Contained within the EA is information regarding wetlands found within the Riverwalk project area.

The draft Wetland Delineation Report for the Proposed Anacostia Riverwalk Trail (SES, 2004) identifies two small wetlands in the study area. Wetland WP005 is located a short

distance northeast of the 11th Street Bridge (Exhibit 6-49). This wetland, although not identical in shape or location, appears to correspond to the District of Columbia's Wetland 29. The report identifies this wetland as a palustrine, emergent, persistent, saturated (PEM1B) wetland. WP005 occupies 3,327 square feet (0.08 acre) in area, and is located 335 feet northeast of the 11th Street Bridge along the east side of Anacostia Drive.

EXHIBIT 6-49
Wetland WP005
This small wetland is just north of the 11th Street Bridge in Anacostia Park.

A second, smaller wetland labeled WP005B (approximately 400 square feet, 0.01 acre) is located immediately south of the Officer Welsh bridge, between the river and Anacostia Drive. This wetland is classified as a palustrine, emergent, persistent, temporarily flooded (PEM1A) wetland.

6.8.2 Field Investigation

Field investigations were conducted to confirm previously identified wetlands and to identify other potentially regulated wetlands. Wetlands were identified according to the Corps of Engineers Wetland Delineation Manual (USACOE, 1987), with subsequent guidance from the Corps of Engineers. In accordance with the manual, each wetland area was identified based on the occurrence of wetland vegetation, hydric soils, and wetland hydrology. Indicators of all three parameters are required to conclude that a regulated wetland is present.

The connectivity of each wetland to the tributary system (streams) of the study area was studied. Wetlands with indicators of at least annual surface water connection to a stream, or within a floodplain, are considered "non-isolated," and those with no apparent surface water connection to a stream are considered "isolated." Non-isolated wetlands are regulated as waters of the United States under the Clean Water Act. Isolated wetlands are not regulated under the Clean Water Act, but may be subject to District regulations.

Ditches that parallel the roadways, which were created in a non-hydric soil and do not represent the relocation of a natural channel, were not considered to be jurisdictional wetlands even though they support wetland vegetation. These ditches were considered drainage ditches or ditches through uplands, which are generally not regulated as waters of the United States under the Clean Water Act (USACOE, 1999).

Site visits were performed by project team biologists in October and November to confirm the presence of the wetlands identified by the DC and NPS reports, as well as to identify other potential wetland areas. Wetlands were also reviewed in the field with USACOE Baltimore District personnel on February 17, 2006. Those field reviews established the wetland boundaries that will be used for this study. The text below describes project-area

wetlands and the differences between this study's wetland findings and previous studies' findings.

The previously identified DC Wetland 27 was not confirmed to be a wetland. The woodland slopes steeply from Water Street (along the west border) to an area mounded by historic dumping, with no sign of wetland hydrology. Dominant trees found in this area included red maple, American elm, and black cherry (*Prunus serotina*). The understory was dominated by amur honeysuckle (*Lonicera maackii*), mulberry (*Morus rubra*), blackberry (*Rubus allegheniensis*), Japanese honeysuckle (*L. japonica*), and English ivy (*Hedera helix*). While the area historically may have been a wetland, this community is more typical of disturbed uplands. The presence of black cherry in the canopy indicates that the disturbance occurred a number of years ago. The wetland delineation report for the Anacostia Riverwalk (SES, 2004) included this area (it is between two Riverwalk alternatives) and also fails to identify this area as a wetland.

The previously identified NPS wetland, WP005B, was eliminated by the Corps. The soil in the area was found to be compacted fill material, and therefore the area was eliminated because of the lack of sufficient hydric soil indicators.

The field reviews confirmed the border of riverbank vegetation, generally 8- to 10-feet-wide, along the east bank of the river, consistent with DC Wetland 30 (Exhibit 6-48). A 3-foot-high stone seawall runs along the bank and this vegetation is perched above the seawall. The vegetated border was found to be a mixture of upland and wetland species, including black willow (*Salix nigra*), red maple, dodder (*Cuscuta gronovii*), purple loosestrife, silky dogwood, false indigo (*Amorpha fruticosa*), jewelweed, blue flag, heath aster, hibiscus, absinthe (*Artemisia annua*), wingstem (*Verbesina alternifolia*), and Virgin's bower (*Clematis virginiana*). The jurisdictional limit of the Anacostia River is the Mean High Water (spring tide) elevation which near the 11th Street Bridges is approximately 2 feet above mean sea level. The limits of the high tide are evidenced in the field above the seawall throughout the study area by a rack line or a line of erosion (particularly where the seawall has failed), which generally corresponds with the limit of mowing by the NPS. This high-tide line includes the wetland vegetation found along the bank above the stone seawall. Therefore, this border of vegetation is considered part of the Anacostia River water body for regulatory purposes (33 CFR 329.11) even though the Corps of Engineers does not consider it wetland.

The previously identified NPS wetland, WP005 (presumably the same as DC inventory Wetland 29), was confirmed along the east side of Anacostia Drive. Vegetation consisted of pink knotweed (*Polygonum pensylvanicum*), common nettle (*Urtica dioica*), jewel weed (*Impatiens capensis*), cattail, culm sedge (*Cyperus filiculmis*), sedge (*Carex sp.*), panic grass (*Panicum languinosum*), duck potato (*Sagittaria latifolia*), heath aster (*Aster pilosus*), silky dogwood, poison ivy, and purple loosestrife (*Lythrum salicaria*). The wetland area and a surrounding buffer area are demarcated with signs as a "Natural Wildlife Habitat" by the NPS.

A new wetland, DP-1, was identified in Anacostia Park north of the bridge approaches. This 0.35-acre wetland consists of a series of shallow ponded depressions in a ballfield. Regular mowing in and around these depressions allows only minimal wetland vegetation to grow, but they do possess indicators of wetland hydrology (ponding and soil saturation) and wetland soil characteristics.

Two wetlands were identified in the project area. They total 0.43 acre.

The two wetlands identified in the project area (WP005, DP-1) were evaluated using the Wetland Evaluation Technique (Waterways Experiment Station, 1987). Exhibit 6-50 provides the results of the evaluation. This method uses physical characteristics of the wetlands and surrounding conditions to provide a qualitative assessment (low, moderate, or high) of the ability of a wetland to provide several functions.

EXHIBIT 6-50
Wetland Functional Evaluation Based on Wetland Evaluation Technique
Wetlands WP005 and DP-1 function the same.

Function	WP005	DP-1
Groundwater recharge	Moderate	Moderate
Groundwater discharge	Low	Low
Floodflow Alteration	High	High
Sediment Stabilization	Low	Low
Sediment/Toxicant Retention	High	High
Nutrient Removal/Transformation	High	High
Production Export	Moderate	Moderate
Wildlife Diversity/Abundance	Low	Low
Aquatic Diversity/Abundance	Low	Low

Wetlands WP005 and DP-1 have a high potential for providing flood flow alteration, sediment/toxicant retention, and nutrient removal/ transformation. Each wetland is essentially a depression with constricted outlet, thereby detaining water. This rating does not reflect the amount of retention/ transformation or detention that each wetland can provide. In each case, the sizes of the wetlands are quite small, which would limit the ability of the wetlands to store or treat any large volume of water. The small size of WP005 and DP-1, frequent adjacent human disturbance and lack of adjacent cover habitats limit the wetlands' functions for wildlife diversity. The lack of open water in the wetlands limits the aquatic diversity functions.

Even though the Corps does not consider the riverbank vegetation as a wetland, it was also evaluated because it contains some wetland species. The riverbank vegetation could function in sediment stabilization (that is, bank stabilization) from erosive forces, because high tide overtops the seawall. While it is adjacent to the river and may be able to remove some toxicants/nutrient from the water column, its lack of ability to detain any water limits this function.

The wetland size, frequent adjacent human disturbance, and lack of adjacent cover habitats limit all of the wetlands' functions for wildlife diversity. The lack of open water of the depressional wetlands, and the separation of the riverbank vegetation from the river by the seawall, limits the aquatic diversity functions.

6.9 Fish and Wildlife

6.9.1 Aquatic Environment

The 11th Street Bridges are located approximately 2.3 river miles above the mouth of the Anacostia River. Aquatic habitats within the tidal Anacostia River near the project site are limited to primarily unvegetated subtidal areas dominated by a mud substrate.

Aquatic Macroinvertebrates

The benthic community of the Anacostia River is characterized by low diversity, low abundance, and dominance by pollution-tolerant worms. These conditions are reflective of the degraded water quality of the river from decades of industrial and urban activities and development (AWTA and AWRC, 2002).

USFWS studied sediment quality in the Anacostia River using the triad approach, a weight-of-evidence approach that consists of complementary measures of sediment chemistry, benthic community structure, and sediment toxicity (USFWS, 2002). As part of the study, benthic invertebrates grab samples were collected from 20 locations throughout the river and evaluated using the Benthic Index of Biotic Integrity (B-IBI) for tidal freshwater. The B-IBI is a multiple metric index developed to identify the degree to which the benthic community meets the Chesapeake Bay Program's Benthic Community Restoration Goals (Weisberg et al., 1997).

The results of the USFWS study indicated that 40 percent of the sites represented degraded conditions; 20 percent were classified as "marginally degraded," and 20 percent were "degraded" or "severely degraded." The station closest to the 11th Street Bridge (AR-68) scored 2.2 on the B-IBI scale, which corresponds to a degraded condition (score of 2.1 to 2.6). Pollution-tolerant oligochaetes (aquatic worms) comprised between 80 and 90 percent of the organisms at most of the sampling sites. The authors suggested that the degraded benthic communities observed were likely caused by a combination of chronic exposure to contaminants and other stressors, such as low dissolved oxygen.

The results of the USFWS study were consistent with the results of benthic surveys conducted by Schlekat et al. (1994), suggesting little improvement in sediment quality and the health of the benthic community during the last decade. Abundance and taxa richness were similar between the studies. Abundance ranged from approximately 1,000 to 6,000 organisms per square meter, which may be related to the homogeneous mud substrate in the lower river. Species diversity ranged from 5 to 17 species per sample site, typical for tidal reaches, with the highest diversity at the upstream locations. In the Schlekat et al. study, each station was dominated by pollution-tolerant oligochaetes and chironomids (non-biting midges), which together comprised at least 93 percent of the total number of organisms.

Fishes

The Anacostia River is a tidally influenced freshwater river. The channel of the river is generally 10 to 16 feet deep in the vicinity of the 11th Street Bridges, according to recent soundings by the Corps of Engineers. The river has three principal types of fishes: resident fishes (e.g., brown bullhead) of the freshwater tributaries and the main channel; anadromous fishes (e.g., striped bass) that live in marine or estuarine waters, but return to freshwater to spawn; and catadromous fishes (e.g., American eel) that live in freshwater most of their lives, but migrate to the sea to spawn. Fish species found in the Anacostia River are listed in Appendix F.

Approximately 140 permanent or seasonal fish blockages such as debris (approximately 50 in the main stem reaches of the larger tributaries) in the upper reaches of the Anacostia watershed were identified in a study by MWCOG in 2000. These fish blockages significantly reduce the available habitat for migratory fishes. There are ongoing efforts to remove some of these fish blockages, but many have not been removed and some new ones have recently occurred from the effects of urban stormwater flows (USACOE, 2005).

Fishing is popular in this reach of the Anacostia River. Anacostia Park is listed as one of several of the most popular fishing spots by the DC Fisheries and Wildlife Division.

Contaminants Accumulation in Fish Tissue

Fish in the Anacostia are contaminated. DDOH has issued a public health advisory recommending no consumption of certain game fish, including catfish, and limited consumption of others, such as largemouth bass. Several studies document the accumulation of contaminants and physical anomalies in the aquatic biota of the river.

Doelling-Brown et al. (2000) investigated the potential for impairment of reproductive success in white perch because of PCB bioaccumulation. PCB concentrations in the spawning population of white perch were compared to a literature-based comparable whole-body concentration of 0.4 ppm in rainbow trout associated with low egg survival (EPA, 1980, as cited in Eisler, 1986). This study found that the whole-body tissue levels of Anacostia white perch exceeded this benchmark. Four of five white perch samples collected in 1998-1999 from Kenilworth Marsh and all five samples collected near Washington Navy Yard, just downstream of the 11th Street Bridge, had concentrations exceeding 0.4 ppm.

The District of Columbia has collected fish samples from the Anacostia River for monitoring tissue chemical residues in relation to human-health concerns (Velinsky and Cummins, 1996). This study evaluated composite fish samples from the Anacostia and Potomac rivers. The results of the study revealed that mercury, lead, selenium, zinc, and cadmium were detected in all or most of the samples. The highest total PAH concentrations were detected in fish from the lower Anacostia River. The distribution of PAHs in the fish tissue was dominated by two- to three-ring aromatics (dominant group naphthalene and alkyl-substituted naphthalenes). This distribution suggests a petroleum source of contamination because approximately 90 percent or greater of the compounds detected were of the low-molecular

weight PAHs. The authors suggest that the petroleum source is most likely from past oil spills in the area and potentially from stormwater runoff and CSOs. Channel catfish composites from the lower Anacostia and lower Potomac rivers had the highest concentrations of most pesticides. The highest concentrations of total chlordane (channel catfish) and total DDTs (common carp) were found in the lower Anacostia River. The highest concentrations of PCBs in fish tissue throughout the river system were found in channel catfish and common carp.

USFWS conducted a survey of tumor prevalence in brown bullhead in the Anacostia River in 2001 (USFWS, 2002) and found a 50 to 68 percent prevalence of liver tumors and 13 to 23 percent prevalence of skin tumors in brown bullhead longer than 260 millimeters (at least 3 years old). The study linked the prevalence of tumors in brown bullhead to high PAH exposure in the Anacostia sediments. Brown bullheads come in close contact with contaminants in sediments because they are benthic feeders that burrow into the mud during winter (Becker, 1983).

Submerged Aquatic Vegetation

No submerged aquatic vegetation (SAV) beds have been recorded in the study area during annual surveys since 1998. Prior to 2001 small beds were located both upstream and downstream of the study area but these have not been noted since. The Virginia Institute of Marine Sciences (VIMS), at the College of William and Mary, under contract to NMFS, performs annual surveys of SAV beds throughout the tidal Chesapeake Bay area, including the Potomac River and the tidal reach of the Anacostia River. Annual survey data for 1998 through 2004 were downloaded from the VIMS website (http://www.vims.edu/bio/sav/) for the Anacostia River (ANATF, Upper Potomac River segment, VIMS maps 034 and 029). Much of these data were originally collected and analyzed by the DC Fisheries and Wildlife Division, before being supplied to VIMS.

During 1994 through 2000, SAV beds were recorded in the Anacostia River, although none were found within 600 feet upstream or within 2,000 feet downstream of the existing bridges (Exhibit 6-51). The annual data since the year 2000 show a general decline in the amount of SAV in the Anacostia River. Except for one small area recorded in 2002 near the mouth, no SAVs were recorded anywhere in the Anacostia River in 2001 through 2004. Data for 2005 were not yet available.

A visual inspection of the river by boat on November 15, 2005, from approximately 1,200 feet upstream to below the South Capitol Street Bridge, found no SAV in the Anacostia River. The inspection was conducted at midday during low tide. A mudflat, created by sedimentation at a storm sewer outfall approximately 1,100 feet upstream of the 11th Street Bridge, had no SAV.

6.9.2 Terrestrial Environment

The study area for terrestrial analysis encompasses approximately 169 acres west of the Anacostia River and approximately 141 acres east of the river. It was defined by the area affected by preliminary design concepts with a buffer. Given that the project is located in a densely developed urban area, with limited potential variability of the alternatives and limited natural resources, the buffer was generally confined to approximately 300 feet, but narrowed to a minimum of approximately 150 feet where improvements would be confined to the existing roadway (such as at the termini).

EXHIBIT 6-51
Study Area Submerged Aquatic Vegetation
Submerged aquatic vegetation has not been recorded in the study area since 1998.

Field studies to characterize current land use and the conditions of vegetative cover and wildlife were performed in September, October, and November 2005. These studies included windshield surveys in more developed areas and meandering hiking surveys in undeveloped areas to identify the predominant vegetative communities. Running lists were kept of plant species found, excluding street trees and other landscaping, and wildlife encountered or whose signs (e.g., tracks and calls) were seen.

An inventory of street trees in the developed areas, prepared by the Casey Tree Foundation in 2002, with additions in 2005, was also consulted.

Overall, the study area is more than 75 percent urban developed area, with another 18 percent composed of maintained parks and recreational fields (Exhibit 6-52). For discussion, the study area was subdivided into three subareas based on predominant land use. Subarea One is the portion of the study area west of the river and Subareas Two and Three cover the eastern portion of the study area (Exhibit 6-53).

EXHIBIT 6-52
Habitats in the Study Area
The study area is more than 75 percent urban developed area, with another 18 percent composed of maintained parks and recreational fields

	Subarea 1		Subarea 2		Subarea 3		Total	
	Acreage	Percent	Acreage	Percent	Acreage	Percent	Acreage	Percent
Woodland	5	3.2	4	5.9	6	9.5	15	4.9
Scrub-shrub	0	0.0	1	1.2	1	1.5	2	0.6
Lawns, mowed areas	11	6.4	42	56.5	4	5.3	57	18.4
Developed lands	152	90.4	27	36.4	56	83.7	235	76.1
Total	168	100.0	74	100.0	67	100.0	309	100.0

Subarea One consists of approximately 90 percent urban developed lands. West of the Southeast/Southwest Freeway, the area is predominantly dense residential development. This subarea partially includes the Washington Navy Yard facilities south of the bridges, and the new Maritime Plaza north of the bridges. Windshield reviews of these densely developed areas confirmed that Virginia Avenue Park is the most notable terrestrial community. Virginia Avenue Park is located at the intersection of Potomac Avenue and 9th Street. Recently renovated, this park now contains garden plots along the western edge, picnic tables along the southern end, and a curved walkway with birdhouses and seating areas in the center. New landscaped plantings along the northern edge of the park border the Southeast/Southwest Freeway. One large American elm (40 inches diameter at breast height [dbh]) was observed near the center of the park area. One tree of heaven and a Siberian elm (*Ulmus pumila*) were also observed along the Southeast/Southwest Freeway border.

Scattered small tracts of trees and mowed rights-of-way are located along Southeast/ Southwest Freeway around the interchange, and south and east of the interchange. Trees and shrubs in these areas include black walnut (*Juglans nigra*), mimosa (*Albizia julibrissin*), amur honeysuckle (*Lonicera maackii*), tree of heaven (*Ailanthus altissima*), American elm, and red mulberry (*Morus rubra*). Along with the small trees, moderate to heavy underbrush consisting of poison ivy (*Toxicodendron radicans*), porcelainberry (*Ampelopsis brevipedunculata*), trumpet vine (*Campsis radicans*), and Japanese honeysuckle (*L. japonica*) were observed.

Scattered small willow and red maple trees line a portion of the riverbank above the seawall near the 11th Street Bridges.

EXHIBIT 6-53
Vegetative Cover Types in the Study Area
Most of the vegetative cover in the study area is mowed lawns and fields.

Wildlife observed included gray squirrel (*Sciurus carolinensis*), northern mockingbird (*Mimus polyglottos*), rock dove (*Columba livia*), common gull (*Larus canus*), ring-billed gull (*Larus delawarensis*), and American crow (*Corvus brachyrhynchos*). The gulls were seen mostly in flight along the river. The rock doves were observed under the 11th Street Bridges.

Subarea Two consists of approximately 74 acres, mostly Anacostia Park and Anacostia Freeway right-of-way. The Anacostia Pool and Recreation Center is located along the Drive Circle Roadway north of the bridges and houses the swimming facilities for the Anacostia area. The NPS park police headquarters, consisting of office buildings, storage sheds, dog training yards, helicopter landing pads, and asphalt parking areas, is located west of the bridges.

Most of the park is composed of mowed and maintained recreational fields. Mowed lawns surround the park police headquarters and helicopter pad. Maintained grass also borders either side of Anacostia Drive. Planted ornamental crabapples (*Malus* sp.) line Anacostia Drive.

Wooded areas are located along the Anacostia Freeway right-of-way, but constitute only a small portion of this subarea. The areas of woodland along the bridge approach appear to have been originally landscaped with white pine (*Pinus strobus*) and crabapples, but have since been invaded by other species. Common tree species noted within these areas were American elm, mimosa, smooth sumac (*Rhus glabra*), and tree of heaven. Dense stands of bush honeysuckle (*Lonicera maackii*) and japanese honeysuckle (*L. japonica*) dominate the understory. Other understory species within these wooded areas include poison ivy, Virginia creeper (*Parthenocissus quinquefolia*), multiflora rose (*Rosa multiflora*) and porcelainberry. The wooded areas along the freeway have a similar composition. In a few areas the dominant vegetation is scrub-shrub—that is, mostly composed of scattered smaller trees and shrubs, although of similar species composition.

Along the shoreline, a thin strip of small trees and herbaceous species was observed. This riverbank vegetation was discussed earlier in Section 6.8, Wetlands.

Wildlife observed in this area was mostly birds. Canada geese (*Branta canadensis*) were observed in the soccer fields during the October 6, 2005, field visit. A number of house sparrows (*Passer domesticus*) were observed within the underbrush lining the Anacostia River. A large number of gulls and geese were observed loafing on the mudflat created at a storm sewer outfall along the east bank upstream of the study area. During the boat tour, one double-crested cormorant (*Phalacrocorax auritus*) was observed flying along the Anacostia River.

Evidence of beaver (*Castor canadensis*) foraging was seen on several shrubs along the east bank of the river between the 11th Street Bridge and the Officer Welsh bridge. Beaver are known to inhabit Kenilworth Marsh, approximately 3 river miles upstream, and Poplar Point, adjacent to the study area downstream along the east bank.

Subarea Three comprises approximately 67 acres east of the Anacostia Freeway. A windshield review found the entire area to be comprised of residential, commercial, and light industrial land uses and abandoned lots. Other than mature trees that line the residential streets, essentially no terrestrial plant and animal communities are within this subarea. No wildlife was observed during the site visit.

6.9.3 Street Trees

The Casey Tree Foundation has assembled an inventory of street trees throughout the District. The inventory was completed in the area of the 11th Street Bridges in 2002, with some additional plantings in 2005. The Casey Tree Foundation inventory was consulted as an indicator of the type and quality of street trees in the study area.

Subarea One – Approximately 23 different species and approximately 495 trees were inventoried within this area. Most of the trees (approximately 172) are maples. These include Norway maple (*Acer plantoides*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), and sugar maple (*Acer saccharum*). Diameter at breast height for maples ranged from 2 to 27 inches.

Approximately 105 oak trees were mapped in this area, with diameters ranging from 2 to 38 inches. Species include red oak (*Quercus borealis*), scarlet oak (*Quercus coccinea*), pin oak (*Quercus palustris*), and willow oak (*Quercus phellos*).

A total of 27 American elms (*Ilmus Americana*) (13 to 33 inches dbh) and 12 American lindens (*Tilia Americana*) (2 to 20 inches dbh) were mapped in this area. Other species mapped included dogwood, ash, pine, poplar, little-leaf linden (*Tilia cordata*), American holly (*Ilex opaca*), Eastern red cedar (*Juniperus virginiana*), London planetree (*Platanus acerifolia*), Chinese elm (*Ulmus parvifolia*), and Japanese zelkova (*Zelkova serrata*).

Subarea Two – While many trees are within the woodlands that border the Anacostia Freeway in this subarea, no street trees were inventoried by Casey Tree Foundation here. However, a notably large willow oak, measuring approximately 4 feet in diameter, is located north of the bridge in the park area, just west of the right-of-way. A 30-inch-dbh willow oak was also found nearby, just within the right-of-way fence. A number of white pines also appear to have been planted along the bridge approaches.

Subarea Three – Approximately 9 different species and approximately 142 trees were inventoried within this subarea. There are 51 maples, including 28 Norway maples (2 to 15 inches dbh), 21 red maples (1 to 25 inches dbh), and 2 sugar maples (11 inches dbh). In addition, 22 American elms (6 to 28 inches dbh), 18 Siberian elms (6 to 14 inches dbh), and 37 gingko (Ginkgo biloba, 1 to 33 inches dbh) were mapped in this area. Other species include tree of heaven, Bradford pear (*Pyrus calleryana*), and little-leaf lindens.

6.9.4 Notable Adjacent Habitats

Poplar Point

Poplar Point is located on the eastern bank of the Anacostia River between the 11th Street and South Capitol Street Bridges, just south of the study area (Exhibit 6-53). The area is separated by a treeline from the nearby Park Police headquarters. Much of the area was formerly used for greenhouses and a nursery, but is currently not maintained and succeeding to scrub-shrub vegetation. Large fields of unmowed, unmaintained grass and forb species are managed for ground-nesting birds near Anacostia Drive.

The DC inventory identifies two large wetlands (31 and 32) in the Poplar Point area south of the study area. Wetland 32 is considered to have good quality and diversity, with fair functional viability, while Wetland 31 has fair diversity but poor quality and functionality. Emergent wetland vegetation such as common reed (*Phragmites australis*) and rush (*Juncus* sp.) were noted within each respective wetland area.

A list of plant and animal species that have been observed at Poplar Point by the NPS, and which may occur in the study area, is included in Appendix F.

Osprey Nests on South Capitol Street Bridge

Concern has been expressed from various sources about the osprey nest on the South Capitol Bridge. During the November 15 boat tour of the river, several osprey nests were observed. The nests are located at the points of large wooden "fenders" around the central piers, which extend 50 to 200 feet upstream and downstream of the bridge. No similar structures were built at the 11th Street Bridges, so a similar nesting habitat does not exist on the 11th Street Bridges.

Anacostia Park Land, West Bank

East of Barney Circle and south of the Congressional Cemetery is an NPS parcel, approximately 20 acres in size, which is largely wooded. The parcel extends as a narrow wooded strand along the west bank of the river to Robert F. Kennedy Memorial Stadium. The public provided a number of comments regarding the ecological and aesthetic value of this parcel in conjunction with the Middle Anacostia River Crossings Transportation Study. The area has been documented by local citizens groups as habitat for a large variety of birds. This diversity is likely linked to the location of the parcel at the southern end of a stretch of open land, much of it woodland, which extends upstream along the river to the Kenilworth Aquatic Gardens and the National Arboretum.

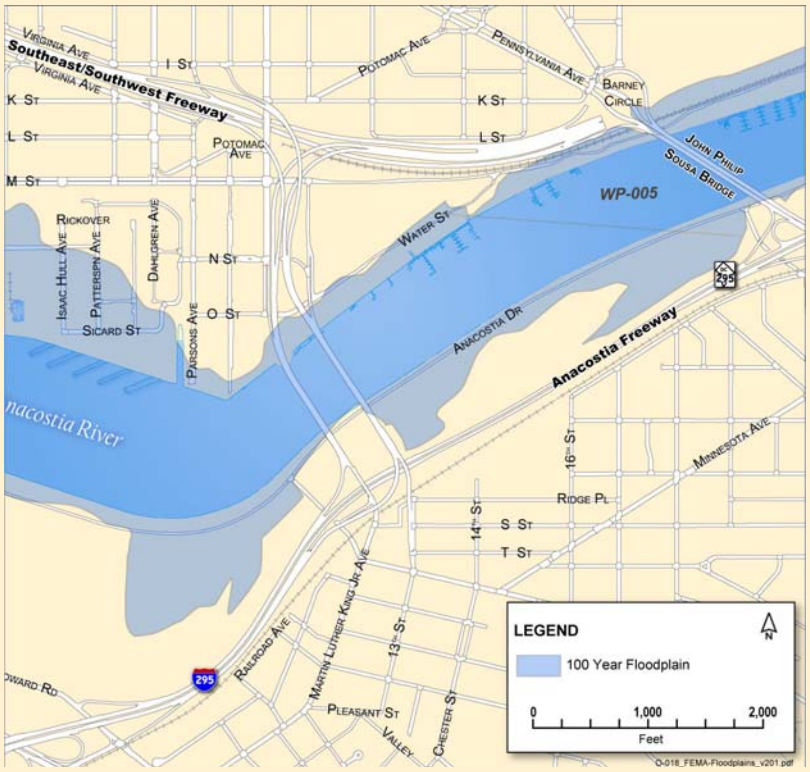
6.10 Floodplains

Floodplains provide flood and stormwater attenuation by decreasing water velocities and providing temporary water storage. By temporarily storing water, floodplains help to remove sediments and provide erosion control. Floodplains also provide important ecosystem functions, such as nutrient export, increased primary productivity, and wildlife

habitat and movement corridors. These functions can vary from one location to another depending on vegetative structure, stream hydrology, and distance from the stream.

Floodplains are often reserved for open space for recreation, in this case, undeveloped areas of the Anacostia Park.

EXHIBIT 6-54
FEMA Floodplain Mapping
FEMA mapping shows the entire floodway area of the Anacostia River as floodway fringe.



FHWA and the Federal Emergency Management Agency (FEMA) guidelines have identified the base (100-year) flood as the flood having a 1 percent probability of being equaled or exceeded in any given year. The base floodplain is the area of 100-year flood hazard. The regulatory floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of obstructions so that the 100-year flood discharge can be conveyed without increasing the base flood elevation more than 1 foot. Areas of the floodplain that are outside of the floodway are designated the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the base (100-year) flood elevation by more than 1 foot.

Floodway and flood boundary mapping available from FEMA shows the extent of the 100-year floodplain along the Anacostia River (Community Panel #110001 0030, effective November 15, 1985) (Exhibit 6-54). The extent of the 100-year floodplain in the study area has been delineated using detailed modeling methods (Zone AE or A10). While the Anacostia is subject to increased flows during storms across its drainage area, the channel is wide relative to the size of its watershed, and therefore it can accommodate large flows without major changes in elevation. Perhaps more significantly, the Anacostia River in the project area is subject to flooding from high tides, tidal storm surges (such as during a tropical depression or hurricane), as well as backwater flooding from the Potomac River. Therefore, the Anacostia River is not shown to have a floodway on the FEMA maps; the entire floodplain area is shown as floodway fringe.

The Anacostia River in the project area is subject to flooding from high tides, tidal storm surges (such as during a tropical depression or hurricane), as well as backwater flooding from the Potomac River.

The 100-year floodplain encompasses much of Anacostia Park on the east side of the river. The predominant cover type within this portion of the floodplain is mowed lawn. It is constricted by the existing roadway embankment approaching the bridges within the study area. West of the river, the floodplain extends to Water Street east of the Officer Welsh bridge but is somewhat narrower in the area of Washington Navy Yard. The cover types within the floodplain west of the river include developed land and woodlands.

6.11 Threatened and Endangered Species

Field biologists assessed the potential for the presence of endangered species within a 1-mile radius of the study area by contacting the District of Columbia Fish and Wildlife Division, USFWS, the National Marine Fisheries Service (NMFS), and the Natural Resources Program Manager, National Capital Parks-East, National Park Service. The USFWS website (http://ecos.fws.gov/tess) was also reviewed to find any federally listed species whose ranges extend into the District of Columbia. The habitat descriptions provided by USFWS and other sources for these species were compared to the conditions observed in the field to predict occurrence for those species in the study area.

The USFWS website identifies the District of Columbia within the range of the Hay's spring amphipod (*Stygobromus hayi*, Endangered) and the bald eagle (*Haliaeetus leucocephalus*, Threatened). Hay's spring amphipod is only known from one population inhabiting an underground aquifer in the Rock Creek Park area, some 5 miles from and in a different watershed than the study area. The habitat conditions required by this animal are not present in the 11th Street Bridges study area. Although bald eagles are known to be transients in the area, there are no known nests or other sensitive habitats for the bald eagle in the study area.

According to USFWS correspondence dated October 20, 2005, except for the occasional transient individuals, no proposed or federally listed endangered or threatened species are known to exist within the study area. No additional coordination pursuant to the Endangered Species Act is required with USFWS.
NMFS notes that one federally endangered fish has been documented in the Potomac River 20 miles downstream. Coordination with NMFS is continuing.

According to USFWS correspondence dated October 20, 2005, except for the occasional transient individuals, no proposed or federally listed endangered or threatened species are known to exist within the study area. No additional coordination pursuant to the Endangered Species Act is required with USFWS.

NMFS notes in its correspondence that one federally endangered fish, the shortnose sturgeon (*Acipenser brevirostrum*) has been documented in the Chesapeake Bay and the Potomac River. Based on recent records of shortnose sturgeons in the Potomac River documented from various sources, sturgeons have recently been

documented as far upstream as the Indian Head peninsula, some 20 miles downstream of the Anacostia River. The resource agencies believe there is potential for the shortnose sturgeon to travel upstream in the Potomac River as far as Little Falls (8 miles above the mouth of the Anacostia River).

In the Anacostia River, migratory fish species, such as herring and alewife, spawn in the upper reaches of the watershed. In the Northwest Branch, spawning of anadromous species occurs just above 38th Street, and it is believed that migratory fishes are making it all the way up the Northeast Branch past River Road, where suitable spawning habitat exists. However, there are fish passage blockages in the lower reach of the Paint Branch and Still Creek tributaries that greatly limit habitat utilization of these areas (AWRC, 2006). Based on the data for these other anadromous species, it appears that suitable habitat may exist in the Anacostia River watershed to support spawning of shortnose sturgeon, but these areas are limited and located far upstream of the 11th Street Bridges project area.

Shortnose sturgeon are benthic omnivores that feed on crustaceans, insect larvae, worms, and small mollusks. Juveniles feed primarily on insect larvae and small crustaceans, while adults feed primarily on small mollusks (NMFS, 1998). In contrast to the Potomac River, where the invasive Asiatic clam (*Corbicula fluminea*) has become abundant, few individuals of this species are found in the Anacostia River and the species is apparently failing to grow or reproduce (Phelps, 1985). Therefore, the habitat in the vicinity of the project site provides limited foraging habitat for shortnose sturgeon. Further, no sturgeons have been documented in the Anacostia River. Annual spring sampling of fish in the Anacostia River by the DC Fisheries and Wildlife Division (DCFWD) during the past 15 years has found no sturgeon (DCFWD, 2006).

According to National Capital Parks–East, no other rare or sensitive species or habitats have been recorded in the 11th Street Bridges project area (NPS, personal communication, 2005).

No species listed as federally endangered or threatened or candidates were observed during the field visits.

6.12 Historical and Archaeological Resources

6.12.1 Introduction

Historical and archaeological resources are protected by a number of statutes and regulations at all levels of government and must be taken into consideration during the National Environmental Policy Act (NEPA) process. A discussion of the archaeological and historical resources in the project area is found below.

Historic Properties

Historic properties, for the purposes of the National Historic Preservation Act (NHPA), are places eligible for inclusion in the National Register of Historic Places (NRHP). The NRHP is a federally maintained list of districts, sites, buildings, structures, objects, and landscapes

significant in American history, prehistory, architecture, archaeology, engineering, and culture. Historic properties can also include traditional cultural properties (TCPs).

To be listed on the NRHP, a property must have historic significance and integrity and generally be at least 50 years old. Certain properties are exempt from the 50-year rule if they possess exceptional importance. Historic significance may be present in districts, sites, buildings, structures, and objects that possess integrity. Integrity is defined as having integrity of location, design, setting, materials, workmanship, feeling, and association. A property must demonstrate significance in at least one of the following areas:

- Association with events that have made a significant contribution to the broad patterns of our history
- Association with the lives of persons significant in our past
- Embodiment of the distinctive characteristics of a type, period, or method of construction or representative of the work of a master, or possessing high artistic value, or representative of a significant and distinguishable entity whose components may lack individual distinction
- Yielding, or likely to yield, information important in prehistory or history

Historic significance is the importance of a property to a community, state, or the nation. In addition to the above criteria, significance is defined by the area of history in which the property made important contributions and by the period of time during which they were made (National Register Bulletin 16).

Archaeological Sites. Archaeological sites are places where past peoples left physical evidence of their occupation. Sites may include ruins and foundations of historic-era buildings and structures. Or, they may be surface ruins and/or underground deposits of prehistoric or Native American occupation debris such as artifacts, food remains (shells and bones), and former dwelling structures. Important archaeological sites can qualify as "historic properties."

Native American cultural resources may include human skeletal remains, funerary items, sacred items, and objects of cultural patrimony. Native American traditional resource procurement areas and culturally important regional landscapes are also considered Native American cultural resources, and may be TCPs (and thus potential "historic properties") if they are places that define tribal identity and meet NRHP eligibility criteria.

Other Cultural Resources. Other types of cultural resources include cultural institutions, lifeways, culturally valued viewsheds, places of cultural association, and other valued places and social institutions. Under the 1992 NHPA amendments, these types of TCPs can be eligible for inclusion in the NRHP because of their association with cultural practices or beliefs (traditions, beliefs, practices, lifeways, arts, crafts, and social institutions) of a living community that are rooted in that community's history and important in continuing its cultural identity.

National Historic Landmarks. Some of the historic properties that lie within the project area are also designated as National Historic Landmarks (NHLs). These landmarks are buildings, sites, districts, structures, and objects that have been determined by the Secretary of the Interior to be nationally significant in American history and culture because of their association with events, persons, and architectural styles that have had a significant effect on the nation's history. These properties are also listed in the NRHP.

Other agencies, as described below, have designated some properties within the project area as historic landmarks. These properties may or may not be eligible for listing in the NRHP. Consultation with the agencies was undertaken to ensure that all eligible historic properties were identified as this EIS was developed.

Federal Regulations

When a project receives federal funding, the possible impacts of the project on historical and archaeological cultural resources must be reviewed. The process of review is often referred to as the "Section 106" process and is described in the NHPA, as amended. Section 106 can also be triggered as part of a wider NEPA documentation process. For purposes of an EIS, if a project alternative other than the No-Build Alternative is chosen, compliance with Section 106 of the NHPA is mandatory.

The NHPA (*Code of Federal Regulations* (CFR), Title 36, Section 800.16 [36 CFR 800.16]) defines historic properties as any prehistoric or historic district, site, building, structure, or object included in or eligible for the NRHP. Under NHPA, a property is significant if it meets the NRHP criteria listed in 36 CFR 60.4. Section 106 requires federal agencies and others to consider the effects of proposed projects on historic properties and to provide the Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) with a reasonable opportunity to comment on any undertaking that would adversely affect properties listed in or eligible for the NRHP.

Regulations in 36 CFR 800 provide a process for satisfying the requirements of Section 106, namely, resource identification (inventory), significance evaluation, assessment of adverse effects on significant historic properties, and resolution of adverse effects. Properties of traditional religious and cultural importance to a tribe (TCPs, discussed above) per Section 101(d)(6)(A) of the NHPA can be determined eligible for inclusion in the NRHP and thus be considered under NHPA. Cultural resources must also be given consideration under NEPA, and Section 106 encourages maximum cooperation with NEPA. This cultural resources documentation meets the requirements of both NEPA and Section 106 of the NHPA.

For FHWA projects, Section 4(f) of the Department of Transportation Act of 1966 (*U.S. Code* (USC) Title 49, Subtitle I, Chapter 3, Section 303 [49 USC 303]), implemented by 23 CFR 771.135, is another federal regulation that protects historic resources. Section 4(f) applies to all projects that require approval by an agency of the USDOT, including FHWA. Section 4(f) resources include any publicly owned park, recreation area, wildlife refuge, or publicly or privately owned historic site. Section 4(f) resources are discussed separately in Section 9.

State and Local Regulations

Washington, DC's regulatory agencies are much like state-level agencies. A Section 106 review is administered by the DC SHPO, with comment by the Advisory Council on Historic Preservation as needed. However, other agencies are almost always cooperating agencies because of the overall planning and review process for any federal project in the District. In addition to the SHPO, the NCPC is an active participant in project design and review. Other agencies that participate in the NEPA process include the Architect of the Capitol and the Commission of Fine Arts.

Congress established the National Capital Park Commission in 1924 with responsibilities to acquire lands to complete a park, parkway, and playground system for the nation's capital. Two years later, Congress reestablished the agency as the National Capital Park and Planning Commission and gave it comprehensive planning responsibilities for the national capital and its environs. In 1952, Congress passed the National Capital Planning Act, designating the NCPC as the central planning agency for the federal and District of Columbia governments. The NCPC was also given the responsibility to preserve the important natural and historical features within the region. In accordance with this charge, the NCPC designated a number of sites and districts in Washington, DC as historic landmarks.

In 1973, Congress passed the District of Columbia Self-Government Reorganization Act (the Home Rule Act) that gave the planning responsibility for the District of Columbia to the mayor and continued the role of the NCPC as the central planning agency for the federal government in the region. With the granting of Home Rule to the District of Columbia, comprehensive planning responsibilities for the national capital were realigned. Currently, the District's mayor and the NCPC are charged with publishing a joint comprehensive plan.

The Historic Preservation Review Board, of the DC Department of Planning, reviews all applications for designation of new historic landmarks and historic districts in the District. In addition, the Board reviews proposed projects that may have an effect on properties listed in the DC Inventory of Historic Sites (Inventory). The Inventory is a listing of properties designated by the Board, its predecessor, the Joint Committee on Landmarks,[1] or the NCPC, which had sole jurisdiction until 1968. First established in 1964, the Inventory now includes more than 500 historic landmarks and more than three dozen historic districts containing approximately 23,600 buildings. While the Board does not have authority over the Section 106 review process, it does review proposed federal projects involving properties listed on the Inventory and advises the DC SHPO of its conclusions.

6.12.2 Records Search

The project team consulted the following sources and archives to locate records of previously identified historical or archaeological resources within the project area:

- DC Historic Preservation Office

[1] A joint agency effort of the District, the federal Commission of Fine Arts, and the NCPC.

- Martin Luther King Library, Washingtonia Room
- Library of Congress (historic maps)
- National Archives
- NPS (NRHP and NHLs)
- NPS, National Capital Region (land records and parks history)
- Washington Navy Yard (archives, oral interviews, and land records)
- USACOE-Baltimore District (land records)

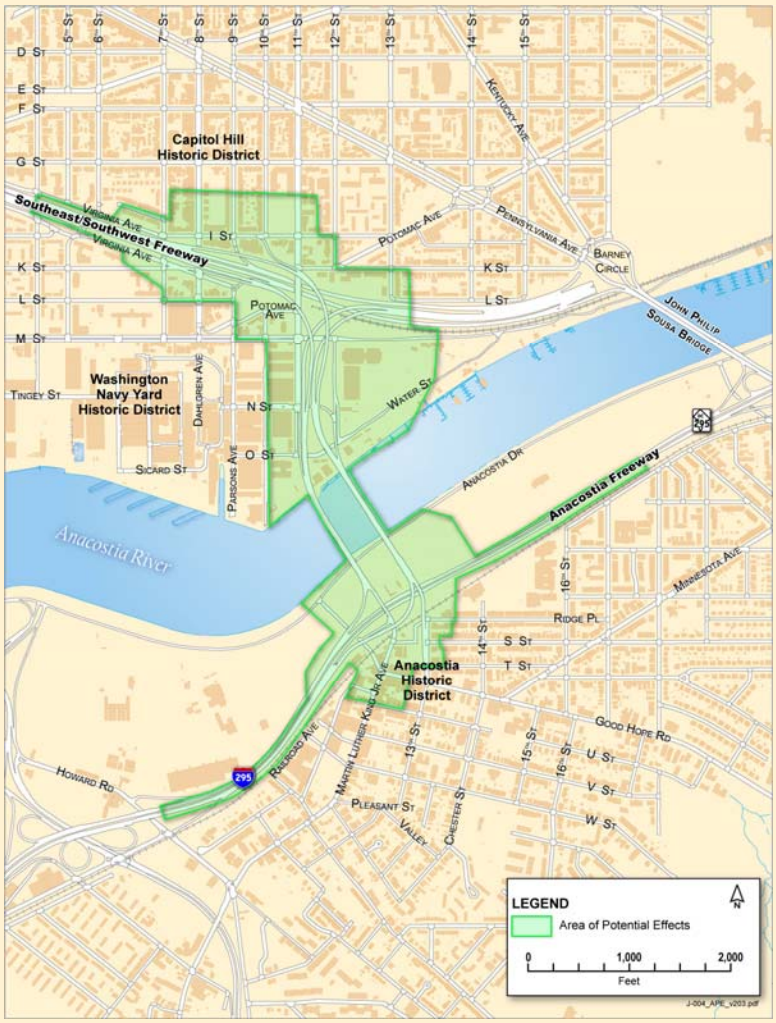
A bibliography of published resources used in the development of this section is found in Section 14, References.

6.12.3 Survey of Historical and Archaeological Resources

A field survey of the resources in the study area was conducted in order to describe the affected environment. An Area of Potential Effect (APE), the area within which the project may directly or indirectly cause alterations in the character or use of historic properties, was developed (Exhibit 6-55). The APE was delineated to be, in most cases, the first building/property/tax lot facing the project corridor. The project team contacted the SHPO to discuss and obtain concurrence on the proposed APE. A field survey of historical resources within the APE was carried out by qualified architectural historians on the project team on November 7–11, 2005.

The project team conducted a limited field reconnaissance of the project area to assess current conditions and to understand the location and types of archaeological resources likely to be present. Particular attention was paid to the age of structures and whether rear yard deposits may be present behind any earlier structures within the project area, as well as the

EXHIBIT 6-55
Area of Potential Effect
The APE was designated to focus on specific locations within the possible project corridor.



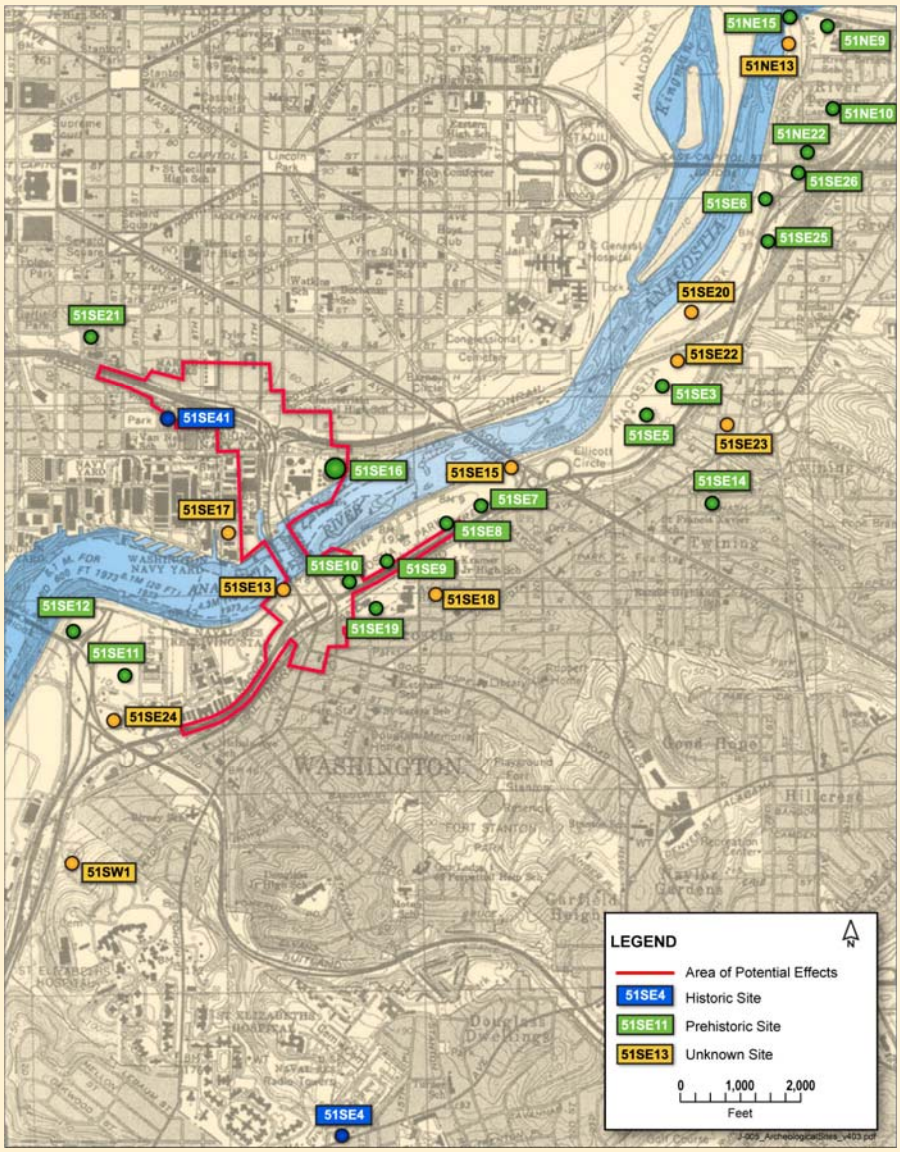
possible levels of disturbance caused by the construction of any modern structures such as gas stations, Interstate 395 (the Southeast/Southwest Freeway) and Interstate 295 (the Anacostia Freeway).

6.12.4 Results of the Records Search and Historic Search

A number of previously identified archaeological sites are located in the project area and in the project vicinity (see Exhibits 6-56, 6-57, and 6-58). Many of these are prehistoric sites identified by collectors and amateur archaeologists during the late nineteenth century and given site numbers by the DC Historic Preservation Office, primarily based on the information on acquisition cards in the National Museum of Natural History (NMNH).

Because of the incomplete information on these cards, many of the sites are not assigned to temporal periods, and most of their locations are only approximate. A number of the site forms also do not include information on whether the site is a prehistoric or historic archaeological resource.

EXHIBIT 6-56
Previously Recorded Archaeological Sites in the Project Vicinity
Archaeological sites are concentrated along the Anacostia River.



Source: USGS, 1979a, 1983

Several other archaeological studies were also conducted within the project area. In 1984, Thunderbird Research Corporation (TRC) conducted a Phase I investigation of the Virginia Avenue Playground, located at the eastern end of the intersection at 9th Street and L Street, SE. Historic research indicated that this small parcel of land

at the western half of the intersection of Virginia and Georgia Avenues (currently Potomac Avenue), north of Square 952 and east of Square 930, was originally reserved for public use, like the land set aside for Eastern Market, and remained so throughout its history.

Historic maps show that the Anacostia Fire Company Building, which was also used as the Anacostia Public School, was located on the tract between 1857 and 1870, and was then relocated to the northwest sometime before 1880 (Henley, 1984). A well and a structure are shown on the parcel in an 1887 map, but are not evident on later maps (Henley, 1984). Field investigations identified a rectangular rise in the northwest corner of the playground that was thought to correspond to the Anacostia Fire Company/School Building. Subsurface testing revealed that this area had been disturbed, possibly as a result of the construction/demolition of the building (Henley, 1984). Testing was unsuccessful in locating the well and associated structure in the southeast portion of the parcel (Henley, 1984).

EXHIBIT 6-57
Archaeological Sites within the Project Area
Colors correspond to sites identified in Exhibit 6-56

Site Number	Cultural Period	Site Type
51SE8	Contact and unknown prehistoric	Camp
51SE9	Contact and unknown prehistoric	Camp
51SE10	Contact and unknown prehistoric	Camp
51SE13	Not listed/unknown	Not listed/unknown
51SE16	Unknown prehistoric	Quarry
51SE41	Nineteenth century	Original Eastern Market

Engineering-Science, Inc. completed an archaeological investigation in 1989 for the Barney Circle Freeway Project that included portions of Anacostia Park that are within the 11th Street Bridges project area (Flanagan et al., 1989). Subsurface testing in these areas resulted in the recovery of prehistoric artifacts from preserved contexts at Sites 51SE25, 51SE26, and 51NE25, located along the east bank of Anacostia River north of the project area (Flanagan et al., 1989). These sites were recommended as eligible for listing in the NRHP, and additional testing was recommended where testing had not been conducted but where impacts were predicted at Sites 51SE25 and 51SE26. Additional testing of Site 51NE25 was recommended only if additional grading, drainage, or other work was proposed in the area.

The Engineering-Science report also made a general recommendation, for any proposed improvements to Anacostia Park, that archaeological testing be required in highly sensitive areas within the park that may have not been destroyed during the first half of the twentieth century. One area that was singled out in the report was directly east of the eastern terminus of the John Philip Sousa Bridge (the Pennsylvania Avenue Bridge) where the site of the former Anacostin Fort is believed to be located (Flanagan et al., 1989). The report also stated that any planned park improvements should be the subject of an overview and assessment to ascertain whether archaeological testing would be needed (Flanagan et al., 1989).

EXHIBIT 6-58
Archaeological Sites in the Project Vicinity
These sites, which are mapped on Exhibit 6-56, are not in the APE.

Site Number	Cultural Period	Site Type
51NE9	Contact Period	Camp
51NE10	Contact Period	Camp
51NE13	Not listed/unknown	Not listed/unknown
51NE15	Unknown prehistoric	Not listed/unknown
51NE22	Unknown prehistoric	Not listed/unknown
51SE3	Contact and unknown prehistoric	Camp/workshop
51SE4	Nineteenth century	Jenkins Farm/domestic site
51SE5	Contact and unknown prehistoric	Camp
51SE6	Contact and unknown prehistoric	Camp
51SE7	Contact and unknown prehistoric	Camp
51SE11	Contact unknown prehistoric	Camp
51SE12	Contact and unknown prehistoric	Camp
51SE14	Unknown prehistoric	Not listed/unknown
51SE15	Not listed/unknown	Not listed/unknown
51SE17	Not listed/unknown	Not listed/unknown
51SE18	Not listed/unknown	Not listed/unknown
51SE19	Unknown prehistoric	Camp
51SE20	Not listed/unknown	Not listed/unknown
51SE21	Unknown prehistoric	Camp?
51SE22	Not listed/unknown	Not listed/unknown
51SE23	Not listed/unknown	Not listed/unknown
51SE24	Not listed/unknown	Not listed/unknown
51SE25	Late Archaic	Camp
51SE26	Early Woodland through Contact	Camp or village
51SW1	No site form on file	No site form on file

Later in 1989, in response to the proposed planting and grading activities at Anacostia Park, Engineering-Science conducted a background investigation that summarized the existing historical, archaeological, and collections data relating to the park (Bromberg et al., 1989). The project area included land on both sides of Anacostia River from the 11th Street Bridge upstream to the Benning Bridge. The report documenting the investigation identified a number of areas within the current project area that have a high potential for archaeological resources. The report noted that the portion of the park northwest of Interstate 295 (the Anacostia Freeway), between the 11th Street Bridge and the John Philip Sousa Bridge along the east side of the river, has a very high potential to yield prehistoric archaeological resources in primary contexts (Bromberg et al., 1989). This conclusion was based on previous investigations and the presence of three former tributaries that once emptied into the Anacostia River in this area. The report noted that one area in particular, located east of the tennis courts and

corresponding to Site 51SE7 or 51SE8 (Exhibit 6-56), is "known for the richness of its archaeological resources since the late nineteenth century and has been related to the historically documented aboriginal occupation of Nacochtanke" (Bromberg et al., 1989).

The report also documented a moderate to high potential for sites related to historic occupation along both sides of the river within the current project area east of the 11th Street Bridge. The review of historic documents for this investigation showed that locations on 12th and 14th Streets, SE on the east side of the river have moderate to high potential for historic sites. The report suggested that remains of a pier that once extended into the river just east of the foot of 12th Street, SE might still be present (Bromberg et al., 1989). The report also stated that portions of the early ferry dock associated with Commissioners Wharf and the Upper Ferry may still exist under fill at the tip of 14th Street, SE, as well as at the ferry's eastern terminus on the east side of the river (Bromberg et al., 1989). Both ferry docks on either side of the river were located outside and to the east of the current project area.

The historic documents review also revealed that late eighteenth- and early nineteenth-century structures were present on the west side of the river between the 11th Street Bridge and the John Philip Sousa Bridge, including structures dating to circa 1796 identified as belonging to the Widow Wheeler in the area bounded by M Street, SE on the north and the river on the south at the foot of 14th Street, SE (Bromberg et al., 1989).

The earliest archaeological investigations conducted in the project vicinity began with landowners and local collectors, including S.V. Proudfit, who collected prehistoric artifacts in agricultural fields.

William Henry Holmes, the head of the Anthropology Department at the United States National Museum (now the NMNH) in the late nineteenth and early twentieth centuries, was another pioneer in the study of local prehistory. Holmes investigated the area between the east end of the Pennsylvania Avenue Bridge and Poplar Point within and in the vicinity of the project area. There he observed that occupational debris covered this flat and low alluvial terrace and extended back 100 to 200 yards to the base of the abruptly rising hills; however, the refuse was much denser closer to the shoreline (Holmes et al., 1891). Holmes not only observed prehistoric artifacts in this area but also noted the presence of stone hearths and graves. Like Proudfit, Holmes also speculated on the location of the village of Nacochtanke, but concluded that it could be located anywhere along the east bank of Anacostia River from Giesboro Point to the vicinity of the present day Benning Bridge (Holmes et al., 1891).

Several archaeological investigations were also conducted in and around the Navy Yard during the 1980s and 1990s. In 1981, SSI conducted an "industrial archaeological investigation" of the Washington Navy Yard Annex for Wallace, Roberts, and Todd and the Washington Metropolitan Area Transit Agency. The work consisted of additional investigation of the fill zones delineated in the earlier Green Line report prepared by TRC (Gardner and Rimmler, 1979 and Fehr et al., 1980) to assess the potential for the fill zones to contain significant information about the industrial development of the Navy Yard and the lower-

class residential occupations in the area (SSI, 1981). The report detailed the history of the Navy Yard area and contained a discussion of the development of the Anacostia shoreline in the Navy Yard area. The report contained the conclusion that the shoreline changes did not represent a continuous process of discard or a result of conscious construction, but resulted instead from both discard and systematic filling operations (SSI, 1981).

Underwater archaeological investigations were conducted in 1993 along the Anacostia waterfront at the Navy Yard to develop a database of submerged cultural resources within the project area (James et al., 1994). The investigations consisted of an extensive archival investigation and the delineation of targets using remote sensing methods and a follow-up examination by divers. A total of five targets were identified that warranted further identification and assessment, but were discovered to be non-significant modern ferrous debris (James et al, 1994). Archival research also indicated that no submerged cultural resources were within the project area, and no further work was recommended. Archival evidence did, however, indicate that one vessel was abandoned and was later buried under fill and that any construction impacts in this area should be preceded by an effort to identify the vessel and to take the appropriate measures to ensure its protection (James et al., 1994).

Historic Map Review

A series of historic maps was reviewed to better understand historic occupation in the project area. Andrew Ellicott and Dennis Griffith prepared two of the earliest maps of Washington, DC, in 1794. The preliminary maps merely show the original grid plan and street layout of the project area north of Anacostia River. The original Anacostia shoreline, as well as one of the former stream locations on the east side of the river, is also shown within the project area on the maps.

EXHIBIT 6-59
Study Area Square Designations West of the River
West of the Anacostia River, 38 squares are within the APE

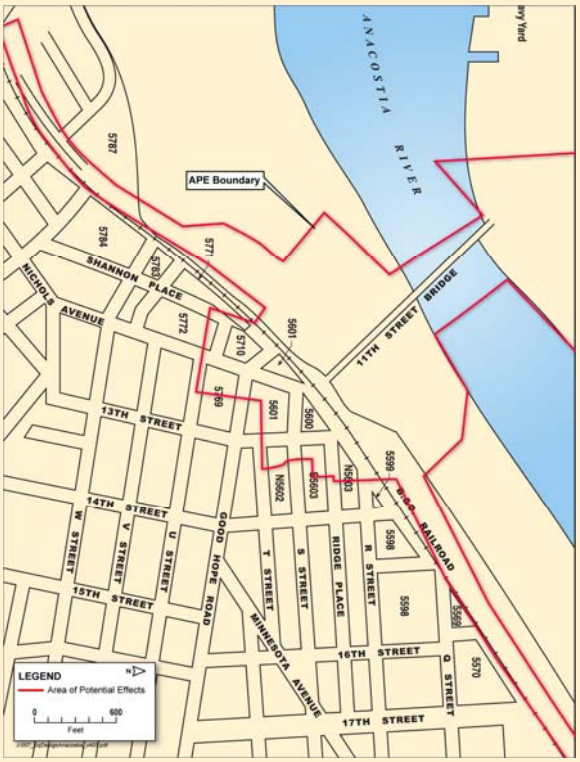
Source: Sanborn Map Company, 1928

An 1818 map by Robert King of Washington, DC, shows the early Anacostia shoreline as well as the general topographical conditions within the project area on the west side of Anacostia River, which consists of several terraces dissected by eastern flowing streams. The map also shows that all blocks in the city west of Anacostia River were given a number and were called squares no matter what their shape. Two additional maps also show the square designations within the project area and vicinity for both Washington, DC, west of the river (Exhibit 6-59), and for Anacostia on the east side of the river (Exhibit 6-60).

The first map of Washington, DC, that shows the earliest development in the

project area is the 1836 map by Henry S. Tanner (Exhibit 6-61). The map shows that 21 of the squares in the project area had been built upon by this time and specific buildings identified by Tanner located within the project area include the Marine Barracks and a Baptist Church. Buildings just outside the project area include Eastern Market, Christ Church, and the Methodist Radical Church. Large coves were still present west of the Navy Yard and directly south of M Street along 12th Street, SE. This is also the first map to show a bridge spanning Anacostia River between 11th Street and a point on the east side of the river.

EXHIBIT 6-60
Square Designations East of the River
East of the Anacostia River, 18 squares are within the APE.



Source: Sanborn Map Company, 1927

An 1861 map by Albert Boschke shows that 32 of the squares in the project area contained structures (Exhibit 6-62). The map also shows that a fairly large portion of the cove west of the Navy Yard had been filled in, as well as some small areas on either side of 11th Street south of O Street, SE. It is also the first map to show any development on the east side of Anacostia River, where the original grid plan of Uniontown, a suburban white neighborhood, is depicted.

An 1862 map by E.G. Arnold is not as detailed as the 1861 Boschke map, but is the first to show a rail line running between the Capitol and the Navy Yard along Pennsylvania Avenue and down 8th Street, SE through the project area.

An 1883 map by the U.S. Coastal and Geodetic Survey (USCGS) no longer shows the earlier rail line, but does show the major lines of the Baltimore and Potomac Railroad. These lines ran along Virginia Avenue through the project area and then turned to the northeast towards Pennsylvania Avenue where they crossed the river. The USCGS map also shows the tracks of the W & P Branch of the Baltimore and Ohio Railroad on the east side of the river running along the original Anacostia shoreline through the project area in the same location as today. By this time the 11th Street Bridge had been reconstructed as an iron truss bridge (Myer, 1974).

The first Sanborn Fire Insurance maps that cover Washington, DC were published in 1888. Only a limited amount of the project area, and Washington, DC in general, is covered by the 1888 Sanborn map.

EXHIBIT 6-61
1836 Map of Southeast Washington, DC
This map shows the earliest development in the study area.

Source: Tanner, 1836

EXHIBIT 6-62
1861 Topographical Map
By 1861, the Navy Yard had filled in a cove west of the bridge.

Source: Boschke, 1861

An 1892 map by F.L. Averill shows many additional rail lines running through the project area along M Street, 11th Street, and again along 8th Street. The map also clearly shows the railroad tunnel that was constructed underneath Virginia Avenue, SE from 7th Street and K Street to 11th Street and the intersection of Virginia Avenue and L Street.

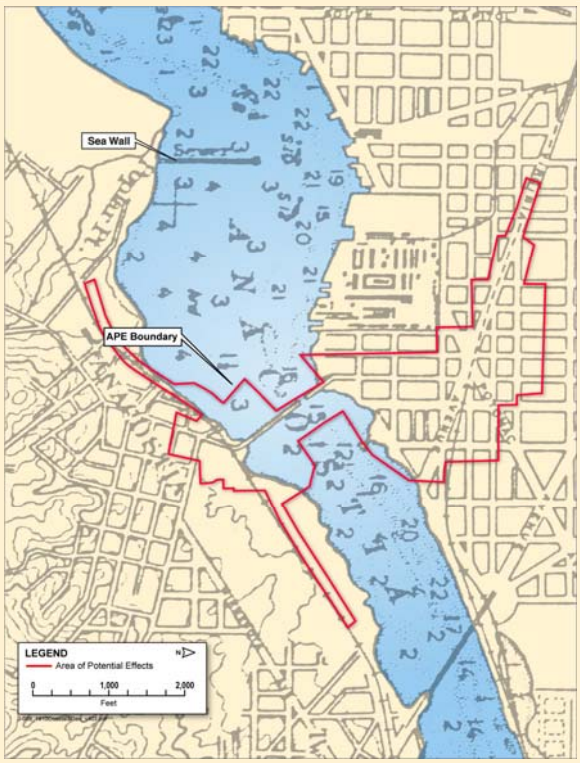
An 1894 USCGS map shows more development on the east side of the river within the project area in what by then was referred to as Anacostia, which was increasingly becoming an African-American community. This map also shows the Anacostia shoreline in detail, including the accumulating mud flats located in the shallow coves on either side of the 11th Street Bridge on the west side of the river and north of the bridge on the east side.

EXHIBIT 6-63
1902 Detail of Washington, DC and Suburbs
By 1902, the cove east of the 11th Street Bridge had been filled.

Source: Weller and Perley, 1902

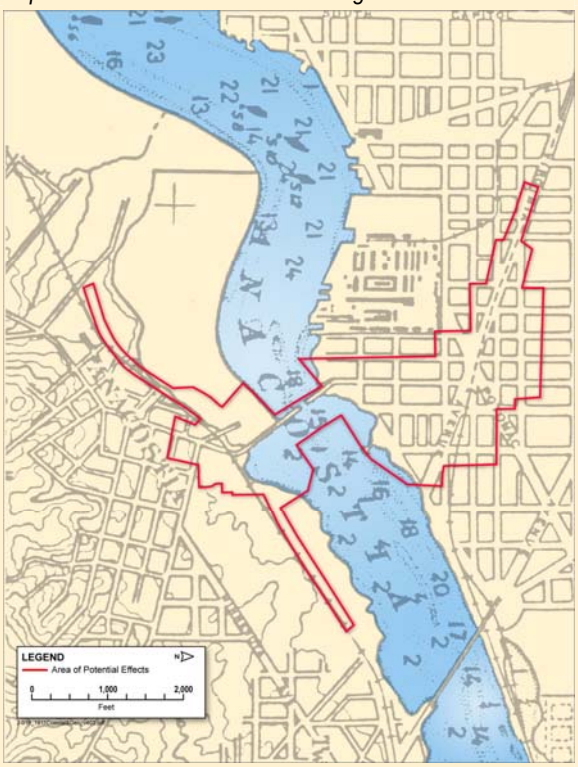
A map by F.R. Weller and F.A. Perley shows that the entire embayment west of the Navy Yard had been filled in by 1902 as well as small portions of the cove below N Street along 12th Street, SE (Exhibit 6-63). The map also shows proposed development on the east side of the river within the portion of the project area between Minnesota Avenue and the Anacostia shoreline. An updated Sanborn Insurance map for Washington, DC was published in 1904. Two USCGS maps, dating to 1910 and 1911, show the most drastic changes to occur in the project area (Exhibits 6-64 and 6-65).

EXHIBIT 6-64
1910 U.S. Coastal and Geodetic Survey Map
By 1910, the Poplar Point seawall had been constructed.



Source: USCGS, 1910

EXHIBIT 6-65
1911 U.S. Coastal and Geodetic Survey Map
By 1911, a large amount of river had been filled between Poplar Point and the 11th Street Bridge.

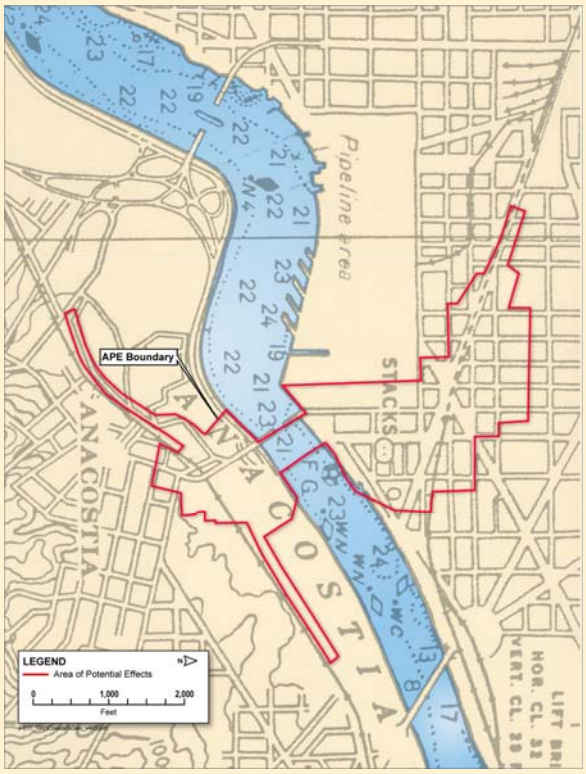


Source: USCGS, 1911

A 1953 USCGS map shows more roads present in the large filled-in area within the project area on the east side of the river (Exhibit 6-66). It also shows large stacks and a possible holding tank located below M Street and east of 12th Street, SE on the west side of the river.

A 1922 USCGS map shows the expansion of the Navy Yard to the east. The map also shows that the cove below N Street along 12th Street, SE was entirely filled in by this time, matching present-day conditions. The shallow cove northeast of the 11th Street Bridge on the east side of the river was also filled in by 1922.

EXHIBIT 6-66
1953 U.S. Coastal and Geodetic Survey Map
By 1953, the Anacostia River's banks look very similar to today.



Source: USCGS, 1953

Historic Resources

The lands within the project area have numerous historic resources. Five historic districts currently listed in the NRHP are located wholly or partially within the APE. Some sites within these districts are listed individually on the NRHP because of their individual significance.

These districts include the Anacostia District, the Capitol Hill District, the U.S. Marine Corps Barracks and Commandant's House, Washington Navy Yard, and the L'Enfant Plan District. Each of these areas is also designated locally as a historic district by the NCPC. No NRHP-listed properties outside of these districts are located within the APE for this project.

Anacostia District. The Anacostia Historic District is located southeast of the 11th Street Bridges. Uniontown, the core of the historic district, was incorporated in 1854 and was one of the first suburbs in the District. The area includes primarily residential structures (see Exhibit 6-67), although it also features several historic commercial districts along its borders. These structures are primarily frame houses in the Cottage and Italianate styles, with a scattering of Queen Anne style homes. It also includes brick rowhouses and small-scale homes in early-twentieth-century Revival styles, and low-scale historic commercial development. The Frederick Douglass National Historic Site (14th and W Streets, SE), which was originally the home of one of the developers of Uniontown and was later bought by Frederick Douglass, is within the district's boundaries.

The Anacostia National Register Historic District is roughly bounded by Martin Luther King, Jr. Avenue on the west, Good Hope Road on the north, Fendall Street and the rear of the Frederick Douglass home on the east, and Bangor Street and Morris Road on the south. The district was listed in the NRHP on October 11, 1978. The boundaries of the local historic district are contiguous with those of the National Register district.

Capitol Hill District. The U.S. Capitol is situated upon the crest of a hill facing the city. Stretching easterly behind the Capitol Building along wide avenues lies the residential area known as Capitol Hill. Capitol Hill, one of the oldest residential communities in Washington, was originally a small boarding house community for members of Congress. It has grown to become an area that embraces a number of separate neighborhoods.

Capitol Hill is the largest residential historic district in Washington, DC. The residential housing stock is composed primarily of rowhouses of different stylistic varieties and periods, forming a continuous wall broken only by street intersections. The historic residential architecture of the area includes early-nineteenth-century manor houses, Federal townhouses, small frame dwellings, ornate Italianate houses, and late-nineteenth-century press brick rowhouses whose styles are often combinations of Richardsonian Romanesque, Queen Anne, and Eastlake decorative motifs. Interspersed with the rowhouses are historic churches, such as Christ Church and St. Mark's Episcopal Church.

The street pattern in Capitol Hill has remained faithful to the original 1791 L'Enfant Plan for the Federal City, which called for grand diagonals superimposed over a standard grid pattern. As L'Enfant planned, East Capitol Street and Pennsylvania Avenue are major arterials and foci for the area.

A number of buildings and sites within the Capitol Hill District are also individually listed in the NRHP. These include the U.S. Marine Corps Commandant's House and Barracks (an NHL), the Old Naval Hospital, the Folger Shakespeare Library, Christ Church, Friendship House, the Chaplains Memorial Building, St. Mark's Episcopal Church, Eastern Market, the East Capitol Street Car Barn, and the Sewall-Belmont House (NHL).

The Capitol Hill National Register Historic District is bounded by Virginia Avenue, SE; South Capitol, 2nd, and F Streets, NE; and 14th Streets, SE and NE. The district was listed on the NRHP on August 27, 1976, and on July 3, 2003, an area bounded by 7th Street, NE; I-295; M Street, SE; and 11th Street, SE was added to the NRHP listing. The local historic district also includes the U.S. Capitol and its related buildings and grounds, which are designated as an NHL.

EXHIBIT 6-67
Typical Anacostia Residential Property
This is an example of a residential property on U Street, SE, in the Anacostia Historic District.

U.S. Marine Corps Barracks and Commandant's House. The oldest continually active post in the Corps, the Marine Barracks served as Marine Corps Headquarters from 1801 to 1901 (see Exhibit 6-68). As the home of the Marine Band, which has played for every President since John Adams, the Marine Barracks witnessed a significant epoch in American musical history when John Philip Sousa, the "March King," served as the band's leader from 1880 to 1892.

Early in the twentieth century, the Marine Barracks underwent extensive renovation. The 2½-story brick Commandant's House, completed in 1806, is the only structure remaining of the original barracks complex. Other structures on the old post grounds include a barracks building,

EXHIBIT 6-68
8th Street Marine Barracks
Although included within the NHL boundaries, these buildings are not historic.

a band hall, and a row of five officers' quarters. All of these brick structures were erected between 1904 and 1907. None of these structures are located within the APE for the 11th Street Bridges project. This district was listed in the NRHP on December 27, 1972, and was listed as an NHL in 1976.

Washington Navy Yard. Established in 1799, Washington Navy Yard was the United States' first naval yard. It was the nation's primary navy yard until 1815, and later in the nineteenth century it became the Navy's center for ordnance research and production, a use that continued until the 1960s. It is the southern terminus for L'Enfant's Eighth Street (East) axis, and was one of the city's few important nineteenth-century manufacturing establishments.

Initially, most of the Navy Yard land was open water, but landfill operations steadily increased the Yard's size from about 16 acres in 1801 to about 40 acres by 1858. Nineteenth-century plans indicate that its boundaries were extended somewhat to the west later in the century, but almost all of the Yard's buildings remained within the 1858 borders until the twentieth century. With the exception of the land that runs for about 80 feet west of Isaac Hull Avenue, the historic district is almost identical to its 1858 boundaries.

Most of the industrial buildings in the district were built between 1850 and 1919. Most are one-, two-, and three-story brick buildings with three-bay-wide gable ends, sometimes featuring pediments. Gable roofs predominate, although some buildings have monitor roofs and some twentieth-century buildings have flat roofs. Applied ornamentation is minimal. The harmonious effect of these buildings comes from their pleasing proportions, evenly spaced openings, symmetry, and the uniformity of scale and material throughout the district. In size and simplicity of form, the buildings reflect their original functions and dates of construction.

In the nineteenth century the waterfront was dominated by Ship Houses. Now it contains piers, Admiral Willard Park, and, at the east, the Marine Railroad. Just west of the slip with the functioning marine railroad is the 470-foot-long building that contained the Model Basin, used for testing model ship designs. The basin has been filled in and the building is now used for storage.

The boundaries of the historic district begin at the southwest corner of the intersection of Parsons Avenue (9th Street, SE), continue south along the west side of Parsons extended to Anacostia River, then northwesterly along the Yard's waterfront, including its quays, to its intersection with the southwest corner of Isaac Hull Avenue extended. The boundaries then

turn north along the west side of Isaac Hull Avenue extended to its intersection with the south side of M Street, SE, and continue back east along the south side of M Street, SE This district was listed in the NRHP on June 19, 1973. Its boundaries mirror those of the local historic district. In 1976, the Navy Yard was elevated to NHL status.

L'Enfant Plan of the City of Washington. The plan of the City of Washington was designed in 1791 by Pierre L'Enfant, and remains largely in place. This plan was realized fairly gradually for the first 100 years, until the development of the McMillan Commission's recommendations for planning the federal city in 1901–1902. The plans were implemented over the next 30 years and continued sporadically thereafter.

The plan of the historic city of Washington is bounded by Florida Avenue from Rock Creek, NW, to 15th Street, NE, then south to C Street, and eastward to Anacostia River. At the center of the plan were ceremonial parks and green areas around the seats of the federal government. This historic urban footprint consists of a grid of regular orthogonal streets designated numerically and alphabetically within four quadrants, with the U.S. Capitol occupying the center point. A series of diagonal avenues, named for states, are superimposed on this grid. At the intersections of these diagonal and orthogonal avenues are parks, public structures, and vistas that typify L'Enfant's grand baroque design.

The district was listed in the NRHP on April 24, 1997.

Anacostia Park. Anacostia Park, established in 1919, is the largest park in Washington, DC. The boundaries of the park begin at the confluence of the Anacostia and Potomac Rivers and extend on both sides of the river up to the Maryland state line, an area of more than 1,200 acres. Although not listed on the NRHP, the history of the park, from construction through its association with local and national events, such as the Bonus March, could make portions of it eligible for listing. The sea walls, which line either side of the river, were constructed to hold dredged material and to reclaim land for the new park. The physical structures of the park, such as the seawalls, could also be eligible for listing.

6.12.5 Results of Archaeological and Historical Surveys

Archaeological Resources

To assess archaeological potential of the project area, the project team conducted cartographic research, background research, and a field review. Historic maps were used to identify where and when buildings were built within the project area. Previous archaeological investigations, prehistoric predictive models, and an examination of the pre-build natural topography of the project area contributed to predicting where prehistoric cultural resources may be present. For clarity, the resources within the project area are organized by square which, in most instances, corresponds to square designations used on historic maps (Exhibits 6-55 and 6-56). The field investigation covered these squares to identify where archaeological resources may have survived and where modern disturbances (highways, modern office buildings, and redevelopment construction) would have included excavations that would have been deep enough to remove evidence of all earlier

occupations. It is likely that any cultural resources found would be on eligible register properties. Determination of resource eligibility, if any cultural resources are present and found, would be made on a case-by case basis, based on the full context of the find.

The archaeological potential of any given area was assessed as *high*, *low*, or *no*. *High*-probability areas were defined as areas where historic structures and associated rear yards have survived until the present, or open space where buildings may have been removed, but modern construction has not included earthmoving activity that would have resulted in the removal of below-ground cultural resources. Areas with a high potential for prehistoric resources were defined as locations where the natural landform may have survived and where there is a probability of deeply buried soils (Anacostia River floodplain). *Low*-probability areas were defined as locations where buildings and associated yards or natural landforms favored by prehistoric populations were once present, but modern construction may have removed below-ground cultural resources. For example, areas beneath the sections of the highway on berms may contain cultural resources beneath the structures. *No*-probability areas were defined as locations with no potential for prehistoric resources, not built upon in historic times, or where modern construction included the disturbance of all cultural resources in a particular area.

Exhibit 6-69 shows the results of the review of archaeological potential and an explanation for each potential designation. Exhibits 6-70 and 6-71 illustrate the locations of the squares west and east of the river, respectively. Two areas have a high potential for prehistoric resources. There is a high potential for prehistoric sites along the former Anacostia River shore line on the east (Anacostia) side of the river. It should be noted that investigations farther upstream on the river identified deeply buried prehistoric archaeological sites along the I-295 corridor and within its interchanges. The second area is Square 1026, where prehistoric resources were found in the nineteenth century.

There is a high probability that historic archaeological resources have survived at numerous locations within the project area. On the east side of Anacostia River, historic archaeological resources associated with the antebellum development of Uniontown (later Anacostia) may have survived in the vicinity of the 11th Street/I-295 interchange. Further, there is a high probability of archaeological resources associated with the post-Civil War development and urbanization of the area.

Historic Resources. A pedestrian survey was conducted within the boundaries of the APE. Almost all of the buildings and structures surveyed are within existing designated historic districts. These resources were listed several decades ago, with boundaries drawn, but the entire district did not receive a comprehensive survey; therefore, existing survey sheets could not be used for this field survey. As part of this historic resources survey, all historic structures in the APE were surveyed and survey sheets created. These sheets will be provided to the SHPO to augment existing documentation.

EXHIBIT 6-69
Archaeological Potential By Square
Square designations correspond to maps in Exhibits 6-70 and 6-71.

Square Designation	Potential	Comments
West Side of the River		
823	Low	Possible that intact cultural resources are present beneath the solid structure of the highway
847	Low	Possible that intact cultural resources are present beneath the solid structure of the highway
878	Low	Possible that intact cultural resources are present beneath the solid structure of the highway; no cultural resources have survived construction of new town homes
879	Low	Possible that intact cultural resources are present beneath the solid structure of the highway
880	No	Previously investigated; cultural resources mitigated (Gardner et al., 2004)
881	No	Previously investigated; cultural resources mitigated (Gardner et al., 2004)
904	High	Historic residences and rear yards have survived
905	High	Cultural resources may have survived in the open space beneath elevated highway
906	High	Open space is present
907	No	Modern development covers square
927	High	Historic residences and rear yards have survived
928	No	Construction of modern buildings and depressed highway has removed any earlier occupations
929	High	Open space is present
930	High	Historic residences and rear yards have survived
950	High	Historic residences and rear yards have survived
951	No	Construction of modern buildings and depressed highway has removed any earlier occupations
S951	No	Construction of depressed highway has removed any earlier occupations
Playground	High	Previous investigations identified resources and additional archeological potential (Henley, 1984)
952	High	Open space is present
974	High	Open space is present where historic residences and associated rear yards once stood
975	High	Historic residences and rear yards have survived
S975	No	Construction of depressed highway has removed any earlier occupations
976	High	Open space is present; the southeast corner is disturbed by a gas station
977	No	Construction of modern buildings has removed any earlier occupations
978	No	Construction of modern buildings has removed any earlier occupations
979	No	Construction of modern buildings has removed any earlier occupations
995	High	Historic residences and rear yards have survived

EXHIBIT 6-69
Archaeological Potential By Square
Square designations correspond to maps in Exhibits 6-70 and 6-71.

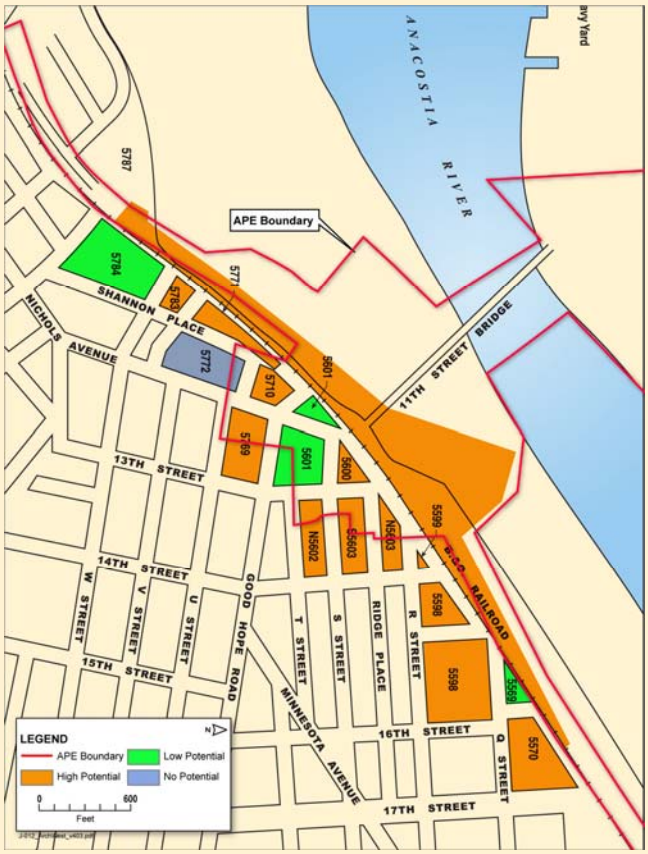
Square Designation	Potential	Comments
West Side of the River, continued		
996	High	Historic residences and rear yards have survived; the northwest corner is occupied by a gas station
997	No	Construction of depressed highway has removed any earlier occupations
998	No	Construction of depressed highway has removed any earlier occupations; square destroyed in 19th century by construction of a railroad
999	High	Open space beneath elevated highway
1000	Low/high	Possible that intact cultural resources are present beneath the solid structure of the highway; east street face of this square may survive beneath a parking lot.
1001	Low/high	Possible that intact cultural resources are present beneath the solid structure of the highway; the east street face of this square may survive beneath landscape fill
S1001	High	Open space beneath elevated highway; location of original 11th Street Bridge
1020	No	Construction of modern buildings has removed any earlier occupations
1021	High	Historic residences and rear yards have survived
1022	High	Historic residences and rear yards have survived
1023	High	Historic structures and associated yards have survived at the northeast corner of the square; the remaining areas of the square have no potential because modern construction has removed all earlier occupation
1024	No	Construction of depressed highway has removed any earlier occupations
1025	No	Construction of modern buildings has removed any earlier occupations
E1025	Low	Possible that the original landform has survived beneath modern fill
1026 (lower part of 1025 on Exhibit 6-71)	Low	Along the west half of the square, construction of modern buildings has removed any earlier occupations; the parking lot along the east side has a potential for a previously identified prehistoric site (District of Columbia Department of Historic Preservation [DCDHP])
S1026	No	Square filled and created in the twentieth century
1047	High	Historic structures and associated yards have survived along the west face of this square
1048	No	Construction of depressed highway has removed any earlier occupations
S1048	No	Modern industrial activity has disturbed the square
Anacostia		
5569	Low	Construction of an annex building to Anacostia Senior High School has disturbed most of the square, but some open space is present; location is near original shoreline and has potential for prehistoric resources
5570	High	Historic residences and rear yards have survived
5598	High	Construction of Anacostia Senior High School has disturbed some of the square, but some open space is present; location is near original shoreline and has potential for prehistoric resources

EXHIBIT 6-69
Archaeological Potential By Square
Square designations correspond to maps in Exhibits 6-70 and 6-71.

Square Designation	Potential	Comments
Anacostia, continued		
5599	High	Commercial buildings and open space; location is near original shoreline and has potential for prehistoric resources
5600	High	Open space; location is near original shoreline and has potential for prehistoric resources
5601	Low	On the west side of Martin Luther King, Jr. Avenue there is potential for prehistoric cultural resources to have survived in the open space; however, on the east side of the avenue modern construction has disturbed the entire area—approximate location of buildings depicted on 1861 Boschke map
N5602	High	Historic residences and rear yards have survived
N5603	High	Historic residences and rear yards have survived
S5603	High	Historic residences and rear yards have survived
5710	High	Open space; location is near original shoreline and has potential for prehistoric resources—approximate location of a building depicted on 1861 Boschke map
5769	High	Historic residences and rear yards have survived
5771	High	Open space; location is near original shoreline and has potential for prehistoric resources
5772	No	Portion of the square within the project area contains large commercial buildings
5783	High	Open space; location is near original shoreline and has potential for prehistoric resources
5784	Low	Numerous commercial buildings present; their construction is likely to have disturbed any cultural resources that may have been present
Anacostia Park	High	East of the extant 11th Street Bridge there is a high potential for prehistoric cultural resources along the original shoreline; approximate location of a building depicted on 1861 Boschke map
Railroad right-of-way	High	The Baltimore and Ohio Railroad right-of-way follows the original shoreline; therefore, it is likely that deeply stratified prehistoric cultural resources are present within the boundaries of the right-of-way
Interstate 295	High	Beginning at the 11th Street Bridge interchange and continuing to the northeast, the highway is located along the original shoreline; archaeological investigations along the I-295 corridor east of the project area have found prehistoric cultural resources within the open space within interchanges and the margins of this highway Southwest of the 11th Street Bridge interchange, only the south side of the highway has potential for prehistoric resources; the north side is constructed on fill—approximate location of a building at the end of the 11th Street Bridge as depicted on 1861 Boschke map and shown in a historic photograph

Of the buildings and structures surveyed, 34 were not part of an existing historic district nor are they listed individually on the NRHP. Of the 34 buildings surveyed, 5 were considered eligible for listing in the NRHP (Exhibit 6-72). These buildings are within the wall of the Navy Yard, but are not within the existing Washington Navy Yard Historic District. None of

EXHIBIT 6-70
Archaeological Potential by Square—East of the River
Most of the squares east of the river have a high archaeological potential.



these buildings lie within or adjacent to any of the construction footprints of any of the build alternatives.

6.13 Hazardous Waste Sites

6.13.1 Historical Records Review

Historical records were reviewed to identify past uses of properties in the project area commonly associated with generation, storage, or transportation of hazardous materials. The review was limited to records of the project area and adjacent areas within 400 feet.

Historical Maps

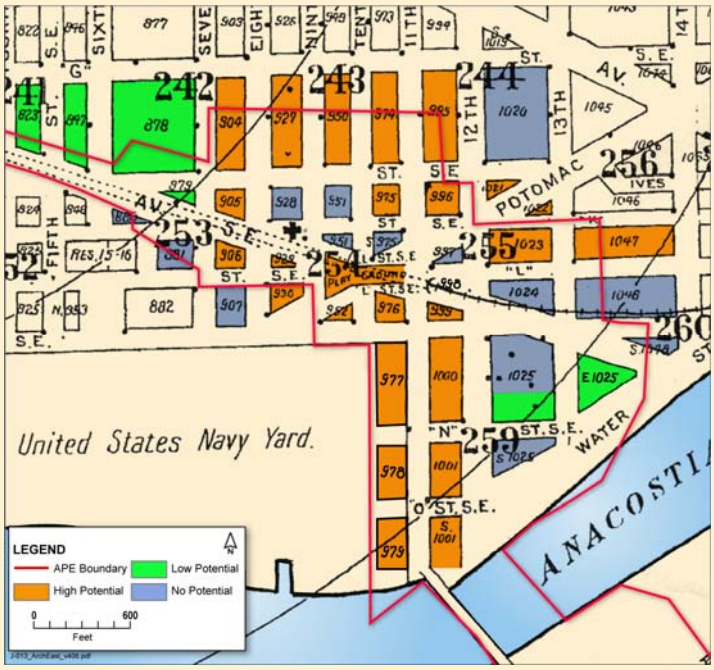
Historical maps were reviewed for periods between 1792 and 1936 (specifically, 1792, 1880, 1901, 1904, 1927, and 1936) to identify differences in land use within the study area. The maps revealed that the land use has remained constant throughout the time periods, except for the expansion of the shorelines towards the Anacostia River as a result of periodic fill placement along the west and east shorelines of the river.

Previous Studies

Project files and archives from several earlier studies were gathered and reviewed. Information was obtained from the following resources:

- DC Department of Health Underground Storage Tank Management Division
- DC Department of Health Water Quality Division
- Washington Navy Yard administrative files
- AWTA documents
- Anacostia Riverwalk Environmental Assessment

EXHIBIT 6-71
Archaeological Potential by Square—West of the River
Areas of high archaeological potential follow 11th Street.



Regulatory Records Review

Federal and state databases were reviewed to identify former and current land uses that could result in the contamination of soil and/or groundwater within the study area. The objective of the review was to identify and document reported releases of hazardous or toxic materials to the environment as well as to locate businesses and industries that use, generate, store, transport, and/or dispose of regulated hazardous materials.

In August 2005, Environmental Data Resources, Inc. (EDR) conducted a computerized search of available environmental databases, including those of EPA, for known and suspected contaminated sites within a 1-mile radius of the project area. Approximately 329 known and potentially contaminated sites and/or sites that use, transport, or handle hazardous or regulated materials were identified within the radius (EDR, 2005) (Exhibit 6-73). Some of the sites appeared in more than one database. Irregularities in site locations, information, and the current status of Underground Storage Tanks (USTs) for some sites were noted.

EXHIBIT 6-72
Properties Eligible for Listing in NHRP
These six properties have been inventoried and determined eligible for listing in NRHP, but are not part of an existing district.

Building Number	Lot/ Square	Brief Description	Period of Construction	NRHP Listing
Building 220	0977	Lejuene Hall	1944	Eligible
Building 219	0977	Gauge Laboratory	1944	Eligible
Building 200	0977	Administration Building	1940	Eligible
Building 126	0	Receiving Station Laundry	1925-1939	Eligible
Building 166	0	Seaman Gunners School/Receiving Station	1918	Eligible
Anacostia Park	n/a	The park, established in 1919, may be historically significant for events held there	Circa 1919	Eligible

The EDR area study report covering all sites is presented in Appendix G. Exhibit 6-73 lists databases searched and the number of sites within or adjacent to the project area.

EXHIBIT 6-73
EDR Database Search Results
Fourteen databases were searched, identifying 119 areas of concern within or adjacent to the project area.

Database Searched	Database Description	No. of Sites Within/Adjacent to Project Area
CERCLIS	Contains data on potentially hazardous waste sites that have been reported to EPA by states, municipalities, private companies, and private persons	**2**—these sites will be discussed within this section
CERCLIS-NFRAP	NFRAP sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly without the need for the site to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund Action or NPL consideration	**0—**no CERCLIS-NFRAP sites are located within or adjacent to the project area
RCRIS-LQG	Includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste as defined by the RCRA	**1—**one site is located within the project area
RCRIS-SQG	See above description for RCRIS-LQG	**15**—5 of the 15 sites have previous documented violations; no violations were documented for the other 10 sites
ERNS	Records and stores information on reported releases of oil and hazardous substances	**9**—all 9 sites are located within the project area; however, the sites do not appear in other federal databases as spill sites or sites requiring remediation beyond the emergency response
LUST	Incident Reports—contain an inventory of reported leaking UST incidents.	**12**—10 of the sites have been closed and 2 sites required no further action
UST	Contains registered USTs	**41**—10 of the 41 sites have USTs currently in use, while the USTs at the remaining sites are permanently out of use
ROD	ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup	**1**—the site is located within the project area and will be discussed within this section
FINDS	Contains facility information and "pointers" to other sources of information that contain more detailed information for a facility	**21**—the sites are located within or adjacent to the project area
HMIRS	Contains hazardous material spill incidents reported to the U.S. Department of Transportation (database source is EPA)	**2**—the sites did not appear in other federal databases as having violations, or as sites requiring response actions, and therefore were not considered to have a potential impact to the project area

EXHIBIT 6-73
EDR Database Search Results
Fourteen databases were searched, identifying 119 areas of concern within or adjacent to the project area.

Database Searched	Database Description	No. of Sites Within/Adjacent to Project Area
MLTS	Maintained by the NRC and contains a list of approximately 8,100 sites that possess or use radioactive materials and are subject to NRC licensing requirements	**1**—the site is not considered to have a potential impact to the project area
Federal Lands	Consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres in the United States, Puerto Rico, and the U.S. Virgin Islands.	**0**—there are no federal lands that have areas equal to or greater than 640 acres within or adjacent to the project area
AST	Contains registered ASTs	**1**—information is not readily available for the AST-listed site
Orphan Sites	Sites that are unmapped due to poor or inadequate address information	**13**—the sites are located within or adjacent to the project area

CERCLIS = Comprehensive Environmental Response, Compensation, and Liability Information System
NFRAP = No Further Remedial Action Planned
NPL = National Priority List
RCRIS = Resource Conservation and Recovery Act Information System
LQG = Large Quantity Generators
RCRA = Resource Conservation and Recovery Act
SQG = Small Quantity Generators
ERNS = Emergency Response Notification System
LUST = leaking underground storage tank
ROD = Record of Decision
FINDS = Facility Index System
HMIRS = Hazardous Materials Incident Report System
MLTS = Material Licensing Tracking System
NRC = Nuclear Regulatory Commission
AST = aboveground storage tank

A total of 59 sites were identified as being located within the project area. Exhibit 6-74 lists each site, identified in one or more environmental database, located within the project area. The exhibit provides the environmental information identified by the EDR search. Additional information about the sites may be referenced by looking up the database site numbers in Exhibit 6-74 and Appendix G.

Federal Databases

In addition to the EDR computerized data search, a federal database search was completed to verify sites of concern identified in the EDR report and to capture sites not identified in the EDR report.

EPA Envirofacts Warehouse. A multisystem query was performed to search multiple environmental databases for facility information. The query was run using the zip codes surrounding the project area (20002, 20003, 20020, and 20374). The sites identified in the query, located within or adjacent to the project area, were also identified in the EDR database search.

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
24	Metropolis Bike & Scooter	709 8th Street, SE	Sporting goods store	RCRA-SQG; FINDS	No Concern
25	Lenox	725 5th Street, SE	No additional information was reviewed for the site	Heating Oil—UST (1 In Use)	No Concern
29	Capitol Motor Works	701 Virginia Ave, SE	General automotive repair. Automotive mechanical and electrical repair and maintenance; 4 Gasoline USTs, all permanently out	RCRA-SQG—SQG Violations; UST (4 Out of Use); FINDS	No Concern
29	Ellen Wilson Building	636 I Street, SE	Building has been demolished and area is being redeveloped	UST	No Concern
29	Boiler Plant Building	636 I Street, SE	Building has been demolished and area is being redeveloped	UST (2 Out of Use)	No Concern
29	US Marine Barracks	8th & I Street, SE	New facility built in 2003	RCRA-SQG; FINDS	No Concern
31	Washington Auto Club	900 11th Street, SE	General automotive repair; conditionally exempt SQG, no violations found	RCRA-SQG	No Concern
32	DC Housing Authority	501 Virginia Avenue, SE	Former Arthur Capper Apartments—demolished. LUST was removed in January 2000	LUST (Closed)	No Concern
36	Arthur Capper Apt	501 Virginia Avenue, SE	Former Arthur Capper Apartments—demolished. LUST was removed in January 2000	UST (1 Out of Use);	No Concern
36	Arthur Capper Dental Clinic	601 L Street, SE	No additional information was reviewed for the site	UST (1 Out of Use); FINDS	No Concern
37	National Medical Care Inc	900 M Street, SE	No additional information was reviewed for the site	UST (2 Out of Use)	No Concern
37	Navy Yard Bldg 320	901 M Street, SE	No additional information was reviewed for this site	UST (33 Out of Use); LUST (3—All Closed)	No Concern

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
37	Navy Yard Bldg 184	901 M Street, SE	No additional information was reviewed for this site	LUST (Closed)	No Concern
37	Exxon R/S #2-7118	1022 M Street, SE	Refer to "Areas of Concern" for site information	UST (4 In Use; 1 Permanently Out); LUST (Closed)	Potential Concern
N/A	11th & M St SE	11th & M Street, SE	Documented 5-gallon sodium hydroxide solution spill to the ground surface	ERNS	No Concern
37	M St & 12th St SE (Amtrak)	M Street & 12th Street, SE	Underground cable-break releasing 2,800 gallons of electrical insulating oil to the ground surface	ERNS	No Concern
37	Washington Navy Yard	7th & M Street, SW	RCRA SQG site; no violations documented	RCRA-SQG; FINDS	No Concern
37	816 Potomac Ave #24	816 Potomac Avenue #24	Documented indoor radiation complaint from apartment tenant; no additional information was reviewed for this site	ERNS	No Concern
37	Calomiris GP	816 Potomac Avenue, SE	DC UST Division—File Review—DDOH case closure letter states the site does not pose a threat to human health or the environment and no further corrective action is required at this time	Heating oil UST (1 Permanently Out)	No Concern
37	Potomac Ave Project	1120 8th Street, SE	No additional information was reviewed for this site	Gasoline (1)—UST (Permanently Out of Use)	No Concern
37	Tune Up Kit of Capitol Hill	801 Virginia Avenue, SE	SQG, violations exist (recordkeeping)	RCRA-SQG; FINDS	No Concern
18	739 12 St SE	739 12th Street SE	Documented overfill of heating oil to ground surface; no additional information was reviewed for this residential site	AST	No Concern
N/A	Washington Gas & Light	1240 12th Street, SE	Refer to "Areas of Concern" for site information	CERCLIS; ROD; U.S. Brownsfield	Concern

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
43	District Yacht Company	1409 Water Street, SE	No additional information was received for this site	Gasoline (1)—UST (1 Permanently Out)	Potential Concern
44	Naval District Washington (Washington Navy Yard)	1014 N Street, SE	Refer to "Areas of Concern" for site information	CERCLIS; NPL; RCRA-LQG; CORRACTS; ROD	Potential Concern
55	Southeast Plant	1330 Railroad Avenue, SE	Four documented USTs have been removed from the site; no additional information was reviewed for this site	Gasoline (2)/Heating Oil (2)—USTs All Permanently Out	No Concern
55	Linens of the Week	1330 Railroad Avenue, SE	One documented closed LUST listed for this site; no additional information was reviewed for this site	LUST (Closed)	No Concern
57	Star Vending Depot	1107 Good Hope Road, SE	No additional information was reviewed for this site	UST (Currently In Use)	No Concern
57	Environmental Design & Construction	1104 Good Hope Road	No additional information was reviewed for this site	FINDS (MD Env. Permit)	No Concern
57	Harlin Brothers Trash Co	1104 Good Hope Road	No additional information was reviewed for this site	FINDS (Permit)	No Concern
58	1421 Ridge Place, SE	1421 Ridge Place, SE	Facility has a reported emergency release to the soil; April 2004 reported 55-gallon drum leaked unknown amount of used motor oil onto the ground—no additional information was located for this site	ERNS	No Concern
61	1432 T St SE	1432 T Street, SE	Heating oil delivered to wrong house and placed in abandoned AST; no spill or release documented for this site	HMIRS	No Concern

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
59	Parking Lot	2201 Martin Luther King, Jr. Avenue, SE	Three documented USTs have been removed from the site; no additional information was reviewed for the site	Gasoline (3)—UST (3 Permanently Out)	No Concern
59	Metropolitan Police	2250 Railroad Avenue, SE	RCRIS-SQG site; no additional information was reviewed for the site	RCRA-SQG—SQG Violations; FINDS	No Concern
59	Hungerford Printers	2207 Shannon Place, SE	RCRIS-SQG site; no additional information was reviewed for the site.	FINDS; RCRA-SQG	No Concern
59	DC Lottery Board	2101 Martin Luther King, Jr. Avenue, SE	One heating-oil UST currently in use at this site; no additional information was reviewed for the site.	Heating Oil (1)—UST (Currently In Use);	No Concern
59	Mr T S Auto Repair	2200 Railroad Avenue, SE	RCRIS-SQG site; no additional information was reviewed for the site	RCRA-SQG; FINDS	No Concern
59	Curtis Furniture	1112 V Street, SE	One heating-oil UST is documented as being removed from the site; no additional information is listed for the AST	Heating Oil (1)—UST Permanently Out; AST	No Concern
59	LTD Partnership Associates	2100 Martin Luther King, Jr. Avenue, SE	Two gasoline USTs and one used-oil UST have been removed from this site; no additional information was reviewed for the site	Gasoline (2)/ Used Oil (1)—USTs (3 Permanently Out)	No Concern
59	Heung-Lho Yoon MD PC	2007 Martin Luther King Jr. Ave SE	One gasoline UST is documented as being removed from the site; no additional information was reviewed for the site	Gasoline (1)—UST (1 Permanently Out)	No Concern
59	Anacostia Lodge Building Corp	2010 Martin Luther King, Jr. Avenue, SE	One heating-oil UST currently in use at this site; no additional information was reviewed for the site	Heating Oil (1)—UST (Currently In Use)	No Concern
59	Barnes, Boisey MD	2010 Martin Luther King, Jr. Avenue, SE	No additional information was reviewed for the site	MLTS	No Concern

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
59	Weaver, John MD	2041 Martin Luther King, Jr. Avenue, SE	No additional information was reviewed for the site	MLTS	No Concern
59	Tower Cleaners and Laundry	2026 Martin Luther King, Jr. Avenue, SE	No additional information was reviewed for the site	Air; FINDS	No Concern
59	Riverside Carwash/Auto Detail	2011 Martin Luther King, Jr. Avenue, SE	No additional information was reviewed for the site	Air; FINDS	No Concern
59	Curtis Properties Inc	2030 Shannon Place, SE	One gasoline UST is documented as being removed from the site; no additional information was reviewed for the site	Gasoline (1)—UST (1 Permanently Out)	No Concern
59	Curtis Properties Inc	2012 Shannon Place, SE	One gasoline UST is documented as being removed from the site; no additional information was reviewed for the site	Gasoline (1)—UST (1 Permanently Out);	No Concern
59	Macks Auto Clinic	2030 Shannon Place, SE	RCRA-SQG site; one RCRA SQG violation exists for this site (recordkeeping); no additional information was reviewed for this site	RCRA-SQG—SQG Violations; FINDS	No Concern
59	JR S Auto Clinique	2016 Shannon Place, SE	RCRA-SQG site; no additional information was reviewed for the site	RCRA-SQG; FINDS	No Concern
59	Southeast C.O. (12237)	1325 Good Hope Road, SE	Two kerosene USTs are documented for this site; one of the USTs has been removed and the other UST is currently in use; no additional information was reviewed for the site	Kerosene (2)—UST (1 Currently In Use/1 Permanently Out)	No Concern
59	Verizon Washington DC SE	1325 Good Hope Road, SE	RCRA-SQG site; no violations documented for this site	ERNS; FINDS; RCRA-SQG	No Concern
59	Real Cleaners	1319 Good Hope Road, SE	RCRA-SQG site; five RCRA-SQG violations reported for this site (recordkeeping and oversight requirements)	RCRA-SQG—SQG Violations; FINDS	No Concern

EXHIBIT 6-74
EDR-Identified Hazardous Waste Sites
These 59 identified sites are within the 11th Street Bridges project area.

EDR Listing	Site/Business Name	Address	Site Information	Environmental Information	Concern
59	Sunny's Carryout	1301 Good Hope Road, SE	DC UST Division File Review—no records of spills or leaks from USTs were observed during the file review of this site	Gasoline (13)—UST (13 Permanently Out)	No Concern
59	Good Hope Rd Amoco	1234 Good Hope Road, SE	Refer to "Areas of Concern" for site information	Gasoline—LUST; Air, FINDS	Potential Concern
59	Arch Development Cor	1920 Martin Luther King, Jr. Avenue, SE	Six USTs are documented as being removed from this site; no additional information was reviewed for this site	Gasoline (6)—UST (6 Permanently Out)	No Concern
59	MLK Motors	1750 Martin Luther King, Jr. Avenue, SE	RCRA-SQG site; no violations documented	RCRA-SQG; FINDS	No Concern
59	BP Service Station #60038	1234 Good Hope Road, SE	Refer to "Areas of Concern" for site information	Gasoline (4)—UST (4 Currently In Use)	Potential Concern
59	Former Sunoco Gas Station	1750 Martin Luther King, Jr. Avenue, SE	Refer to "Areas of Concern" for site information	Gasoline (5)—UST (5 Permanently Out); LUST	Potential Concern
59	Friedman, Singer & Neistadt	1203 S Street, SE	Nine USTs are documented as being removed from this site; no additional information was reviewed for this site	UST (9 Permanently Out)	No Concern

CORRACTS = Corrective Action Sites

Highlighted properties are of potential concern or concern based on known and documented contamination or releases, proximity to the project area, and their potential to impact the project area.

CERCLIS. Two CERCLIS sites—Washington Navy Yard and Washington Gas & Light—were identified within the project area.

NPL Sites in DC. A subset of CERCLIS, one NPL site was identified within the project area, Washington Navy Yard.

EPA Enforcement & Compliance History Online (ECHO). One facility in this database—Washington Gas & Light—was identified within the project area.

The National Response Center (NRC). The on-line query system was used to obtain oil and chemical spill data for the project area. The NRC query identified spills at seven sites within the project area that did not appear in the other federal databases as spill sites, as having violations, or as sites requiring response actions. They were therefore not considered to have a potential impact to the project area.

District of Columbia Regulatory File Review

Based on the EDR and EPA database searches, Freedom of Information Act (FOIA) requests were submitted to the District of Columbia Bureau of Hazardous Materials and the District of Columbia Water Quality Division for permission to review files of sites that could affect the project area based on documented reported releases of hazardous or toxic materials to the environment. Remedial Actions Plans, Corrective Action Plans, UST and LUST records, Environmental Assessments, and No Further Action documents were reviewed at both divisions.

Windshield Survey of Project Area

A windshield survey of the project area was conducted to evaluate the current site property uses in the project area that are likely to involve the use, treatment, storage, or disposal of hazardous materials. All observations were made from public areas, as detailed site investigations were beyond the scope of this evaluation.

Anacostia River Sediment

The Anacostia River watershed has become increasingly degraded from decades of industrial and urban activities that have resulted in the destruction and loss of tidal fringe wetlands and marshes that are essential for the watershed's filtering capacity. There are current fish advisories because of contaminants in the river. Anacostia River sediment was studied through the review of AWTA documents and other relevant sediment studies of the river. Section 6.6, Water Quality, contains more details about sediment contamination.

Asbestos

Because the Anacostia Community Boathouses and associated structures, located between the 11th Street Bridges, were built before the 1970s (between 1909 and 1919), it is reasonable to assume that the asbestos hazards could be present within the buildings and associated structures. No asbestos maintenance records for the boathouses were available for review at the time of writing this EIS.

Polychlorinated Biphenyls

No site-specific surveys were conducted to identify PCB hazards within the 11th Street Bridges alignment. Transformers that are located within the project area are owned and operated by the Potomac Electric Power Company and, depending on the age of installation and maintenance history, they may contain PCBs.

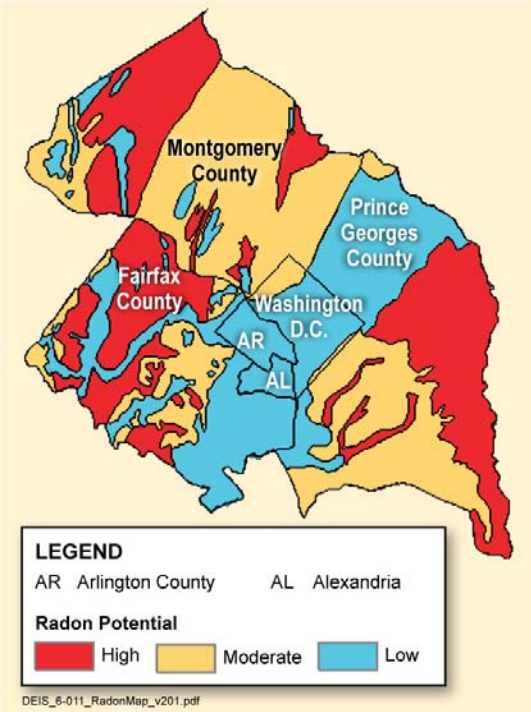
Radon

EPA and USGS have compiled a map of radon zones for counties within Maryland and the District. The rocks and soils found in the vicinity of the 11th Street Bridges were mapped as having low radon potential (average readings of 0 to 4.0 picocuries per liter (pCi/L) (see Exhibit 6-75).

Lead-Based Paint

Because the Anacostia Community Boathouses were built and maintained before 1977, it is reasonable to assume lead-based paint may have been used on the boathouses and associated structures. No lead-based paint maintenance records for the boathouses were available at the time of writing this EIS. Additionally, it is also possible that lead-based paint may have been used on the bridge structures.

EXHIBIT 6-75
Radon Potential of Rocks and Soils in the Greater Washington, DC Metropolitan Area
Southeast Washington, DC has a low potential for radon.



Source: USGS, 2005

Site Screening Criteria/Evaluation Criteria

Federal and state databases were queried for sites within 1 mile of the project area boundary to encompass all potential alignments during the preliminary design for this project. Documented release sites were defined as those having reported a release of contamination into the soil, groundwater, or sediment of a property. Sites were screened based on the following evaluation criteria:

- Sites listed in the regulatory databases that were located more than two blocks from the project area were not evaluated because they are not as likely to affect the project compared to the 59 sites identified in the project area.
- Sites listed as generators of hazardous waste in the RCRIS database that were not included on other lists documenting a release to the environment were screened as not having potential impact to the project area. They are sites that use or generate

regulated materials as part of their business practice, and no indication is given of releases to the environment.

- Sites listed in the ERNS database were also eliminated, unless the spill was included on other lists, indicating a release to the environment occurred that required further remedial action.
- Sites listed in the regulatory database as possessing USTs were eliminated if they were not subsequently associated with documented LUSTs.
- One site of potential concern was not identified within the EDR report—former Steuart Petroleum Company Terminal (Support Terminal Services, Inc.). The site is listed in Exhibit 6-76 and discussed later in this section.

A list of the sites within the project area is provided in Exhibit 6-76. The seven properties within the exhibit are sites of potential concern for the 11th Street Bridges project area. Note that seven properties are listed, but that two properties are listed twice with different owners. These properties were determined to be of concern or potential concern due to known and documented releases of contamination to the soil and/or groundwater, proximity to the project area, and their potential to impact the project area.

6.13.2 Areas of Concern

Sites of Potential Concern

The seven sites listed in Exhibit 6-76 were classified as sites of potential concern based on current or historic site practices associated with hazardous materials use or storage, or because the properties in question have a history of contamination that presents the potential to affect the proposed project. Exhibit 6-77 shows the location of the sites.

EXHIBIT 6-76
11th Street Bridges Sites of Potential Concern
Two of these sites have multiple listings.

Site/Business Name	Address	Environmental Information	Known or Suspected Contamination	Within/Adjacent to Study Area
1. Washington Gas & Light	1240 12th Street, SE	CERCLIS, Brownfields	Metals, Cyanide, SVOCs (PAHs), VOCs (benzene, ethylene, toluene, xylenes), DNAPL (coal tar)	Within
2. Naval District Washington (Washington Navy Yard)	1014 N Street, SE	CERCLIS; Hydrocarbons, PAHs, PCBs, Metals, Solvents;	Hydrocarbons, PAHs, PCBs, Metals, Solvents	Within
3. Support Terminal Services Inc.	1333 M Street, SE	USTs	Hydrocarbons (Diesel, Used Oil, Gasoline)	Adjacent

EXHIBIT 6-76
11th Street Bridges Sites of Potential Concern
Two of these sites have multiple listings.

Site/Business Name	Address	Environmental Information	Known or Suspected Contamination	Within/Adjacent to Study Area
3. Steuart Petro Co M Street Terminal	1333 M Street, SE	USTs—All Permanently Out of Use (Removed)	Hydrocarbons (Diesel, Used Oil, Gasoline)	Adjacent
4. Good Hope Rd Amoco	1234 Good Hope Rd, SE	LUST; Air, FINDS	Hydrocarbons (Gasoline)	Within
4 . BP Service Station #60038	1234 Good Hope Rd, SE	Gasoline (4)—UST (All Permanently Out of Use)	Hydrocarbons (Gasoline)	Within
5. Former Sunoco Gas Station	1750 MLK, Jr Avenue, SE	Gasoline (5)—UST	Hydrocarbons (Gasoline)	Within
6. Exxon R/S #2-7118	1022 M Street, SE	UST (4 In Use; 1 Permanently Out); LUST (Closed)	Hydrocarbons (Gasoline)	Within
7. District Yacht Company	1409 Water Street, SE	Gasoline (1)—UST (1 Permanently Out)	Hydrocarbons (Gasoline)	Within

SVOCs = semivolatile organic compounds
DNAPL = dense non-aqueous phase liquid

Washington Gas & Light East Station Site. The Washington Gas & Light East Station Site is located within the project area south of M Street and east of 11th Street. The site is listed in the EDR and EPA databases as a CERCLIS and U.S. Brownsfield site. (See Exhibit 6-78).

The site covers approximately 18.8 acres and is defined as a terrestrial area that has been contaminated by the residuals of gas manufacturing. Gas manufacturing involved the use of coal to produce combustible gas. The site consists of the area of the former East Station manufacturing gas plant, which comprises Maritime Plaza, the East Station treatment building, and former natural gas fueling facility; and land owned and occupied by NPS, the District of Columbia, and USACOE. The site drains to the Anacostia River.

The portion of the site owned by Washington Gas & Light (East Station Site) contains a two-story building used for office space and the treatment of groundwater pumped from the site. Immediately south of the building is a facility formerly used for fueling vehicles with natural gas (Washington Gas, 1999). Refer to Exhibit 6-79 for the site location.

Manufacturing gas was produced at the facility from 1888 to 1948. Coal and oil were the principal gas-manufacturing feedstocks (Washington Gas, 1999). Gasification byproducts were tar, oil, coke, and lampblack (Washington Gas, 1999). Wood chips containing iron oxide were used in the purification of manufactured gas, and when purification capacity was exhausted, some of the wood chips and absorbed tar were also placed as fill on the site (Washington Gas, 1999). In 1948, natural gas became available and manufactured gas was produced by

EXHIBIT 6-77
Project Area Sites of Potential Concern
Most of the sites are located west of the Anacostia River.

EXHIBIT 6-78
Washington Gas & Light Sites
The East Station Site (left photo) groundwater treatment pumping stations discharge to this treatment facility for removal of aqueous phase liquid prior to being discharged to the public sewer system. This natural gas fueling station (center photo) is no longer in service. Groundwater monitoring wells (right photo) are located on the East Station Site.

EXHIBIT 6-79
East Station Treatment System Schematic
Treated groundwater is released to the Blue Plains Wastewater Treatment Plant.

the facility intermittently. The gas manufacturing plant was demolished in 1986 and aboveground oil storage tanks were removed in 1997.

In 1976, Washington Gas voluntarily began taking action to remedy the environmental conditions at the East Station Site and installed a 150-foot lateral groundwater interceptor drain (trench well) in fill near the river on the NPS and USACOE properties (Washington Gas, 1999). Between 1976 and 1993, groundwater containing tar and oil was pumped from the trench well and treated before release to the river under a National Pollution Discharge Elimination System (NPDES) permit. Release of the treated water to the river ceased in 1993 with the construction of the current groundwater treatment facility. The current, upgraded facility releases the treated water to the public sanitary sewer under a discharge permit from the District and WASA. Currently, the treated groundwater is being released to the Blue Plains Wastewater Treatment Plant, located in Washington, DC. (Hydro-Terra, 2005). Refer to Exhibit 6-79 for the East Station treatment system schematic drawing.

The groundwater pump-and-treat system is operated by Washington Gas. The pumping portion of the system consists of five pumping wells, three on the East Station property and two on the NPS property. A sixth well, RW-4S, gravity-drains into the trench well. The trench well collects extracted groundwater from the NPS and USACE properties and pumps it to the treatment facility (Hydro-Terra, 2005).

Six environmental investigations were completed between 1983 and 1999 to identify the nature and extent of contamination at the East Station Site. The investigation results indicated potential migration of coal tar from the East Station property to the District's right-of-way and NPS and USACOE properties. The chemicals of concern at the site include metals; cyanide; SVOCs; PAHs; VOCs; and benzene, ethylene, toluene, and xylenes (BTEX). In addition, a DNAPL (coal tar) was found to have accumulated in the fill material at three different areas of the site. Exhibit 6-80 shows the approximate location of the DNAPL plumes. The three areas of known or suspected tar accumulation were found in the fill unit,

on the East Station property and two on the NPS property. In the deeper sand/gravel unit, tar was found to have moved southward from the East Station to the north side of the NPS property where it appears to have stopped (Hydro-Terra, 2005).

EXHIBIT 6-80
Approximate Locations of DNAPL Plumes
One plume is located on East Station property and two on NPS property.

In September 1999, a ROD was completed for the East Station Site, which outlines the remedy selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). It includes the Washington Gas & Light, NPS, USACOE, and District properties. NPS is planning to issue a separate ROD concerning its portion of the property (Washington Gas, 1999).

Under the EPA Brownfields program, the northern portion of the East Station Site was capped through the construction of the Maritime Plaza building and its associated parking lot. The building contains a vapor-control system consisting of collection pits under the first-story floor slab connected by piping to a blower on the roof (Hydro-Terra, 2005). A cover of clean soil stabilized with vegetation was installed on unpaved open spaces (Hydro-Terra, 2005).

The 1999 ROD remedies included the following (Washington Gas, 1999):

1. Eliminate human exposure to surface soil by covering exposed soil with either 1 foot of clean soil stabilized with a vegetative or impervious surface.
2. Manage the risks to site-development workers, current and future utility maintenance workers, and future offsite office workers by applying institutional controls that minimize exposure to soil and groundwater.
3. Protect ecological and human receptors from excessive influx of chemicals to the river by continuing to pump and treat groundwater that otherwise would enter the river and by continuing to extract coal tar from areas where it accumulates above residual concentration and where it may enter the river.
4. Undertake or participate in additional environmental studies that might influence future remedial action at the site and in Anacostia River.

In addition to minimizing direct exposure to humans and the environment, the selected remedies are intended to manage the following potential noncancerous human health risks (Washington Gas, 1999):

- Inhalation exposure of utility workers to VOCs (primarily benzene) in subsurface soil
- Inhalation exposure to dust (particulates, primarily manganese) by equipment operators

Activities that have taken place at the East Station Site since 2000 include the following (DDOH, 2000):

1. An updated pump and treatment system and three groundwater recovery wells in the shallow and deep aquifers on Washington Gas & Light property have been installed and are operated continuously.
2. The NPS property and USACOE properties have also been connected to the treatment system and pumped continually from the trench well located on the NPS property (refer to Exhibit 6-79 for the schematic of the remediation system).
3. Recovery wells have been installed in areas of known DNAPL accumulation. The wells are monitored monthly and DNAPL is removed when it accumulates.
4. Monitoring and reporting of constituents in the groundwater have been instituted.
5. Demonstration that the 12th Street Outfall is not a conduit for contaminants to the river.
6. Investigation has shown that PCBs are not present in surface soils at the site.

Additional contamination may be located along the right-of-way area of 12th Street.

Another area of soil contamination at the Washington Gas & Light property is located on the west side of 12th Street across from Maritime Plaza (Exhibit 6-81). The area is currently an asphalt parking lot that is owned and maintained by Maritime Plaza. The constituents of concern in the soil beneath and around the parking lot include metals, cyanide, SVOCs, PAHs, VOCs, and BTEX.

Additional contamination that is not documented may be located along the west side of Washington Gas & Light, in the right-of-way area of 12th Street. Based on personal communication with the District in 2001, a construction worker became dizzy and nauseated due to odors generated while digging near the 11th Street Bridge area. A meeting was held with the DDOH, DC Department of Public Works, KCI Consultants, and Washington Gas & Light on September 27, 2001, to discuss the discovery and try to locate the possible source of contamination. Official documentation of the discovery was not filed and no additional information was located regarding the discovery.

The Five-Year Review of the Remedial Actions at the East Station Site states that during any future development of the East Station property, Washington Gas will require the developer to provide third-party environmental health and safety inspection of all earthwork and remedial measures to ensure compliance with the institutional controls and the environmental health and safety plan (Hydro-Terra, 2005).

EXHIBIT 6-81
Maritime Plaza Parking
This parking lot on the west side of 12th Street is another area of soil contamination.

DEIS_6-017_Photo13_v201

Washington Navy Yard. Washington Navy Yard is located within the western portion of the project area south of M Street and west of 11th Street. The Navy Yard is a Navy Installation Restoration site that is listed on the NPL and currently undergoing environmental investigations and remediation under the CERCLA program.

The Navy Yard is the oldest continuously operated Navy facility in the United States during the 1800s, ordnance production, research and other industrial activities were prevalent at the Navy Yard. Industrial operations ended in the 1960s. Many of the old shops and storage buildings have since been converted to offices. The Navy Yard is now used for administrative purposes, and also contains the Navy Historical Center, the Navy Band facilities, and a number of museums and other organizations.

Based on historic activities at Washington Navy Yard, typical wastes generated included metals used in ordnance production and paint spraying, solvents used in cleaning, cyanide and phenols used in cooling processes, creosote used in wood treatment, petroleum products and wastes, and PCB-containing oils in storage tanks and electrical equipment.

In April 1998, the Navy, the Department of Justice, and Earth Justice negotiated a Consent Degree to settle a civil suit. The suit was filed by Earth Justice because of concerns that contaminated stormwater from the Navy Yard (and the "The Yards", once part of the Navy Yard) could contribute to pollution in the Anacostia River. In July 1998, EPA placed the Navy Yard on the NPL. Cleanup at the Navy Yard is guided by the Navy, EPA, and DDOH.

Between July 1998 and May 2001, the Navy Yard storm sewers were replaced or rehabilitated. The storm sewer lines were cleaned and inspected, repaired, renovated, or replaced as needed. Manholes, inlets, and trench drains were also inspected and repaired or replaced. The storm sewer system at the Navy Yard leads to nine outfalls into the Anacostia River.

Current Installation Restoration investigations at the Navy Yard include a facilitywide groundwater investigation, facilitywide fill investigation, and focused site investigations for various potential source locations around the Navy Yard.

The Navy Yard Installation Restoration sites are located outside of the proposed alternatives boundary of impact; therefore, these sites are not anticipated to affect the project area. Refer to Exhibit 6-77 for the IR potential source locations; a description of each site is listed below.

The Navy Yard Installation restoration sites are located outside of the proposed alternatives boundary of impact; therefore, these sites are not anticipated to affect the project area.

Site 7 (Building 126). From 1938 to 1950, Building 126 was a receiving station for washing, starching, and pressing of clothing. There have been no documented spills or releases to the soil or groundwater at the site. A remedial investigation to evaluate human health and ecological risks from exposure to soil was performed at the site in 1999. Based on the results, a remedial action may be necessary if the site were to be redeveloped for residential use with subsurface soils present at the surface, due to potential exposure to PAHs. The PAHs in the subsurface soil at Site 7 are believed to be associated with the fill material on which the Navy Yard was constructed. The fill material is currently being investigated under the facilitywide investigation.

Site 9. From 1944 through 1962, Building 219 was used as a gauge laboratory and machine shop for manufacturing precision instruments; for a period of time it was used as a USGS laboratory for the study of uranium and other raw radioactive materials on behalf of the Atomic Energy Commission (CH2M HILL, 2005). Based on historical review of available documentation, no spills or releases to the soil or groundwater have been documented at Site 9.

Based on a remedial investigation completed for Site 9 in 2005 to evaluate the nature and extent of contamination and assess human health and ecological risks, the results indicate there are no unacceptable risks to human health or the environment from exposure to subsurface soil at Site 9.

Site 10. A portion of Site 10 is located in the area of 10th and M Streets at the Navy Yard, Quarters S, T, W, and Y. A focused remedial investigation was completed for Site 10 in 2004 to evaluate the human health and ecological risks. The results of the investigation indicated that lead from the lead paint that had fallen from the buildings to the surface soil is the main contaminant of concern. Site 10 is currently undergoing a series of non-time-critical removal actions for all quarters and buildings with surface soil concentrations of lead greater than 400 ppm, the EPA child soil-screening value.

The soil removal action has not yet occurred at Quarters S, T, W, and Y. However, because the lead concentrations in the soil at those quarters are generally concentrated within close proximity to the quarters (that is, surrounding yards), lead-contaminated soil from the quarters is not anticipated to pose an impact to the 11th Street Bridges project area.

Site 11. Site 11 consists of two former incinerators in the southeastern portion of the Navy Yard. In 1979, the incinerators were removed, along with the top 6 inches of the soil. A remedial investigation was completed in 2004 to evaluate human health and ecological risks at the site. Based on the results of the human health risk assessment, additional information regarding the subsurface presence of PAHs would need to be obtained, or remedial action

would need to be performed at Site 11 based on a future residential land use. Potential risks to other receptors at Site 11 (industrial workers, construction workers, adult recreational users, adolescent recreational users, and child residents) are within EPA's acceptable target levels and therefore would not require remedial action. The presence of PAHs in the area is likely associated with the fill material used in the area. The fill material at Site 11 is currently being evaluated under the facilitywide investigation (CH2M HILL, 2005).

Former Steuart Petroleum Company Terminal (Support Terminal Services). The former Steuart Petroleum Company property was previously used as a petroleum bulk storage and distribution facility equipped with ASTs and truck loading racks. Support Terminal Services transported petroleum fuels using underground and aboveground pipelines from an offloading pier in Anacostia River to the storage and distribution facility located on the property.

Three USTs (one 2,000-gallon diesel tank, one 5,000-allon gasoline tank, and one 550-gallon used-oil tank) were installed and in operation on the property from 1966 through 1982 and were subsequently removed in 1987.

In 1992, an environmental investigation of the property included the installation of eight soil borings and monitoring wells. Soil and groundwater samples collected from these borings/ wells were analyzed for total petroleum hydrocarbons (TPH), BTEX, MTBE, and naphthalene. It was concluded that the central portion of the property appeared to have been contaminated by a release from a former UST, and the western portion of the property affected by a release from an abandoned petroleum pipeline. Free-phase hydrocarbons were not detected in any of the groundwater monitoring wells (ECC, 1997). However, because of the leaking former UST, a LUST case was opened at the UST site in April 1993.

Quarterly sampling of the groundwater was conducted at the UST site between February 1993 and October 1996. Concentrations of dissolved-phase hydrocarbons at the wells, on and adjacent to the UST site, exhibited a decreasing trend over time. In 1997, a technical review of the UST site was conducted, and it was determined that no further investigation or monitoring was warranted. The conclusion was based on the minimal concentrations of petroleum compounds detected in groundwater, the industrial use of the area and surrounding properties, and the use of municipal potable water in the District and surrounding counties (ECC, 1997).

In 1998, the District of Columbia Pesticides, Hazardous Waste and UST Management Division issued a conditional case closure pursuant to the District's UST Management Act of 1990 and UST regulations. Although the case closure letter stated that the UST site did not pose a present threat to human health and the environment, any future work (including excavation, and redevelopment) had to be preceded by a work plan submitted to the District of Columbia UST Program for approval, defining the scope, schedule, and approaches for the tasks to be performed at the property to take into account the residual contamination (DDOH, 1998a).

The UST site is located outside of the proposed alternatives boundary of impact; therefore, the site is not anticipated to affect the project area.

The UST site is located outside of the proposed alternatives boundary of impact; therefore, the site is not anticipated to affect the project area.

Former Amoco/BP Gas Stations—1234 Good Hope Road, SE. The former Amoco/BP gas station is located adjacent to the 11th Street Bridges alignment at the corner of Good Hope Road and 13th Street. The property currently comprises an abandoned service station building and its associated awnings and fuel islands. The USTs were formerly located within the northeast corner of the facility. The tanks have been removed and the area of the former USTs has been filled in (see Exhibit 6-82). No abnormal staining was observed on the concrete/asphalt around the facility during the site visit on January 25, 2006.

EXHIBIT 6-82
Former Amoco/BP Service Station
The tanks on this site at 1234 Good Hope Road, SE, have been removed.

The EDR report for the location indicated that the site had previously contained a LUST (listed under Amoco). However, a file indicating the status of the LUST as closed was not located during the file review at the District UST Division. The District UST Division files specify that the service station is no longer in service and that the tanks were removed in March 2005.

The site is located outside of the proposed alternatives boundary of impact; therefore, the site is not anticipated to affect the project area.

Former Sunoco Gas Station. The former Sunoco Gas Station is located adjacent to the 11th Street Bridges project area at the corner of Good Hope Road and Martin Luther King, Jr. Avenue. The property is currently an abandoned lot containing no buildings or structures. A fence surrounds the property, and as a result, a site walk-over could not be performed during the site visit on January 25, 2006. However, based on visual observations, no concerns or abnormal features were observed from outside the fence. The property and its immediate surrounding area are presently slated to be developed for the future Anacostia Gateway Government Center.

The EDR database report for this location indicated that the property previously contained five USTs for gasoline. The property is also listed in the orphan site list as containing a LUST. The file for this LUST was not located during the file review at the District UST Division. Therefore, the current status of the property is unknown.

The property is located outside of the proposed alternatives boundary of impact; therefore, the site is not anticipated to affect the project area.

Exxon Gas Station—1022 M Street, SE. The Exxon gas station is located on the north corner of M and 11th Streets, north of Washington Navy Yard, and currently operating (Exhibit 6-83). Presently the USTs for the facility are located in the southeast corner of the property. No abnormal staining was observed on the concrete/asphalt around the facility during the site visit on January 25, 2006.

EXHIBIT 6-83
Exxon Service Station
This service station is currently operating at 1022 M Street, SE.

In 1991, Groundwater Technology, Inc. completed a Phase II Environmental Investigation for the Exxon facility to establish the presence or absence of hydrocarbons in the subsurface following the repair of a gasoline dispenser. Elevated levels of BTEX and TPH were detected in both soil and groundwater (Groundwater Technology, Inc., 1991).

In response to the hydrocarbon contamination, a soil vapor extraction system was installed and operated between 1993 through 1996 to remediate the contamination in the site soil and groundwater. During operation of this system, 7,068 pounds of hydrocarbons were recovered (Fluor, 1997).

Fluor Daniel GTI completed a Risk-Based Corrective Action Report in 1997 for a study on whether concentrations of BTEX dissolved in the groundwater and soil at the site continued to pose an unacceptable risk to human health and the environment under current or future land use. The report results stated that onsite groundwater and soil were within calculated risk-based target levels, and that the chemicals present in the groundwater and soil at the site do not pose unacceptable risks to human health and the environment under current or potential future land uses. No further action was recommended for the site groundwater and soil (Fluor, 1997).

The site was conditionally closed in 1998 pursuant to the District of Columbia UST Management Act of 1990, D.C. Code Section 6-995, and the District of Columbia UST Regulations (DDOH, 1998b). The groundwater monitoring wells at the site (six total) were abandoned in January 1999 (Fluor, 1999).

Although the property is located outside of the proposed alternatives boundary of impact, it is unknown whether any contamination has migrated into potential construction areas of the project.

Although the property is located outside of the proposed alternatives boundary of impact, it is unknown whether any contamination has migrated and into potential construction areas of the project.

District Yacht Company. The District Yacht Company is located at 1409 Water Street, SE, adjacent to the 11th Street Bridges alignment, east of the Washington Gas & Light property (East Station Site). The EDR database indicates that the site previously contained a 2,000-gallon gasoline UST, which was removed. An AST is currently located on the property, but no additional information about it could be located. Due to its location, the property is not anticipated to affect the project area.

Due to its location, the District Yacht property is not likely to be directly affected by the project.

Sediment Contamination

A literature review was completed for the Anacostia River sediment through review of AWTA documents and other relevant sediment studies of the river. The project area, in relation to sediment AOCs within the Anacostia River, is identified by AWTA as areas identified for potential active remedial actions (Exhibit 6-46). Section 6.6, Water Quality, has more information about sediment contamination in the Anacostia River.

6.14 Visual Features

An analysis of visual resources within the 11th Street Bridges study area was conducted. The analysis primarily followed FHWA (DOT-FH-11-9694) and American Society of Landscape Architects (ASLA) visual assessment guidelines. Guidance from FHWA-HI-88-054 was also used. Additionally, DDOT and other city plans and codes were consulted for policies on visual and aesthetic design goals.

With the exception of Anacostia Park, the study area is a fully developed, urbanized environment, consisting of a mix of residential, commercial, and industrial uses. The river, the open space of the park, the bridges and freeways, and the institutional structures such as the Navy Yard are the dominant visual elements of the project area. The open space of Anacostia Park makes the bridges and freeways more visible than is typical in an urban setting.

For this study, key views were selected to represent the range of views in the project area. The view selection process included field reconnaissance of the corridor and an assessment of potential Visual Character Units from which the existing highway and proposed alternatives are visible. A Visual Character Unit is a geographic area in which views of the subject have a similar context. The Visual Character Units are identified and summarized in Exhibit 6-84.

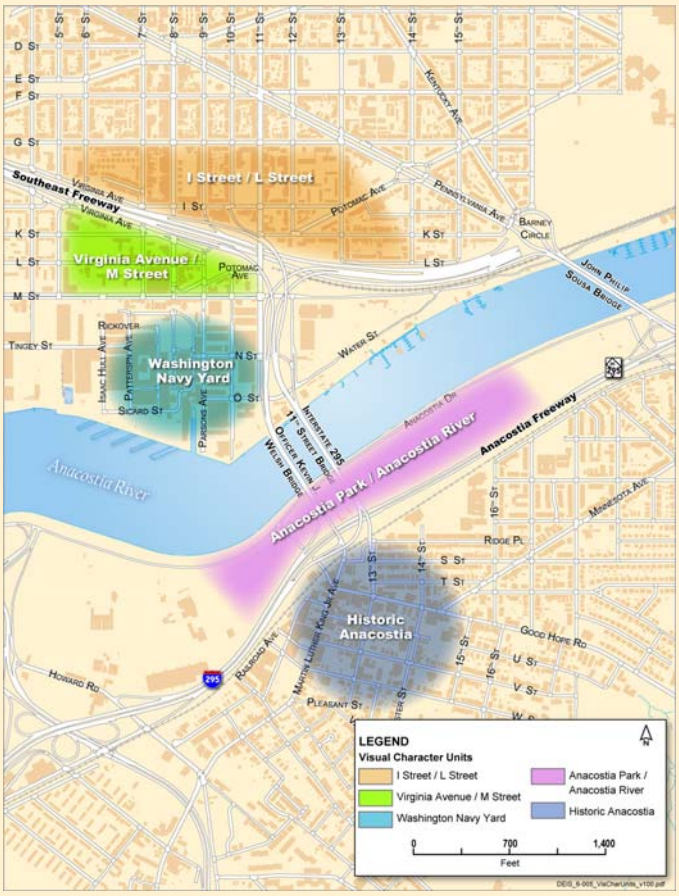
6.14.1 Historic Anacostia Visual Character Unit

Within this Visual Character Unit, three distinct subareas were recognized: 1) the largely commercial "gateway" area at the nexus of Martin Luther King, Jr. Avenue, Good Hope Road, and 13th Street; 2) the residential area at the intersection of Fairlawn Avenue and 16th Street; and 3) the residential area at the intersection of Ridge Place and 13th Street.

Gateway Subarea

Encompassed by Martin Luther King, Jr. Avenue, Good Hope Road, and 13th Street, this subarea is the primary commercial zone of Anacostia. The roadway approaches to the 11th Street Bridges run through this area. For the most part, the 11th Street Bridge infrastructure is largely obscured from ground views from the Gateway (Exhibit 6-85). The Anacostia Gateway Government Center is proposed for the site. A multistory project in this block would substantially alter existing views.

EXHIBIT 6-84
Study Area Visual Character Units
There are five visual character units in the study area.



Views from the roadway to the Gateway site are varied, depending on the bridge. As drivers enter Anacostia from the Officer Welsh bridge, the Gateway is largely hidden. As they exit the bridge structure, drivers descend toward the Martin Luther King, Jr. Avenue/Good Hope Road intersection (Exhibit 6-85). This intersection is a low point. From the intersection, Martin Luther King, Jr. Avenue begins to increase in elevation. Leaving Anacostia on the 11th Street Bridge, drivers steeply climb onto bridge structures over Anacostia Park and the Anacostia River. From a driver's vantage point, historic Anacostia is effectively left behind upon entering the on-ramp. At that point, drivers can no longer see the surrounding neighborhoods.

Views toward the roadway from the Gateway site are also varied by location. Perhaps the most concentrated view of roadway ramps is from the corner of Good Hope Road and 13th Street (Exhibit 6-85). From this spot, views of the ramps toward downtown Washington, DC are visible, as are the ramps taking vehicles from downtown to I-295. Overall, the views of the ramps can be best described as sporadic.

EXHIBIT 6-85
Gateway Subarea Photos

View from the Martin Luther King, Jr. Avenue/Good Hope Road Intersection toward the 11th Street Bridge.

E-033_MLK_GoodHope_v101

View of the proposed site for the Anacostia Gateway Government Center.

E-034_Gateway_GovtCenter_v101

View from the Welsh Bridge toward Martin Luther King, Jr. Avenue/Good Hope Road intersection. The proposed site of the Anacostia Gateway Government Center is located at the left edge of this photograph.

E-035_MLK_2GoodHope_v101

View of the 11th Street Bridge ramps visible from the corner of Good Hope Road and 13th Street.

E-036_GoodHope&13th_v101

Fairlawn Avenue/16th Street Subarea

Two Anacostia residential areas lie adjacent to the 11th Street Bridges. One is located at the intersection of Fairlawn Avenue and 16th Street. This strip of row houses abuts Anacostia Freeway, separated from it by a rail road line and narrow wooded strip (Exhibit 6-86). At this location, Anacostia Freeway is slightly depressed, relative to the residences. This area is at the outer limits of the project's study area and contains the roadways that could be altered by project alternatives. One visual element that is widely visible within the study area—the smokestack of a local business (Exhibit 6-86)—is located in this part of Anacostia.

EXHIBIT 6-86
Fairlawn Avenue/16th Street Subarea Photos

View from residences on Fairlawn Avenue toward Anacostia Freeway.

E-037_Noise95_v101

View of smokestack that is visible throughout the area.

E-038_Chimney@14th_v101

Ridge Place/13th Street Subarea

The other residential area within the Anacostia Visual Character Unit is located at the intersection of Ridge Place and 13th Street. The ramps of the 11th Street Bridge toward downtown Washington, DC loom above the residents of this neighborhood (Exhibit 6-87). The rail line that parallels Anacostia Freeway is visible, but the freeway itself is generally not. The views of the ramps are most dramatic from Ridge Place, but similar views occur at the S Street and T Street termini with 13th Street.

EXHIBIT 6-87
Ridge Place/13th Street Subarea Photos

View down Ridge Place. Ramp from Anacostia toward downtown Washington is also visible.

View of the undersides of 11th Street Bridge ramps from Ridge Place/13th Street intersection.

View down 13th Street toward Ridge Place. This photo, taken at the intersection of 13th Street and T Street, shows the on-ramp on the left.

6.14.2 Anacostia Park/Anacostia River Visual Character Unit

From surrounding areas within the 11th Street Bridges study area, the riverfront is generally not visible. Isolated views of the Anacostia riverfront exist—some include glimpses of resources such as the Capitol—but these views are rare and limited. Views toward the riverfront are limited by existing roadways/rail lines, the bridge infrastructure, vegetative screens, and buildings immediately adjacent to the rail line that flanks the park. Within this Visual Character Unit, three distinct subareas are recognized—the waterfront/marina areas,

the recreational areas away from the riverfront, and the park administration facilities located on the western edge of the study area. In all of these areas, the existing bridges form a dominant element in the landscape.

Waterfront/Marina Subarea

Within the study area, marinas are limited to the west side of the river. Public access to the riverfront is easiest on the east side of the river. On the west side, access is limited by enclosures surrounding the area's marinas. Warnings against contact with the water are present throughout the area. (Exhibit 6-88) From the waterfront, views within the park are largely unobstructed to the opposite shore. A very narrow band of woody vegetation (generally a single sporadic row of trees/shrubs) lines the riverfront. From the east side of the river, Washington Navy Yard (including the moored destroyer), the modern Marine Barracks, and the riverfront boathouses/marinas are clearly visible (Exhibit 6-88). From the west side of the river, the view is mostly limited to the mowed recreational fields that dominate that part of Anacostia Park.

The bridges across Anacostia River are visible throughout the park. In addition to the 11th Street Bridges, the adjoining bridges (John Philip Sousa Bridge and South Capitol Street Bridge) are visible from nearly every vantage point. All three bridges exhibit a low profile over the river. All have wall-type piers in the river. The Pennsylvania Avenue and 11th Street Bridges have piers surfaced with concrete-type blocks. The piers on the South Capitol Street Bridge are surfaced with stone blocks. The 11th Street and South Capitol Street Bridges have straight steel fascia girders that are noticeably rusted. The Pennsylvania Avenue Bridges have unrusted arched steel fascia girders. The 11th Street and South Capitol Street Bridges have limited exterior

EXHIBIT 6-88
Waterfront/Marina Subarea Photos
View of the Anacostia riverfront. This view includes Washington Navy Yard (and destroyer). Sewer outfalls, sporadic vegetation, and warning signs are found along the riverfront.

E-042_Destroyer_v101

View of the 11th Street Bridge from the east side of the river. Park marinas are visible on the opposite bank of the river.

E-043_11stBridge_v101

View of the Officer Kevin J. Welsh Memorial Bridge.

E-044_11Street_v101

aesthetic elements, while the Pennsylvania Avenue Bridge includes decorative fencing, lighting, and fascia treatments. The views from the 11th Street Bridges, as well as the views toward the 11th Street Bridges, project a strong highway-type streetscape.

The waterfront/marina views from the roadways on the 11th Street Bridges are extremely limited. The approaches to the bridges (on both sides) are curved. The structures also have sight-limiting coping/sidewalls. These design features limit views of the riverfront to glimpses. The highway character of the approaches is continued onto the bridges, giving few cues to indicate that drivers are on a bridge. While these features do not limit pedestrian views, the narrowness of the sidewalks creates an environment where few will feel comfortable enough to linger.

Recreational Subarea

Within the study area, the parkland on the east side of Anacostia River is almost entirely mowed, unstructured open space (Exhibit 6-89). None of the park's nearby structures/ amenities (such as the pool and recreation center) falls within this project's study area. Views to areas outside of the parks are extremely limited. Aside from bridges, the most visible nonpark landscape element is a smokestack located in Anacostia. The bridges are components of the landscape of the park, visible in nearly all views. The roadway elements that approach the bridges are somewhat obscured by edge vegetation (Exhibit 6-89). Given the unstructured nature of recreation opportunities provided at the park, the view is not especially distracting. The bridge breaks the park-like setting, but it is always there. Given its omnipresence, ball players, dog walkers, and joggers (and other typical users) are unlikely to find the bridge particularly disturbing. The park is also designed to separate users from the bridges.

EXHIBIT 6-89
Recreational Subarea Photos

View of the Anacostia Park recreational subarea. The only element of the Anacostia neighborhood typically visible from the park is the smoke stack, adjacent to Anacostia Senior High School.

E-047_North_11ST_v101

View toward the 11th Street Bridge. The roadways adjoining the park are almost always obscured by border vegetation.

E-048_North_11ST_v101

As with the riverfront, the views of the park's recreational areas (from the 11th Street Bridge) are extremely limited. Curved approaches and sight-limiting walls and elevation limit views

of the recreation subarea to glimpses. The highway character and unfriendly pedestrian facilities also create an environment where drivers/pedestrians have limited opportunities to observe the park.

Park Administration Subarea

The park headquarters are located about 1,600 feet from the bridges. In addition to parking facilities, offices, maintenance depots, and canine training grounds, the headquarters also includes a helipad. Views from the roadway to the headquarters are limited and unremarkable. The most common views are of the multistory office building and the operation of the helipad (as it rises above the horizon). The headquarters are more visible from the riverfront and recreational subareas. Views from the other Visual Character Units are of a facility that in general character is similar to a typical municipal or street maintenance facility—distinctly unpark-like. Although the headquarters comprises a fenced facility that directly abuts the rest of the park, it is not jarringly out of character with the rest of the general riverfront area.

6.14.3 Washington Navy Yard Visual Character Unit

Washington Navy Yard occupies the area on the west side of Anacostia River, between 11th Street and M Street. Access to the site is strictly limited. Regarding visual resources, Washington Navy Yard is unique because of its security concerns. Its security personnel desire unobstructed views of the areas adjacent to its perimeter. The most prominent view of the Navy Yard is probably the decommissioned destroyer moored in a slip on Anacostia River.

This Visual Character Unit also includes Maritime Plaza. Although not part of the Navy Yard, this multistory commercial development is so similar in character that it deserves to be included in this discussion (Exhibit 6-90).

As a unit, Washington Navy Yard is visible from the project's roadways. Individual elements are not distinguishable at this scale. Views from Washington Navy Yard to the 11th Street Bridges are limited by the security walls and buildings that constitute the facility's outer security perimeter. This is especially true of the approach roadways. The view from the Navy Yard, across the river, to the bridges is more open. The river and the open space adjoining the river are generally visible from the Navy Yard.

Project coordination has established that, for security purposes, Washington Navy Yard desires unobstructed views of the areas adjacent to its perimeter.

EXHIBIT 6-90
Washington Navy Yard Visual Character Unit Photo
View along M Street. Maritime Plaza is visible in the left foreground. The 11th Street Bridge approach roads are visible in the mid-view. Washington Navy Yard is mostly obscured in the background (left) of this view.

E-052_Maritime_Plaza_v101

6.14.4 Virginia Avenue/M Street Visual Character Unit

This Visual Character Unit encompasses a mixed use part of the Near Southeast neighborhood, on the west side of Anacostia River. Its boundaries roughly include Southeast/Southwest Freeway and Washington Navy Yard. Distinctive land uses in this area include Virginia Avenue Park, the Kapp DC Key Academy, and U.S. Marine housing, as well as an infill of smaller-scale commercial and residential operations (Exhibit 6-91). At this location Southeast/Southwest Freeway is an elevated highway curving toward the 11th Street Bridges. The elevated roadway is visible through this area. The lower portions of the roadway are composed of MSE embankment walls with decorative panels. The taller sections are supported by piers. The American Institute of Steel Construction named this elevated roadway the "most beautiful bridge" in 1972. This roadway continues to appear clean and well-maintained. Numerous underpasses allow continuity across the freeway. From this vantage point, the Southeast/Southwest Freeway creates a visual barrier within the Near Southeast neighborhood. However, the consistency/continuity of the elevated roadway creates a replacement horizon. For the most part, only the outbound (toward Anacostia) component of the Southeast/Southwest Freeway is visible to the area. However, down M Street, viewers can glimpse the larger interchange (Exhibit 6-91).

From the roadway, the ground-level features are visible throughout the approach to the 11th Street Bridges. Typically slow rush-hour speeds allow drivers to see much of the neighborhood.

From the neighborhood, the elevated roadway is visible from nearly all viewpoints. From some vantage points, it dominates the viewshed.

EXHIBIT 6-91
Virginia Avenue/M Street Visual Character Unit Photos

Virginia Avenue Park is in the foreground of this view. At this point, the Southeast/Southwest Freeway is elevated on piers.

E-063_10th_Park_v101

View from the intersection of L Street and 8th Street. The Southeast/Southwest Freeway is on MSE walls at this location.

E-064_8th_EL_v101

6.14.5 I Street/L Street Visual Character Unit

This Visual Character Unit is also located within the Near Southeast neighborhood. It encompasses areas west of the Southeast/Southwest Freeway. In many respects, this Visual Character Unit is similar in composition to the Virginia Avenue/M Street Visual Character

Unit. Differences include more concentrated residential and commercial developments (Exhibit 6-92). In the vicinity of 9th Street (immediately opposite Virginia Avenue Park), the visual landscape is similar to that described in the Virginia Avenue/M Street Visual Character Unit—elevated roadways composed of MSE walls with decorative panels.

From the roadway ramps, ground-level features generally are not visible. Drivers can see the back of the Hampton and Marine facilities. The rest of the neighborhood is either shielded by topography or sight lines.

From the neighborhood, the elevated roadway is visible from isolated viewpoints. It rarely dominates the view, appearing instead as a somewhat distant element of the landscape.

EXHIBIT 6-92
I Street/L Street Visual Character Unit Photos

View up 9th Street. The Marine Barracks are visible on the left side of the photo.

E-055_North_up9th_v101

View of the Hopkins Apartments, from the intersections of 11th Street and Potomac Avenue. 11th Street Bridge ramp (elevated highway) is visible between the buildings.

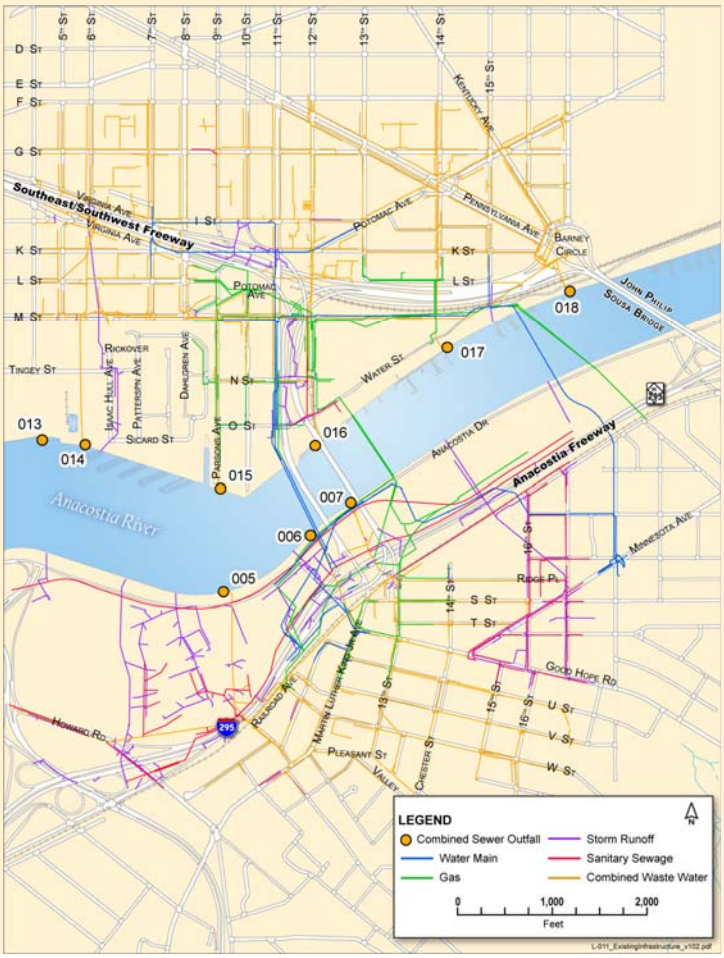
E-056_KStreet(Hopkins)_v101

6.15 Infrastructure

There are numerous utilities in the study area. All residential, commercial and business customers in the District of Columbia can choose their electric, gas, and telephone service providers. PEPCO and Washington Gas & Light are the only distributors of electricity and natural gas, respectively, serving the District. More than 40 companies provide local telephone service in the District. Cable television is provided by Starpower Communications and Comcast. Water and sewer services are provided by WASA. The MAC Study identified the need to locate the various underground utilities in the area of the Anacostia Freeway. This inventory became necessary because the development of long-term improvements evolved into considerations for lowering the grade of the Anacostia Freeway near the 11th Street Bridges, Pennsylvania Avenue, and possibly between the two interchanges. Exhibit 6-93 illustrates the existing water, sewer and gas lines in the study area.

In total there are 60 CSO outfalls in the WASA system. They are regulated by permit by EPA and listed in the National Pollutant Discharge Elimination System. WASA's Long-Term Control Plan (LTCP) for the Anacostia River includes rehabilitation of pumping stations, consolidation of outfall stations, construction of new interceptor pipelines, valve replacement, as well as the building of two storage tunnels (one on the west side of the Anacostia River, shown in Exhibit 6-94, the other runs parallel to the Northwest Boundary Sewer) and ancillary pumping equipment. The two tunnels would have approximately 125 million gallons of storage capacity. The tunnel in the study area will have approximately 49 million gallons of storage capacity.

EXHIBIT 6-93
Existing Water, Sewer, and Gas Lines
The study area contains an extensive network of major utilities.



Additional work would include the construction of the Fort Stanton Interceptor. The Interceptor is a 66-inch pipeline from Fort Stanton to Poplar Point to convey CSOs 005, 006, and 007 on the east side of the Anacostia to the storage tunnel. Tidal gate replacement will continue by changing out the existing tidal gates with elastomeric-type gates that ensure more positive closure and help reduce inflow and infiltration into the sewer system.

The CSO 006 separation project will separate this CSO in the Fort Stanton Drainage Area and tie it into the Fort Stanton Interceptor. The interceptor routes the CSO to the storage tunnel on the west side of the Anacostia River. Large (16-inch and larger) valve and small (12-inch and smaller) valve replacement projects will also continue. Over 199 large valves and 177 small valves will be replaced between 2005 and 2012. The valves allow emergency repairs to the system, system flushing, and protection of the system from inflow and infiltration.

EXHIBIT 6-94
WASA Proposed Improvements
Water and sewer improvements are planned for both sides of the river.

6.16 Existing Roadways and Bridges

Existing traffic and transportation data were gathered from recently completed DDOT planning and traffic studies in the project area. These data were compiled and summarized to establish a baseline assessment of existing conditions and to provide a framework for assessment of future No-Build and build conditions.

6.16.1 Background and Previous Studies

The 11th Street Bridges project falls within the context of the AWI, which was started in 2000 by Mayor Anthony Williams in coordination with 20 District and federal agencies. Preliminary engineering and transportation planning conducted by DDOT in prior studies determined that the most important and cost-effective improvements in the study area would be to provide the missing connections between the 11th Street Bridges and the Anacostia Freeway. Also, separating the local and regional traffic was expected to reduce the number of conflict points, allowing better efficiency with improved local access between neighborhoods. DDOT grouped these various improvements into the East Washington Traffic Relief Program.

When the Southeast Freeway was built in the mid-1960s, regional plans called for its extension across the river and to join the Anacostia Freeway. However, these plans were abandoned, and today there is no direct connection between the Southeast Freeway and the northbound Anacostia Freeway. Because of this, regional traffic is forced to use neighborhood streets to reach the Anacostia Freeway. The result is increased traffic on local streets such as Martin Luther King, Jr. Avenue, Good Hope Road, Pennsylvania Avenue, and Minnesota Avenue, as well as the Barney Circle area.

The 11th Street Bridge study area has been the subject of many proposed transportation infrastructure projects during previous decades. After efforts to extend the freeway system

through the Capitol Hill neighborhood in the 1970s were abandoned, and construction of the Barney Circle Freeway in the 1980s and 1990s failed, this area was left with an incomplete regional transportation network. This network includes sections of interstate highway that are almost completely unused. Important city streets like Pennsylvania and Minnesota Avenues have borne the brunt of spillover traffic, resulting in limited access, costly traffic congestion, and tension among neighborhoods that have tried to balance traffic impacts to neighborhoods with basic mobility.

Middle Anacostia River Crossings Transportation Study

The MAC Study evaluated the existing traffic conditions and recommended options to improve bridge and roadway connections between the 11th Street Bridges and the John Philip Sousa Bridge to enhance mobility on both sides of Anacostia River. Existing conditions data presented in the MAC Study were used for this study.

Washington Navy Yard Building 200 Environmental Assessment

The Navy conducted a site impact analysis as a part of its Building 200 Environmental Assessment. This study provided existing peak-hour turning movement traffic volumes at the Navy Yard gates and adjacent interchange ramp intersections.

Pennsylvania Avenue Southeast Transportation Study

The Pennsylvania Avenue Southeast Transportation Study evaluated all modes of transportation access, operations, and safety along Pennsylvania Avenue in the vicinity of the interchange with the Anacostia Freeway. This study also assessed existing travel patterns and transportation issues along Pennsylvania Avenue.

Anacostia Gateway Study

The Anacostia Gateway Study identified options to improve transportation access, parking, and aesthetic conditions in the Anacostia historic district. This study evaluated existing traffic, parking, pedestrian activity, and transit operations to recommend a series of short-mid-, and long-range improvements in the area.

Maritime Plaza Traffic Study

The Maritime Plaza traffic study (Lincoln Properties, 2005) focused on the traffic and access implications to the Maritime Plaza development at 12th and M Streets, SE. Traffic operations at intersections surrounding the site were investigated and improvement recommendations were made.

AWI Transportation Master Plan

The AWI Transportation Master Plan has identified and established an implementation timeline and construction sequencing of DDOT projects in the Anacostia area. The document identifies a range of projects underway or planned in the Anacostia area through the year 2030.

The existing roadways and bridges were evaluated in terms of:

- Roadway geometry and traffic control
- Pedestrian and bicycle access
- Traffic and safety conditions
- Transit and freight service

The existing roadway system is described first in the subsequent subsections, followed by a discussion of each of the elements listed above.

6.16.2 Existing Roadway System

The 11th Street Bridges study area includes several major roadways that carry significant amounts of traffic to and from the Southeast quadrant of Washington, DC. Speed limits within the study area range from as low as 25 mph for most local streets to 50 mph on parts of the Anacostia Freeway and the Southeast/Southwest Freeway.

The **Southeast/Southwest Freeway,** located west of the Anacostia River, is a six-lane, divided interstate with a speed limit of 45 mph. It is also known as the Southeast/Southwest Freeway. The section between the 11th Street Bridges and Barney Circle is known as I-695. For the purpose of this study and to avoid confusion, it is referred to as the Southeast/Southwest Freeway.

The **Anacostia Freeway** parallels the Anacostia River along its east side. It is a four-lane, divided freeway with a posted speed limit of 50 mph. South of the 11th Street Bridges the freeway is designated Interstate 295. North of the 11th Street Bridges, the Anacostia Freeway is no longer part of the interstate system, and is designated DC-295. Beyond the study area, north of Benning Road, the highway is known as Kenilworth Avenue. This study refers to the length of highway north of the 11th Street Bridges as the Anacostia Freeway.

The **11th Street Bridges** cross the Anacostia River in the Southeast quadrant of Washington, DC. They connect the Southeast and Anacostia Freeways and also to local streets on both sides of the river. The 11th Street Bridge and Officer Kevin J. Welsh Memorial Bridge together operate as a one-way pair. The four-lane 11th Street Bridge carries westbound traffic from I-295 and 13th Street in historic Anacostia to the Southeast/Southwest Freeway and points west of the river. The four-lane Officer Welsh bridge connects eastbound traffic from the Southeast/ Southwest Freeway and 11th Street to southbound I-295 and Martin Luther King, Jr. Avenue in historic Anacostia. Combined, these two bridges are called the 11th Street Bridges.

The transportation study area for the 11th Street Bridges project includes several arterial, collector, and local roadways in the vicinity of the bridges—Martin Luther King, Jr. Avenue, 13th Street, Good Hope Road, Minnesota Avenue, 11th Street, 12th Street, M Street, N Street, and I Street.

Martin Luther King, Jr. Avenue is a minor arterial with a speed limit of 25 mph. The roadway operates two lanes one-way southbound with parking on each side from Good Hope Road to W Street. This parking is restricted during peak traffic periods and limited to

1- to 2-hour parking during off-peak hours. South of W Street, Martin Luther King, Jr. Avenue is a two-way roadway with one travel lane in each direction and parking on both sides. The ½–mile segment between Good Hope Road and Howard Road has three signalized intersections. These traffic signals, combined with narrow travel lanes, high rush-hour traffic volumes, and pedestrian and parking activity result in congested traffic conditions during the evening peak period.

13th Street is a minor, one-way northbound minor arterial with a speed limit of 25 mph. It is a three-lane undivided roadway providing the return direction of travel from Martin Luther King, Jr. Avenue at W Street. 13th Street connects with the 11th Street Bridge at Good Hope Road. Parking is permitted on both sides of the roadway.

Good Hope Road is an undivided minor arterial running east-west and has a posted speed limit of 25 mph. The roadway operates with one travel lane in each direction and a parking lane on both sides along most of its length. The ¼-mile section of Good Hope Road, between Martin Luther King, Jr. Avenue and Minnesota Avenue has four signalized intersections. These traffic signals, combined with narrow travel lanes, high peak-hour traffic volumes, and pedestrian and parking activity, cause Good Hope Road to operate at congested levels during both the AM and PM peak periods. The facility currently operates with fairly low levels of congestion during off-peak time periods.

Minnesota Avenue is a north-south roadway that intersects with Good Hope Road toward the east side of the study area. Classified as a minor arterial, it operates with one lane in each direction and a parking lane on both sides. The posted speed limit is 25 mph. The nearly 1-mile length of Minnesota Avenue from Good Hope Road to Pennsylvania Avenue has three signalized intersections and two stop signs. Similar to other streets east of the river, the signalized intersections, high peak-hour traffic volumes, and pedestrian and parking activity along Minnesota Avenue result in moderately congested traffic conditions during both the AM and PM peak periods. The facility operates with low levels of congestion during off-peak periods.

11th Street is classified as a minor arterial from I Street to M Street and a local street from M Street to the Officer Welsh bridge. It has four undivided lanes with no on-street parking. In the ½-mile section of 11th Street between Pennsylvania Avenue and the Officer Welsh bridge, there are five signalized intersections. During the afternoon peak period, 11th Street operates at failure conditions.

M Street is classified as a minor arterial from where it enters the study area from the south to 10th Street. From 10th Street to 12th Street and beyond the Maritime Plaza complex it is classified as a local street. The arterial section of M Street has six lanes (three in each direction), a mix of divided and undivided sections, and on-street parking during off-peak periods. The posted speed limit is 25 mph. M Street has many signalized intersections within the study area. These traffic signals, combined with high peak-hour traffic volumes, result in congested operations and poor levels of service during peak periods.

12th Street is classified as a local street. It operates one-way northbound, between Water and M streets and most of its traffic comes from the 11th Street Bridge off-ramp.

Exhibit 6-95 illustrates the travel-lane configuration on the freeways and primary roads studied.

6.16.3 Roadway Geometry and Traffic Control

An evaluation of geometric and design characteristics of the Southeast/Southwest Freeway and the Anacostia Freeway interchanges with 11th Street Bridges was based on a review of as-built drawings and field observations. Those geometric, traffic control, or design features that contribute to traffic performance and/or safety issues were specifically identified.

Potential nonstandard geometric design features are described in this subsection. Many of these features may not be consistent with current DDOT design policies, and they appear to affect operations or capacity adversely. Potential modifications to nonstandard features should be considered with any future interchange reconstruction plans.

Issues at the 11th Street Bridges and Southeast/Southwest Freeway interchange include the following:

- Weaving conflicts on the bridges, which create heavy friction and significantly slower travel speeds on the weaving section of the freeway
- Lack of connections from the neighborhoods to the freeways and from the neighborhoods to the waterfront

Issues at the 11th Street Bridges and Anacostia Freeway interchange include the following:

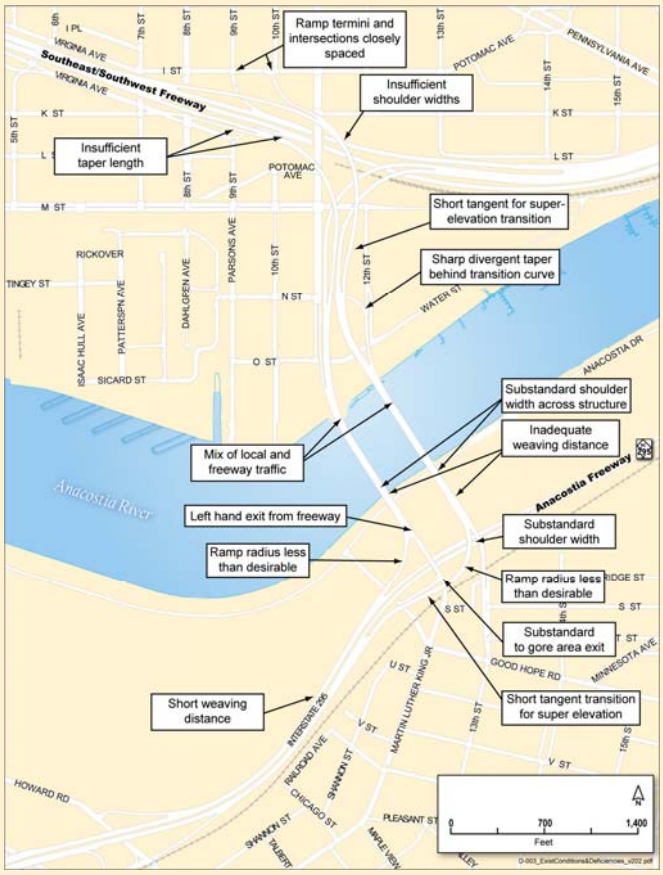
- Missing ramp movements
- Poor pedestrian connectivity

EXHIBIT 6-95
Roadway Lane Configurations
This shows the number and direction of travel lanes for the roadways studied.

Specific geometric issues related to barriers between the neighborhoods and Anacostia Park/ waterfront are summarized below and depicted in Exhibit 6-96:

- Local and freeway traffic is mixed at the Officer Welsh bridge and 11th Street Bridge.
- Freeway ramp movements are missing at the Anacostia Freeway/11th Street interchange. There is no freeway access to the Officer Welsh bridge.
- Short weaving sections exist between the eastbound Officer Welsh bridge entrance ramp to the southbound Anacostia Freeway and the southbound Anacostia Freeway exit ramp to Howard Street. Short weaving sections exist between the westbound 11th Street Bridge entrance ramp to N Street and the northbound Anacostia Freeway exit ramp from Howard Street.
- Lack of shoulders on the bridges preclude handling of emergencies, incidents, maintenance, and enforcement activities.
- Stopping- and decision-sight distances were inadequate at numerous places along the freeways. Roadway profiles may need to be modified to correct this deficiency in any future interchange and bridge reconstruction plans.

EXHIBIT 6-96
Existing Roadway Conditions and Deficiencies
Roadway deficiencies are found throughout the study area.



- The lengths of merging taper ramps to the Officer Welsh bridge are less than those recommended by the AASHTO Policy on Geometric Design, which per FHWA requirements is the basis for interstate highway design.
- East of the river, the 11th Street Bridges are accessible only from the freeway south of the bridges or from local streets east of the river. Longer-distance regional travelers from the north, attempting to cross the river, have two choices: continue south of the bridges and reverse direction on the freeway at the Howard Road interchange, or exit the freeway north of the bridges and use local streets to access the bridges across the river.
- West of the river, the 11th Street Bridges connect traffic on local streets and the Southeast/

Southwest Freeway with points south on I-295 or the local streets of historic Anacostia. Longer-distance regional travelers, attempting to travel north on the Anacostia Freeway must seek an alternative indirect route to complete the trip. These alternatives include using the Southeast/Southwest Freeway to Barney Circle and crossing the river on Pennsylvania Avenue; entering historic Anacostia and using local streets to get back to the freeway northbound; and traveling south on I-295 before reversing direction at the Howard Road interchange.

- The westbound exit taper from the 11th Street Bridge to N Street is substandard.
- Shoulder-width dimensions are substandard at the 11th Street Bridges. The right shoulder along the bridges ranges from 0 to 6 feet and does not allow vehicles to pull off the roadway safely in an emergency.
- The ramp structure shoulder widths appear to be less than the current DDOT standard. Based on field observations, reduced shoulder widths appear to affect ramp operations or to restrict motorists' ability to safely traverse the ramps.
- The grades at the 13th Street on-ramp and the 11th Street at N Street on-ramp exceed 10 percent, which is greater than recommended in current AASHTO design policies.

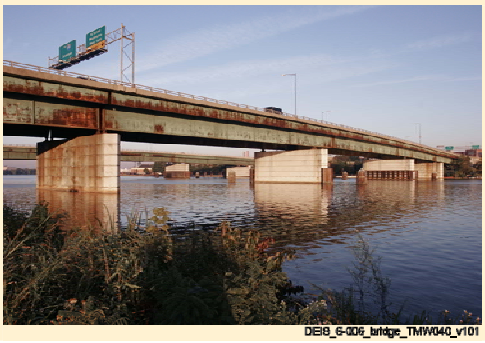
The following issues were noted for the traffic control elements within the study area:

- Directional signs throughout the corridor are confusing, missing, or poorly placed.
- Existing pavement markings and object/barrier delineations are faded or missing.
- There is no effective system coordination for the closely spaced traffic signals.
- The existing stop-sign control at the intersection of M Street at 12th Street is not capable of accommodating peak-hour traffic. Given the proposed development in the vicinity of Maritime Plaza, a traffic signal may soon be warranted at this intersection.

6.16.4 River-Crossing Bridges

Two bridges span the Anacostia River in the study area: the 11th Street Bridge, referred to as the upstream bridge, and the Officer Welsh bridge, referred to as the downstream bridge. The alignments of the two spans are approximately parallel, and the decks are separated by a distance of approximately 320 feet.

EXHIBIT 6-97
Existing Bridges
The current physical condition of the bridges is fair. The poor condition of the paint on steel framing is evident in this photo.



DEIS_6-006_bridge_TMW040_v101

The current physical condition of the bridges is fair (Exhibit 6-97). Inspections performed in 2002 identified numerous deficiencies, such as poor condition of paint on existing steel framing, spalled or cracked concrete on the deck slab and substructure, and deficiencies in the drainage

systems and expansion joints. At that time, a sufficiency rating of 66 was assigned to the Officer Welsh bridge and 41 to the 11th Street Bridge. Highway Bridge Replacement and rehabilitation Program (HBRR) program requirements (23 CFR 650.409) state that bridges with a rating of less than 80 are eligible for rehabilitation, and bridges with a rating of less than 50 are eligible for replacement. Rehabilitation of the existing bridges would require repainting the steel superstructure and bearing assemblies, patching or sealing deck and substructure concrete, and repair or replacement of existing deck expansion joints.

The 11th Street Bridge was designed by the District Department of Highways. Construction began on the substructure in 1961, and a second contract for the superstructure was let in 1963. The portion of this bridge over the river is a five-span unit with a span arrangement of 171.25–171.25–234–171.25–171.25 feet. The superstructure is not continuous and includes deck joints at the piers. The canter portion of the 234-foot span is suspended between two pin-and-hanger expansion joints, which are cantilevered approximately 32 feet from the piers on either side of the main channel. Design drawings for this bridge do not show pre-existing bridges at this alignment.

A similar design was prepared by the District Department of Highways for the Officer Welsh bridge, and construction began in 1965. The portion of this bridge over the river has a similar five-span unit, with a span arrangement of 170–170–234–171.25–186.25 feet. As with the 11th Street Bridge, the superstructure is not continuous, and includes deck joints at the piers. The center portion of the 234-foot span is suspended between two pin-and-hanger expansion joints, which are cantilevered approximately 32 feet from the piers on either side of the main channel. The Officer Welsh bridge was constructed on approximately the same alignment as a pre-existing, four-span steel arch bridge with one bascule span that was constructed in 1904. At the time that the existing bridge was designed, the piers were located to avoid the 1904 bridge piling and footings, which currently remain beneath the river bed. Maps and other documentation indicate that a steel truss bridge, which existed up to the construction of the 1904 bridge, was located on an alignment that was approximately 50 to 100 feet south of the existing bridge. It is assumed that the foundations from this truss bridge also remain in the river.

Both bridges have a 63-foot-wide deck slab with a 52-foot curb-to-curb dimension. The cross-section for the portions of the bridges over the river consists of two longitudinal steel plate girders with floor beam and stringer framing. The superstructure is articulated as a statically determinate structural scheme: pin-and-hanger assemblies support a suspended span over the navigation channel, and expansion joints are utilized in the deck for the simple span framing.

Piers are 6-foot 9-inch-wide solid wall–type piers (Exhibit 6-98) with stone masonry facing extending from the water level to the caps. Pier walls are supported on reinforced concrete pile caps, and steel H piles, with between 100 and 129 piles per pier. A tremie seal was placed below the bottom of the pile cap to allow for cofferdams to build to piers in the dry. The top of pile caps were located below the mud line (as it existed at the time of original construction).

EXHIBIT 6-98
Existing Bridge Support Structure
Existing bridge support structures include pin and hanger assemblies to support the span over the navigation channel.

In addition to their current deficient physical condition, there are issues associated with the design and articulation of the bridges. The existing statically determinate structures are not continuous over the supports, and have a two longitudinal girder framing scheme. In addition, the pin-and-hanger assemblies that support the central portion of the 234-foot span over the navigation channel are non-redundant and fracture critical. In the event of a failure of one of the pin-and-hanger assemblies, this would result in collapse of the suspended span and closure of the bridge to traffic. Similarly, in the event of a failure of a tension area on one of the two longitudinal girders, this could result in the failure of the affected span. Rehabilitation of the existing physical deficiencies of the bridges will not address the non-redundant features of the original design.

6.17 Pedestrians and Bicyclists

6.17.1 Pedestrian and Bicycle Access

Providing safe and efficient non-motorized travel is important within the District and the study area specifically. The study team analyzed existing bicycle and pedestrian facilities in the study area to form a basis of comparison for the future No-Build and each of the build alternatives. An inventory of existing facilities and deficiencies was combined with a review of plans from the DC Bicycle Master Plan and the Anacostia River Trail Plan to evaluate the system of sidewalks, bike lanes, and trails within and through the study area. Exhibit 6-99 illustrates the existing and planned sidewalk and bicycle facilities within the study area.

EXHIBIT 6-99
Existing and Planned Pedestrian and Bicycle Facilities
The project will enhance the existing and planned facilities across the river.

Existing Bicycle and Pedestrian Facilities

Existing bicycling conditions in the study area are generally fair to poor, primarily consisting of shared street use with motor vehicles. There are no dedicated bicycle lanes on the local streets, and the high traffic volumes, combined with narrow travel lanes, make bicycling difficult (Exhibit 6-100).

EXHIBIT 6-100
Bicycle and Pedestrian Facilities on the Bridges
Pedestrian and bicycle facilities on the Officer Welsh bridge and 11th Street Bridge are narrow.

Sidewalks throughout the study area are in varying conditions. West of the river the sidewalks are generally adequate, with many areas having accessible curb ramps and crossing accommodations for the disabled. Recent streetscape improvements and new development (Exhibit 6-101) have improved many pedestrian facilities, but have also resulted in a somewhat disconnected system. Areas with no sidewalks limit connectivity, and wide variations in conditions are prominent. East of the river, brick sidewalks highlight the historic character of the neighborhood, but are in poor general condition. Sidewalks of varying widths and materials, mixed with crossing accommodations compliant with the Americans with Disabilities Act, make access difficult for disabled users.

EXHIBIT 6-101
Brick Sidewalks in Study Area
Recent streetscape and improvements to pedestrian facilities.

Access to the Waterfront

Within the study area, the Anacostia waterfront east of the river is accessible to bicycles and pedestrians only through Good Hope Road or across the bicycle/ pedestrian bridge near Anacostia Senior High School. Within Anacostia Park, there is no continuous dedicated path, so bicyclists and pedestrians share parts of Anacostia Drive with motorists. West of the river, limited access to the waterfront is provided from 11th Street, O Street, and Water Street. Similar to other parts of the study area, sidewalks are sporadic, and users must share access with motorists.

Access to the Bridges

Bicycle access to the bridges is limited to the downstream Officer Welsh bridge. A 4-foot passageway along the southern edge of the bridge accommodates both bicyclists and pedes-

trians traveling in both directions. The narrow path makes passing in opposite directions difficult. The passageway is separated from the freeway traffic on the bridge by a short concrete wall, resulting in high noise levels and frequent wind gusts from passing vehicles (Exhibit 6-100).

Access to the bridge path from the west side of the river is accomplished using a ramp at the intersection of 11th Street and N Street. However, no crosswalk or pedestrian signals are provided to accommodate users needing to cross 11th Street. East of the river, users have two choices to access the bridge. A paved bicycle path from Good Hope Road provides the only route for cyclists, while a tree-covered, concrete stairway alongside the bridge connects pedestrians to Anacostia Drive in Anacostia Park. The sidewalk is generally hidden from view and is a safety and security concern for users.

The 11th Street Bridge provides a 5-foot sidewalk along the upstream side of the bridge. The open sidewalk is separated from freeway traffic by a curb, making travel uncomfortable at best. Access to the bridge from either end is provided by narrow stairways. West of the river, the stairway is located on O Street, in front of the Public Works facility. East of the river, the stairway is heavily tree-covered and hidden from view within the Anacostia Park. Safety and security are concerns.

Proposed Bicycle and Pedestrian Facilities

Construction of the Anacostia Riverwalk at the Navy Yard is complete except for the access control gate to be located on the waterfront at the east end of the Navy Yard. The access control gate will be constructed directly below the Officer Welsh Bridge at the water's edge. This facility is in good condition and provides enough space for combined bicycle and pedestrian travel.

The Anacostia River Trail will include widespread improvements to bicycle path and sidewalk facilities on both sides of the river (Exhibit 6-99). West of the river, sidewalks on 11th Street and M Street will be rehabilitated as a part of this project, as well as complete bicycle facilities on M, O, and Water Streets.

East of the river, the East Bank Anacostia River Trail will create a dedicated, paved path for bicycles and pedestrians within Anacostia Park paralleling the river from Poplar Point to the Maryland border. The trail will also provide a paved connection to the bicycle/pedestrian bridge over the freeway connecting to Anacostia Senior High School.

6.18 Traffic Safety

Accident data were obtained directly from the MAC Study and cover the 3-year period from January 2000 to December 2002. Accident data were analyzed for key intersections and interchanges in the study area.

During 2000–2002, the eastern interchange (Anacostia Freeway–11th Street Bridges interchange) and the western interchange (Southeast/Southwest Freeway–11th Street Bridges interchange) had the most crashes in the MAC study corridor. Roadway design plays a role in such crashes because drivers are forced to maneuver quickly in short distances. For

example, traffic crossing the bridge from the western side of the river at 11th Street and trying to reach the left exit on the eastern side to Martin Luther King, Jr. Avenue must weave through two lanes of regional traffic that is exiting to the Anacostia Freeway. Westbound traffic crossing the bridge from 13th Street traveling toward downtown must weave through traffic from the Anacostia Freeway that is exiting to locations on the western side of the river. These forced lane-change maneuvers increase traffic turbulence and frequently result in vehicle crashes.

The accident severity rating was reviewed to better understand safety problems. Accident severity takes into account the following types of accidents: property-damage only (PDO), injury-related, or fatality. By evaluating the accident severity, more insight may be gathered into the perceived safety or deficiency in safety conditions at a particular location. A rating scale is then applied to the different accident types to produce a value at each location that will account for the occurrence of injuries and deaths. The MAC Study provided the accident severity rates, calculated using the formula:

> Accident Severity Rate =
> (number of PDO accidents) + (3 × number of Injury accidents) + (8 × number of Fatality accidents)

The five intersections with the highest severity rates are:

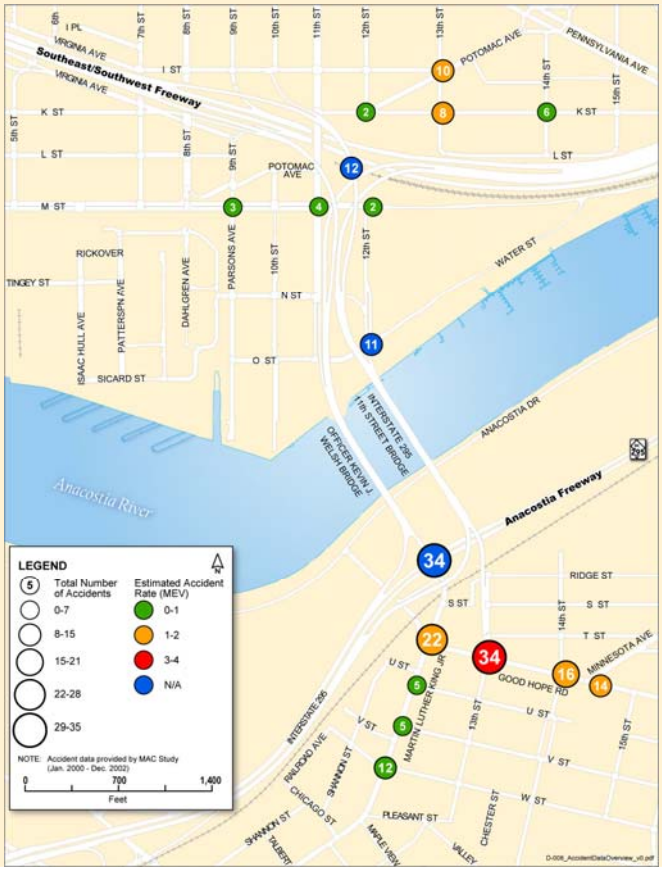
- Good Hope Road/13th Street/northbound 11th Street on-ramp
- Martin Luther King, Jr. Avenue/Good Hope Road/southbound 11th Street off-ramp
- Good Hope Road/14th Street
- Minnesota Avenue/Good Hope Road
- Potomac Avenue/13th Street

The Good Hope Road/13th Street/northbound 11th Street on-ramp had the most accidents (34) and highest accident severity rate (48) of any intersection within the study area. Within the study area, four accidents resulted in fatalities during the study period. Three fatal accidents were reported along the Anacostia Freeway between Howard Road and Pennsylvania Avenue. One fatal accident was reported at the intersection of Martin Luther King, Jr. Avenue and Good Hope Road. The intersections of Good Hope Road/13th Street/northbound 11th Street on-ramp, and Martin Luther King, Jr. Avenue/Good Hope Road/southbound 11th Street off-ramps had reported pedestrian and bicycle accidents that resulted in injuries in the study area.

Traffic safety is a concern along the 11th Street Bridges corridor. As volumes there continue to increase, lack of capacity will increase the number of traffic accidents along the corridor.

Exhibit 6-102 shows total accidents by location (January 2000 to December 2002). The accident data by intersections, interchanges, and freeway segments are summarized in Exhibit 6-103. The accident data did not provide specific ramp locations or conflict points to further evaluate the location.

EXHIBIT 6-102
Number and Rate of Traffic Accidents at Key Intersections, 2000-2002
The intersections at the Anacostia entrance and exit ramps with the 11th Street Bridges are among the highest crash locations.



6.19 Traffic Conditions

6.19.1 Traffic Access

Existing traffic access in the study area can best be described as indirect and circuitous. The freeway system only partially connects longer-distance regional trips across the Anacostia River. Motorists familiar with the area use a variety of neighborhood streets and shortcuts to fill in the gaps in the freeway system. This increases congestion on the local streets and forces low-speed, lower capacity roadways to service the longer-distance regional trips by providing the missing connections between freeway facilities. Minnesota Avenue, Good Hope Road, and Martin Luther King, Jr. Avenue are examples of streets east of the Anacostia River that currently service traffic that should and would be on a freeway facility if the connections existed.

EXHIBIT 6-103
Accident Data by Intersections, Interchanges and Freeway Segments (2000 to 2002)
The intersection of Good Hope Road with 13th Street and the 11th Street Bridge on-ramp has an accident rate more than twice the next highest location.

Location	Total Accidents	Estimated Accident Severity Rate*	Estimated Accident Rate (per MEV)**
Intersections			
Good Hope Road/13th Street/11th Street Bridge on-ramp	34	48	3.57
Martin Luther King, Jr. Ave /Officer Welsh bridge off-ramp/Good Hope Road	22	41	1.25
Good Hope Road/14th Street	16	30	1.68
Minnesota Avenue/Good Hope Road	14	20	1.13
Potomac Avenue/13th Street	10	18	1.34
Martin Luther King, Jr. Avenue/W Street	12	18	0.68
K Street/13th Street	8	12	1.04

EXHIBIT 6-103
Accident Data by Intersections, Interchanges and Freeway Segments (2000 to 2002)
The intersection of Good Hope Road with 13th Street and the 11th Street Bridge on-ramp has an accident rate more than twice the next highest location.

Location	Total Accidents	Estimated Accident Severity Rate*	Estimated Accident Rate (per MEV)**
K Street/14th Street	6	6	0.67
M Street/9th Street	3	5	0.51
Martin Luther King, Jr. Avenue/V Street	5	5	0.28
Martin Luther King, Jr. Avenue/U Street	5	5	0.28
M Street/11th Street	4	4	0.68
K Street/12th Street	2	2	0.31
M Street/12th Street	2	2	0.34
Interchanges			
Anacostia Freeway/11th Street Bridges	34	48	NA
Southeast/Southwest Freeway/11th Street Bridges	12	20	NA
11th Street Bridge/N Street Exit	11	19	NA
Freeway Segments			
Anacostia Freeway, Howard Road to Pennsylvania Ave	36	NA	NA
Southeast/Southwest Freeway, 11th Street to Barney Circle	6	NA	NA

Source: Data and formulae from MAC Study, Appendix F
MEV = millions of entering vehicles; ADT = average daily traffic
*Estimated Accident Severity Rate =
[(Number of PDO Crashes × 1) + (Number of Injury-related Crashes × 3) + (Number of Fatality crashes × 8)]

**Estimated Accident Rate =
[(3-year accident total × 10^6) ÷ (3 × 2004 Estimated ADT × 365)]

Accident data for the three interchanges listed above were unable to be isolated to specific ramp locations due to the vague descriptions found on the accident reports.

These missing connections have different effects on drivers not familiar with the area. Poor or missing guide signs, combined with confusing or missing ramps, often result in traffic from the freeway entering the neighborhoods in search of the Navy Yard or routes to the downtown core of Washington, DC. Exhibit 6-104 illustrates an example of the indirect travel paths leaving the Navy Yard and traveling north on the Anacostia Freeway to Maryland. While it is impossible to capture all the possible routes a driver could take, the exhibit is illustrative of the indirect and circuitous nature of motor vehicle travel on the existing system.

6.19.2 Traffic Volumes

Existing traffic volumes for the study area were obtained from the MAC Study and other recently completed traffic studies in the vicinity. Traffic volumes were collected using

EXHIBIT 6-104
Example Existing Travel Route
Travel routes from the Navy Yard to the northbound Anacostia Freeway are circuitous.

automatic traffic recorders for 48-hour periods during March and June 2004. Traffic volumes show that all the major roadways in the study area carry a significant amount of traffic daily and in the peak periods. Major roadways in the study area, including the Anacostia Freeway, the 11th Street Bridges, and the Southeast/Southwest Freeway (west of 11th Street), are carrying the most traffic for the region (more than 30,000 vehicles per day). Much of this congestion can be attributed to the incomplete interchanges that are the focus of long-term improvements for this project.

Traffic counts for select intersections within the study area were based on 13-hour turning movement counts (6:00 a.m. and 7:00 p.m.) conducted for the MAC Study in March and June 2004. The data included vehicle movements, pedestrian crossings, and in some instances, bicycle activity. Traffic volumes on freeway segments were based on Automatic Traffic Recorder (ATR) data that were also summarized in the MAC Study. The AM and PM peak-hour traffic volumes are given in Exhibit 6-105.

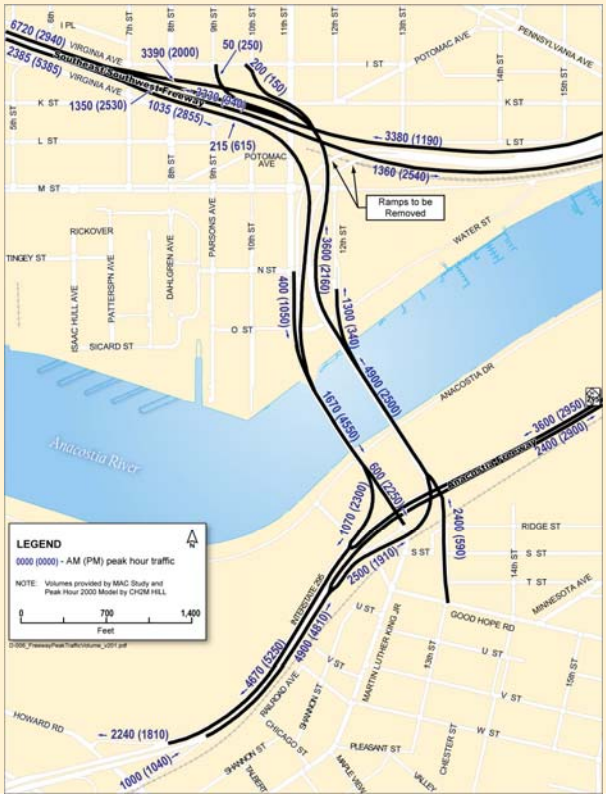
6.19.3 Level of Service

LOS is the generally accepted means of characterizing the quality of traffic service on a street or roadway network. LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed, travel time, delay, freedom to maneuver, traffic interruptions, and driver comfort. The levels range from "A" (free-flowing) to "F" (total congestion or failure). The definitions of LOS vary depending on the type of facility (freeway, signalized intersection, or arterial) being analyzed.

During the PM peak period, congestion is widespread along the eastbound Officer Welsh bridge, caused by outbound traffic outbound from the core of the city combining with traffic exiting other employment centers within the study area (e.g., the Navy Yard). The Officer Welsh bridge is one of the major routes across the river, serving District residents living east

of the Anacostia River as well as traffic traveling from the District to Maryland. This directional trend is reversed for the morning rush as motorists travel from home to work.

EXHIBIT 6-105
Existing Freeway AM and PM Peak Hour Traffic Volumes
Morning and evening peak-hour traffic is highly directional.



Congestion on the freeways and surface street systems is widespread and common in dense urban settings and is generally expected and to some degree accepted by motorists. Within the study area, several segments of the freeway (Southeast/ Southwest, I-295) system operate at poor levels of service during both the morning and evening peak periods. In addition, longer-distance regional traffic must exit the freeway system, using the local roadways to complete the trip because of missing ramp movements. This shift of freeway traffic to local streets and back to the freeway system increases congestion on the surface street system.

The LOS at critical segments of the freeway system during the evening peak hours was based on previous studies, and is shown in Exhibit 6-106. This exhibit illustrates study-area freeway segments having the greatest constraints on traffic flow. The constraints are the result of roadway characteristics, traffic volumes, and patterns of demand during the peak travel periods.

6.20 Transit

The Washington Metropolitan Area Transit Authority (WMATA) operates the second largest rail transit system (Metrorail) and the fifth largest bus network (Metrobus) in the United States. There are three Metrorail lines in proximity to the study area as well as scheduled Metrobus service. WMATA also offers its MetroAccess paratransit service that provides curb-to-curb transportation service for eligible disabled persons.

Exhibit 6-107 provides details about WMATA Metrorail facilities in the study area. Exhibit 6-108 illustrates the locations of WMATA facilities and other transportation facilities and infrastructure in the study area.

Existing transit services and amenities are described in the MAC Study. WMATA's Metrorail and Metrobus both service the area. Transit is an important and integral part of the study area for residents and visitors to the community. The heaviest concentrations of bus routes

EXHIBIT 6-106
Existing PM Peak Hour Freeway Level of Service
During the PM peak hour, the outbound direction of the freeway is congested.

run along Pennsylvania Avenue, the 11th Street Bridges, Martin Luther King, Jr. Avenue, and M Street. Exhibit 6-108 depicts the existing transit routes and stops relevant to the project. Most of the bus routes provide services along the roadway network to and from the following Metrorail stations:

- DC Stadium–Armory (serves the Orange Line and Blue Line)
- Potomac Avenue (serves the Orange Line and Blue Line)
- Anacostia (serves the Green Line)
- Navy Yard (serves the Green Line)

West of the river, bus stop locations provide good access to Washington Navy Yard, commercial areas, and residential neighborhoods. Only one route provides convenient service to the waterfront area west of the river, with a stop on O Street. East of the river, bus stops provide good access to businesses and residential communities. However, there are no routes servicing Anacostia Park and the eastern waterfront, requiring a considerable walk to access these areas.

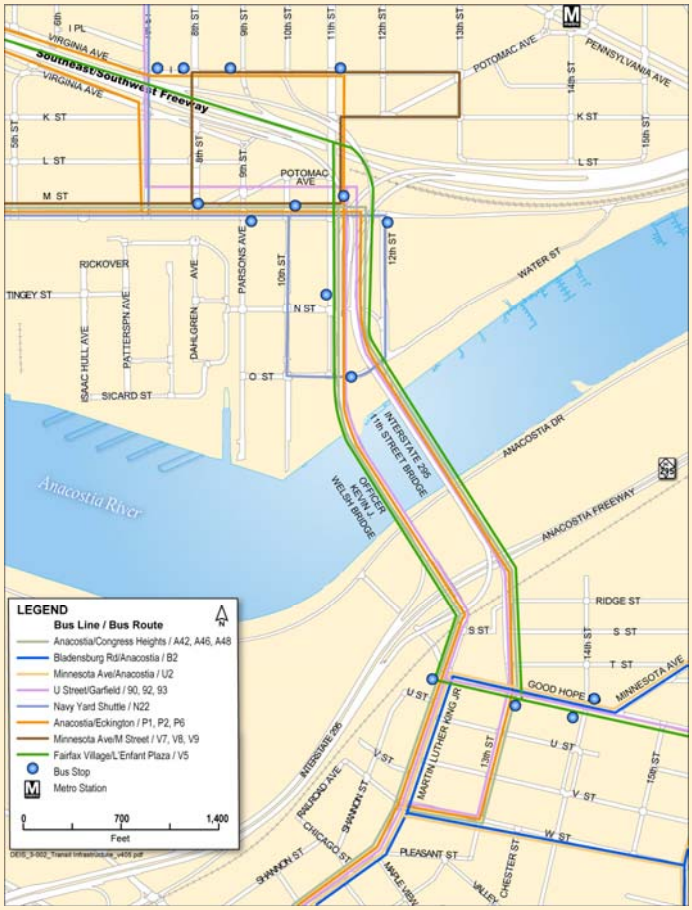
EXHIBIT 6-107
Study Area Metrorail Facilities
Three Metrorail Facilities are near the perimeters of the study area.

Station	Location	Routes in Project Area	Departure of First Train	Departure of Last Train
Anacostia	Shannon Pl between MLK Ave and Firth Sterling Ave SE. North of Howard Rd and Anacostia Freeway	Green Line	5:03 am	12:19 am
Navy Yard	SE corner M and Half St, SE NW corner of M St at New Jersey Ave	Green Line	5:05 am	12:17am
Potomac Ave	NE corner 14th St and Potomac Ave, SE, north of Penn Ave	Blue Line Orange Line	5:00 am	11:51 pm

Source: Washington Metropolitan Area Transit Authority, 2006.

The quality of bus stops in the study varies widely. Some facilities are new with generous waiting areas, shelters, and schedule information, while others lack basic amenities and are nothing more than a bus route sign. The bus stops also vary in ridership. Appendix C of the MAC Study summarizes transit ridership data for many of the pertinent routes and bus stop locations for the period January 2000 through December 2003.

EXHIBIT 6-108
Existing Transit Facilities in the Study Area
Both residents and people who work in the study area are dependent on extensive bus and Metro routes.



6.21 Freight Rail Services

A railroad track system exists along both sides of the Anacostia River. On the west side of the river, an active CSX line traverses the study area along the east side of Southeast/Southwest Freeway. The tracks cross the Anacostia River near the Congressional Cemetery.

The CSX Blue Plains spur line is currently inactive and parallels the Anacostia Freeway on the east side of the river. The tracks run along the east edge of the freeway through the study area.

7 Environmental Consequences

This section of the Final EIS summarizes the analyses completed to determine the environmental consequences of the No-Build and build alternatives. Key assumptions, analysis tools (as appropriate), and results are presented in the following sections. The environmental impacts associated with the 11th Street Bridges project are limited and generally the same for all proposed build alternatives. Few issues examined show any meaningful impact levels. Each of the individual subsections will explore in more detail the similarities and differences of specific impacts among the No-Build and build alternatives.

As detailed in Section 5, the Preferred Alternative is a hybrid of two alternatives analyzed in the Draft EIS: Build Alternative I west of the Anacostia River and Build Alternative II east of the river. The baseline data, model runs, and other tools used to prepare the build alternatives in the Draft EIS are also valid for analysis of the Preferred Alternative. In the following discussions, "Build Alternative" always includes the Preferred Alternative unless the Preferred Alternative is specifically excluded.

The foldout map inside the back cover may facilitate your review.

To respond to comments and to reduce impacts, there have been important developments since publication of the DEIS:

- A Preferred Alternative was formulated after public and agency review of the DEIS. It incorporates the preferred features of the initial alternatives. Section 5 provides specifics on each alternative.
- The construction methodology has been refined to reduce the potential for impacts. There will be no use of explosives in bridge demolition. There will be no dredging. Form boxes will be used for pier demolition/reconstruction instead of cofferdams. Options for providing the additional pilings are limited to either drilled shafts or driven piers. These and other construction issues are discussed in Section 5.
- There will be no impact to the buildings used by ACBA. It will still be necessary to temporarily (during construction) relocate ACBA activities. Section 7.3 details the relocation.
- The footprint of the Preferred Alternative in Anacostia Park has been reduced from expectations presented in the DEIS. Section 9 provides details on the impact to the park.

Other efforts have resulted in the avoidance or minimization of the potential impacts of the project. The approach throughout the project has been to avoid impacts as much as possible while achieving the project's Purpose and Need (see Section 4). Where avoidance is not

feasible, detailed efforts have gone into minimizing the impact as much as practical. When residual impacts would still occur even after avoidance and minimization efforts, mitigation measures have been identified to lessen potential adverse impacts to the affected environment should a Build Alternative be selected.

The following outlines some of the many design efforts developed to accomplish this:

- Use of retaining walls in lieu of slopes in several sensitive areas reduces the overall footprint of the project and thereby reduces impacts to adjacent resources.
- Use of form boxes instead of cofferdams minimizes the potential for impacts to water quality because their use does not stir up and resuspend bottom sediments.
- Reuse of existing piers minimizes water quality impacts, reduces the amount of land that would otherwise need to be converted to highway uses, and keeps new facilities on the same alignment as the existing facilities.
- Use of Low Impact Development (LID) facilities to treat some runoff while capturing the rest for offsite treatment further enhances water quality.
- Application of the AWI design standards provides for aesthetic treatment of visible surfaces and for public amenities, particularly along the downstream local bridge.
- Enhancement of park areas near the highway structures will include refurbishing playing fields, planting trees, and other landscaping in areas identified by NPS. Signage will commemorate use of Anacostia Park by the Bonus Army of 1932.

These avoidance, minimization, and mitigation techniques are presented in the remainder of Section 7 along with a discussion of the impacts associated with each alternative. Most of the following sections use a standard organization, examining in turn the impacts of the No - Build Alternative, the impacts of the build alternatives (including the Preferred Alternative), temporary construction-related impacts, indirect and cumulative impacts, and mitigation measures.

Impacts of the No-Build Alternative

This Final EIS examines the impacts of six alternatives. These alternatives include five build alternatives and the No-Build Alternative, which would retain the existing bridges and access in the current configuration. It would not connect the bridges to the northeast reach of the Anacostia Freeway. It would not separate local and freeway traffic, and it would not accommodate a streetcar. Normal maintenance and appropriate safety upgrades would continue, with periodic repaving, repainting, and other activities as necessary. The impacts associated with the No-Build Alternative are discussed in subsequent sections of this Section at a level of detail comparable with the five build alternatives. The No-Build Alternative would not achieve the goals of the Purpose and Need (see Section 4). It provides a useful baseline to evaluate the impacts of the other alternatives.

Impacts of the Build Alternatives (including the Preferred Alternative)

Five build alternatives are analyzed in subsequent sections. The development of these alternatives and supportive mapping is the topic of Section 5. Each of the build alternatives would achieve the goals of the Purpose and Need (see Section 4), would replace and expand the existing bridges, would reconfigure access to and from the bridges, including adding access ramps to the northeast reach of the Anacostia Freeway, and would provide four lanes for local traffic separate from eight freeway lanes to safely accommodate local traffic and a potential future streetcar project. All the build alternatives have been developed to a degree necessary to evaluate equally the potential impacts. The Preferred Alternative has been further detailed to avoid or minimize some potential impacts. Discussions under the heading of Impacts of the Build Alternatives are concerned with direct impacts, and discussions of indirect and cumulative impacts are reserved for those subheadings.

Temporary Construction-Related Impacts

Impacts that result in a permanent change in the environment, whether as the result of a construction activity or the result of a change in the baseline environment, are considered in the sections on impacts of the No-Build or the build alternatives. An additional class of impacts is unique to the construction phase of the project. Some construction impacts of an action are concentrated during the period of construction and cease to occur following construction—construction noise, for example. Other construction impacts will resolve themselves over time—revegetation of cleared areas, for example—but can be hastened or improved by mitigations.

Indirect and Cumulative Impacts

Indirect effects are caused by a project, but unlike direct effects, they occur later in time or are farther removed in distance. Indirect effects can range from physical environmental effects, such as downstream sedimentation, to growth-related effects resulting from changes in accessibility to a previously undeveloped area or a redistribution of growth.

Indirect effects are most often associated with highway projects that encourage or facilitate land use or development that changes the location, rate, type, or amount of growth. Not every project has growth-related impacts. They are more common for highway projects that provide new access or that are built along a new alignment. The 11th Street Bridges will not provide access where none exists today. The location of the bridges and highway will be reconstructed and expanded from 8 lanes to 12 lanes along the existing alignment. While the role of the two bridges will be redefined to separate regional freeway trips from local trips, and four separate lanes will be provided for local traffic, the only new component is ramps that will connect to the northeast reach of the Anacostia Freeway. Drivers are already making this connection using a variety of circuitous surface routes. The potential for indirect impacts from the 11th Street Bridges project, as detailed in subsequent sections of this Section, is limited.

Cumulative effects are those that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts encompass the direct and indirect impacts attributable to a proposed project along with the environmental impacts of other past, present, and reasonably foreseeable future actions.

The 11th Street Bridges exist in a synthetic environment. Over time, human actions have heavily conditioned the natural components of the environment. Buildings occupy much of the land area. Anacostia Park was largely built on fill in the early 20th century. The river was constrained to a smaller channel. Development has reduced the river flow and degraded water quality. The District government, USACOE, and various private organizations are working to improve the quality of the river water and sediments. Air quality in the District is improving, largely as a result of EPA efforts to reduce tailpipe emissions and other activities.

Ongoing actions are mostly continuing the urbanization trend of the past. A new baseball stadium is under construction a short distance downstream of the 11th Street Bridges. Redevelopment is occurring on both sides of M Street between the river and the Southeast Freeway from at least South Capitol Street past 11th Street. Development activity includes the South Capitol Street roadway improvement and bridge replacement project, "The Yards" (formerly known as the Southeast Federal Center), and the new USDOT headquarters. "The Yards" will cover 40 acres with 1.8 million square feet of office space, 2,800 residential units, and 160,000 to 350,000 square feet of retail. Maritime Plaza expects to expand from two buildings to five. DDOT intends to remove the ramps connecting the westbound Southeast Freeway to the 11th Street Bridges and provide a boulevard treatment for the highway. This could open still more development opportunities.

Development proposals across the river include a potential soccer stadium, residential development, and parkland in the Poplar Point area that the federal government has transferred to the District. Proposed developments within Anacostia include a new District government center to house DDOT. Adjacent private development could house additional office space as well as commercial uses. The Salvation Army is building a major facility on Martin Luther King, Jr. Avenue, and a developer is proposing a 600,000-square-foot building on the block bounded by Martin Luther King, Jr. Avenue, Shannon Avenue, W Street, and Chicago Street. Redevelopment at St. Elizabeths could move up to 14,000 federal jobs to this location.

The 11th Street Bridges exist within this context of a developed and redeveloping urban area. The direct and indirect impacts of the project add to the historic and ongoing impacts of other activities. Individual resource topics in subsequent sections discuss cumulative impacts.

Mitigation Measures

From the start, the 11th Street Bridges project has used a project development approach known as Context-Sensitive Solutions. The project team solicited meaningful public and agency concerns. Design efforts then focused on avoiding or minimizing potential impacts to these concerns as the alternatives developed. The result is a set of alternatives that have a

limited environmental impact. Implementation of a set of environmental commitments, or mitigations, that are described for each resource may lower impacts still more. Section 7.21 lists all environmental commitments for both the construction phase and the long-term phase of the project.

7.1 Land Use Impacts

The 11th Street Bridges project will not open access for development of new areas, nor will it eliminate or restrict access to areas currently accessible. As such, the potential for impacts to land uses is highly constrained.

Land use in the study area is guided by the District's and the overall region's various plans and policies. The Washington, DC Comprehensive Plan, the Citywide Strategic Plan, the National Capital Planning Commission Legacy Plan, Neighborhood Action Plans, and regional plans such as the Constrained Long-Range Transportation Plan all provide guidance and direct land use planning in the study area. All the build alternatives support and are consistent with the local and regional plans and policies described below.

The Washington, DC Comprehensive Plan

The District's Comprehensive Plan provides planning guidance on the physical development and redevelopment of the city. Last updated in 1999, the Comprehensive Plan covers a range of issues: land use, economic development, housing, environmental protection, transportation, public facilities, urban design, and historic preservation. It also guides the District's zoning laws, which in turn affects how property is used, the types of uses allowed in residential and commercial areas, and the amount of parking that must be provided. The DC Office of Planning is in the process of updating the current Comprehensive Plan.

The Washington, DC Comprehensive Plan, the Citywide Strategic Plan, Neighborhood Action Plans, and regional plans such as the Constrained Long-Range Transportation Plan all provide guidance and direct land use planning in the study area.

The Transportation Element of the Comprehensive Plan outlines public action objectives that will:

> *…provide and maintain an efficient and effective transportation system that will do the following:*
>
> *a) Maximize accessibility and the movement of people and goods;*
>
> *b) Enhance growth and economic development;*
>
> *c) Support the development of housing; and*
>
> d) *Provide safe and convenient pedestrian and bicycle circulation within neighborhoods.* (DC Office of Planning, 1999)

The 11th Street Bridges project shares these objectives. The project's purpose is to improve traffic flow on local streets and into the region and to improve the flow and safety of bicycle,

pedestrian, and transit traffic, and finally, to create an overall healthy and vibrant waterfront. The overall goal of the District's Comprehensive Plan and policies is to provide for consistency and coordination of transportation, land use plans and economic development activities by local planning agencies. The build alternatives would serve these needs, most importantly serving the needs of the local community, and provide a better connection between Anacostia neighborhoods and downtown Washington, DC.

The two specific Transportation Element policies in the Comprehensive Plan that are most applicable to the 11th Street Bridges project are:

- *500.7 The transportation system of the District performs another important role beyond its basic task of moving people and goods. The role relates to the growth and development of the future District. The transportation system must respond to District plans for the future as expressed in the Plan and the detailed program and project plans made in accordance with it. The Transportation Element is an essential part of that planning process.* (DC Office of Planning, 1999)
- *502.2 (d) Establish traffic management strategies to separate local traffic from through-traffic within residential neighborhoods, route through-traffic around identified neighborhood enclaves if possible, and complete segments of the highway and street system necessary for smooth traffic flow and the reduction of commuter traffic in residential neighborhoods.* (DC Office of Planning, 1999)

All of the proposed build alternatives are consistent with these policies. The proposed project allows for increased mobility and less local traffic congestion. Greater highway and local street access will allow traffic and people to move in and out of the area smoothly. This project also accommodates growth in the area by allowing drivers better access in and out of the neighborhoods and to/from downtown Washington, DC.

All of the build alternatives are consistent with the transportation elements of the Comprehensive Plan.

Citywide Strategic Plan

The Citywide Strategic Plan (CWSP) is the comprehensive management tool of the District government. Two of the CWSP priorities—Building Sustainable Neighborhoods and Promoting Economic Development—fall in line with the proposed build alternatives. The CWSP was shared with the community to get feedback and promote public involvement. At the same time, special planning sessions were held in each of the District's 39 neighborhood clusters. Each neighborhood cluster produced a SNAP designed to bring the community's vision of its city to reality. After incorporating community feedback and action items from SNAPs, mayoral initiatives, and agency plans, the CWSP serves as the foundation of the Mayor's proposed budget.

National Capital Planning Commission

In 1997, as part of its long-range planning responsibilities, the Commission released its framework plan for Washington's Monumental Core. *Extending the Legacy: Planning America's Capital for the 21st Century* redefines Washington's Monumental Core by creating

opportunities for new museums, memorials, and federal office buildings in all quadrants of the city. The Legacy Plan preserves the historical character and open space of the Mall and its adjacent ceremonial corridors while accommodating growth and new development. The plan expands the reach of public transit and eliminates obsolete freeways, bridges, and railroad tracks that fragment the city. It reclaims Washington's historic waterfront for public enjoyment, and adds parks, plazas, and other amenities to the urban fabric. Using federal resources to generate local investment, the Legacy Plan will spur community renewal well into the 21st Century.

NCPC and its planning partners have begun work on the plan's "First Initiatives"—a variety of projects that will produce immediate, visible benefits within the longer-term framework. Among these initiatives are revitalization of the South Capitol/M Street Corridor, reclamation of the waterfront, and a visitor signage program. In addition, NCPC is preparing a master plan that will guide the location and development of new monuments, memorials, and museums in the National Capital for the next 50 years. A proposed circulator system is an early version of what is now called the streetcar system, which would require a project like the 11th Street Bridges to accommodate streetcars.

In 2001, NCPC published the *Memorials and Museums Master Plan*. The plan identified 100 sites for new commemorative works, including 20 "prime sites" and 80 "other candidate sites." The area between the 11th Street Bridges east of the river is identified as Candidate Site 64. The area between the 11th Street Bridges west of the river is identified as Candidate Site 69. Both locations are part of the 80 other candidate sites. The existing open area east of the river will be foreshortened by the need to link the upstream bridge and southern reaches of I-295, but should still be appropriate as a candidate memorial site. While the bridges will be rebuilt, the area between the bridges west of the river will be largely unchanged. ACBA is expected to continue actively using this area following construction of the new bridges.

Neighborhood Plans

In addition to the SNAPs, the Comprehensive Plan includes plans for the city's eight wards, which are political and administrative divisions. The project study area is located across three of these wards, Wards 6, 7, and 8, while the bridges and interstate are in Wards 6 and 8. Each ward plan includes specific goals and policies for transportation. The following are specific goals and policies for each ward that are relevant to the proposed project.

The Ward 6 objective for transportation is:

> *To provide an adequate balanced circulation system, properly related to residential, commercial/retail, and other land uses, which will enhance the aesthetic and environmental characteristics along streets in the Ward 6 area as well as to minimize traffic congestion.* (DC Office of Planning, 1999)

The Ward 7 objectives for transportation include:

> *Improve the traffic circulation system; provide for improved traffic flow through transportation system management initiatives and ride-sharing programs*

> *Plan biking and hiking trails, particularly along the Anacostia waterfront and Watts Branch tributary and increase on-street bikeway routes.* (DC Office of Planning, 1999)

The Ward 8 objectives for transportation include:

> *Provide a balanced transportation network incorporating all modes of transportation including mass transit, private automobiles, bicycling and walking;*
>
> *Improve and maintain neighborhood streets, thereby facilitating commerce, supporting growth and development and expanding businesses and job opportunities.* (DC Office of Planning, 1999)

The local plans contain a number of goals and policies intended to promote economic development. There are goals to improve waterfront pedestrian circulation and to enhance connections between downtown and the neighborhoods along the waterfront. The build alternatives address these goals in varying ways. By improving traffic flow through neighborhood streets, providing pedestrians and bicyclists with a pathway across the Anacostia River, and changing the access to enhance the function of the roadway, each alternative will provide continued access to the waterfront and will likely result in greater opportunities for new connections than the existing structures.

Anacostia Waterfront Initiative

The AWI Framework Plan is a guide to the revitalization of the Anacostia Waterfront. The Washington, DC Office of Planning produced the Framework Plan in collaboration with a steering committee of federal and District agencies and an advisory group of community leaders. The plan specifically addresses the 11th Street Bridges.

The Framework Plan advocated diversion of some of the current 11th Street Bridge traffic to a new connection between the Anacostia Freeway (I-295) and the Southeast/Southwest Freeway (I-395) via a new tunnel under South Capitol Street. The goal would be to provide a link to better serve local traffic including pedestrians, bicyclists, and local transit.

With some traffic diverted, the Framework Plan advocates rebuilding the 11th Street Bridges to better serve local traffic, including pedestrians and cyclists, and as a potential candidate for a streetcar system connecting both sides of the river. With the appropriate sidewalks and ramps, the Framework Plan argues that the bridges can provide important pedestrian links within the RiverParks system via the new Riverwalk. The proposed 11th Street Bridges can create new sites for community buildings, commercial development, and employment at either end. They can establish a more direct relationship between neighborhoods east and west of the river.

Regional Transportation Plans

The TPB (as part of the MWCOG) is the federally designated Metropolitan Planning Organization for the region, and plays an important role as the regional transportation

planning group. The TPB prepares plans and programs that the federal government requires in order for federal-aid transportation funds to be allocated to the Washington, DC region.

The regional plans developed by the TPB include the CLRP and the TIP. Another document, the Transportation Planning Board Vision, is a short and influential policy document that lays out eight broad goals to guide the region's transportation investments. These goals shape the projects and programs that make up the CLRP. The CLRP has a scope of 25 years, whereas the TIP is a 6-year fiscal plan that shows federal and local matching funds obligated for these projects. These plans include improvements to roads, transit, and bicycle and pedestrian facilities.

The 11th Street Bridges project is included in regional transportation plans.

The long-range plan covers a number of other federal requirements, including meeting national air quality standards, contributing to annual emissions reductions, and considering the relationship between land use and transportation.

On October 18, 2006, the TPB adopted the FY 2007-2012 TIP. The 11th Street Bridges project is described as follows:

> *Replace and reconfigure the 11th Street Bridges. The current two spans – carrying four inbound lanes on one span and four outbound lanes on the other – would be reconfigured so that each span carries traffic in both directions, with one span carrying freeway traffic and the other, local traffic. The freeway span would be four lanes in each direction; the local span would be two lanes in each direction. New ramps east of the Anacostia River would connect both directions of the Anacostia Freeway (I-295) with each span.*
>
> - *Length: 1 mile*
> - *Complete: 2011*
> - *Cost: $377 million*
> - *Funding: Federal earmarks and local funds*

Following TPB approval and certification, the TIP was provided to FHWA and FTA for review and certification. They issued the Conformity Determination on April 6, 2007.

7.1.1 Impacts of the No-Build Alternative

Under continued operation of the current bridges and highways, existing land uses would not be affected. However, a delay in improving the bridges and highways would not be consistent with regional and local plans that state the importance of a good transportation system as part of achieving specific plan goals and objectives.

7.1.2 Impacts of the Build Alternatives

All build alternatives, including the Preferred Alternative, are consistent with the goals and objectives of the local and regional plans and policies. The proposed build alternatives do not

conflict with existing or planned future land uses. As can be seen by recent development in the study area, land use changes will occur with or without the proposed improvements to the 11th Street Bridges.

All the build alternatives help achieve the AWI Framework goal of a better link to serve local traffic including pedestrians, bicyclists, and local transit through separation of local and freeway traffic. This separation is more fully realized with the Preferred Alternative and Build Alternatives I, II, and III, where a separate bridge would be provided to serve local needs. This local bridge would allow many of the Framework Plan goals to be achieved. A sidewalk is planned for either side of the roadway, with a 14-foot bike/pedestrian path planned for the downstream side and a 6-foot sidewalk planned for the upstream side. Both paths would connect to the new Riverwalk. The local bridge is being designed to accommodate both Metrobus and any streetcar system that might be implemented in the area.

All the build alternatives help achieve the AWI Framework goal of a better link to serve local traffic including pedestrians, bicyclists, and local transit through separation of local and freeway traffic.

With the Preferred Alternative and Build Alternatives I, I, and III, the opportunity exists to create a boulevard along 11th Street from M Street across the river through a new gateway entrance to Anacostia. With Build Alternative I, the local road would pass over the freeway lanes and provide a grand entrance to Anacostia. The Preferred Alternative and Build Alternatives II and III would pass under one freeway ramp, but present the opportunity to extend the boulevard treatment down Martin Luther King, Jr. Avenue. The new 11th Street Bridges can help establish a more direct relationship between neighborhoods east and west of the river.

7.1.3 Temporary Construction-Related Impacts

Beyond the temporary use of construction staging and lay-down areas that will be identified by the contractor, study area land use will not be affected by construction.

7.1.4 Indirect and Cumulative Impacts

Indirect Impacts: Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate. Because the 11th Street Bridges project will not open any additional land to development nor will it isolate any areas, indirect land use impacts are not anticipated.

Cumulative Impacts: A cumulative impact results from the incremental effect of the action when added to other past, present, and reasonably foreseeable future actions. A number of factors are currently operating to change land uses in the Southeast quadrant of the District. While they are all independent of the 11th Street Bridge project, they will affect residents in concert with one another.

The Federal and District of Columbia Real Property Act of 2006 (PL 109-396) transferred about 100 acres at Poplar Point to the District for redevelopment. The majority of the land is to be retained as parkland, but the remaining area could be developed as apartments or condominiums, or for commercial or office use. A soccer stadium is another potential development. The District needs to develop a land use plan for NPS approval before transfer of this land is completed.

Proposed developments east of the river within Anacostia include a new District government center to house the DDOT. Adjacent private development could house additional office space as well as commercial uses. The Salvation Army is building a major facility on Martin Luther King, Jr. Avenue, and a developer is proposing a 600,000-square-foot building on the block bounded by Martin Luther King, Jr. Avenue, Shannon Avenue, W Street, and Chicago Street. Redevelopment at St. Elizabeths could involve up to 14,000 federal jobs at this location.

Substantial redevelopment is occurring in the project area. The District is supportive of the overall redevelopment through the Anacostia Waterfront Initiative.

Substantial redevelopment is concentrated along the M Street corridor west of the river. Plans are being developed for the South Capitol Street roadway improvement and bridge replacement project. A professional baseball stadium is planned for a block south of the intersection of M Street and South Capitol Street. Just east are "The Yards" and the new USDOT headquarters. "The Yards," to be completed in three stages over 10 to 20 years, will cover 40 acres with 1.8 million square feet of office space, 2,800 residential units, and 160,000 to 350,000 square feet of retail. Maritime Plaza expects to expand from two buildings to five. DDOT intends to remove the ramps connecting the westbound Southeast/ Southwest Freeway to the 11th Street Bridges and provide a boulevard treatment for the highway. This could open still more development opportunities. The DC Office of Planning anticipates that the Capitol Hill District population will increase from 1,850 to more than 11,000 and employment from 19,000 to more than 96,000 in the next two decades.

Redevelopment will result in substantial changes to the areas on both sides of the river. The 11th Street Bridges project is independent of this development and is needed whether or not the redevelopment happens. The District and DDOT are support of the overall redevelopment goals through the Anacostia Waterfront Initiative.

7.1.5 Mitigation Measures

Long-Term Mitigation

Mitigation measures for overall land use impacts are not proposed. All build alternatives are consistent with existing and future land use plans. No land uses, either existing or proposed, will change as a result of the selection of any of the alternatives. Impacts to specific parcels of property and the associated proposed mitigation are discussed in the individual subsections of this section.

Mitigation During Construction

The expected construction-related impacts on land use will be limited to staging and lay-down areas in and near the construction site. Specific mitigation for these sites will be determined as appropriate in a future design phase.

7.2 Social Impacts

The potential effects on social resources resulting from the construction and operation of the proposed project alternatives are both adverse and beneficial. Effects on population and housing, community facilities, religious institutions, social and employment service providers, cultural and social institutions, parks and recreational facilities, and government institutions are discussed for each of the proposed project alternatives.

The project does not include proposals for any new private development or removal of any existing private development. The project involves a limited workforce (typically 50-75 people) whose opportunities to interact with nearby neighborhoods are constrained by a network of railroads, freeways, berms, and other physical barriers. As a result, the impacts of each of the proposed build alternatives on nearby social infrastructure (homes, businesses, schools, churches, public safety services, etc.) are primarily related to changes in access and travel patterns.

Other than land required from Anacostia Park and the temporary relocation of ACBA activities a short distance upstream of the current activity location (detailed in Section 7.3), there would be no impacts to the social infrastructure. Because of improved connections across the river, the build alternatives will accommodate an improved trans-river social infrastructure, although whether one will develop is speculative. Potential benefits include improving access to existing highways and reducing congestion on the local street network. New pedestrian and bicycle pathways on each side and across the Anacostia River are expected to make both motorized and non-motorized travel safer, more enjoyable, and more efficient. The separation of longer-distance freeway traffic from local street traffic across the river would reduce traffic congestion in the study area neighborhoods, making it more convenient to access area attractions and businesses. The accommodation for potential future streetcar as a separate project would also be an enhancement for persons dependent on transit. These improvements are consistent with the current development objectives of study area neighborhoods and the District.

7.2.1 Impacts of the No-Build Alternative

Under the No-Build Alternative, no impacts to social resources are anticipated in the near term, and current neighborhood cohesion would remain intact. Although the No-Build Alternative includes normal ongoing maintenance, this is typically insufficient to prevent a slow deterioration. If the bridges and roadways are not replaced, they will continue to deteriorate and may eventually be rendered unsafe and unfit for driving. This would not only compromise community cohesion within and between neighborhoods in the study area,

but also adversely affect access to and provision of social services and community facilities. This would be a long-term, not an immediate, concern.

The build alternatives will not displace or acquire any existing housing, religious institution, cultural institution, or government facility.

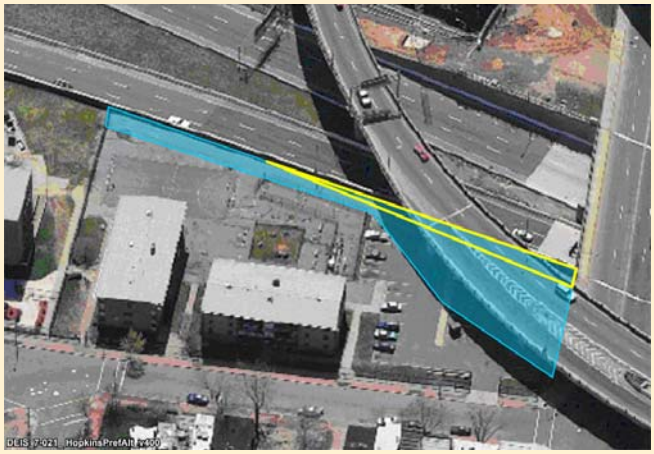
7.2.2 Impacts of the Build Alternatives

Population and Housing

The proposed 11th Street Bridges project is a transportation project and does not involve the construction of new housing in the study area. Similarly, the build alternatives will not displace or acquire any existing housing. As a result, there will be no direct increase or decrease in housing or population in the study area associated with the proposed build alternatives.

West of the river, the project alignment passes near the Hopkins Apartments, a 158-unit public housing complex. The proposed build alternatives, although not affecting the apartment buildings, likely will have an impact on a portion of the Hopkins Apartments' parking lot. The existing parking lot is approximately 14,000 square feet, with approximately 1,300 square feet unusable because of the Southeast/ Southwest Freeway bridge piers placed within the lot. As shown in Exhibit 7-1, a substantial portion of the parking lot encroaches on the existing highway ROW. Each of the proposed build alternatives would remove the Southeast/ Southwest Freeway from above the existing parking lot. The Preferred Alternative would require a slice of land within the existing ROW along the edge of the parking area. Lost parking will be offset by removal of the Southeast/Southwest Freeway piers, freeing about 1,300 square feet for replacement parking.

EXHIBIT 7-1
Existing Hopkins Apartments Parking and Playground Areas
The Hopkins Apartments recreation and parking areas encroach on the existing highway ROW (blue area). The Preferred Alternative will use a portion of the existing ROW in the parking lot (yellow triangle).



The traffic circle in Build Alternative II would encroach on the Hopkins Apartments parking lot space, reducing the total lot size by approximately 30 percent. This alternative would not affect the playground space.

The underpass connecting the Southeast/Southwest Freeway with Southeast Freeway Boulevard in Build Alternatives III and IV would encroach on the Hopkins Apartments parking and playground areas. This results in a reduction of the total parking lot area by approximately 40 percent. The playground area would also be reduced in size with these alternatives.

Community Facilities

There are no long-term effects from the proposed build alternatives to any community facilities because of property acquisition. The right-of-way acquisitions that are proposed

would not include property currently used by child care facilities, public schools, instructional facilities, or professional or technical schools or colleges. There are no community facilities located immediately adjacent to the proposed alternatives, so vehicular, transit, and pedestrian travel routes to these facilities are not anticipated to change following construction. Direct access and general travel patterns to the community facilities in the study area should remain the same.

Religious Institutions

The build alternatives would not require the acquisition of property currently used by religious institutions, nor would they result in greater or lesser use of those facilities. No religious institutions are located in close proximity to the proposed alignments, and no effects on these facilities are anticipated.

Social and Employment Services

None of the proposed build alternatives requires the acquisition of property currently used by social and employment services. The study area contains many public and non-profit social service providers, with most located on the west side of the river, several blocks away from proposed improvements. Direct access to and from these facilities would be very similar to current conditions. No adverse effects are expected.

Cultural and Social Institutions

Similar to many other neighborhoods in the District, many cultural and social institutions are located in the study area. These facilities include the Navy Yard, the Marine Barracks, the Frederick Douglass National Historic Site, and the World's Largest Chair, to name a few. The build alternatives would not have an effect on these area landmarks. No adverse effects are expected to occur to any of the cultural and social institutions in the area.

Government Institutions

Washington Navy Yard is situated on the west bank of the river, adjacent to the project area. East of the Anacostia River, the District's planned Anacostia Gateway Government Center would be located between Martin Luther King, Jr. Avenue, 13th Street, and Good Hope Road. Access to this area would vary slightly, depending upon the build alternative selected. A more detailed discussion of these changes is provided in Section 8, Traffic and Transportation Analysis, of this Final EIS. The build alternatives would not affect other government institutions in the study area, including "The Yards" on M Street.

Neighborhood Cohesion

A key aspect of neighborhood cohesion is connectivity. Because the build alternatives do not bisect existing neighborhoods, connectivity within neighborhoods would be unchanged. Connectivity between neighborhoods on both sides of the Anacostia River is anticipated to be enhanced, through improved traffic flow and new pedestrian and bicycle pathways that are part of each build alternative. This is true for all build alternatives, but particularly so for the Preferred Alternative and Build Alternatives I, II, and III, where one bridge is dedicated

to serving local transportation needs. The pathways would provide enhanced non-motorized access across the river and to neighborhoods and social resources.

Parkland on both sides of the river and a recreational facility on the west side of the river would be affected by the proposed build alternatives. The improved access provided to Anacostia Park and the mitigation measures planned for Anacostia Park and Virginia Avenue Park are expected, however, to result in a net benefit to those parks in spite of the proposed impacts. Because the Preferred Alternative has no impact on Virginia Avenue Park, selection of that alternative will not require mitigation. The build alternatives would likely displace the ACBA operations, at least during construction. Because the boathouse is used by people from outside the study area, the loss or potential relocation of this facility is not expected to affect neighborhood cohesion.

The access to existing community facilities and services with any of the build alternatives would be very similar to existing conditions. Direct access to Anacostia Park with the Preferred Alternative and Build Alternatives I, II, and III would be relocated from Good Hope Road to an extension of Martin Luther King, Jr. Avenue. For the Preferred Alternative, access will also be maintained from Good Hope Road. In Build Alternative IV, park access at Good Hope Road would be maintained. The Preferred Alternative and Build Alternatives II, III, and IV would add a service interchange with the Anacostia Freeway to the local traffic bridge, providing additional access to and from the Anacostia Freeway to the park.

The access to existing community facilities and services with any of the build alternatives would be similar to existing conditions.

Each of the build alternatives, including the Preferred Alternative, would maintain the access and continuity of the local street system. Enhanced access to the waterfront, recreational spaces, and across the river would maintain and potentially improve study area neighborhood cohesion.

Displacements

Construction of the build alternatives would not require relocation of any home or for-profit business in the study area, including the ACBA buildings. The Preferred Alternative and Build Alternatives I, II, III and IV would affect ACBA operations, which are operated by a non-profit business, during construction. Temporary relocation of the ACBA operations during construction is discussed in Section 7.3.

Parks and Recreational Facilities

Each of the build alternatives would affect some recreation facilities in the area. East of the Anacostia River, all build alternatives would change the access to Anacostia Park and acquire new right-of-way from the park. Impacts to the 1,200-acre Anacostia Park range from 1.5 acres with the Preferred Alternative to 3.5 acres with Build Alternatives II or III. Build Alternative IV would impact 3.3 acres. All impacts would occur in the same area east of the river, north of the bridges. The Preferred Alternative includes retaining walls that reduce the

impact by 2.0 acres. The impacts of the other alternatives could be reduced through the use of retaining walls. Overall, the build alternatives would improve access to the park and traffic flow adjacent to the park. In addition, each of the bridges in the build alternatives would allow for pedestrian and bicycle facilities that lead directly into Anacostia Park and the neighborhoods on either side of the river.

All build alternatives, except the Preferred Alternative and Build Alternative I, would affect Virginia Avenue Park, which is located between 9th Street, 11th Street, the Southeast/Southwest Freeway, and Potomac Avenue (Exhibit 7-2). The traffic circle in Build Alternative II would encroach on Virginia Park's northern boundary along 11th Street. The off-ramp from the Southeast/Southwest Freeway to 11th Street would also be moved slightly to the east to maintain adequate intersection spacing within the traffic circle. The underpass connecting the Southeast/Southwest Freeway with Southeast Freeway Boulevard in Build Alternatives III and IV would result in a greater footprint for the ramps and an encroachment on the Virginia Avenue Park. The estimated acreage of these impacts is shown in Exhibit 7-3.

7.2.3 Temporary Construction-Related Impacts

Most of the social resources, including community facilities, religious institutions, social and employment services, cultural and social institutions, and police and fire departments in the study area, are not immediately adjacent to the proposed alignments. As a result, construction-related impacts would be limited primarily to local street detours that might be necessary in the immediate area of project construction.

Access to parking and playground areas of Hopkins Apartments would be maintained at all times while construction occurs in the vicinity. The timing and phasing of this construction probably varies slightly by alternative, but the differences are sufficiently subtle that more detailed engineering would be required to highlight them.

EXHIBIT 7-2
Virginia Avenue Park Impact Boundary
The construction footprint for the Preferred Alternatives would not affect Virginia Avenue Park.

EXHIBIT 7-3
Virginia Avenue Park Impact Acreage
The Virginia Avenue Park is approximately 2.63 acres.

Build Alternative	Acres Affected
I	0
II	0.22
III	0.43
IV	0.43
Preferred Alternative	0

Park and recreational facilities on both sides of the river would be affected during construction of the build alternatives. ACBA operations would need to be relocated during construction. Because it will remain in operation, any temporary relocation is not likely to affect membership. River traffic would also be limited to certain spans during construction of the river-crossing bridges. Safety concerns may limit use of portions of Virginia Avenue Park during nearby and overhead construction. Construction in Anacostia Park would require temporary closings of some of the recreational field areas near the bridges. Traffic on Anacostia Drive and Good Hope Road in the park would be diverted to other routes because the Good Hope Road entrance would be under construction.

Park and recreational facilities on both sides of the river would be affected during construction of the build alternatives. Mitigation for this disruption will be provided.

7.2.4 Indirect and Cumulative Impacts

A number of development projects are planned in the general project area, including, among others, the development of a portion of Poplar Point; a new government center to house the DDOT; a new Salvation Army building on Martin Luther King, Jr. Avenue; a proposed 600,000-square-foot building on the block bounded by Martin Luther King, Jr. Avenue, Shannon Avenue, W Street, and Chicago Street; and redevelopment at St. Elizabeths.

Development west of the river is concentrated along the M Street corridor. Plans are being developed for the South Capitol Street roadway improvement and bridge replacement project. A professional baseball stadium is being constructed a block south of the intersection of M Street and South Capitol Street. Just east are "The Yards" and the new USDOT headquarters. "The Yards," to be completed in three stages over 10 to 20 years, will cover 40 acres with 1.8 million square feet of office space, 2,800 residential units, and 160,000 to 350,000 square feet of retail. Maritime Plaza expects to expand from two buildings to five. DDOT intends to remove the ramps connecting the westbound Southeast/Southwest Freeway to the 11th Street Bridges and provide a boulevard treatment for the highway. This could open still more development opportunities. The DC Office of Planning anticipates that the Capitol Hill District population will increase from 1,850 to more than 11,000 and employment from 19,000 to more than 96,000 in the next two decades.

Indirect Impacts: Effects caused by an action but later in time or farther removed in distance, but still reasonably foreseeable, are known as indirect impacts. Frequently of concern on transportation projects are growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate. The 11th Street Bridges may revise the accessibility of areas, but it will open no additional areas to development in

this already developed urban area. Nor will the project foreclose any areas now available for development or other growth. At its most fundamental level, the 11th Street Bridges project is the expansion in the same location of a highway and bridge that already exists, with the addition of now-missing connections to the DC 295 extension of the Anacostia Freeway.

Substantial redevelopment is occurring in the project area. The District is supportive of the overall redevelopment through the Anacostia Waterfront Initiative.

This project's proposed improvements, which occur largely within existing right-of-way, would contribute to a more efficient transportation system in the general study area, but the proposed 11th Street Bridges improvements are not driving planned development. As such, this project would not create indirect social impacts. Parks would receive a net benefit and therefore would not contribute any cumulative adverse effects. Its improvements to traffic efficiency and bicycle and pedestrian facilities across the Anacostia River contribute to similar improvements being made by other projects under the planning umbrella of the Anacostia Waterfront Initiative.

Cumulative Impacts: A cumulative impact results from the incremental impact of an action such as the 11th Street Bridges project when added to other past, present, and reasonably foreseeable future projects. While the anticipated development projects noted above will result in positive and negative social changes on both sides of the river, these projects will occur with or without the 11th Street Bridges project. The cumulative impact to social resources from changes likely to occur in the neighborhoods bordering both sides of the river could be substantial. New jobs, new residents, new development, and redevelopment could all lead to a substantially different area from what exists today. The 11th Street Bridges do not contribute to this change other than providing temporary (during construction) jobs and requiring a small amount of parkland.

7.2.5 Mitigation Measures

Long-term Mitigation

As a result of more-refined engineering, almost all previously anticipated impacts to the Hopkins Apartments parking lot have been eliminated. The playground will be completely avoided and the parking area may experience a net gain as existing highway ramp piers now in the middle of the existing parking lot are to be removed. Only two to three existing parking spaces in the existing highway ROW will be converted to highway uses. There may already be more spaces than needed by the residents. DDOT and the DC Housing Authority will continue to refine the number of spaces needed before any specific replacement plan is developed.

DDOT and NPS have been cooperating throughout the project to identify appropriate mitigation for the property in Anacostia Park that would be acquired for construction of the Preferred Alternative. NPS has concluded that, when viewed as a whole, the changes result in a net benefit to the park. More information is provided in Section 9 of this Final EIS. The net benefit determination for Anacostia Park is included in Appendix H.

DDOT has committed that ACBA operations will be maintained throughout the construction process. As noted earlier, issues related to the boathouse are discussed in Section 7.3, Relocation Impacts.

DPR and DDOT have identified mitigation for property takings at Virginia Avenue Park that are necessary to construct Build Alternatives II, III, and IV. The Preferred Alternative and Build Alternative I will not impact Virginia Avenue Park. Land at the corner of M Street and 12th Street, within sight of Virginia Avenue Park, is available for development as new parkland. Section 9, the Section 4(f) evaluation, provides more details. DPR's net benefit determination for Virginia Avenue Park is included in Appendix I.

Mitigation During Construction

Communicating the project's status and upcoming project activities during the construction process will allow area business owners and residents to better plan for the temporary impacts associated with road closings, access restrictions at local parks, and related issues. Mitigation measures discussed in other sections, such as measures to minimize construction noise levels, will lessen the overall level of social impacts experienced during construction. Because access to businesses will be maintained, they are not likely to experience noticeable financial impacts.

7.3 Relocation Impacts

None of the build alternatives, including the Preferred Alternative, would require the acquisition of any residential buildings or any other private property. No homes, owned or rented, would be taken. No private for-profit businesses would be taken. One property, a nonprofit business, the ACBA, operating in space leased from DDOT, will be relocated during construction. Temporary relocation of ACBA operations during construction will be necessary for safety; however, construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings.

> None of the build alternatives would require the acquisition of any residential buildings or any other private property.

7.3.1 Impacts of the No-Build Alternative

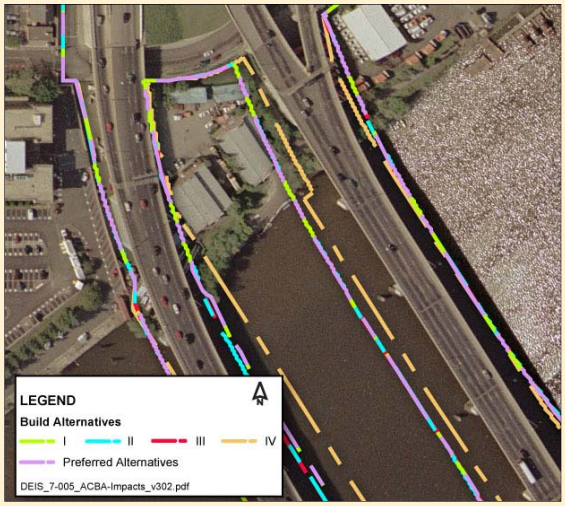
The No-Build Alternative will not affect any property.

7.3.2 Impacts of the Build Alternatives

The Draft EIS discussed the potential destruction of the upstream ACBA building if Build Alternatives I, II, or III were selected (Exhibit 7-4). While the belief was expressed that it might be possible to avoid the structure following more detailed design, until that greater certainty had been attained, the structure was treated as affected. Following selection of the Preferred Alternative, additional engineering was prepared. Based on that analysis, it is now clear that construction of the Preferred Alternative will not require the whole or partial demolition of either of the two ACBA buildings.

The existing ACBA site includes two buildings. The upstream building is the only one currently in use and serves as boat/equipment storage and meeting space for ACBA membership. The building contains a restroom, two other small internal rooms, and a large central open space with a concrete floor where boats and equipment are stored. The building is steel-sided with a brick façade and is approximately 75 feet wide and 100 feet long, with a footprint of approximately 7,500 square feet. It has working plumbing and electricity. Indoor storage currently accommodates between 40 and 56 boats. These boats are currently stored to a height of approximately 8 to 10 feet inside on racks up to 60 feet in length. Related equipment, such as oars, are stored vertically to a height of approximately 15 feet.

EXHIBIT 7-4
ACBA Buildings Impact Area
The upstream ACBA building is inside the construction impact area for three of the four build alternatives and the Preferred Alternative and close to the impact area of the fourth alternative.



The entire site stores between 100 to 120 boats and related equipment (currently comprised of both indoor and outdoor storage areas) in close proximity to the waterfront launching and landing space. The outdoor storage areas on the site are fenced and lockable. The total outdoor fenced storage is between 6,400 and 8,000 square feet. Along the O Street edge of the existing site are two open-front sheds with 12 stalls for ACBA member club use and other supplies (fuel cans, paint, etc.). The two sheds are each 60 feet wide and 21 feet long.

The existing clear waterfront launching/landing space available to ACBA is approximately 100 feet, with approximately 300 linear feet of dock for use by motorized and non-motorized watercraft (existing dock area is approximately 5,600 square feet). The November 2005 ACBA letter references additional secure dock parking for approximately 15 motorized boats. During site visits, the project team noted a separate dock used exclusively for eight motorized launches, but did not observe any means of security.

The ACBA buildings were reviewed as a potentially eligible historic property, but no distinguishing features or associated history were uncovered, and the District SHPO does not believe they would be eligible for listing as a historic resource.

The ACBA is a 501(c)(3) nonprofit corporation that represents a coalition of users. The users of the ACBA buildings come from throughout the region, including rowing groups in high schools and universities from the Virginia and Maryland suburbs as well as the District proper.

The ACBA corporation was organized to hold the sublease to the buildings and adjoining land from the NPS and the District. ACBA gained permission to use the building in March

2003 and started a program of improvements. In October 2005, DDOT presented ACBA with the keys to the adjacent building and a grant of $300,000 to renovate the building as a Riverwalk facility to support ACBA's activities.

7.3.3 Temporary Construction-Related Impacts

Even though it is possible to avoid partial or complete demolition of the structure, current usage of the building as a boathouse will have to be severely curtailed or prohibited during construction on adjacent, and potentially overhead, bridge structures. This is true for all build alternatives, including the Preferred Alternative. Mitigations are described in Section 7.3.5.

Construction activities will require periodic temporary prohibitions on boats passing under portions of the bridges.

7.3.4 Indirect and Cumulative Impacts

Indirect Impacts: Indirect effects are reasonably foreseeable effects caused by an action but later in time or farther removed in distance. The publicity associated with relocation, including the visibility of the temporary location, may attract a few additional rowers to the ACBA. The construction activity may discourage a few new prospects from becoming active. On balance, the two factors should offset one another. There are no other indirect relocation effects from the 11th Street Bridges project.

Cumulative Impacts: A cumulative impact results from the incremental impact of an action such as the 11th Street Bridges project when added to other past, present, and reasonably foreseeable future projects. Substantial redevelopment is occurring in the entire area east of the Southeast/Southwest Freeway. This redevelopment exerts pressure on all current land uses, including uses such as a boathouse. Given that the ACBA buildings are on public property and that the parcel is in a less-desirable location (between busy highway bridges), it may be more immune to the external redevelopment pressure than other nearby parcels.

7.3.5 Mitigation Measures

As a nonprofit corporation, ACBA qualifies as a "business" and is eligible for treatment under the terms of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970 (42 U.S.C. 4601 et seq., P.L. 91-646) as amended by the Uniform Relocation Act Amendments of 1987 (P.L. 100-17). The Act calls for negotiations with affected persons, relocation assistance, just compensation, and timely notice if a property must be taken.

DDOT has committed to maintaining ACBA operations during construction. At a minimum, maintaining operations includes an alternative site where secure storage and access to the river are available. The site location and additional details related to the temporary operation are outlined below.

DDOT has committed to maintaining ACBA operations during construction. Ongoing coordination with the ACBA, NPS, and DDOT will continue through completion of construction.

The goal of DDOT is to maintain ACBA operations over the long term at the current site after construction.

ACBA identified potential temporary relocation sites along the Anacostia River. The ACBA preferred site is the former Washington Gas tanker site in the 1200 block of Water Street, SE (between 1201 and 1301 Water Street). This same site was identified by NPS as its preferred relocation site. See Appendix H and Exhibit 7-5.

The total site area is approximately 80,000 square feet, but is partially covered with trees. The site has clear access to the waterfront totaling approximately 150 feet. Because of the existing uses of the adjacent sites, ACBA docks may need to be reconfigured when they are relocated to the temporary site, but this could increase the usable dock space over the current ACBA site.

The preliminary site sketch in Exhibit 7-6 demonstrates that with minimal tree and brush clearing (approximately 5,000 square feet) the site could accommodate the temporary equivalent of 8,000 square feet of outdoor fenced storage and 7,500 square feet of secured

EXHIBIT 7-5
Aerial View of Proposed Temporary Relocation Site for ACBA Operations
ACBA and NPS both identified the outlined parcel as their preferred relocation site.

indoor storage of a type similar to those shown in Exhibits 7-7 and 7-8. The site remediation by Washington Gas, discussed below, will clear trees and other vegetation from the western half of the site as part of a separate project.

Advantages to ACBA members with this site include the fact that the same parking areas are available; people who ride Metro or bikes would have the same logistics; and the restrooms in the downstream of the two existing ACBA buildings might be accessible at least part time during the relocation. The designated relocation site and the existing site are near each other, so relocation of equipment would be less complex. ACBA currently uses some facilities at the Navy Yard during regattas, and this accessibility would be unchanged with the proposed temporary relocation site.

Prior to use by ACBA, Washington Gas will complete planned site remediation for the portion of the site west of an extension of 13th Street, SE (along a line roughly along the edge of the large parking lot in Exhibit 7-5). This process, which has already received an ROD from NPS and is estimated to require 14 months to complete, will involve removing and replacing of 1 to 3 feet of topsoil and planting replacement trees. DDOT will coordinate with Washington Gas to ensure that trees are not planted in the portion of the site needed to accommodate ACBA until after ACBA is returned to its current location. The most serious consequence of use of the site by ACBA is that tree planting may be delayed up to 5 years.

DDOT will prepare the temporary site by ensuring an appropriate grade on the property and erecting a security fence around the area. Where temporary structures are to be erected, DDOT will provide an asphalt surface.

DDOT will provide temporary structures with sufficient space for the inside storage of up to 60 boats on racks up to 4 boats high. DDOT will provide at least 7,500 feet of floor space inside temporary structures, the same floor space as in the existing building. DDOT will provide exterior storage for up to 80 boats. This number will be reassessed closer to the start of construction to ensure there is adequate storage for additional boats that may have been added because of growth in ACBA operations. Exterior storage areas will have a metal, fiberglass, or comparable roof to protect the boats from the weather, particularly UV radiation. DDOT will provide storage racks inside the temporary structure and under the storage area roofs. These racks will be comparable to the racks currently being used by ACBA. DDOT will ensure that potable running water and electricity are available at the site, although ACBA will be responsible for any usage charges. DDOT will provide four portable toilets to the site that will be cleaned and serviced at least weekly. DDOT will transfer boats, oars, and other equipment from the existing facility to the temporary facility. DDOT will relocate to the temporary site all the existing docks other than the high dock. The equivalent of the existing high dock will be provided at the temporary location.

EXHIBIT 7-6
Sample Site Layout for Temporary ACBA Operations Relocation Site
ACBA and NPS both identified the outlined parcel as their preferred relocation site.

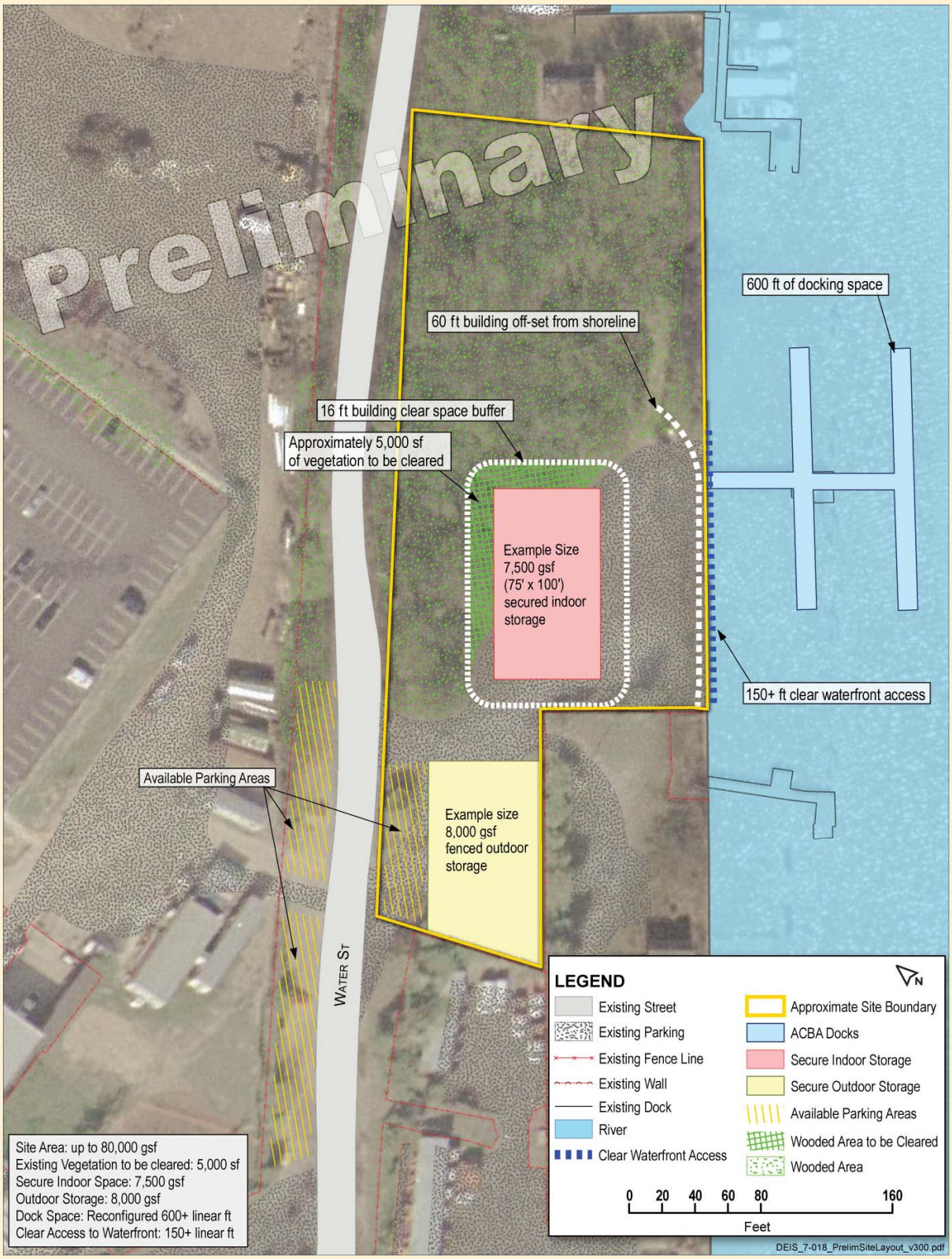


EXHIBIT 7-7
Example of Exterior of Temporary Secured Indoor Storage Facility
This sample is one of a number of comparable options available on the market.

EXHIBIT 7-8
Example of Interior of Temporary Secured Indoor Storage Facility
This sample is one of a number of comparable options available on the market.

Following bridge construction, DDOT will return ACBA to the current facility. This will include moving all boats and other equipment as well as returning the docks to their current location. DDOT will remove all temporary facilities from the temporary site. This includes the temporary structures, the fencing, and any asphalt or other hard surface introduced to the site. DDOT will plant any trees that were part of the Washington Gas remediation plan but whose planting was delayed to accommodate ACBA's use of the site.

DDOT and the construction contractor will maintain continued coordination with the Coast Guard through construction. Contractors will have to provide information on how/when the waterway would need to be shut down. The Coast Guard requires notification 45 days in advance for approval. The information is published in the *Federal Register* and communicated to local mariners, including ACBA. In addition to the *Federal Register* notice, DDOT will require the contractor to directly notify ACBA leadership of closures at least 45 days in advance. If ACBA provides a written list of special weekend events, such as regattas, at least 6 months in advance, DDOT will require that the contractor schedule work in such a way to ensure the waterway is open for these events. Because ACBA typically plans its major events about 9 months ahead, this notification schedule should provide no concern.

7.4 Economic Impacts

The project does not include proposals for any new development or removal of any existing private development. As a result, the economic impacts of each of the proposed build alternatives are primarily related to changes in access and travel patterns. Because of better local connections across the river, the build alternatives are expected to benefit established neighborhoods and employment centers, planned economic development initiatives, and development projects in the study area. These potential benefits include providing improved access to existing highways and reducing congestion on the local street network. Additionally, new bicycle and pedestrian pathways on each side of and across the Anacostia River are expected to make both motorized and non-motorized travel safer, more enjoyable, and more efficient. The proposed separation of longer-distance freeway traffic from local street traffic across the river would reduce traffic congestion in the study area neighborhoods, making it more convenient to access area attractions and businesses. These improvements are consistent with the current economic development objectives of the study area neighborhoods and the District.

The project does not include proposals for any new development or removal of any existing private development. As a result, the economic impacts of each of the proposed build alternatives are primarily related to changes in access and travel patterns. Because of better local connections across the river, the build alternatives are expected to benefit established neighborhoods and employment centers, planned economic development initiatives, and development projects in the study area.

7.4.1 Impacts of the No-Build Alternative

The No-Build Alternative retains the existing access and travel patterns to neighborhood commercial areas and other employment centers in the study area. Congestion on neighborhood streets would continue to increase in both intensity and duration with this alternative. The extended periods of congestion,

combined with the existing indirect access and confusing travel patterns, will continue to affect economic activities and potential development in the study area.

7.4.2 Impacts of the Build Alternatives

Access between the 11th Street Bridges and adjacent neighborhoods east and west of the Anacostia River would be changed with each of the proposed alternatives. A detailed explanation of the changes in access is presented in Section 8, Traffic and Transportation Analysis.

7.4.3 Temporary Construction-Related Impacts

There are expected short-term economic impacts related to construction of the project. These include employment of construction workers, wages and fees paid, and the purchase of construction supplies, materials, equipment, and fuel from local and regional sources.

Construction of the proposed build alternatives would have short-term impacts similar to any major construction project. Temporary lane closures and detours would affect travel patterns in the study area during completion of the project. Bicycle and pedestrian routes may be incomplete for short periods. Each of the build alternatives is expected to have a similar effect during the phased construction process.

There will be few, if any, impacts to local businesses on either side of the river, whether the business is owned by a minority member or not. Construction materials will either be transported on the river or on the freeway, but seldom, if ever, on local streets. Thus, the materials traffic will not affect business access in Anacostia. There will rarely be more than 75 construction workers onsite at any time, with 50 workers being a more typical case. Construction worker parking will be in designated areas, not in neighborhood parking areas. Construction activities east of the river would not reach into business areas in Anacostia. Businesses are sufficiently removed from the construction areas that construction workers are unlikely to seek out goods and services such as meals. There will be a minor amount of construction-related traffic on Martin Luther, King, Jr. Avenue, Good Hope Road, and Minnesota Avenue, but this should have no negative effect on local businesses, and may result in a slight increase in sales.

Construction activities west of the river will be very close to the service station in the northwest corner of 11th Street and M Street. Access to this business will be maintained at all times, as will access to all other businesses on both sides of the river. As the only service station in the area, the owner may experience increased sales to construction workers. Somewhat higher traffic levels may occur on M Street from construction activities. This would be a negative, but very minor, effect. Construction areas west of the river are closer to the neighborhood parking areas, but the District's vigorous parking enforcement will quickly encourage workers to use the areas that will be provided by the contractor.

7.4.4 Indirect and Cumulative Impacts

Indirect Impacts: The 11th Street Bridges project will not have any growth-inducing effects or other effects likely to induce changes in the pattern of land use, population density, or growth rate. Lacking these effects, indirect impacts on the social infrastructure are not anticipated.

Cumulative Impacts: Cumulative effects occur when the effects of separate projects, even projects separated by time or distance, combine to have more substantial collective effects. The other projects noted in Section 7.2.4 for social effects and also projects that could combine with the 11th Street Bridges project are not likely to yield cumulative impacts. The 11th Street Bridges project will compete with other projects for scarce economic goods and services, including labor, capital, and materials. The transportation projects included in AWI are all being coordinated to minimize cumulative construction effects.

7.4.5 Mitigation Measures

Long-term Mitigation

In general, the build alternatives are not expected to have an adverse impact to the local or regional economy. No business or private residential properties would be acquired for the project. With any of the build alternatives, new highway guide signs would be installed to inform motorists of new travel patterns as well as new freeway entrances and exits.

Mitigation During Construction

During construction, communicating the project's status and upcoming project phases will be key to helping businesses and residents in the study area stay informed and plan accordingly. Temporary and long-term changes in the transportation network will be communicated through an extensive community outreach program, consisting of the following elements:

During construction, communicating the project's status and upcoming project phases will be key to helping businesses and residents in the study area stay informed and plan accordingly.

- The use of newsletters, web pages, posters, newspaper inserts, television and radio public announcements, special neighborhood public meetings, and other similar methods of communication to announce to the general public the upcoming opening and use of the new roadway facilities.
- Coordination with other transportation providers—buses, taxi, tour buses, tourist industry, commercial trucking, and railroads.
- Special outreach activities to communicate new transit operations to members of the public who have mobility limitations and may be transit-dependent. Coordination efforts could be extended to social and employment service agencies that work with these special populations.

- A network of temporary signs, posters, and/or reader boards to guide vehicular or transit traffic during construction and through the first weeks or months after the opening of the new roadway facilities.
- Special signage to alert pedestrians and bicyclists of changes in access.
- Early coordination with WMATA on alternative bus routes, stops, and amenities during construction periods on streets served by Metrobus.

7.5 Air Quality Impacts

The FHWA and DDOT propose to reconstruct and reconfigure the interchange of the Southeast/Southwest Freeway and the Anacostia Freeway over the Anacostia River in Southeast Washington, DC, a distance of approximately 1 mile. If implemented, missing linkages would be added to the Anacostia Freeway northbound and local traffic would be separated from freeway traffic. No new capacity would be added to the freeway. The project and the project alternatives are described in detail in Section 4, Purpose and Need and Section 5 Alternatives. Existing conditions are the topic of Section 6, with air quality topics including air quality standards, meteorological conditions, and air pollution trends in the Washington DC metropolitan area all discussed in Section 6.5. The traffic conditions included in the air quality modeling discussed in this Section 7.5, Air Quality, are detailed in Section 8, Traffic, and Appendix B, Traffic.

This section presents the air quality impacts associated with the project. Affects to air quality from transportation projects are largely dependent on how the proposed action will affects traffic volumes and mobility in the study area. Traffic conditions in the 11th Street Bridges project area will be affected by changes in the number of vehicles, their speed, and the level of congestion on local roadways—changes that, in turn, affect air quality. The purpose of the air quality analysis is to identify the potential air quality effects associated with such changes.

While vehicle exhaust contains several air pollutants, those that are typically evaluated for transportation projects are carbon monoxide (CO) and particulate matter (PM_{10} and $PM_{2.5}$). Another pollutant of concern is ozone as two of its precursors, NOx and VOC, are emitted in vehicle exhaust. Note that NOx, which is a regulated pollutant, is included in the analysis of air quality affects because it is a precursor for both ozone and $PM_{2.5}$ formation.

Existing concentrations of ozone and $PM_{2.5}$ exceed the National Ambient Air Quality Standards (NAAQS), resulting in the District, including the project area, having a status of moderate nonattainment for the 8-hour ozone standard and the annual $PM_{2.5}$ standard. Additionally, the project area, as part of the District, is classified as a maintenance area for CO.

The analysis conducted in this document is intended to satisfy the requirements of NEPA (40 CFR 1500-1517) and Transportation Conformity (40 CFR 93) regulations. The NEPA regulations require that a proposed project's effects be evaluated for specific elements of the

environment, air quality being one of the specified elements. The Federal Clean Air Act (CAA) amendments of 1990, and the subsequent transportation conformity regulations, require that a proposed transportation project located in a nonattainment or maintenance area demonstrate conformity with the State Implementation Plan (SIP) provisions.

A project-level conformity analysis was performed for CO, via hot-spot analysis, according to EPA regulation and guidance. Procedures established by EPA were used to estimate localized CO concentrations. CO is the pollutant most associated with the localized effects of motor vehicle emissions. Concentrations of CO were estimated under PM (evening) peak hour traffic conditions for several of the worst-case study area intersections. The results were compared with the NAAQS established by EPA. For comparison to NAAQS time frames, worst-case 1-hour and 8-hour CO concentrations were estimated. The result of this analysis is that estimated future air pollution levels under the No-Build and build alternatives are all below (within) the NAAQS.

The proposed project is not a project of air quality concern as defined in 40 CFR 93.123(b)(1), and EPA has determined that such projects meet the Clean Air Act's $PM_{2.5}$ conformity requirements without any further hot-spot analysis.

Because the 11th Street Bridges project does not meet any of the EPA project criteria, a $PM_{2.5}$ qualitative hot spot analysis is not required.

Areawide emission estimates for CO, ozone precursors (NOx and VOC), and particulate matter (PM_{10} and $PM_{2.5}$) were completed using forecast daily vehicles miles traveled (VMT) and travel speed in the study area for existing conditions (2004) and the project's design year (2030). Additionally, the latest planning assumptions consistent with the current conforming Transportation Plan and Transportation Improvement Program (TIP) for the study area were used. Estimated emission rates under the No-Build and build alternatives for CO, NOx, VOC, and particulate matter are included in Section 7.5.2.2.

Potential air quality impacts that might occur during the temporary construction phase of the project were also discussed, and it was assumed that mitigation measures for construction activities would be followed as needed. Pollutants most associated with the localized effects of construction activities were considered— CO, particulate matter, and nitrogen dioxide (NO_2). A qualitative review of construction emissions was completed.

7.5.1 Methodology

Analysis methods for the 11th Street Bridges project were developed in coordination with MWCOG, EPA, and FHWA. In early 2006, MOBILE 6.2 input files were provided by MWCOG for the metropolitan Washington region.

Pollutant estimates were made for three analysis years: existing conditions (2004), the project's opening year (2015), and its design year (2030). Future-year analyses were conducted with and without the proposed build alternatives.

The methodology for analyzing air quality effects was designed to satisfy NEPA requirements for federally funded transportation projects (23 CFR 771) and the Transportation Conformity regulation (40 CFR 93). In addition, air quality effects associated with transportation projects typically occur during construction as a result of earth-moving and diesel-fueled construction equipment emissions and during operation as a result of changes in traffic that may increase motor vehicle exhaust emissions. This analysis first evaluates effects during operation by determining pollutant concentrations in the vicinity of the most congested intersections affected by the project. The amount of mobile source-related air pollutants generated in the study area is also analyzed. Air quality effects during construction are then analyzed qualitatively.

The Transportation Conformity Rule (40 CFR 93.114 and 93.115) requires that a currently conforming regional long-range transportation plan (plan) and a regional short-range transportation improvement program (TIP) must be in place at the time of project approval, and the project must come from the conforming plan and TIP. On October 19, 2005, the National Capital Region Transportation Planning Board, the metropolitan planning organization (MPO) for the Washington, DC-MD-VA metropolitan area, adopted its Constrained Long Range Plan (CLRP), and Transportation Improvement Program (TIP). In late 2005, FHWA/FTA found the CLRP and TIP conform for all applicable pollutants.

The 11th Street Bridges project was amended to the current CLRP and TIP in April, 2006. The Transportation Planning Board adopted the 2006 CLRP and 2007-2011 TIP on October 18, 2006. FHWA/FTA issued the Conformity Determination on April 6, 2007.

7.5.2 Impact Analysis

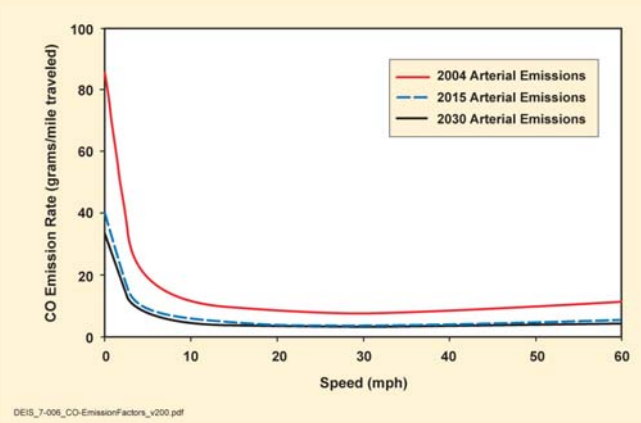
Localized CO Analysis

Based on current EPA and FHWA regulation and guidance, a hot spot analysis was performed for CO via quantitative modeling. The results of the analysis are used both for evaluating effects as required by NEPA and to satisfy the requirements of the project-level conformity requirements. The EPA approved models, MOBILE6.2 and CAL3QHC were used. The highest CO concentrations from motor vehicles typically occur in the vicinity of signalized intersections that are highly congested due to high traffic volumes and prolonged delay. Emissions from vehicle exhaust increase as a result of less efficient combustion while a vehicle is idling or driving at very slow speeds.

This localized analysis requires estimating CO emission factors (in grams per vehicle mile traveled) using the MOBILE6.2 model and then calculating CO concentrations in the vicinity of the selected intersections using the EPA approved CAL3QHC dispersion model.

The data inputs to MOBILE 6.2 (specific to the Washington, DC area) were provided by MWCOG. MOBILE 6.2 emission factors were developed for existing conditions (2004), year of opening (2015), and design year (2030).The emission factors for CO from an average vehicle in Washington, DC traveling on an arterial roadway for 2004, 2015, and 2030 are shown in Exhibit 7-9. This figure shows that vehicle emissions decrease over time as a result

EXHIBIT 7-9
CO Emission Factors
CO emission factors for Washington, DC traffic decline as older vehicles are replaced with newer, less polluting vehicles.



Source: MOBILE 6.2 with MWCOG Inputs for DC

of the gradual replacement of older vehicles with newer, less-polluting vehicles. The exhibit also shows that CO emissions are higher at lower travel speeds.

The CAL3QHC model is designed to calculate worst case 1-hour CO concentrations, based on peak-hour traffic and stable meteorological conditions. Eight-hour average CO concentrations are calculated by multiplying maximum 1-hour concentrations by a persistence factor, which accounts for the time variance in traffic and meteorological conditions. A CO persistence factor of 0.65 was established by calculating the average ratio of the 1- to 8-hour monitored concentrations recorded during the last 11 years (1995-2005) at the monitoring station nearest to the project site on L Street. These monitoring data are shown in Exhibit 7-10. Traffic volumes were obtained from the traffic analyses that were completed as part of the transportation analysis.

PM peak period traffic data were used to estimate maximum 1-hour and 8-hour CO concentrations. The PM peak is the highest traffic volume period of the day in downtown Washington, DC.

Intersections chosen for this analysis are the heavily congested intersections within the project study area. The project study area includes the portion of Southeast Washington, DC where traffic patterns would most likely be affected by the various project alternatives. It encompasses the Southeast/Southwest Freeway from the ramps at Virginia Avenue to Barney Circle, Anacostia Freeway from Howard Road to the interchange north of Pennsylvania Avenue, and the river crossings

EXHIBIT 7-10
CO Persistence Factor
The CO persistence factor was established by calculating the average ratio of the 1- to 8-hour monitored concentrations recorded over the last 11 years.

Year	Highest 8-Hour CO Concentration*	Highest 1-Hour CO Concentration*	Ratio of 8-Hour/ 1-Hour
1995	6.6	8.4	0.79
1996	4.6	7.8	0.59
1997	6.3	9.6	0.66
1998	5.9	6.7	0.88
1999	3.9	5.7	0.68
2000	5.3	9.5	0.56
2001	5.0	5.3	0.94
2002	3.6	7.6	0.47
2003	3.7	10.9	0.34
2004	2.4	3.8	0.63
2005	2.1	3.7	0.57
Average Ratio			0.65

* Data collected at the C&P Phone Co., L St. between 20th and 21st Street North

connecting the Anacostia Freeway to the Southeast/Southwest Freeway. The study also evaluated impacts to surface streets adjacent to these freeway facilities, including Pennsylvania Avenue, Minnesota Avenue, Good Hope Road, Martin Luther King, Jr. Avenue, N Street, M Street, I Street, 11th Street, and 8th Street.

Selection of Congested Intersections for Detailed CO Analysis. A screening evaluation was performed to identify which of the signalized intersections in the study area are most congested and most affected by the project. Traffic volumes and the traffic levels of service for the year 2030 at the major signalized intersections that may be affected by proposed alternatives were evaluated with and without the project, and ranked as potential air quality analysis sites. Level of Service (LOS) is a way to categorize intersections according to the delay a vehicle would experience waiting to pass through it. Exhibit 7-11 provides the range of delay (in seconds) defined by each LOS category A-F.

EXHIBIT 7-11
Intersection Delay Time Associated with Level of Service Categories
The highest pollutant concentrations from motor vehicles typically occur in the vicinity of signalized intersections that are highly congested.

LOS	Stopped Delay Per Vehicle (seconds)
A	< 10.0
B	10 to 20
C	20 to 35
D	35 to 55
E	55 to 80
F	> 80

Intersections with an LOS of A, B, or C did not need to be considered because they do not pose a prolonged delay to vehicles. All intersections with an LOS of D, E, or F for one or more of the build alternatives, and the No-Build Alternative, were chosen for the analysis of localized affects to air quality, also called hot spot analysis. Exhibit 7-12 provides a diagram that illustrates the screening procedure. The intersections selected for intersection level CO modeling are indicated in Exhibit 7-13 and mapped in Exhibit 7-14.

Receptor Locations for CO Analysis. Locations where pollutant concentrations are predicted near the intersections are called receptors. For the purposes of the CO hot spot modeling, the receptors were placed strategically around the intersection because this is where the highest CO concentrations would typically be expected to occur. For this analysis, receptors were identified in the model at the corner of each intersection and at a distance of 80 and 160 feet from the corners along the outside lanes of each road. The receptors were placed at approximately 10 feet from the edge of the road, representing mid sidewalk, and at a height of 6 feet above ground as specified in EPA guidance (EPA, 1992).

Background Concentrations for CO Analysis. In addition to the contributions from local traffic, an evaluation of localized CO concentrations must include an estimation of the other sources of CO, such as home and commercial heating units. Also known as background concentration, these values were developed based on data collected at the Annandale monitoring station, located southwest of Washington, DC at 6507 Columbia Pike. This is the nearest CO monitoring station located outside the urban city center and away from the influence of local traffic congestion. Therefore it is more likely to be measuring contributions from background sources of CO. The second highest monitored 1-hour CO concentration

during the period of 2003–2005 was 2.2 ppm; the second highest 8-hour average was 1.6 ppm (EPA, 2006b). These values were conservatively used as background concentrations for all CO modeling analyses. Future background CO levels are anticipated to be lower than the existing levels due to continuing efforts to reduce emissions from all sources (industrial, commercial, and residential sources). In absence of definitive data, 2015 and 2030 future background levels were conservatively assumed to be the same as the existing levels.

EXHIBIT 7-12
Intersection Selection Procedure for Project Level Conformity
Screening focused on the most congested intersections.

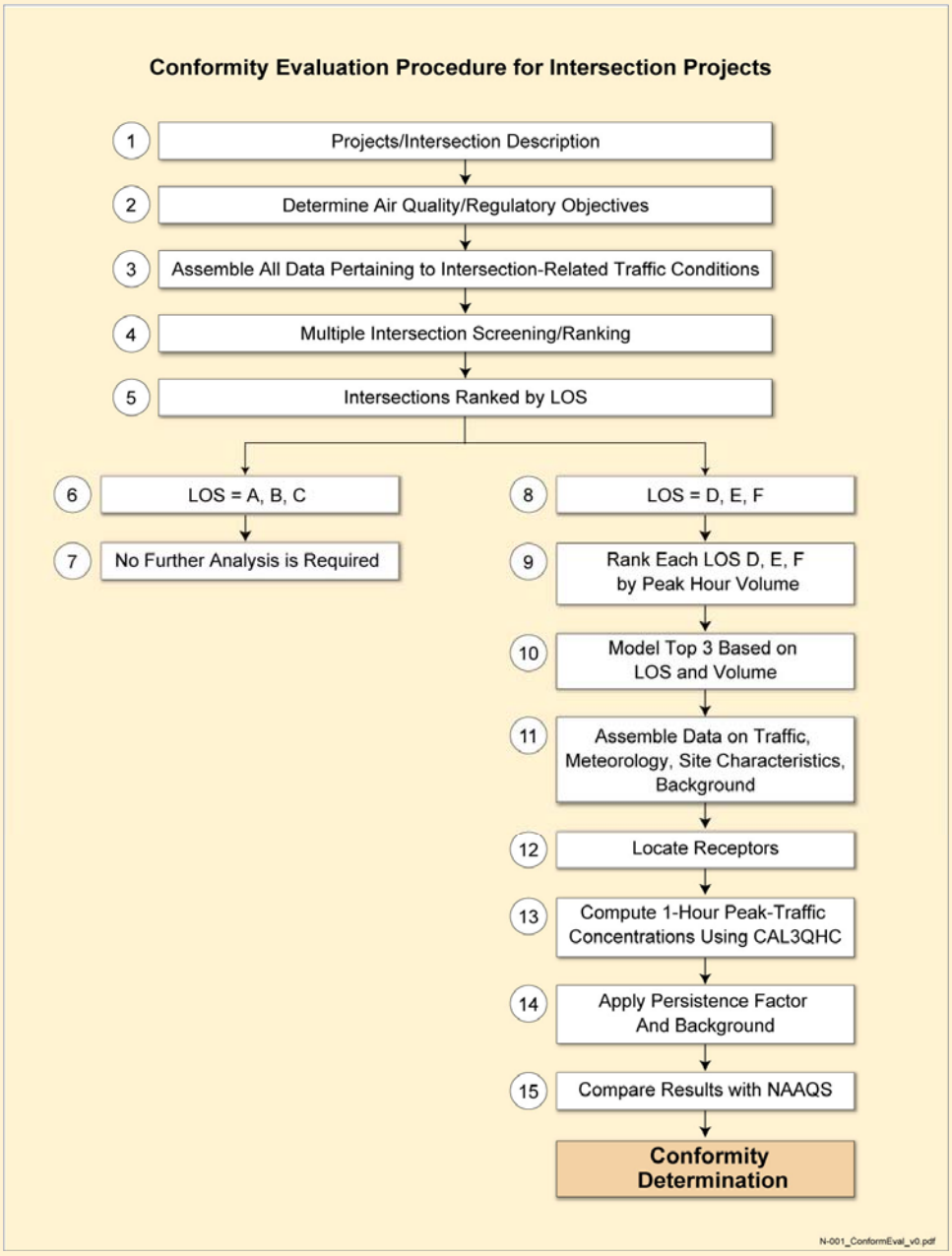


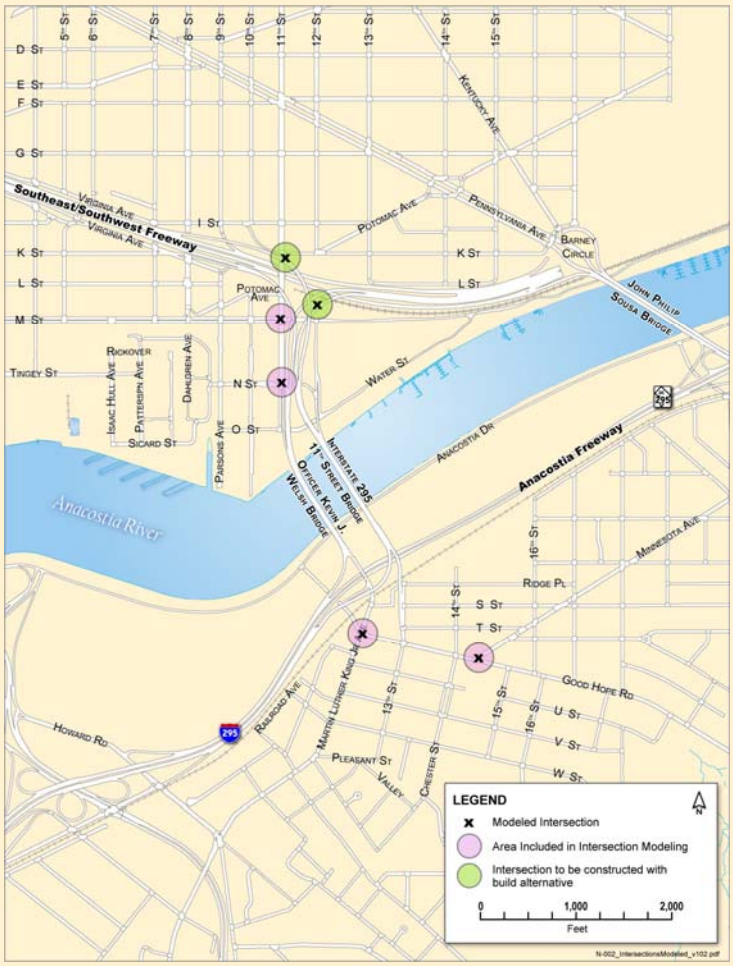
EXHIBIT 7-13
Results of Screening Signalized Intersections to Identify Intersections for Air Quality Conformity Analysis
Conformity analysis is appropriate at signalized intersections with LOS D, E, or F.

Signalized Intersection	No-Build Alternative	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
Virginia Avenue & 8th Street						
I Street & 8th Street						
I Street & 11th Street						
I Street & Southeast/Southwest						
M Street & 8th Street						
M Street & 9th Street						
M Street & 11th Street						
M Street & 12th Street East						
M Street & 12th Street West						
N Street & 11th Street						
Southeast/Southwest Freeway Off-Ramp &						
Southeast/Southwest Freeway On-Ramp &						
Southeast Freeway Boulevard NB & 12th						
Southeast Freeway Boulevard SB & 12th						
Local Bridge & Anacostia Freeway SB Ramps						
Local Bridge & Anacostia Freeway NB Ramps						
Good Hope Road & Martin Luther King, Jr.						
Good Hope Road & 13th Street						
Good Hope Road & Minnesota Avenue						

NB = northbound; SB = southbound

- Intersection does not exist with this alternative
- LOS A, B, or C. Conformity analysis not necessary
- LOS D. Conformity analysis appropriate
- LOS E. Conformity analysis appropriate
- LOS F. Conformity analysis appropriate

EXHIBIT 7-14
Intersections Modeled for Air Quality Impacts
The intersections modeled are expected to operate at LOS D, E, or F in 2030.



Existing Conditions- Localized CO Concentrations near Congested Intersections. Worst-case CO concentrations were estimated at four existing intersections to evaluate the potential to exceed the NAAQS for CO within the study area under existing traffic conditions. The modeled intersections include all of the intersections identified as being most likely to exceed the NAAQS for CO in the future under any of the build alternatives.

Consistent methodology and assumptions were used for modeling existing and future conditions; therefore, modeled CO concentrations for 2004 can be compared with those predicted for future years, to show the trend in air quality expected in the project area. No exceedance of the CO NAAQS was predicted by the model results. The maximum estimated 1-hour CO concentration from vehicle emissions for existing conditions was 4.7 ppm, compared to the 35 ppm NAAQS. The maximum estimated 8-hour CO concentration was 3.2 ppm, compared to the 9 ppm NAAQS. Model results are summarized in Exhibit 7-15. The highest CO concentrations were modeled in the vicinity of the worst-case intersections anticipated to be affected by the project.

EXHIBIT 7-15
CO Concentrations, 2004
Modeled CO concentrations for conditions existing in 2004 are below NAAQS thresholds.

Intersection		CO (ppm)	
Street	With Street	1-Hour	8-Hour
M Street, SE	11th Street, SE	4.4	3.0
N Street, SE	11th Street, SE	3.5	2.4
Good Hope Road	Martin Luther King, Jr. Avenue	4.7	3.2
Good Hope Road	Minnesota Avenue	3.4	2.4

8-hour NAAQS- 9 ppm
1-hour NAAQS- 35 ppm

No-Build Alternative- CO Concentrations near Congested Intersections. Although emission rates are expected to be much lower in the future years due to cleaner vehicles and fuels, increased traffic volumes are expected to offset the

decrease. Therefore, modeled CO concentrations for the No-Build Alternative were not appreciably different from those modeled for existing conditions. No exceedances of the 1-hour average CO NAAQS of 35 ppm were predicted at any location under the No-Build Alternative in 2015 (Exhibit 7-16) or 2030 (Exhibit 7-17). Similarly, no exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted for 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). As was the case for existing conditions, the highest CO concentrations were modeled near the intersection of M Street and 11th Street, SE.

EXHIBIT 7-16
1-hour CO Concentrations, 2015
Modeled 1-hour 2015 CO concentrations are below NAAQS thresholds for the No-Build and build alternatives.

Intersection		Alternative					
Street	With Street	No-Build	I	II	III	IV	Pref.
M Street, SE	11th Street, SE	3.3	3.5	3.5	3.6	3.4	3.5
N Street, SE	11th Street, SE	3.0	3.2	3.3	3.3	3.0	3.2
Southeast Freeway Blvd	12th Street, SE	NA	2.9	3.0	2.8	2.9	2.9
Southeast/Southwest Freeway Off-ramp	11th Street, SE	NA	3.2	3.4	3.0	3.1	3.2
Good Hope Road	Martin Luther King, Jr. Avenue	3.3	2.8	3.1	3.1	3.0	3.1
Good Hope Road	Minnesota Avenue	3.1	2.7	2.8	2.8	2.8	2.8
1-hour NAAQS- 35 ppm							

EXHIBIT 7-17
1-hour CO Concentrations, 2030
Modeled 1-hour 2030 concentrations are below NAAQS thresholds for the No-Build and build alternatives.

Intersection		Alternative					
Street	With Street	No-Build	I	II	III	IV	Pref.
M Street, SE	11th Street, SE	3.3	3.9	3.7	3.9	3.6	3.9
N Street, SE	11th Street, SE	3.1	3.2	3.3	3.3	3.0	3.2
Southeast Freeway Blvd	12th Street, SE	NA	3.0	3.5	2.8	3.0	3.0
Southeast/Southwest Freeway Off-ramp	11th Street, SE	NA	3.3	3.5	3.0	3.0	3.3
Good Hope Road	Martin Luther King, Jr. Avenue	3.2	2.9	3.3	3.1	3.1	3.3
Good Hope Road	Minnesota Avenue	3.0	2.8	2.9	2.9	2.9	2.9
1-hour NAAQS - 35 ppm							

EXHIBIT 7-18
8-hour CO Concentrations, 2015
Modeled 8-hour 2015 CO concentrations are below NAAQS thresholds for No-Build and build alternatives.

Intersection		Alternative					
Street	With Street	No-Build	I	II	III	IV	Pref.
M Street, SE	11th Street, SE	2.3	2.4	2.4	2.5	2.4	2.4
N Street, SE	11th Street, SE	2.1	2.3	2.3	2.3	2.1	2.3
Southeast Freeway Blvd	12th Street, SE	NA	2.1	2.1	2.0	2.1	2.1
Southeast/Southwest Freeway Off-ramp	11th Street, SE	NA	2.3	2.4	2.1	2.2	2.3
Good Hope Road	Martin Luther King, Jr. Avenue	2.3	2.0	2.2	2.2	2.1	2.2
Good Hope Road	Minnesota Avenue	2.2	1.9	2.0	2.0	2.0	2.0
8-hour NAAQS- 9 ppm							

EXHIBIT 7-19
8-hour Concentrations, 2030
Modeled 8-hour 2030 CO concentrations are below NAAQS thresholds for No-Build and build alternatives.

Intersection		Alternative					
Street	With Street	No-Build	I	II	III	IV	Pref.
M Street, SE	11th Street, SE	2.3	2.7	2.6	2.7	2.5	2.6
N Street, SE	11th Street, SE	2.2	2.3	2.3	2.3	2.1	2.3
Southeast Freeway Blvd	12th Street, SE	NA	2.1	2.4	2.0	2.1	2.1
Southeast/Southwest Freeway Off-ramp	11th Street, SE	NA	2.3	2.4	2.1	2.1	2.3
Good Hope Road	Martin Luther King, Jr. Avenue	2.3	2.1	2.3	2.2	2.2	2.3
Good Hope Road	Minnesota Avenue	2.1	2.0	2.1	2.1	2.1	2.1
8-hour NAAQS- 9 ppm							

Build Alternatives- Localized CO Concentrations Near Congested Intersections. Preferred Alternative. No exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted at any intersection analyzed under the Preferred Alternative in 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). The highest CO concentrations were modeled in the vicinity of the intersection of 11th Street and M Street, and these were well below the NAAQS—at about one-third the standard. The 1-hour averages would be about 10 percent of the standard.

Build Alternative I. No exceedances of the 1-hour average CO NAAQS of 35 ppm were predicted at any intersection analyzed under Build Alternative I in 2015 (Exhibit 7-16) or 2030 (Exhibit 7-17). Similarly, no exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted for 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). The highest CO concentrations

were modeled in the vicinity of the intersection of 11th Street and M Street and these were well below the NAAQS.

Build Alternative II. No exceedances of the 1-hour average CO NAAQS of 35 ppm were predicted at any location under Build Alternative II in 2015 (Exhibit 7-16) or 2030 (Exhibit 7-17). Similarly, no exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted for 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). The highest CO concentrations were modeled near the intersection of 11th Street and M Street and they were well below the NAAQS.

Build Alternative III. No exceedances of the 1-hour average CO NAAQS of 35 ppm were predicted at any location under Build Alternative III in 2015 (Exhibit 7-16) or 2030 (Exhibit 7-17). Similarly, no exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted for 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). The highest CO concentrations were modeled near the intersection of 11th Street and M Street.

Build Alternative IV. No exceedances of the 1-hour average CO NAAQS of 35 ppm were predicted at any location under Build Alternative IV in 2015 (Exhibit 7-16) or 2030 (Exhibit 7-17). Similarly, no exceedances of the 8-hour average CO NAAQS of 9 ppm were predicted for 2015 (Exhibit 7-18) or 2030 (Exhibit 7-19). The highest CO concentrations were modeled near the intersection of 11th Street and M Street and they were well below the NAAQS.

Burden Analysis

In addition to the localized analysis described above, an emissions burden analysis was performed to estimate the project study area daily emission rates associated with each of the project alternatives. The project study area was defined in the previous section. CO, PM (PM_{10} and $PM_{2.5}$), and ozone precursor (VOC and NO_X) emission rates were calculated as part of the burden analysis to provide an indication of the effects of the project alternatives throughout the project study area on those air pollutants. Only direct emissions of each of these pollutants were estimated, no attempt was made to estimate secondary formation downwind of the release. Note that NOx is also a $PM_{2.5}$ precursor. Existing emission estimates are calculated in pounds per day (lbs/day) for the project study area for existing conditions (2004) and the project's design year (2030).

The daily air pollutant emissions rates for the proposed project were estimated multiplying MOBILE 6.2 emission factors by the project-specific daily traffic volumes, by roadway link. Emission rates were estimated for each build alternative and compared to the No-Build Alternative emission rates for the year 2030. These values are useful for comparison between the build alternatives but are not meant to predict air quality effects to the region.

Existing Conditions – Burden Analysis. These existing daily emissions were calculated by multiplying the modeled daily VMT for the year 2004 by the MOBILE6.2 emissions factor (in grams/VMT) calculated for an average travel speed of 40 miles per hour. The study area emissions provide a comparison between existing conditions and the project alternatives, but

not a calibrated estimate of actual emissions. The estimated existing daily pollution emission rates are:

CO	4,648 lbs/day
NOx	533 lbs/day
VOC	308 lbs/day
PM_{10}	16 lbs/day
$PM_{2.5}$	9 lbs/day

No-Build Alternative – Burden Emissions. Daily pollutant emission rates generated in the study area in 2030 were estimated using the same methodology used to estimate existing emission rates. Although average daily traffic is forecast to increase between 2004 and 2030, a comparison between existing study area emissions and the No-Build Alternative in 2030 demonstrates the trend towards cleaner operating vehicles for CO, NO_X, and VOC in 2030 (Exhibit 7-20). The emission of CO is expected to fall by about 50 percent. NO_x will decline more than 80 percent and VOC by about 66 percent. Only emissions of PM_{10} and $PM_{2.5}$ would not vary. A comparison between the build alternatives in 2030 indicates very little difference between them for any pollutant.

EXHIBIT 7-20
Estimated 2030 Study Area Pollutant Emission Rates (pounds/day)
Very little difference was found in pollution emission rates among the alternatives.

Alternative	CO	NO_X	VOC	PM_{10}	$PM_{2.5}$
No-Build	1,817	88	102	15	7
Build Alternative I	2,007	97	113	17	8
Build Alternative II	1,902	92	107	16	7
Build Alternative III	2,044	99	115	17	8
Build Alternative IV	1,944	94	109	16	7
Preferred Alternative	1,974	95	111	16	7

Build Alternatives – Burden Analysis. Daily pollution emission rates generated in the study area in 2030 were estimated using the same methodology used to estimate existing emissions.

The project will improve mobility in the region by providing a more efficient travel route into and out of downtown Washington, DC. The higher daily emission rates for each of the Build Alternatives versus the No-Build Alternative reflect more vehicles using the roads in the project study area than under No-Build conditions (Exhibit 7-20). However, this is not an indication that any of the alternatives represent a negative effect on regional air quality. Recognizing that the project study area is a subset of the air quality region (the Washington, DC metropolitan area), the estimate does not account for decreases in VMT, and thus emission rates, occurring elsewhere in the region.

The 2030 transportation emissions are expected to be below the transportation emission budgets for each of the build alternatives.

Build Alternative II daily emission rates are the lowest of all the build alternatives because the VMT within the study area is predicted to be the lowest for this alternative. Build Alternative III daily emission rates are the highest of all build alternatives because the VMT is predicted to be the highest for this alternative within the study area. Alternative IV daily emission rates are the third highest of all build alternatives, which is directly proportional to the VMT ranking for the alternatives within the study area. Emission rates for the Preferred Alternative are lower than Build Alternatives I or III and higher than Build Alternatives II or IV or the No-Build Alternative. However, differences among all alternatives are very small.

Localized $PM_{2.5}$ Impacts

On a local scale, a $PM_{2.5}$ hot spot analysis is not required to demonstrate project-level conformity according to the *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas* FHWA/EPA Guidance. This guidance states that $PM_{2.5}$ hot spot analysis should be conducted according to qualitative guidance only if the project is a project of air quality concern, defined in 40 CFR 93.123(b)(1) as:

(i) New or expanded highway projects that have a significant number of or significant increase in diesel vehicles;

(ii) Projects affecting intersections that are at Level-of-Service D, E, or F with a significant number of diesel vehicles, or those that will change to Level-of-Service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project;

(iii) New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location;

(iv) Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location; and

(v) Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

Because the 11th Street Bridges project does not meet any of the EPA project air quality criteria, a $PM_{2.5}$ qualitative hot spot analysis is not required.

The proposed project is not a project of air quality concern, and EPA has determined that such projects meet the Clean Air Act's conformity requirements without any further hot-spot analysis. The proposed project will not change the number or percentage of diesel vehicles in the study area.

In response to the October 17, 2006 final rule (see Section 6.4.1), EPA released guidance on April 16, 2007, on how to address transportation conformity under the lower 24-hour $PM_{2.5}$ standard. The guidance states that: "Transportation conformity for the 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$ does not apply until one year after the effective date of nonattainment designations that consider that standard (see 40 CFR 93.102(d), and Clean Air Act section

176(c)(6))." Therefore, there is no requirement to demonstrate conformity to the revised $PM_{2.5}$ standard at this point in time. Even with the revised standard, this project is still not a project of air quality concern. Therefore, no additional analysis is necessary under NEPA to address the revised $PM_{2.5}$ standard.

Mobile Source Air Toxin (MSAT) Impacts

Background. In February, 2006, FHWA issued guidance for the analysis of mobile source air toxics (MSATs) in the NEPA process for highway projects (FHWA. Interim Guidance on Air Toxic Analysis in NEPA Documents. February 3, 2006). The following language is taken verbatim from this guidance document.

In addition to the criteria air pollutants for which there are National Ambient Air Quality Standards (NAAQS), EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners) and stationary sources (e.g., factories or refineries).

Mobile Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the Clean Air Act. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The EPA is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of MSATs. The EPA issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources. 66 FR 17229 (March 29, 2001). This rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, EPA examined the impacts of existing and newly promulgated mobile source control programs, including its reformulated gasoline (RFG) program, its national low emission vehicle (NLEV) standards, its Tier 2 motor vehicle emissions standards and gasoline sulfur control requirements, and its proposed heavy duty engine and vehicle standards and on-highway diesel fuel sulfur control requirements. Between 2000 and 2020, FHWA projects that even with a 64 percent increase in VMT, these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent.

As a result, EPA concluded that no further motor vehicle emissions standards or fuel standards were necessary to further control MSATs. In February 2007, the agency finalized a rule under authority of CAA Section 202(l) that will reduce toxic emissions from passenger vehicles and gas cars.

Unavailable Information for Project Specific MSAT Impact Analysis. This EIS includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EIS. Due to these limitations, the following discussion

is included in accordance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information:

Information that is Unavailable or Incomplete. Evaluating the environmental and health impacts from MSATs on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

Emissions. The EPA tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model--emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

Dispersion. The tools to predict how MSATs disperse are also limited. The EPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the NAAQS. The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The NCHRP is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the NEPA process and to the general public. Along with these general limitations

of dispersion models, FHWA is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Exposure Levels and Health Effects. Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs. Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database best illustrate the levels of various toxics when aggregated to a national or State level.

The EPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The EPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database *Weight of Evidence Characterization* summaries. This information is taken verbatim from EPA's IRIS database and represents the agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures:

- ***Benzene*** *is characterized as a known human carcinogen.*

- *The potential carcinogenicity of **acrolein** cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.*
- ***Formaldehyde** is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.*
- ***1,3-butadiene** is characterized as carcinogenic to humans by inhalation.*
- ***Acetaldehyde** is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.*
- ***Diesel exhaust** (DE) is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.*
- ***Diesel exhaust** also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.*

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a non-profit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health outcomes -- particularly respiratory problems. Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of impacts Based on Theoretical Approaches or Research Methods Generally Accepted in the Scientific Community. Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is

not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, a qualitative assessment of MSAT emissions relative to the various alternatives has been performed, as described below.

Analysis of Impacts for Proposed Project. The FHWA guidance suggests a three tiered approach to analyzing the effects of a transportation project in terms of public exposure to MSAT emissions. The level of analysis is related to expected size and impact of the project, as follows:

1. No analysis for projects with no potential for meaningful MSAT effects; or
2. Qualitative analysis for projects with low potential MSAT effects; or
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The proposed project meets the criteria of category 2, and therefore a qualitative assessment of MSATs is provided in this document.

Although a qualitative analysis cannot identify and measure health impacts from MSATs, it can give a basis for identifying and comparing the potential differences among MSAT emissions—if any—from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives* (FHWA, 2006).

For each project alternative, the amount of MSATs emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for Build Alternative III is higher than any of the other alternatives, the highest level of MSATs within the study area would be expected for this alternative. Assuming the MSATs are proportional relative to the criteria pollutant emissions for each alternative, as indicated in Exhibit 7-20, all of the build alternative MSAT emissions are predicted to be higher than the No-Build Alternative emissions within the study area.

As described in the areawide analysis, this should not be interpreted as an indication that the build alternatives represent a negative effect on regional air quality. Recognizing that the study area is a subset of the air quality region, the estimate does not account for decreases in VMT, and thus emissions, occurring elsewhere in the region.

Also, regardless of the alternative chosen, emissions will likely be lower in 2030 as a result of EPA's national control programs, which are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and 2020 (FHWA, 2006). These programs consist of vehicle and fuel regulations that result in lower MSAT emissions. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after

accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations. Therefore, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will, over time, cause substantial reductions that in almost all cases will cause regionwide MSAT levels to be lower than today.

Greenhouse Gas Impacts

From a NEPA perspective, it is analytically problematic to conduct a project level cumulative effects analysis of greenhouse gas emissions on a global-scale problem. Secondly, criteria pollutant emissions last in the atmosphere for perhaps months; CO2 emissions remain in the atmosphere far longer - over 100 years - and therefore require a much more sustained, intergenerational effort. Finally, due to the interactions between elements of the transportation system as a whole, project-level emissions analyses would be less informative than ones conducted at regional, state, or national levels. Because of these concerns, FHWA concludes that the CO2 emissions cannot be usefully evaluated in the same way that other vehicle emissions are addressed.

The NEPA process is meant to concentrate on the analyses of issues that can be truly meaningful to the consideration of project alternatives, rather than simply amassing data. In the absence of a regional or national framework for considering the implications of a project-level GHG analysis, FHWA concludes that such an analysis would not inform project decision-making, while adding administrative burden.

7.5.3 Temporary Construction-Related Impacts

Construction impacts were evaluated qualitatively due to the limited availability of detailed information regarding equipment staging during construction. It is not anticipated that construction will last longer than 5 years at any location in the study area. Therefore, a project level conformity analysis is not required, and construction emissions do not need to be accounted for in a "hot spot analysis" per 93.123(c)(5).

Air quality impacts related to the construction phase of the project would occur primarily as a result of emissions from heavy-duty construction equipment (such as bulldozers, backhoes, and cranes), diesel-fueled mobile sources (such as trucks), diesel- and gas-fueled generators, and on- and offsite project-related vehicles (such as service trucks and pickups).

Air quality impacts related to the construction phase of the project would occur primarily as a result of emissions from heavy-duty construction equipment (such as bulldozers, backhoes, and cranes), diesel-fueled mobile sources (such as trucks), diesel- and gas-fueled generators, and on- and offsite project-related vehicles (such as service trucks and pickups). All construction emissions are expected to be local and limited to the duration of construction.

The following types of construction operations were considered in assessing construction impacts to air quality:

- Material storage, handling, and processing
- Loading and unloading (stockpile to trucks)
- Demolition and dumping
- Earth-moving and excavating
- Grading, scraping, dozing, and removal activities

- Paving, asphalt, or concrete activities
- Dredging
- Hauling of materials
- Wind erosion of exposed surfaces
- Transporting materials on paved and unpaved roads

Fugitive PM_{10} and $PM_{2.5}$ emissions are associated with site preparation, demolition, ground excavation, grading, cut-and-fill operations, and structure erection. Fugitive dust emissions also could be generated as a result of construction-related traffic and wind erosion of uncovered demolition and excavation areas. PM emissions would vary from day to day, depending on the level of activity, specific operations, and weather conditions. Hot, dry weather conditions could aggravate particulate matter emissions. Emission rates would depend on soil moisture, silt content of soil, wind speed, and the amount and type of operating equipment. Larger dust particles (PM_{10}) would settle near the source, and fine particles ($PM_{2.5}$) would be dispersed over greater distances from the construction site. Measures to minimize particulate matter leaving the construction area are discussed in Section 7.5.5.

In addition there will be engine exhaust from personal vehicles (construction workers), heavy trucks, and construction equipment. These emissions would primarily consist of NO_x, SO_2, PM, CO, and VOCs, which are common at construction sites. Emissions from operating equipment and vehicles during hot summer months would contribute to ozone formation.

If construction traffic and lane closures were to increase congestion in the area, emissions from traffic would increase temporarily and would be limited to the area surrounding the construction site. Some construction phases (particularly during paving operations using asphalt) would result in short-term odors. These odors might be detectable to some people near the project site, but would be diluted as distance from the site increases.

No-Build Alternative

Under the No-Build Alternative, air pollutant emissions would be limited to those associated with ongoing operations and any maintenance activities in or around the project area.

Build Alternatives

Each build alternative would be constructed in four general phases over an estimated 5-year period. Each phase would include work on both sides of the river as well as both river-crossing bridges. Most construction activities during the first stage are expected to occur during the first 2 years, while phases 2 and 3 would take place primarily in years 3 and 4. Phase 4 is expected to take place in year 5. Construction of Build Alternative IV would differ from the other build alternatives in that river-crossing bridge work would be performed later in the construction period, in phases 3 and 4 during years 3-5. Construction activities and generation of air pollutant emissions would be similar for all alternatives.

Air pollutant emissions in all construction phases would result from earthwork, demolition, grading, and paving activities in support of ramp, roadway, and bridge work. Additionally,

access roads and staging areas would need to be constructed. An area approximately between 2 and 5 acres would be required for staging.

Emissions also would result from storing, handling, and transporting construction materials. At times, traffic would be detoured in various locations along the project corridor. Temporary detours would be necessary on local streets below any hoisting operation (girder placement) and deck pours overhead as safety precaution. For river traffic, temporary closures may be required during bridge girder erection. Two lanes for highway traffic are expected to be open in each direction during construction. During construction of Build Alternatives I through III, three lanes may be open in each direction frequently. Local access through Anacostia Park could be restricted during some construction although access to either end from Nicholson Street and Howard Road respectively should be unaffected.

All construction emissions are expected to be local (that is, confined to the construction site area) and limited to the duration of the construction activities.

7.5.4 Indirect and Cumulative Impacts

Indirect Impacts: While the higher emissions of the build alternatives reflect more vehicles using the roads in the study area than under No-Build conditions, the indirect impact is expected to be decreases in VMT, and thus emissions, occurring elsewhere in the region.

Cumulative Impacts: The air quality analysis for the 11th Street Bridges project considers the long-term cumulative effects of air pollutant emissions from all traffic forecasted to operate within the project area. Average daily traffic on some roadways is expected to increase between 2004 and 2030 due to projected growth; however, emission rates are also expected to be lower in the future years than those in 2004 due to predicted trends and continued improvements towards cleaner operating vehicles for CO, $PM_{2.5}$, and ozone, as shown in regional analyses conducted by MWCOG (MCOG, 2005a).

During the construction phase, several other projects may be under construction near the project area, including construction of the new baseball stadium, rebuilding of the Arthur Capper/Carrollsburg Development, completion of "The Yards," and several other projects that are described in the *Anacostia Waterfront Transportation Master Plan* (DDOT, 2005). Regional modeling performed for the CLRP and TIP conformity analyses, which includes these major regional projects, indicates that the 2030 transportation emissions are anticipated to be lower than the rates necessary to maintain compliance with the NAAQS.

If construction detours and material haul routes are not well coordinated, these projects could have an adverse cumulative effect on traffic congestion and associated air pollutant emissions. If other construction projects are within the immediate vicinity (less than approximately 1,000 feet) of the 11th Street Bridges construction areas, the cumulative concentration of dust and other construction emissions could increase near those activities. These emissions would be limited to the construction phase of these projects only.

7.5.5 Mitigation Measures

Long-term Mitigation

Because the air quality analysis indicates that no exceedances of the NAAQS are anticipated, no adverse air quality impacts are expected to result from any of the alternatives and no mitigation measures would be required.

Any transportation demand control measures that reduce traffic volumes within the study area would reduce traffic-related air pollutant emissions. These measures might include enhanced shared ride services (for example car-pool, van-pool, commuter bus, and express bus).

Mitigation During Construction

Construction impacts could be reduced by incorporating mitigation measures into the construction specifications for the project. The following measures will be employed to reduce potential impacts to air quality:

Long-term emissions associated with the reconstruction of the 11th Street Bridges are expected to be within TIP emission budgets and no exceedances of the NAAQS are anticipated. No mitigation measures would be required. Construction impacts could be reduced by incorporating mitigation measures into the construction specifications for the project.

- Developing a detailed construction air pollutant emission control plan, possibly supported by particulate monitoring, to substantially reduce construction-phase pollutant emissions by specifying project-specific techniques to be adhered to by the contractor.
- Spraying exposed soil with water or other dust suppressants to prevent visible dust emissions, particularly during demolition activities by mechanical or explosive methods.
- Covering dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris.
- Covering all trucks during transport of fill materials or soil, wetting materials in trucks, or providing adequate freeboard (space from the top of the material to the top of the truck) to minimize dust emissions during transportation. Covering loads of hot asphalt to minimize odors.
- Providing wheel washers to remove dirt that vehicles would otherwise carry offsite to decrease deposition of particulate matter on area roadways.
- Removing dirt from public roads, sidewalks, and bicycle and pedestrian paths to reduce windblown dust on area roadways.
- Routing and scheduling construction trucks to minimize disruption or delays to traffic during peak travel times to reduce potential air quality impacts caused by congestion.
- Routing construction trucks away from residential and business areas to minimize annoyance from dust.
- Delivering/removing materials by barge to reduce traffic congestion and localized pollution from construction trucks.

- Graveling or paving haul roads to reduce windblown dust and dirt being deposited on local roads.
- Requiring the use of low or ultra-low sulfur fuels in construction equipment to reduce sulfur emissions.
- Locating construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential impacts to other resources.
- Planting vegetative cover on graded areas that would be left vacant for more than one season to reduce windblown particulates in the area.
- Cleaning spills of transported material on public roads by frequently using a street-sweeper machine.
- Coordinating (by lead agencies) of construction activities with other projects in local proximity to reduce the cumulative effects of concurrent construction projects.
- Minimizing emissions by assuring proper equipment operation:
  - Turning off the engine of construction vehicles if they are left idling for more than 15 minutes.
  - Requiring appropriate emission-control devices (catalytic converters or particulate traps) on all construction equipment powered by gasoline or diesel fuel to reduce CO, NO_X, and particulate emissions in vehicular exhaust.
  - Using relatively new, well-maintained equipment to reduce CO and NO_X emissions.

7.6 Noise Impacts

Highway noise levels were predicted for the five build alternatives, the existing (2005) conditions, and the No-Build Alternative using the FHWA Traffic Noise Model, Version 2.5 (TNM). TNM is based on reference energy emission levels for automobiles, medium trucks (2 axles), heavy trucks (3 or more axles), buses, and motorcycles. In this model, vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site are taken into account. TNM was developed to predict noise levels for both constant-flow and interrupted-flow traffic conditions. The model enables the user to account for the effects of different pavement types, graded roadways, and attenuation over/through rows of buildings and dense vegetation. TNM also enables the user to input terrain elevation lines to account for shielding effects of natural terrain. In addition, various intervening ground types can be specified, with different sound absorption qualities. The ground types available for use include soft and hard soil, snow-covered ground, water, and pavement. In this analysis, FHWA rules and restrictions regarding the use of weather, ground type, pavement type, and vegetation parameters were adhered to.

The No-Build and build alternatives all have noise receiver locations that are predicted to exceed FHWA established threshold levels.

FHWA has established Noise Abatement Criteria (NAC) that provide guidance on threshold levels of noise for determining when noise impacts are considered to occur and when consideration must be given to noise abatement. Exhibit 7-21 shows the NAC by interior and exterior values by land use activity category.

EXHIBIT 7-21
FHWA Noise Abatement Criteria
These criteria are presented in hourly A-weighted sound levels – decibel (dBA).

Activity Category	L_{eq}(h)*	L_{10}(h)*	Description of Activity Category
A	57 (Exterior)	60 (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 purpose.
B	67 (Exterior)	70 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	75 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	--	Undeveloped lands.
E	52 (Interior)	55 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

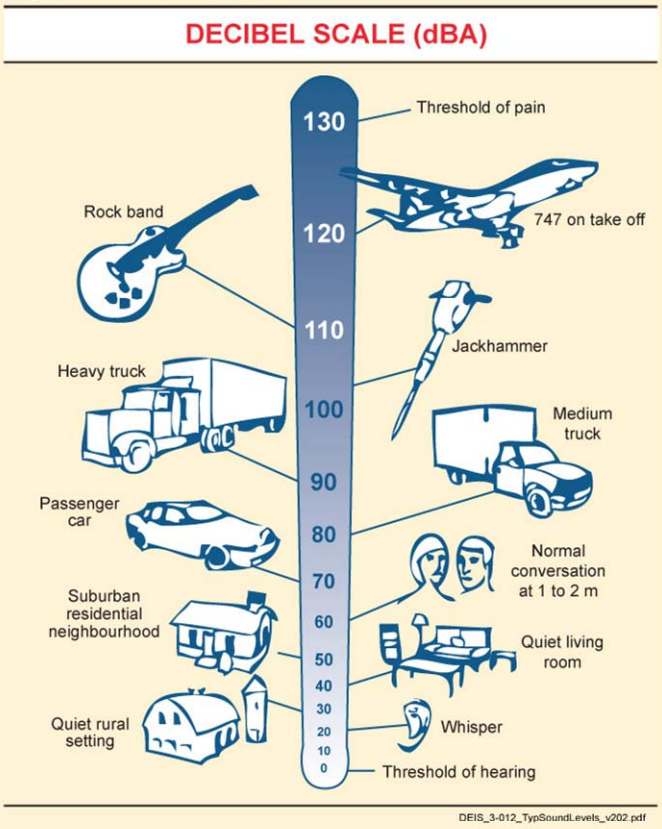
Note:
These sound levels are only to be used to evaluate traffic noise impacts. These are the absolute levels where abatement must be considered. Noise abatement should be designed to achieve a substantial noise reduction - not the NAC. In developing the NAC contained in the noise regulations, FHWA attempted to strike a balance between that which is most desirable and that which is feasible. Factors such as technical feasibility, the unique characteristics of highway-generated noise, cost, overall public interest, and other agency objectives were important elements in the process of setting a standard. Establishing values for the NAC was approached by attempting to balance the control of future increases in highway noise levels and the economic, physical, and aesthetic considerations related to noise abatement measures.

*L_{eq}(h) = hourly equivalent sound level; L_{10}(h) = sound level exceeded 10 percent of the time

Exhibit 7-22 illustrates typical transportation sounds levels and everyday activities. A traffic noise impact is considered to occur if noise levels approach or exceed the NAC, or if substantial increases over the existing condition occur (an increase of 10 dBA or more). Activity Category B is appropriate for this project. Consequently, a noise impact is considered to occur if outdoor noise levels exceed 66 dBA.

Currently, four of the six noise study areas discussed in Section 6.5.2 have receivers that exceed the 66 dBA threshold. In 2030, under the No-Build Alternative, five of the six noise study areas would have receivers that exceed the threshold. Under all of the build alternatives, in 2030, all noise study areas would have one or more receivers that are predicted to exceed the threshold, except Build Alternative I, where five of six noise study areas would have a receiver that exceeds the threshold.

EXHIBIT 7-22
Typical Sound Levels
Comparison of transportation sound levels to everyday activities.



The following data assumptions were used in the noise analysis:

- To depict the peak noise hour, LOS E traffic volumes and speed projections were used. These volumes were developed independently for each noise study area.
- The peak traffic hour predictions forecast a LOS F, with lower speeds that would under-predict the peak noise hour.

The LOS E traffic volumes and speed projections developed for each noise study area for Build Alternative II were also used to analyze the Preferred Alternative.

A summary of the volume and speed inputs is contained in Appendix C, Noise and Vibration.

The engineering data available were used to develop the three-dimensional geometry for the TNM model. These data, especially the roadway profile elevations, are preliminary. Each alternative has been developed to the same level, making the noise-level predictions comparable. Thirty-eight receiver locations were used to evaluate traffic noise levels within the six noise study areas established for the project. The locations of the receivers are shown on Exhibit 7-23. The receiver locations provide coverage of the sensitive receivers within 500 feet of the nearest highway.

Existing, future build, and future No-Build Alternative noise levels for the receiver locations are detailed in Exhibit 7-24.

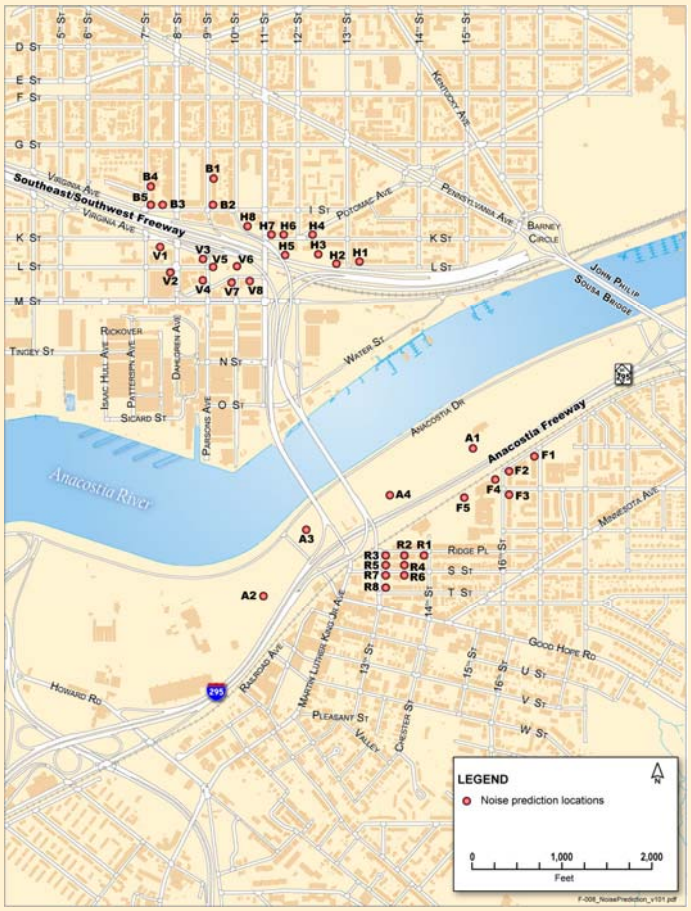
7.6.1 Impacts of the No-Build Alternative

Exhibit 7-24 shows that the NAC are already exceeded by at least one receiver in four of the six noise study areas. Only Anacostia Park and Virginia Avenue Park do not have receivers that exceed the threshold. The exhibit further shows that noise levels would increase at every receiver location over the next 25 years and that by 2030, the NAC will be exceeded in five of the six noise study areas in a no-build condition. Under the No-Build Alternative, an additional seven receivers will exceed the NAC by 2030.

7.6.2 Impacts of the Build Alternatives

The build alternatives will move some traffic closer to the existing receivers. This will result in traffic noise level increases, in many cases, compared to the No-Build Alternative. The traffic noise levels associated with the build alternatives would be up to 10 dBA higher than the No-Build Alternative. Averaged across all receivers and measurements, the difference between the No-Build Alternative and the build alternatives is 2.3 dBA for the Preferred Alternative, 1.6 dBA for Build Alternative I, 3.5 dBA for Build Alternative II, 3.5 dBA for Build Alternative III and 4.7 dBA for Build Alternative IV. Providing an average value across all receivers by alternative is useful in providing a perspective on the general noise increase or decrease, but one must still look at the values of the individual receptor locations.

EXHIBIT 7-23
Noise Receiver Locations
Locations are distributed throughout the residential and park portions of the project area.



Among the build alternatives, the traffic noise differences are subtle. Among the most important differences are the following:

- Within the Ridge Place/13th Street Noise Study Area (for receivers most influenced by Anacostia Freeway traffic – R1, R2, R3, R4, and R6), traffic noise levels under Build Alternative IV would be higher than under the Preferred Alternative or Build Alternatives I – III. The difference is roughly 3 dBA and is the result of the northbound Anacostia Freeway on-ramp coming from the Officer Welsh bridge instead of the 11th Street Bridge. The increases associated with Build Alternative IV using the Officer Welsh bridge also affect some of the Fairlawn/16th Street Noise Study Area.
- For Ridge Place/13th Street Noise Study Area receivers along 13th Street (R5, R7, and R8), the removal of the ramp bridges to the 11th Street Bridge would be a benefit. This occurs in all build alternatives, except Build Alternative I. For some of these receivers, noise levels would decrease, in comparison to the No-Build Alternative.

- Within the Anacostia Park Noise Study Area, the build alternatives have slightly different configurations. The net effect would be minimal, but there would be identifiable differences. These include the addition of a new local roadway in Build Alternative IV, resulting in higher traffic noise levels for the receivers north of the bridges. Build Alternative IV also would add an additional local lane adjacent to I-295 southbound, resulting in higher noise levels south of the bridges. Finally, while the other build alternatives remove highway traffic from the Officer Welsh bridge, Build Alternative IV maintains highway traffic on it. Consequently, the area immediately south of the Officer Welsh bridge would experience higher traffic noise levels than the other alternatives.
- Within the Virginia Avenue Park Noise Study Area, the configuration of the Southeast/ Southwest Freeway through the interchange varies. Build Alternatives III and IV would encroach farthest into the park, resulting in a discernible difference between Build Alternatives III and IV and Build Alternatives I and II. The Preferred Alternative is generally consistent with Build Alternative I noise levels in the Virginia Avenue Park Noise Study Area.

All noise study areas would experience traffic noise levels that exceed the 66 dBA threshold for noise abatement to be considered. Because of the similarity of impacts, abatement would need to be evaluated on the preferred alternative when more detailed engineering information is available. Section 7.6.5 contains a further discussion on noise mitigation.

Noise receivers were modeled at 38 locations in the study area. By 2030, the 66 dBA threshold level will be exceeded at a minimum of 16 of these locations:

- Under the 2005 existing conditions scenario, traffic noise levels at 10 of the 38 noise receivers equal or exceed 66 dBA.
- Under the No-Build Alternative (2030), traffic noise levels at 16 of the 38 noise receivers would equal or exceed 66 dBA.
- Under the build scenarios:
  - Preferred Alternative: traffic noise levels at 23 of the 38 noise receivers would equal or exceed 66 dBA.
  - Build Alternative I: traffic noise levels at 23 of the 38 noise receivers would equal or exceed 66 dBA.
  - Build Alternative II: traffic noise levels at 28 of the 38 noise receivers would equal or exceed 66 dBA.
  - Build Alternative III: traffic noise levels at 27 of the 38 noise receivers would equal or exceed 66 dBA.
  - Build Alternative IV: traffic noise levels at 32 of the 38 noise receivers would approach or exceed 66 dBA.

The impacts of the Preferred Alternative and Build Alternatives I-IV on the six noise study areas are summarized in the following paragraphs.

EXHIBIT 7-24
Existing and Predicted Noise Levels
Highlighted cells are forecast to approach or exceed the Noise Abatement Criteria.

Noise Study Area	Existing (2005) (dBA)		No-Build Alternative (2030) (bDA)		Build Alternative I (2030) (dBA)		Build Alternative II (2030) (dBA)		Build Alternative III (2030) (dBA)		Build Alternative IV (2030) (dBA)		Preferred Alternative (2030) (dBA)	
	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.	a.m.	p.m.
Fairlawn/16th Street														
Receiver F1	67.8	67.8	69.2	68.3	69.4	69.3	73.6	73.6	73.6	73.6	73.7	73.1	73.6	73.6
Receiver F2	68.5	68.5	69.8	69.0	70.2	70.5	73.9	74.0	73.9	74.0	74.3	74.1	73.9	74.0
Receiver F3	66.5	66.5	67.9	67.0	68.2	68.3	72.4	72.5	72.4	72.5	73.0	72.8	72.4	72.5
Receiver F4	67.9	67.9	69.2	68.5	69.7	70.0	72.9	73.1	72.9	73.1	73.8	73.7	72.9	73.1
Receiver F5	70.0	70.0	71.4	70.4	74.1	74.7	71.9	72.6	71.9	72.6	76.3	77.2	71.9	72.5
Ridge Place/13th Street														
Receiver R1	57.3	56.4	58.8	57.2	59.6	59.3	61.6	61.5	61.6	61.5	64.2	64.8	61.4	61.4
Receiver R2	57.8	56.5	59.4	57.5	60.5	59.8	62.4	62.3	62.4	62.3	65.5	66.2	62.3	62.2
Receiver R3	63.7	60.5	65.3	62.0	68.8	67.0	67.0	67.2	67.0	67.2	72.0	72.6	66.9	67.1
Receiver R4	58.2	56.4	59.7	57.7	59.9	58.4	61.4	61.5	61.4	61.5	64.0	64.8	61.3	61.3
Receiver R5	65.5	60.8	67.1	62.7	68.7	64.6	66.1	66.3	66.1	66.3	69.9	70.5	66.0	66.3
Receiver R6	57.3	54.6	58.8	55.5	59.0	55.8	60.0	60.1	60.0	60.1	62.5	63.3	59.9	60.0
Receiver R7	67.3	62.1	68.8	63.6	68.8	62.9	65.5	65.7	65.5	65.7	68.5	69.2	65.4	65.6
Receiver R8	71.0	65.7	72.7	66.1	71.0	63.5	65.0	65.1	65.0	65.1	67.6	68.3	64.9	65.0
Anacostia Park														
Receiver A1	63.7	63.5	65.1	63.8	65.7	65.7	68.2	67.3	68.2	67.3	71.8	72.2	69.0	67.3
Receiver A2	62.3	62.1	63.7	62.8	63.7	63.7	66.0	65.9	66.0	65.9	68.1	69.1	65.1	65.8
Receiver A3	59.0	61.6	62.4	63.1	58.6	59.3	60.6	60.9	60.6	60.9	68.4	70.8	60.3	60.6
Receiver A4	62.3	61.9	63.8	62.4	65.4	64.9	67.4	67.2	67.4	67.2	71.7	72.2	67.2	67.0
Virginia Avenue Park														
Receiver V1	61.9	65.1	65.5	66.0	65.6	66.2	67.2	68.7	67.7	67.8	67.7	68.4	65.6	66.2
Receiver V2	55.7	58.3	58.3	58.4	59.2	59.5	62.2	63.5	62.5	62.9	63.0	64.0	59.1	59.4
Receiver V3	59.6	63.0	63.0	63.5	66.5	67.2	68.4	69.8	67.8	68.6	68.4	70.0	69.4	67.1
Receiver V4	56.0	58.6	59.1	59.4	62.2	62.6	65.1	66.1	64.3	64.8	65.1	66.8	62.1	62.5
Receiver V5	59.8	63.1	63.2	63.7	66.4	67.0	69.1	70.4	68.8	69.4	69.0	70.6	66.8	66.9
Receiver V6	61.4	65.2	65.6	66.4	73.3	74.0	72.1	73.2	72.3	73.9	74.1	75.4	73.2	74.0
Receiver V7	58.6	61.6	62.2	62.8	67.2	67.6	68.3	69.1	68.2	69.0	68.1	69.4	67.1	67.5
Receiver V8	59.5	62.9	63.7	64.3	69.9	70.3	70.3	70.9	69.9	70.8	69.0	70.1	69.9	70.2
Marine Barracks														
Receiver B1	58.1	58.2	59.7	59.3	60.8	61.0	63.6	63.3	63.7	63.5	63.2	63.1	60.8	61.0
Receiver B2	64.5	64.1	65.4	64.7	67.4	67.3	70.8	70.4	69.9	69.4	69.3	69.2	67.3	67.2
Receiver B3	65.4	65.0	66.3	65.6	67.4	67.0	71.2	70.8	69.9	69.5	69.2	69.1	67.3	66.9
Receiver B4	64.2	64.2	65.3	64.8	66.2	66.0	69.5	69.2	69.2	69.1	69.2	69.0	66.2	66.0
Receiver B5	67.0	66.5	67.8	67.2	68.2	67.8	71.4	70.9	69.8	69.4	69.3	69.1	68.2	67.8
Hopkins/K Street Triangle Park														
Receiver H1	62.9	63.6	70.5	65.0	63.8	64.3	67.9	67.2	69.3	69.4	66.9	69.5	63.7	64.2
Receiver H2	62.9	63.7	70.7	64.8	63.2	64.3	66.0	66.5	68.3	68.3	64.9	68.4	63.1	64.2
Receiver H3	62.0	62.3	66.4	63.4	63.8	64.7	68.5	66.7	69.2	69.5	64.8	66.8	63.8	64.6
Receiver H4	55.5	55.8	58.3	56.8	57.7	58.9	60.0	59.8	59.1	59.7	58.1	58.9	57.6	56.9
Receiver H5	66.0	66.1	68.4	67.4	68.4	68.4	70.8	70.8	71.9	72.3	67.3	68.5	68.3	68.3
Receiver H6	62.9	62.9	65.1	64.0	65.6	67.1	67.7	67.7	69.2	69.8	66.4	67.1	65.5	67.0
Receiver H7	62.9	62.6	64.6	63.4	69.7	70.3	70.6	70.5	70.7	71.2	71.1	70.7	69.7	70.3
Receiver H8	60.4	60.4	62.4	61.1	70.5	71.9	71.9	71.6	67.3	68.9	70.0	69.4	70.4	71.9

Fairlawn/16th Street Noise Study Area

The Fairlawn/16th Street Noise Study Area is located at the intersection of Fairlawn Avenue and 16th Street and abuts the Anacostia Freeway. Receivers F1–F5 represent the land uses in this neighborhood (see Exhibit 7-23). All build alternatives would add ramps connecting the Anacostia Freeway to the 11th Street Bridges. The addition of the ramp from the 11th Street Bridge to the Anacostia Freeway (northbound) would result in travel lanes 20 to 50 feet closer to the Fairlawn neighborhood. The new roadways would be closest to the neighborhood in the vicinity of the Anacostia Senior High School. The new ramp also would increase the total number of vehicles passing the Fairlawn neighborhood. The increase in traffic would essentially be the same for all build alternatives.

Because of the similarities among the Preferred Alternative and Build Alternatives II–IV, similar traffic noise impacts are expected (the Preferred Alternative and Build Alternatives II and III would be identical on this side of the river). In general, the maximum traffic noise levels associated with build alternatives would be roughly 5 to 6 dBA higher than the No-Build Alternative. Under Build Alternative I, there would be fewer lanes (less hard surface), which would allow the encroachments to be minimized. This would result in lower traffic noise increases for Build Alternative I than for the other build alternatives. One interesting anomaly is where the new on-ramps merge with the Anacostia Freeway. Some of the southernmost receivers would receive some shielding. This would result in receiver F5 having noticeably lower increases (under Build Alternatives II and III) than the other modeled receivers.

Exhibit 7-25 summarizes (averages), for the Fairlawn area, the noise data previously detailed in Exhibit 7-24. Averages of TNM results provide an overview of the project and alternative effects that can be lost in the detailed data.

All of the modeled receivers in the Fairlawn/16th Street Noise Study Area experience traffic noise levels that approach or exceed the NAC. This applies to all conditions examined (existing-2005, No-Build, and all build alternatives).

EXHIBIT 7-25
2030 Noise Levels for Fairlawn/16th Street
Average noise levels in 2030 are expected to increase for the build and No-Build conditions.

Fairlawn/16th Street Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	68.1	69.1	70.4	73.1	73.1	74.2	73.0
Increase over 2005	--	1.0	2.3	5.0	5.0	6.1	4.9
Increase over No-Build	--	--	1.3	4.0	4.0	5.1	3.9

Ridge Place/13th Street Noise Study Area

The Ridge Place/13th Street Noise Study Area is located in Anacostia. The primary impacts to the noise environment would be the addition of on-ramps to the Anacostia Freeway. The proposed ramps would be similarly located for the Preferred Alternative and Build Alternatives I, II, and III, and would be approximately 320 feet from the nearest Ridge Place receiver. With Build Alternative IV, the proposed ramp to the Anacostia Freeway (northbound) is different than the other alternatives in that it would come from the downriver bridge, not the upriver bridge. It would be approximately 190 feet from the nearest Ridge Place receiver.

One element that affects the noise environment in this area is the fate of 13th Street. Currently, 13th Street is the on-ramp to the 11th Street Bridge. Under the Preferred Alternative and Build Alternatives II–IV the 13th Street on-ramps would be removed, benefiting the receivers in this area. Build Alternative I would maintain, but reconfigure, the 13th Street ramps. The receivers adjacent to 13th Street (R5, R7 and R8) should experience traffic noise reductions if the ramp is removed. The reductions depend on the receiver and alternative.

For the balance of the receivers (R1, R2, R3, R4 and R6), traffic noise levels would fluctuate based on how the alternatives align the Anacostia Freeway (northbound) on-ramp. For the Preferred Alternative and Build Alternatives I–III, the maximum traffic noise levels are expected to be about 4 dBA higher than the No-Build Alternative. For Build Alternative IV, the maximum traffic noise levels are expected to be up to 9 dBA higher than the No-Build Alternative.

Under all scenarios (existing-2005, No-Build, and all build alternatives), there will be receivers that experience traffic noise levels above the NAC.

As depicted in Exhibit 7-26, averaging the individual receiver results shows Build Alternative IV being more than 3 dBA higher than any other alternative. For reference, 3 dBA is considered the threshold for humans to be able to distinguish a difference in sound levels.

The build alternatives would increase noise levels relative to the No-Build Alternative. In general, the maximum difference among the build alternatives is about 4 dBA. For reference, 3 dBA is the threshold for humans to be able to distinguish a difference in sound level.

EXHIBIT 7-26
2030 Noise Levels for Ridge Place/13th Street
Average noise levels in 2030 are expected to increase for the build and No-Build conditions.

Ridge Place/13th Street Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	60.7	62.1	63.0	63.7	63.7	67.1	63.6
Increase over 2005	--	1.4	2.3	3.0	3.0	6.4	2.9
Increase over No-Build	--	--	0.9	1.6	1.6	5.0	1.5

Anacostia Park Noise Study Area

The Anacostia Park Noise Study Area is located on the east side of the Anacostia River between the Anacostia Freeway and Anacostia Drive. The proposed improvements in this area include adding a ramp from the Anacostia Freeway (southbound) to the 11th Street Bridge, modifying the existing ramp from the 11th Street Bridges to I-295 (southbound), and modifying the local roadway network in Anacostia. Four receivers were used to model conditions in the park. Receiver A1 is located near the Anacostia Aquatic Center, the northernmost receiver. Receiver A2 is the southernmost receiver, adjacent to the merge between the bridge ramps and I-295. Receiver A3 is located immediately south of the Officer Welsh bridge. Receiver A4 is located immediately north of the 11th Street Bridge.

The footprints of the ramps from the Anacostia Freeway to the 11th Street Bridge are similar and receiver A1 would experience higher traffic noise levels under the build alternatives than under the No-Build Alternative. Build Alternative I would have the smallest footprint and the least amount of new pavement; consequently, it would result in the lowest traffic noise increases (maximum increase: 2 dBA). The Preferred Alternative and Build Alternatives II and III (which are identical in this area) would be located slightly closer to the Anacostia Aquatic Center and encroach slightly farther into the park. These differences would result in increases in the traffic noise level (versus the No-Build Alternative) of up to 4 dBA. Build Alternative IV would have the highest traffic noise increases over 2005 levels (up to about 8 dBA), primarily because of the addition of new local roads into the park.

All of the southbound I-295 ramp configurations would increase encroachment into Anacostia Park, with the largest encroachment (and traffic noise increases) caused by Build Alternative IV. This is the only build alternative that would not remove highway traffic from the Officer Welsh bridge. Consequently, at receiver A2, the maximum traffic noise increase for Alternative IV would be up to 6 dBA. The other build alternatives would also have traffic noise increases.

The park area immediately downstream (south) of the bridges would also be affected by the reconfiguration of the ramps to I-295. Receiver A3 is intended to measure the traffic noise changes associated with these aspects of the build alternatives. Under the Preferred Alternative and Build Alternatives I–III, the traffic noise levels downstream of the bridges (A3), are expected to be reduced because the Officer Welsh bridge would be used for only local traffic. The reductions are expected to be up to 4 dBA. Build Alternative IV would continue to use the Officer Welsh bridge for both highway and local traffic, resulting in a traffic noise impact (approaching/exceeding the NAC) at receiver A3.

The park area immediately upstream (north) of the bridges would be affected by the construction of new ramps connecting southbound Anacostia Freeway to the 11th Street Bridge. Receiver A4 is intended to measure the traffic noise changes associated with these aspects of the build alternatives. All build alternatives would increase traffic noise levels. The highest increases would come from Build Alternative IV. It creates a new local roadway into the park and as a result is predicted to result in traffic noise increases of up to 10 dBA.

Build Alternative I would be the only build alternative to avoid traffic noise levels that approach or exceed the NAC (for all receivers).

Summary (average) noise data for Anacostia Park are presented in Exhibit 7-27. These are based on the individual receivers previously shown in Exhibit 7-24. This averaging shows three important trends: 1) Build Alternative I would have the lowest traffic noise impact to the park, 2) the Preferred Alternative and Build Alternatives II and III would be the same regarding traffic noise impacts, and 3) Build Alternative IV, which has the largest presence in Anacostia Park, would have the highest noise impact.

EXHIBIT 7-27
Noise Levels for Anacostia Park
Average noise levels in 2030 are expected to increase for the build and No-Build conditions.

Anacostia Park Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	62.1	63.4	63.4	65.4	65.4	70.5	65.3
Increase over 2005	--	1.3	1.3	3.3	3.3	8.4	3.2
Increase over No-Build	--	--	0.0	2.0	2.0	7.1	1.9

Virginia Avenue Park Noise Study Area

The Virginia Avenue Park Noise Study Area is located between the Southeast/Southwest Freeway and M Street. The impacts to this noise study area are the result of work needed to the portions of the Southeast/Southwest Freeway through the interchange area (northbound). The Preferred Alternative and Build Alternative I would do this through a single two-lane roadway; Build Alternative II would make the connection by installing a traffic circle. Build Alternatives III and IV would use a pair of two-lane roadways—one for local traffic, one for through traffic. This noise study area would also be affected by the reconstruction of the highway ramps. In comparison to the No-Build Alternative, the build alternatives would increase the predicted traffic noise levels.

The magnitude of the increase (versus the 2030 No-Build Alternative) varies by receiver location (see Exhibit 7-24). Receivers V5 and V6 are located in Virginia Avenue Park and would be the closest to the reconstructed facility. The predicted traffic noise levels at Receiver V6 are forecast to be up to 9 dBA higher than they would be under the future no-build condition.

Among the build alternatives, the differences in the traffic noise levels are mostly associated with how the alternatives would reconfigure the local roadway network. As expected, the dual roadway configurations of Build Alternatives III and IV would have the highest predicted noise levels (up to 2 dBA higher than the other alternatives). In this area, Build Alternative I and the Preferred Alternative have the lowest average predicted noise levels of

any build alternative. Under all scenarios (existing-2005, No-Build and all build alternatives), there would be receivers that experience traffic noise levels above the NAC.

Exhibit 7-28 provides summary data on noise effects in the Virginia Avenue Park Noise Study Area. These data on the average forecast levels show the overall traffic noise impacts associated with the alternatives.

EXHIBIT 7-28
Noise Levels for Virginia Avenue Park
Average noise levels in 2030 for are expected to increase for the build and No-Build conditions.

Virginia Avenue Park Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	60.6	62.8	66.5	68.4	68.0	68.7	66.5
Increase over 2005	--	2.2	5.9	7.8	7.4	8.1	5.9
Increase over No-Build	--	--	3.7	5.6	5.2	5.9	3.7

Marine Barracks Noise Study Area

The Marine Barracks Noise Study Area is located north of the Southeast/Southwest Freeway and west of 11th Street. The build alternatives would maintain the existing footprint of the current project (no encroachments into the neighborhood). Currently, the lanes closest to the receivers are the ramps from the 11th Street Bridge (I-295 northbound to Southeast/ Southwest Freeway southbound). Under the build alternatives, the lanes closest to the receivers would be the connectors for the Southeast/Southwest Freeway through the interchange (southbound).

Build Alternative I is predicted to have the lowest volume of traffic using this pathway; it would consequently have the lowest traffic noise increases. However, all of the front row receivers would approach/exceed the NAC for all build alternatives. The maximum traffic noise increase is expected to be roughly 5 dBA. Under all scenarios (existing-2005, No-Build, and all build alternatives), there would be receivers that experience traffic noise levels above the NAC.

Exhibit 7-29 provides summary data on noise effects in the Marine Barracks Noise Study Area. The differences among the four build alternatives are relatively modest. Using these averages, the traffic noise levels associated with the Preferred Alternative or Build Alternative I would be discernibly lower than the other build alternatives.

EXHIBIT 7-29
Noise Levels for the Marine Barracks
Average noise levels in 2030 are expected to increase for the build and No-Build conditions.

Marine Barracks Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	63.7	64.6	65.9	69.1	68.3	68.0	65.9
Increase over 2005	--	0.9	2.2	5.4	4.6	4.3	2.2
Increase over No-Build	--	--	1.3	4.5	3.7	3.4	1.3

Hopkins Apartments Complex /K Street Triangle Park Noise Study Area

The Hopkins Apartments Complex/K Street Triangle Park Noise Study Area is located north of the Southeast/Southwest Freeway and generally east of 11th Street. DDOT is currently undertaking a separate project to remove the ramps from I-295 across the river to and from the Southeast Freeway Boulevard. The 11th Street Bridges project assumes the removal will be completed before the construction of a preferred alternative. In addition, all of the alternatives anticipate the relocation of Southeast Freeway Boulevard away from the Hopkins Apartments residential neighborhood and noise receivers.

Because of the variations associated with the routing of local traffic, the changes in traffic noise levels for individual receivers (Exhibit 7-24) vary more than for the other noise study areas. First, the No-Build Alternative has no connection to the local roadway system. This results in a situation where, under the no-build condition, the receivers adjacent to the through lanes (H1, H2, H3), approach/exceed the NAC, but the others do not. Under the build alternatives, these local movements would be available and would tend to increase traffic noise. On the other hand, the build alternatives tend to relocate the freeway away from the receivers. The different strategies used for the build alternatives would have different impacts. All front row receivers are expected to experience traffic noise levels that approach/exceed the NAC under Build Alternatives II–IV. Under Build Alternative I, the receivers adjacent to the through lanes (H1, H2, H3) would not exceed the NAC because of lower expected traffic volumes. Under Build Alternative I, the through movement would be discouraged; users have better alternatives, so the users tend to be local. The other build alternatives would have greater through-traffic components. Under all scenarios (existing-2005, No-Build Alternative, and all build alternatives), there would be receivers that experience traffic noise levels above the NAC.

Exhibit 7-30 summarizes the noise data for the Hopkins/K Street Noise Study Area. These data reaffirm the conclusion that Build Alternative I would have the lowest overall traffic noise impact and Build Alternative III the highest.

EXHIBIT 7-30
Noise Levels for Hopkins/K Street Triangle Park
Average noise levels in 2030 are expected to increase for the build and No-Build conditions.

Hopkins/K Street Triangle Park Noise Study Area	Existing (2005) (dBA)	No-Build Alternative (2030) (dBA)	Build Alternative I (2030) (dBA)	Build Alternative II (2030) (dBA)	Build Alternative III (2030) (dBA)	Build Alternative IV (2030) (dBA)	Preferred Alternative (2030) (dBA)
Average	62.1	64.5	65.8	67.8	68.4	66.8	65.7
Increase over 2005	--	2.4	3.7	5.7	6.3	4.7	3.6
Increase over No-Build	--	--	1.3	3.3	3.9	2.3	1.2

Overall Summary

Based on the field measurements reported in Exhibit 7-24, the noise study areas currently experience relatively high-traffic noise levels. Under the existing 2005 conditions, at least one receptor in four of the six noise study areas had modeled results that exceeded the NAC. Under the No-Build Alternative (2030), an additional seven receivers would exceed the NAC. The build alternatives would develop new traffic movements that would result in traffic noise increases up to 10 dBA higher than the No-Build Alternative. Averaged across all receivers and measurements, the noise-level differences between the No-Build Alternative and the build alternatives are as follows:

- 2.3 for the Preferred Alternative
- 1.6 dBA for Build Alternative I
- 3.5 dBA for Build Alternative II
- 3.5 dBA for Build Alternative III
- 4.7 dBA for Build Alternative IV

7.6.3 Temporary Construction-Related Impacts

District regulations limit noise from construction sites to 80 dBA at 25 feet from the edge of the project (pile driving and explosives are subject to separate rules) between 7:00 AM and 7:00 PM. Nighttime allowable levels in residential or waterfront areas are 55 dBA; in commercial or light manufacturing areas, 60 dBA; and in industrial zones, 65 dBA. Noise dissipates rapidly with distance from the source so compliance with the District rules should minimize the impact of construction noise on nearby land uses and users.

In contrast to airborne noise, ground-borne vibration is not a phenomenon that most people experience every day. The background vibration level in residential areas is usually well below the threshold of perception for humans. Typical outdoor sources of perceptible ground-borne vibration include heavy construction equipment and steel-wheeled trains. Pile driving is one of the most common sources of vibration.

Compliance with the District rules will reduce the impact of construction noise on nearby land uses and users.

Temporary vibration impacts may occur in the local area during the construction period as a consequence of blasting, pile drivers, jackhammers, hoe rams, soil compactors, and other heavy construction equipment. Buildings respond to these vibrations with varying results ranging from imperceptible effects at the lowest levels to slight damage at the highest levels. Ground vibrations from construction activities rarely reach the levels that can damage structures, but can be in the noticeable range in buildings very close to a site. Impact pile drivers generally cause the highest vibration levels compared to other types of equipment.

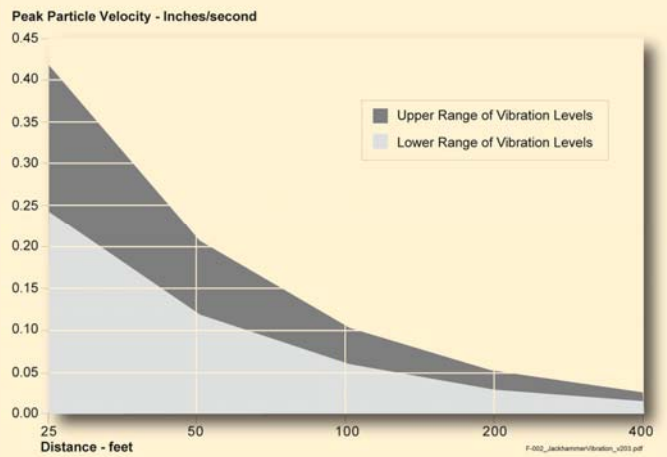
Because this is rarely an issue on highway projects, the standards for the control of vibration come from other disciplines. Based on criteria developed by the Acoustical Society of America, International Organization for Standardization (ISO), the Federal Transit Administration, and the U.S. Bureau of Mines, vibration criteria applicable for the 11th Street Bridges project were established.

Extensive studies conducted by the Bureau of Mines suggest that a peak vibration velocity below 2 inches per second avoids major structural damage of buildings. Vibrations for construction, such as that which will occur for the 11th Street Bridges, rarely exceed velocities of 0.5 to 1.0 inch/second.

The construction activities associated with each of the alternatives would be very similar. There is no good basis to distinguish amongst them relative to anticipated construction vibration. Additionally, vibrations of a magnitude sufficient to cause building damage (in excess of 0.5 inch/second) are not expected, except in very limited areas that would be close to construction and some distance from non-highway structures. The construction activities that would result in the highest levels of ground vibration are the demolition of the existing structures and impact pile driving.

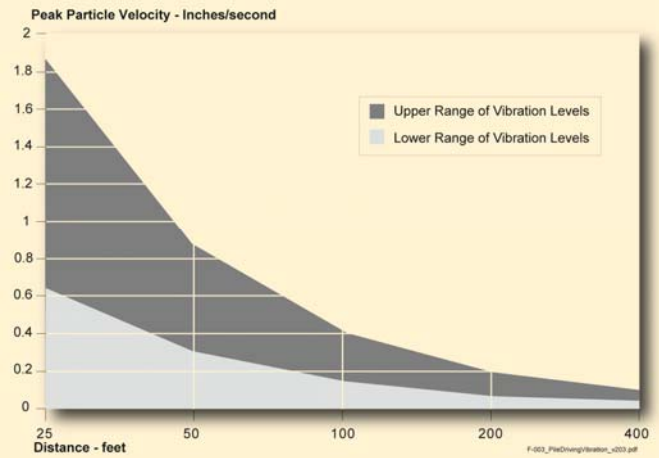
The demolition of the existing facility is expected to require the use of equipment such as saws, pulverizers, shears, splitters, jackhammers, and hoe rams. Typically, the use of jackhammers and hoe rams result in the highest levels of vibration during demolition activities. The expected ground vibration levels at 25 feet from the demolition activities is in the range of 0.24 to 0.42 inch/second (see Exhibit 7-31).

EXHIBIT 7-31
Hoe Ram and Jackhammer Vibration Levels
This depicts how vibration levels vary with the distance from the source.



Even at this close range, the building damage criterion of 2 inches/second would not be exceeded. However, even at a range of 400 feet, the typical jackhammer/hoe ram will produce vibrations in the range that may be detectable. This type of work can be

EXHIBIT 7-32
Impact Pile Driving Vibration Levels
This depicts how vibration levels vary with the distance from the source.



expected to occur throughout the project area intermittently during construction. Several neighborhoods lie within a 400-foot radius of potential demolition activities, including Anacostia, Fairlawn, Washington Navy Yard, and the Marine Barracks.

Impact pile driving typically has a much larger vibration impact. As shown in Exhibit 7-32, ground vibration levels at 25 feet are expected to be in the range of 0.60 to 1.9 inches/second). At a distance of 100 feet, these levels drop to the range of 0.18 to 0.41 inch/second. Pile driving immediately adjacent to buildings would exceed the damage criterion of 0.5 inch/second but vibration levels would be under the threshold within a very short distance.

Most of the buildings that are within 100 feet of structures are concentrated around the existing bridges, such as the ACBA buildings (which lie between the bridges), the city motor pool (immediately north of the 11th Street Bridge), and the adjacent office buildings (in the Navy Yard). Underground utilities in the area could be a concern for pile driving within 100 feet.

If pile driving is used in construction, usage would be restricted to the river-crossing areas and several hundred feet from any residential area. At a distance of 400 feet, a pile driver produces a noise level that some people may find annoying, but it does not produce damage to structures.

7.6.4 Indirect and Cumulative Impacts

No additional analysis is necessary to examine indirect and cumulative impacts because the noise analysis conducted for this Final EIS uses traffic volumes that include the future users attracted to the improved facility. Consequently, the noise levels predicted already incorporate anticipated indirect and cumulative traffic noise impacts.

7.6.5 Mitigation

All noise study areas will experience traffic noise levels of a magnitude sufficient to qualify as impacts. Noise abatement must be considered for projects that result in a traffic noise impact. Determining the feasibility and reasonableness of abatement measures, such as noise barriers, will be based on factors of technical feasibility,

All noise study areas experience traffic noise levels of a magnitude sufficient to qualify as impacts. Abatement will be evaluated when a preferred alternative is selected and will be subject to further public discussion and input.

any unique characteristics of the noise, cost, and overall public interest. Public input from the adjacent land users will be specifically sought prior to the commitment of any mitigation.

District noise abatement policy states that the reasonableness of abatement will be based on a range of factors, including:

- The noise barrier will cost no more than $40,000 per benefited residence
- A majority of affected residents want a noise barrier
- Most of the affected housing predates the initial highway construction
- The affected homes have been in place for at least 10 years
- Future traffic noise levels for build alternatives are at least 65 dBA
- Future noise levels for build alternatives are at least 5 dBA higher than existing noise levels

The data available in this Final EIS show that noise walls would be considered along the Anacostia Freeway from a point west of Anacostia High School to a point between 17th and 18th Streets, SE in the vicinity of Kramer Junior High School. All receptors in this area already exceed the NAC, and noise increases at four of the five receptors would be in the range of 5.0 to 6.0 dBA.

Noise abatement is unlikely to be warranted near the Ridge Place and 13th Street intersection. The NAC would be exceeded only at two receptors, with receptors on either side below the NAC. Receptor R5, one of the two that would exceed the NAC, shows AM and PM noise levels of 66.0 and 66.3, which is very close to the 66.0 NAC threshold. A barrier that would benefit only two receptors is unlikely to be cost-effective.

The stretch of freeway between M Street and 8th Street, SE is also an area where noise levels would exceed the NAC. In 2004, DDOT prepared the *Noise Barrier Constructability Study SE/SW Freeway* (Parsons, 2004). The study examined several locations common to the 11th Street Bridges EIS study area. At Hopkins Apartments, the study concluded that even a 16-foot-high barrier on the freeway structure would not result in a noise reduction sufficient to meet the District's minimum 5-dBA improvement goal. At 11th and K Streets, the study concluded that noise was primarily the result of surface streets and that no barriers would be feasible. The study recommended no barriers at the Marine Barracks because there are no outdoor use areas facing the freeway. The nearest outdoor use area is a small patio on the north side of the barracks. The study noted that a 12-foot-high barrier along the eastbound and southbound lanes would reduce noise levels 5 dBA or more to a 67 dBA maximum noise level in Virginia Avenue Park.

DDOT will reexamine noise issues once final design data that allow more accurate modeling of design and traffic are available and the effectiveness of potential barriers can be assessed. The final design geometry will be used in a new run of the TNM. Included will be more-accurate locations of travel lanes and elevations, as well as roadside treatments such as

berms. The results will show where walls might be effective and how high they would need to be. To ensure compliance with District noise regulations, DDOT will develop a noise control plan to deal with noise issues during construction. The plan will include detail on measurement locations, a monitoring plan, and complaint investigation and resolution procedures.

Only the Fairlawn neighborhood is expected to be eligible for noise walls. With the results of the new analysis, DDOT will prepare preliminary noise wall designs, including aesthetic treatments consistent with the Anacostia Waterfront Design Guidelines, and present the results at a neighborhood meeting where residents who would experience the noise or who would reside adjacent to the walls will be asked to express their opinion before any final decision is made. DDOT and FHWA will then decide whether to implement noise walls.

Mitigation of construction noise requires compliance with District standards. Both pile driving and explosives use can produce negative comments as a result of the unexpected nature of the disruption. Pile driving will not occur within 100 feet of any existing building and will generally be restricted to activities related to the provision of cofferdams in the river. DDOT should require the contractor to have an active outreach program to advise the community and businesses of schedules for any pile driving or explosives use.

7.7 Water Quality Impacts

The Anacostia River has a long history of contamination from industrial and urban activities and development throughout the watershed. Because of existing levels of contamination, the Anacostia River has been designated a high-priority region of concern within the Chesapeake Bay Region. Stormwater runoff from roadways and urban environments, which can carry a number of pollutants, is one of a number of sources of pollution to the Anacostia River. Stormwater entering the lower Anacostia is affected by numerous discharges of stormwater and several CSOs. Therefore, the immediate benefit to the river from treating the stormwater from the roadway may not be measurable. Treatment of stormwater is being taken as part of a watershed-wide effort to improve the quality of discharges into the Anacostia River and will add to the cumulative benefit of this effort. Water quality has been coordinated with the USACOE, NMFS, USFWSD, EPA, and DDOH. Appendix F contains copies of coordination letters.

7.7.1 Impacts of the No-Build Alternative

Stormwater runoff from the roadway that currently discharges to the river directly or through the storm sewer system would continue with the No-Build Alternative. The No-Build Alternative would not require any work in the river for the immediate future. Based on the current condition of the 11th Street Bridge piers, maintenance work for the foreseeable future would be minimal. The No-Build Alternative would eventually require some rehabilitation work on the superstructures of the existing bridges. Potential impacts of that activity to the water quality of the river may include minor discharge of rust, paint, or other debris into the river.

7.7.2 Impacts of the Build Alternatives

The build alternatives would add approximately 12 to 17 acres of impervious surface that will increase the amount of road runoff. However, each build alternative would include measures to collect stormwater from roadway and bridge surfaces and discharge it to the stormwater system or LID facilities. The use of best management practices at the time of design and construction will be incorporated. Further discussion of potential LID facilities is included in Section 7.7.5, Mitigation Measures.

7.7.3 Temporary Construction-Related Impacts

Temporary impacts to water quality and aquatic habitat can occur from erosion of soil from construction sites into waterways, where it forms sediment. Sedimentation can cause an increase in turbidity in the water as well as the siltation or burying of aquatic habitats with eroded soil.

Temporary impacts to the river during construction are expected to be minimal. Construction techniques are detailed in Section 5. During deconstruction, a form box would be attached to the pier foundations, sealed, and then dewatered. The water pumped from inside the form box will be surface water because the area only needs be dewatered to a depth of 4–5 feet below the normal river level. Existing piers would be removed to the appropriate point above the form box. Reconstruction would then occur with the river protected by the form box.

Impacts to the river during construction are expected to be confined to work at the existing pier locations.

Additional pilings will be needed on the upstream side of the upstream bridge. These pilings will be installed in-line with the existing piers and parallel to the shoreline. The affected river bottom will be 0.25 acre or less. Construction of the additional pilings will use either the drilled shaft or driven piling method of construction.

If the drilled shaft pilings are used, an open-ended caisson would be lowered into the river and sealed against the bottom. A shaft would then be drilled, with sediments within the shaft captured and removed to an appropriate offsite disposal location. A steel rebar "cage" would be inserted and tremie concrete (which cures under water) poured into the pipe. Dewatering would occur as the concrete fills the hole and forces the water out. If the water is the same or better quality than the river, direct discharge would cause no impact. If the water is of degraded quality, it will be pumped to an appropriate treatment facility before discharge. The pipe would be extracted as the concrete is poured in, up to a point just below the bottom of the river. A form would be used above the stream bottom to complete the piling to the necessary height.

If driven pilings are used, steel "H" pilings or pipe pilings would be driven into the river bottom, extending upwards to the mean high water elevation, and the concrete foundation formed on top of them. There would be no need to dredge or otherwise remove river sediment nor would there be a need for a cofferdam. This technique could result in sediments immediately adjacent to the driven pile being temporarily resuspended.

7.7.4 Indirect and Cumulative Effects

Indirect Impacts: The 11th Street Bridges would be located along the existing alignment and reuse existing piers as much as possible, although the piers will need to be expanded for at least one of the bridges. Given the conditions of the river—low substrate and depth diversity, a lack of submerged aquatic vegetation, and contaminated sediments—the sensitivity of the aquatic habitat to direct or indirect impacts of pier construction is low. These disturbances would be relatively minor and localized, because the piers will be constructed using techniques, such as form boxes, that will minimize the disturbance of sediments and the drift of re-suspended sediments downstream.

Cumulative Impacts: Any 11th Street Bridges impacts on water quality are small when considered in relation to the ongoing dredging program of the lower Anacostia by USACOE for contaminated sediment removal and other sediment restoration efforts by groups such as AWTA. Time-of-year restrictions on construction, as designated by the DDOH to protect spawning anadromous fish, will minimize indirect impacts to these fish from either project. The replacement structures would cause no greater impairment to the passage of migratory fish to upper watershed spawning sites than the existing bridges.

Implementing stormwater treatment methods for all projects should minimize the cumulative impacts to water quality, with potential for a net improvement. DDOT and NPS have committed to implementing LID methods to treat stormwater for their respective projects. The addition of these treatment methods, where none currently exist, should have a positive cumulative effect on the quality of stormwater runoff discharging to the river. Some of the area projects may also provide opportunities for separation of some stormwater from the combined sewer, meaning a proportionately lower volume of discharge from CSOs to the river.

7.7.5 Mitigation Measures

DDOT will comply with the DDOH Watershed Protection Division, Sediment and Storm Water Technical Services Branch, DC Water Quality Standards for Surface Water (21 DCMR Ch.11), DC Water Management Plan per the Water Pollution Control Act of 1984 (DC Law 5-188), and Section 402 of the Clean Water Act, also referred to as NPDES.

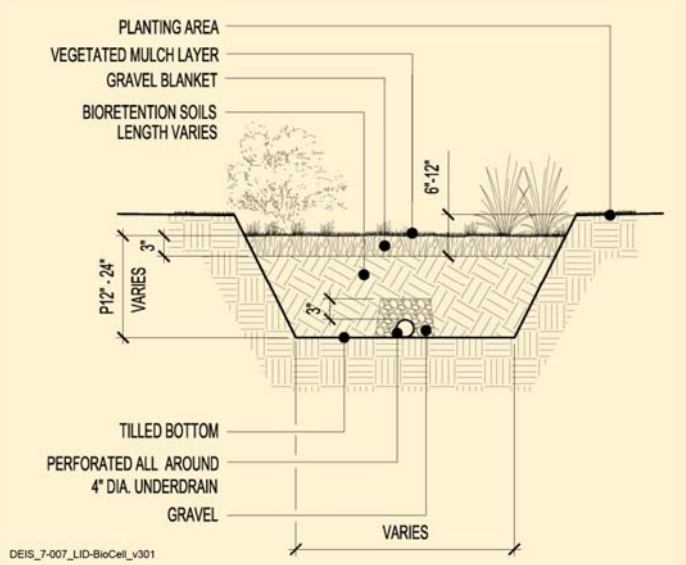
DDOT has made a commitment to treat the stormwater runoff from the roadway, to the extent possible, using LID techniques. These techniques, elaborated in the *Anacostia Waterfront Initiative Transportation Architecture Design Standards*, may include vegetated drainage swales; rain "gardens," which are vegetated holding ponds; and/or treatment wetlands. These techniques can reduce substantially the amount of metals, PAHs, and other contaminants borne in roadway runoff that is discharged into the river. The design and location of the best management techniques for this project will depend on the selected alternative. It is the intent to minimize the area of right-of-way acquisition for the project, so areas immediately adjacent to the roadway or open areas within the footprint will be the primary candidate locations for these treatment sites.

The practicality of specific LID technologies and locations within the project footprint will need to be determined during final design. In general, these technologies work best during small storm events where they provide incremental improvements to the quality of the receiving waters. Some of the principal technologies that hold promise for projects such as the 11th Street Bridges include bioretention, bioslopes, bioswales, vegetated filter strips, trees (both with and without tree box filters), and underground cisterns.

To the extent possible, low-impact development features and best management practices will be implemented to reduce direct road runoff to the Anacostia River.

Bioretention cells, as shown in Exhibit 7-33, are small-scale soil and plant-based devices that remove pollutants and control runoff volume and peak rates through a variety of physical, biological, and chemical treatment processes. They improve water quality for small, frequently occurring storms.

EXHIBIT 7-33
Bioremediation cells are a type of LID that might be appropriate for use on the 11th Street Bridges project
Landscape infiltration devices help improve water quality.



Source: DDOT 2005c

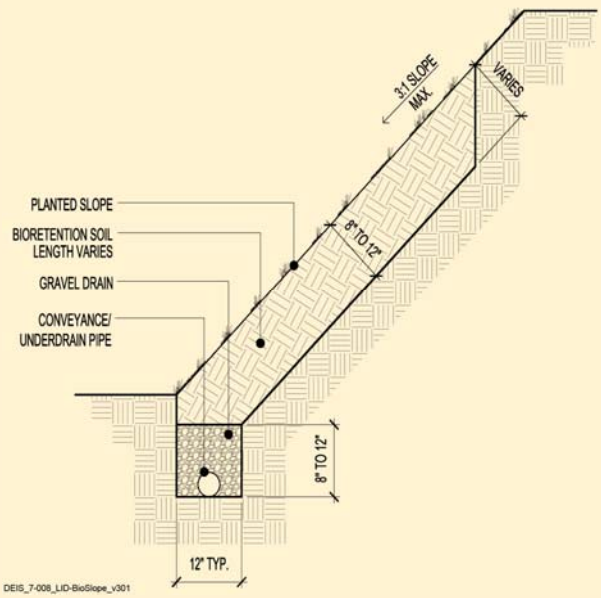
Bioslopes (Exhibit 7-34) expand the amount of open vegetated areas in the urban environment. Bioslopes, consisting of modified filter strips with a special soil, improve water quality, reduce the runoff volume, and reduce the tendency for erosion to occur. They can be incorporated into standard fill slopes in the roadway cross-section and resemble a basic grass filter strip when completed. Such systems require periodic aeration and possible incorporation of amendments, such as topsoil or compost, to maintain infiltration capacity.

Bioswales (Exhibit 7-35) mimic the appearance of natural stream channels. They are broad, shallow, vegetated channels that convey and infiltrate stormwater runoff. Bioswales are designed to reduce stormwater volume through infiltration, improve water quality through infiltration and vegetative filtering, and reduce runoff velocity by increasing flow path lengths and channel roughness.

Vegetated filter strips (Exhibit 7-36) are bands of dense permanent vegetation with a uniform slope, providing water quality pretreatment between an impervious area and another best management practice. Vegetated filter systems provide runoff prevention and runoff treatment, reducing the frequency of discharges and retaining water through infiltration and evapotranspiration. Maintenance requires removal of debris and trash for appearance.

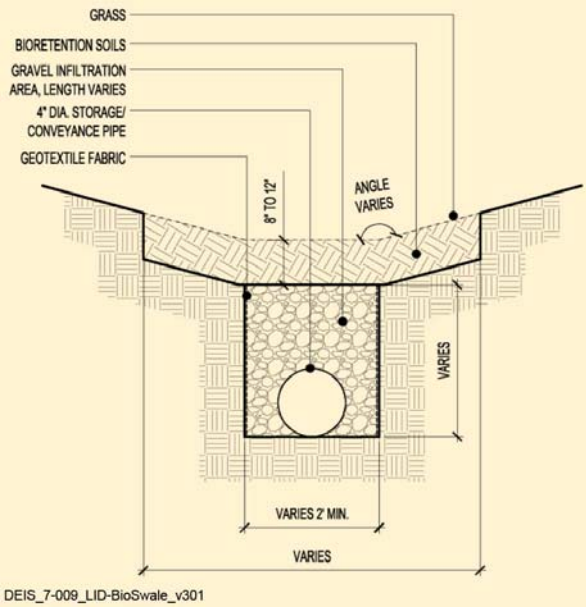
A tree canopy (Exhibit 7-37), in addition to providing aesthetic benefits, intercepts rainfall, allowing water to evaporate into the atmosphere and reducing the amount of runoff generated by storm events. In locations where pervious surfaces surround the trees, root zone uptake also diminishes stormwater generation and removes pollutants. Healthy urban tree canopies reduce peak storm runoff. Occasional pruning and fertilization are required. As part of the mitigations and net benefit enhancements to Anacostia Park, DDOT will plant a large number of new trees that will also have the benefit of intercepting rainfall.

EXHIBIT 7-34
Bioslopes are a type of LID that might be appropriate for use on the 11th Street Bridges project
Vegetated infiltration and filtering systems help improve water quality.



Source: DDOT 2005c

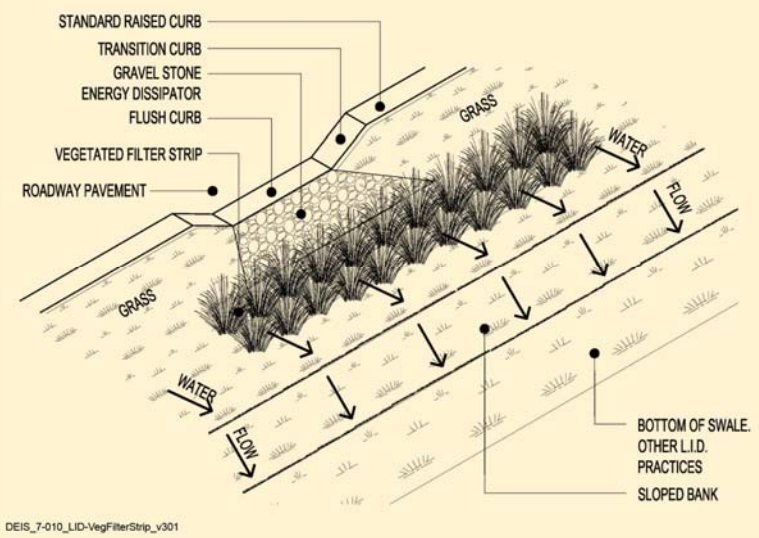
EXHIBIT 7-35
Bioswales are a type of LID that might be appropriate for use on the 11th Street Bridges project
Landscape infiltration areas and conveyance systems help improve water quality.



Source: DDOT 2005c

Tree box filters are concrete boxes filled with bioretention soil installed below grade at the curb line and located upstream of a storm system inlet to reduce runoff volume, reduce peak discharge rate, and improve water quality for small, frequently occurring storms. For low to moderate flows, stormwater enters through the tree box's inlet, filters through the soil, and exits through an underdrain into the storm drain. For high flows, stormwater bypasses the tree box filter if full and flows directly to the downstream storm system inlet. Removal of trash and debris from the inlet is required. Plants and media may have to be replaced after a long time period.

EXHIBIT 7-36
Vegetated filter strips are a type of LID that might be appropriate for use on the 11th Street Bridges project
Vegetated filtering systems help improve water quality.



Source: DDOT 2005c

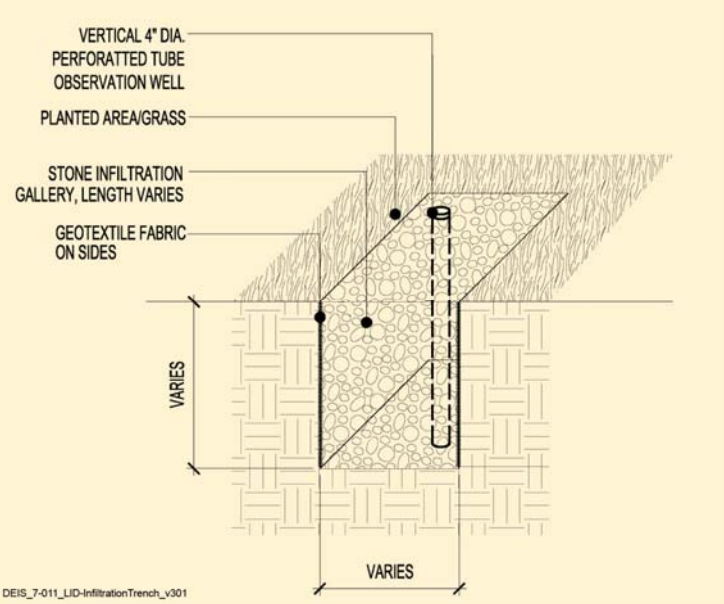
Underground cisterns (Exhibit 7-38) can be used to reduce the flow of runoff into storm drainage systems. Typically, cisterns are manufactured tanks or underground storage areas constructed of a variety of durable, site-appropriate materials. Underground cisterns collect and conserve roadway runoff for future water reuse such as irrigation, or more typically conserve water to recharge the aquifer. These are low-cost water conservation devices that reduce runoff volume and, for very small storm events, function to delay and reduce peak runoff flow rates.

Occasional cleaning of the tank, pumps (if used), and irrigation lines is necessary.

As part of the review of the construction plans, the Sediment and Storm Water Technical Services Branch will also review the proposed LID measures for consistency with District and federal water quality laws and regulations, as cited above.

There is minimal risk of disturbing bottom sediments or spreading contaminants from either of the construction approaches, although the contractor will be required to have a spill response plan in place in the unlikely event of a problem. If driven piles are

EXHIBIT 7-37
Tree canopy, with or without box filters, are a type of LID that might be appropriate for use on the 11th Street Bridges project
Reforestation, interception, and infiltration systems help improve water quality.



Source: DDOT 2005c

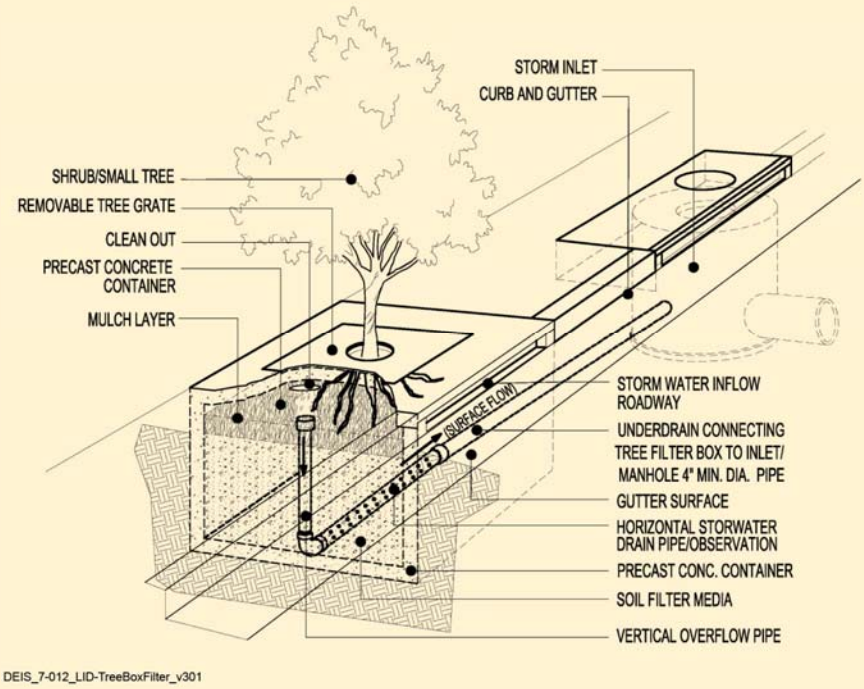
used, sediment curtains would minimize and mitigate the potential impact. These impacts would rectify themselves before the completion of construction.

In accordance with standard DDOT specifications for construction, sediment and erosion control methods will be implemented along the perimeter of the construction site. These measures may include silt fabric fences, stormwater catch basin protection, vehicle strips, and dust suppressant to contain soil to the construction site and out of the river and storm sewer system. Other techniques include minimizing the area of soil that is exposed and mulching/ revegetating exposed areas as quickly as possible after grading.

Permits from federal and local agencies will be required for construction of new piers in the Anacostia River. These permits will include conditions and limitations to minimize impacts to the river water quality and aquatic biota, as noted above. These permits may also require mitigation for stream impacts, such as stream habitat restoration at another location in the Anacostia River watershed. Preliminary discussions with the regulatory agencies have indicated that efforts to restore stream channels and remove blockages to migratory fish passage in the Anacostia River watershed could be acceptable mitigation for these permits. The conditions of the permits will become special provisions in the contract documents for construction.

Permits from federal and local agencies will be required for construction of new piers in the Anacostia River.

EXHIBIT 7-38
Underground cisterns are a type of LID that might be appropriate for use on the 11th Street Bridges project
Concrete-enclosed infiltration devices can help improve water quality



Source: DDOT 2005c

These permits will include:

- U.S. Coast Guard, pursuant to Section 9 of the Rivers and Harbors Act. This review and permit is required to ensure the navigability of the Anacostia River.
- USACOE, pursuant to Section 404 of the Clean Water Act, and Section 10 of

the Rivers and Harbors Act. This review and permit is required to ensure the water quality and biological quality of the river.

- DDOH, pursuant to Section 401 of the Clean Water Act, and the DC Water Pollution Control Act of 1984 (DC Law 5-188). These reviews and permits are required to ensure water quality in the river, including biological quality.

7.8 Wetlands Impacts

Executive Order 11990, *Protection of Wetlands,* requires federal agencies to avoid, to the extent practicable, long- and short-term adverse impacts associated with the destruction or modification of wetlands. More specifically, the Order directs federal agencies to avoid new construction in wetlands unless there is no practicable alternative and, where wetlands cannot be avoided, the proposed action must include practical measures to minimize harm to the wetlands.

There are two small wetlands in the study area, one of which would be affected by the proposed improvements.

7.8.1 Impacts of the No-Build Alternative

No wetlands would be affected by the No-Build Alternative.

7.8.2 Impacts of the Build Alternatives

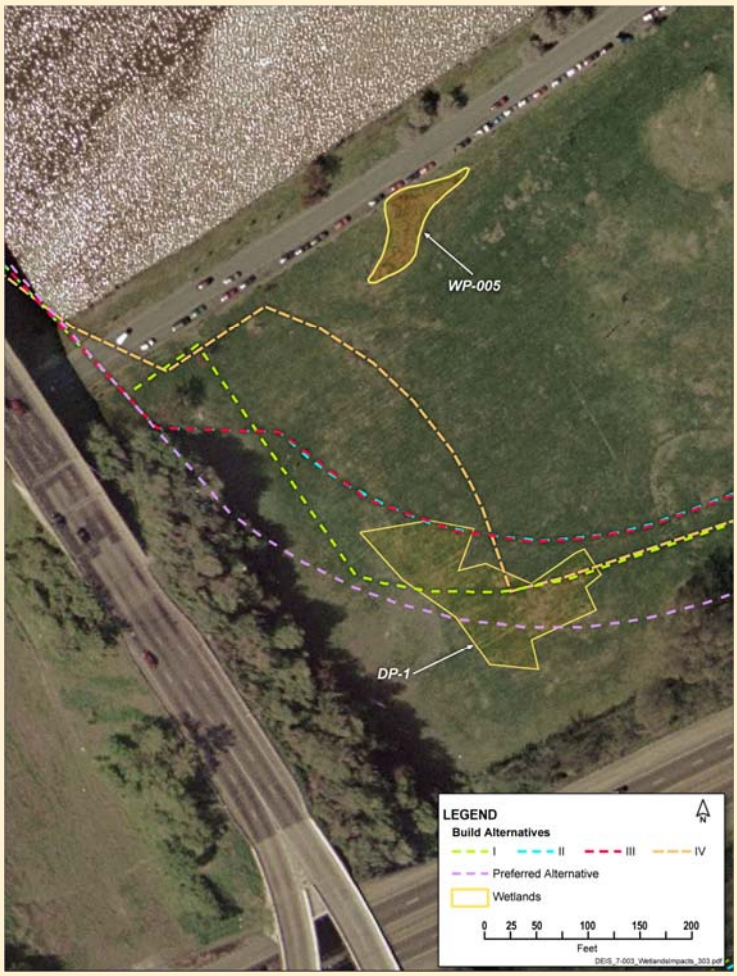
Two small wetlands lie adjacent to the proposed improvements, both of which are located in Anacostia Park north of the 11th Street Bridge approaches. Wetland WP-005, a 0.15-acre, palustrine emergent wetland, would not be affected by the proposed improvements. Wetland DP-1, a 0.35-acre wetland that consists of a series of shallow ponded depressions, is located within the project footprint for all build alternatives (Exhibit 7-39). The construction limits of Build Alternative I include about half (0.17 acre) of this wetland, and Build Alternatives II, III, and IV include the entire wetland. The Preferred Alternative would impact 0.07 acre of wetland. The portion of the wetland affected will be filled so that the area will be unable to perform any wetland functions. This is an adverse impact.

Exhibit 7-39 shows the limits of construction for each alternative in the southeast corner of the interchange in Anacostia Park. For each alternative, the area below and to the left of the line for the alternative will be part of the area that would be in highway use if that alternative is implemented.

As noted in Section 6, Affected Environment, Wetland DP-1 has a high potential for flood alteration, sediment retention, and nutrient removal, although its small size limits its ability to store or treat a large volume of water. Those functions would be lost with the build alternatives. Wetland DP-1, identified in February 2006 as part of the investigation for the 11th Street Bridges project, is separate from any other wetland.

The bridges in all build alternatives (including the Preferred Alternative) would span the area of riverbank vegetation below the mean high water mark in this area; therefore, no permanent impact is expected. Construction activities could damage the vegetation, but it would regenerate within a year. While this area corresponds to Wetland 30 in the District inventory, USACOE has determined that this area is not a wetland.

EXHIBIT 7-39
Impacts to Wetlands
Build alternatives avoid impacts to all wetlands other than Wetland DP-1, a series of shallow ponded depressions.



7.8.3 Temporary Construction-Related Impacts

While impacts to the riverbank vegetation could occur during construction, it is likely that they can be avoided. Construction staging areas and the movement of construction equipment on the east side of the river will be prohibited around Wetland WP-005. No other temporary wetland impacts are expected.

7.8.4 Indirect and Cumulative Impacts

Indirect Impacts: There would be no indirect effects to WP-005 because construction staging and movement of equipment in the area of WP-005 would be prohibited. No other indirect wetland impacts are expected.

Cumulative Impacts: Projects that could contribute to cumulative impacts on wetlands include the 11th Street Bridges project, the Anacostia Riverwalk project, the Washington Gas hazardous waste cleanup, and the Poplar Point development. The 11th Street Bridges project would affect 0.07 acre of wetlands. Anacostia Riverwalk will affect less than 0.1 acre of wetland. The Washington Gas hazardous waste cleanup will remove vegetation and soil from the 1-acre DC Wetland 27 site, thus destroying the wetland. Together these projects constitute a cumulative impact to 1.17 acres of wetlands. The Poplar Point development poses the greatest potential impact to wetlands because the area includes at least two wetlands totaling about 11 acres. No approved development plan exists for this area, so the fate of the wetlands when the property is developed is speculative and conjectural, but affected wetlands acreage could range from 0 to 11 acres. This would be in addition to the 11th Street Bridges, Anacostia Riverwalk, and the Washington Gas cleanup impacts.

7.8.5 Mitigation Measures

Any impact to wetlands or vegetated areas within the mean high water mark of the river requires a permit from USACOE and the District Department of Environment (DDOE), Water Quality Division pursuant to Section 404 and 401 of the Clean Water Act, respectively. These permits will likely require mitigation, such as restoration of a comparable wetland habitat within the general project area or offsite. Preliminary discussions with USACOE indicate that wetlands created for stormwater quality management could be adequate mitigation for the impacts of the project because that is the primary function of the existing wetlands.

DDOE uses the USACOE 1997 draft wetland regulations as a guideline for permit application and mitigation review, and these guidelines will be adhered to during the Section 401 permit process that will be undertaken closer to the time of construction:

- Emergent wetlands are normally replaced as a ratio of 1:1. As a wetland that is frequently mowed as part of a recreational field, DP-01 (the only wetland affected by the project) qualifies as an emergent wetland. Therefore, the mitigation wetland would need to be at least at large as the area of wetland that is affected by the project, 0.07 acre. . FHWA requires replacement of wetlands at a ratio of 1:1.5 and thus an 0.11 acre replacement will be required.
- The wetland would be replaced in kind, with another emergent wetland within the Anacostia River watershed and within the District.
- The mitigation wetland would be separate from the LID treatment methods. Depending on the location of the wetland, additional water input into the mitigation wetland could be provided from stormwater runoff from the roadway, provided the stormwater is pretreated in an LID or forebay, and it enters in a diffuse flow (that is, does not enter directly from the end of a pipe draining the roadway). In this way, the wetland can be preserved and not be subject to the periodic maintenance that an LID system would be (such as removal of built-up sediments).

- The wetland vegetation would be restored with native species.
- A buffer of a minimum of 25 feet would be established around the perimeter of the wetland.
- The mitigation would be monitored for 5 years to ensure success.
- The wetland would be preserved in perpetuity.

Construction staging and movement of equipment in the area of WP-005 will be prohibited. The location will be noted on construction plans and use of the area prohibited.

If riverbank vegetation below the mean water mark is inadvertently affected, the area will be reseeded.

Potential wetland mitigation sites have been discussed at length with the DDOE mitigation coordinator. Options for wetland mitigation have been limited to areas within the Anacostia River watershed within the District. Very few open lands in the District are suitable for wetland creation or restoration.

Several options have been discussed:

1. Installation of submerged aquatic vegetation (SAV) in a flat area along the river, to help to restore this habitat in the lower Anacostia River. This option is not being pursued further because the current water quality, particularly sediment load, would be detrimental to success. Sediment loading in the Anacostia River is thought to be the reason that SAV beds have disappeared in the river in recent years. DDOE has concluded that it would be inconsistent with its approach to mitigation to replace wetlands with SAV.
2. A restoration in the area of Poplar Point, where DDOE has a conceptual design to daylight the lower reach of Stickfoot Creek and establish wetlands. While this is a feasible plan, it is dependent on the eventual land use plans for the area that need to be created by the District and approved by NPS before Poplar Point is transferred.
3. The current preferred wetland mitigation option is the restoration of floating leaved aquatic vegetation in the Anacostia River, adjacent to the site of an ongoing River Fringe mitigation project jointly pursued by USACOE and DDOE near Kingman Lake. This site was recommended by DDOE, and is a feasible alternative. The area adjacent to the River Fringe project is naturally filling in with sediment, and appears suitable for the addition of the floating leaved plants such as *Nuphar* or *Lotus* (water lilies). The largest constraint is timing. Because the best mitigation sites are close to the sheet piling around the River Fringe mitigation area, the planting should occur following the removal of sheet pilings. Construction of the 11th Street Bridges could occur within the next 1-3 years, which would correspond with the timing of the River Fringe piling removal. Coordination with DDOE is ongoing to finalize this option.

7.8.6 Only Practicable Alternative Finding

Based upon the considerations presented above in this Section 7.8, and further discussed in Section 5.2.5, it is concluded that there is no practicable alternative to the proposed construction in wetlands and that the proposed action includes all practicable measures to minimize harm to the wetlands that may result from such use.

7.9 Water Body Modification and Wildlife Impacts

Permanent impacts to the Anacostia River would be limited to the footprints of the proposed pier extensions, an area of less than 0.25 acre. The placement of the extensions of the existing piers would have an impact on the existing river bed, by replacing the existing habitat with a structure. The area of the impact of the structure will depend on the roadway alternative and the type of pier selected. The widened piers will be in-line and upstream of the existing piers of the upstream structure and will run parallel to the shoreline. Water quality impacts are discussed Section 7.7.

The benthic community in the Anacostia River is characterized by low diversity, low abundance, and dominance by pollution-tolerant worms (see Section 6.9.1). These conditions were likely caused by a combination of chronic exposure to pollutants and low dissolved oxygen levels. Although no dredging will occur for the 11th Street Bridges project, removal of some stream sediments may be necessary during construction. It is likely that during a short period after construction, disturbed areas would recover to a condition that is comparable to the existing condition and uniform with the surrounding areas. Therefore, permanent impact to the aquatic habitat or to populations of aquatic biota is not expected from the project.

The analysis of cover types in the study area found that approximately 75 percent of the study area is urban developed land with minimal wildlife habitat. Because the proposed improvements would be adjacent to existing roadways, most impacts would be to paved areas/disturbed lands and mowed lawns. As a result, the proposed improvements are not expected to have an adverse impact on wildlife or wildlife habitat in the study area.

7.9.1 Impacts of No-Build Alternative

The No-Build Alternative will have no impacts to fish and wildlife or aquatic and terrestrial habitats.

7.9.2 Impacts of Build Alternatives

The build alternatives would not impact aquatic biota, submerged aquatic vegetation beds, or fish. Minimal effects on terrestrial habitat are expected.

All of the build alternatives would require work in the Anacostia River to construct new bridge piers and widen existing piers. The area of impact would be limited to just the area of the pilings with the "floating pier" design. All build alternatives, including the Preferred Alternative, would affect a maximum of 0.25 acre of streambed to widen or augment the 11th Street Bridge piers. Because the Anacostia River substrate is dominated by mud and generally has been found to have a degraded benthic community,

the pier widening would not adversely affect aquatic biota. Because no SAV beds have been recorded in the study area during annual surveys since 1988, the proposed improvements would not affect any SAV beds.

Widening the bridge piers could result in a temporary increase in sedimentation upstream and downstream of the piers. Given the normal turbidity of the Anacostia River, the possible short-term increase in turbidity is not expected to adversely affect fish or the benthic community. The replacement structures would cause no greater impairment to passage of migratory fish to upper watershed spawning sites than the existing bridges. Some fish kills have been reported with the Woodrow Wilson Bridge project, particularly related to the explosives demolition of the earlier bridge. Explosives will not be used to demolish the 11th Street Bridges. Mitigation measures should further limit this potential on the 11th Street Bridges project. No other impacts to fish are expected.

Impacts to terrestrial habitats were evaluated by overlaying the construction limits onto the vegetation cover type map. Much of the vegetation would be removed within the construction limits. Because the project would be located along existing alignment, three-quarters of the impact of any alternative would be to already paved or disturbed areas with minimal habitat (see Exhibit 7-40). Most of the terrestrial habitat affected would be mowed lawn and woodlands along the existing right-of-way. Much of the mowed lawn impacts occur in Anacostia Park, where these lawns are maintained as recreational fields. As such, the impact to terrestrial vertebrates dependent on these habitats is expected to be minimal. The woodland and scrub-shrub habitat that would be affected by the project would likely result in lost nesting and loafing opportunities for the few bird and mammal species observed in the study area. The loss of this habitat would likely result in these species moving to Poplar Point and other nearby areas that still have some intact natural habitat.

The primary difference between the build alternatives is the impact to mowed lawn areas in Anacostia Park adjacent to the bridge approaches. Build Alternative IV would have the greatest impact in this area, and Build Alternative I would have the least impact. The area of Anacostia Park that is affected is the main difference in the mowed lawn impacts listed in Exhibit 7-40.

EXHIBIT 7-40
Terrestrial Habitat Impacts
Impacts to terrestrial habitat are expected to be minimal.

Habitat Type	Build Alternative I		Build Alternative II		Build Alternative III		Build Alternative IV		Preferred Alternative	
	Acreage	Percent	Acreage	Percent	Acreage	Percent	Acreage	Percent	Acreage	Percent
Woodland	6	8	7	8	7	8	7	8	7	9
Scrub-shrub	1	1	1	1	1	1	1	1	1	1
Lawns, mowed areas	11	14	13	16	13	16	14	17	11	14
Pavement/Disturbed lands	59	77	62	75	63	75	63	74	60	76
Total	**77**	100	83	100	84	100	85	100	79	100

The alternatives would also have different effects on the 2.6-acre Virginia Avenue Park. The Preferred Alternative and Build Alternative I would have no impact on the park. Build Alternative II would affect about 0.22 acre, with a greater portion in the northern end of the park. Build Alternatives III and IV would have the greatest impact on the park with 0.43 acre, which would not likely include removal of the large elm tree in the center of the park. Although the acreages vary by alternative, there would be little discernable difference among the build alternatives' impact on wildlife given the scarcity of wildlife in the park.

The proposed improvements would not affect nearby natural habitats such as Poplar Point or the NPS property near Barney Circle. As a result, those areas may become more attractive for area wildlife as a replacement for the lost woodland habitat in the study area.

The street trees inventoried by Casey Tree Foundation were compared to the proposed limits of construction of the alternatives, with a 50-foot buffer area. The buffer area includes as many as 65 street trees inventoried in 2002. The buffer area includes 34 trees with diameters of 12 inches or larger, up to 31 inches, as well as another 43 trees that were recently planted along 11th Street, 8th Street, and the Anacostia Riverwalk west of the river.

Each of the alternatives potentially affects a comparable number of these trees. The improvements to 13th Street, Martin Luther King, Jr. Avenue, and Good Hope Road in Anacostia vary slightly between the alternatives. As a result, Build Alternative I would affect a few more street trees in this area than the other alternatives. Otherwise, the potential impact of the alternatives on street trees and wildlife that might use those trees is essentially identical (see Exhibit 7-41).

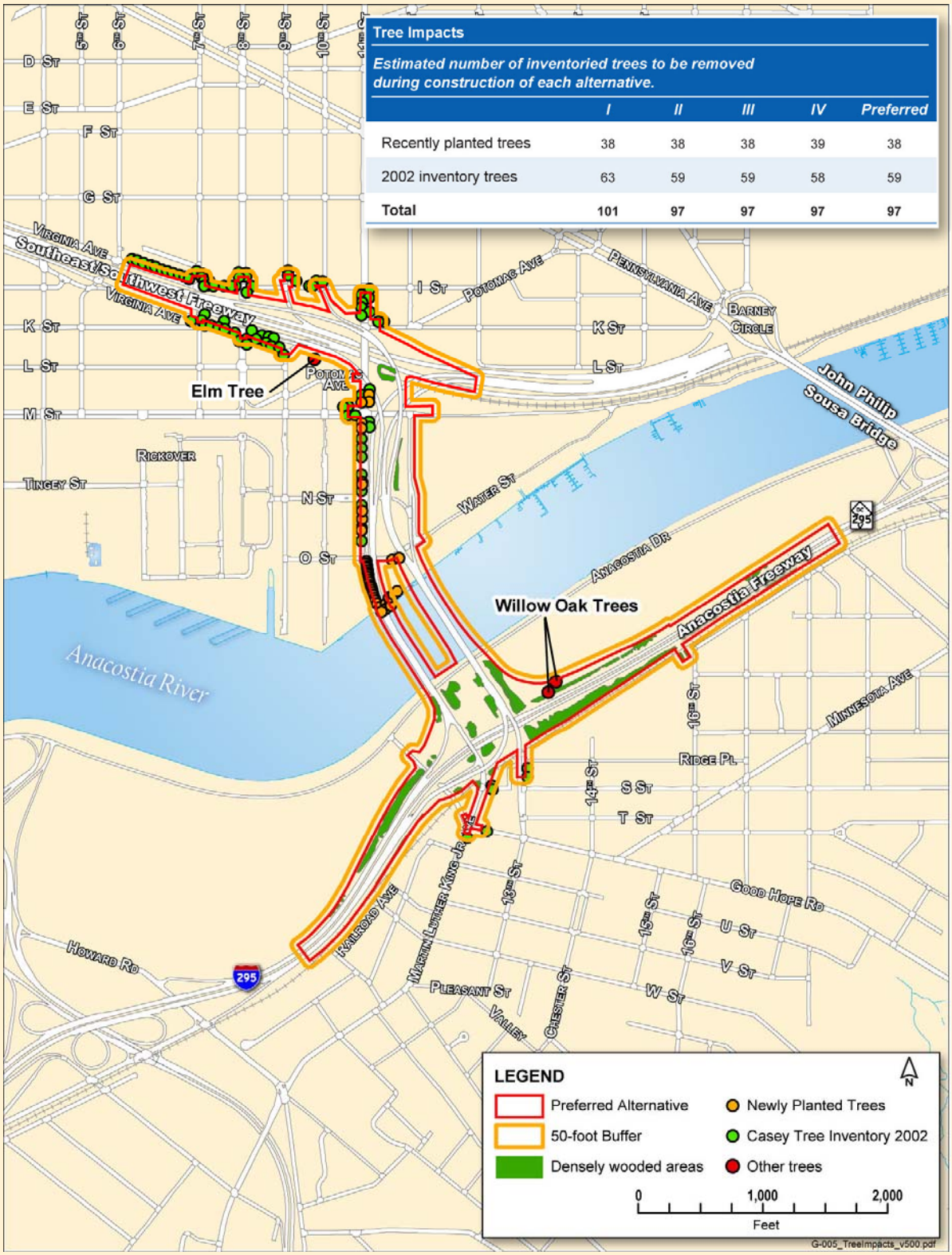
In addition to the inventoried trees, the two large willow oak trees in Anacostia Park and in the right-of-way north of the bridges would be removed under all build alternatives. The large elm tree in the center of Virginia Avenue Park would be removed under Build Alternatives III and IV.

7.9.3 Temporary Construction-Related Impacts

Clearing and grubbing has the potential to affect birds protected by the Migratory Bird Treaty Act (MBTA).

The MBTA protects a number of birds. Protected bird species, including their body parts, that have been observed in the vicinity of the project area include American crow (*Corvus brachyrhynchos*), Canada goose (*Branta canadensis*), common gull (*Larus canus*), northern mockingbird (*Mimus polyglottos*), ring-billed gull (*Larus delawarensis*), and one double-crested cormorant (*Phalacrocorax auritus*) in flight. While observed in the vicinity, these species were not observed in the project area. Given the minimal useful habitat that exists in the mowed fields of Anacostia Park, it is not surprising that bird activity is more common in the adjacent areas where more attractive habitats exist. It is possible that nesting areas exist in the roadside vegetation that buffers the highway.

EXHIBIT 7-41
Tree Impacts
Estimated number of inventoried trees to be removed during construction are similar for all build alternatives.



Tree Impacts

Estimated number of inventoried trees to be removed during construction of each alternative.

	I	*II*	*III*	*IV*	*Preferred*
Recently planted trees	38	38	38	39	38
2002 inventory trees	63	59	59	58	59
Total	**101**	**97**	**97**	**97**	**97**

A "take" of protected birds does not include habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof. Activities that are most likely to result in a take of migratory birds include clearing or grubbing of nesting habitat during the nesting season, and bridge cleaning, painting, demolition, or reconstruction where bird nests are present.

Mitigations are included in Section 7.9.5.

7.9.4 Indirect and Cumulative Impacts

Indirect Impacts: Indirect effects are reasonably foreseeable effects caused by the 11th Street Bridges project but later in time or farther removed in distance. Generally, they result from growth-inducing effects or changes in the pattern of land uses, population density, or growth rate and the resultant impact on water quality, habitat, or other natural systems. The 11th Street Bridges will generate no growth-inducing or land use changes and do not have indirect impacts on aquatic or terrestrial habitats.

Cumulative Impacts: A cumulative impact results from the incremental impact of an action such as the 11th Street Bridges project when added to other past, present, and reasonably foreseeable future projects. Historical development throughout the region has resulted in a polluted river with contaminated sediments. Stormwater runoff from the existing bridges makes a small contribution to this total contaminant load. Small amounts of bottom sediment potentially resuspended during construction would add to this load. This short-term addition pales when compared to the impact of dredging by the USACOE to maintain the river channel and for cleanup. Over the long term, the new bridges will contribute to the ongoing cleanup program by capturing runoff for treatment before discharge.

The greatest potential for impact to terrestrial habitats would come from the redevelopment project at Poplar Point, the property southwest and immediately adjacent to the existing bridges. Poplar Point is arguably the largest naturalized habitat in the project area east of Pennsylvania Avenue. Other projects in the area are redevelopments of urbanized areas that contribute little to the naturalized habitat of the area. No approved redevelopment plan currently exists for the Poplar Point area so forecasting the habitat effects is speculative. The impact will range from 30 to 100 acres, but which acres in which habitat types is unknowable at present. The 11th Street Bridges project would directly affect about 8 acres of naturalized (woodland and scrub) habitats within and adjacent to the existing right-of-way, so the cumulative impact is 38 to 108 acres. The habitat impacts are expected to be only within the footprint of each project.

7.9.5 Mitigation Measures

Time-of-year restrictions as designated by DDOH to protect spawning anadromous fish will minimize potential impacts.

To reduce the potential for fish kills during pier construction or bridge demolition, the 11th Street Bridges project will reuse the existing piers, although these will need to be expanded.

The total area of river bottom that will be affected by new pier construction will not exceed 0.25 acre.

Conservation measures that have proven to be effective in reducing impact to fish include time-of-year restrictions, blasting design techniques, and technical impact reduction techniques. Blasting design techniques are not necessary because explosives will not be used.

- **Time-of-year restrictions.** The life history of anadromous fish suggests that if young-of-the-year are present in the river, they would occur in the vicinity of the project site from February 15 to July 1. This is the time period that the DDOE restricts construction activities in the Anacostia River to minimize impacts to spawning/migrating anadromous fish and thus will minimize the potential for harm.
- **Technical impact reduction techniques.** Technical impact reduction techniques are structures or methods used to reduce potential impacts by reducing pressure waves or repelling fish from an area immediately before beginning work. Impact reduction techniques, such as physical barriers and air bubble curtains, will be used to mitigate potential impacts from underwater pile driving or other construction activities as necessary during the project. Turbidity curtains will be installed around pier construction sites to exclude sensitive species as well as to contain suspended solids to the construction sites.

Form boxes will be used for demolition and reconstruction of piers. Water pumped from the form boxes will be surface water and thus there is a low risk of spreading contamination. The contractor will be required to have a spill plan that would implemented if an event should occur.

Clearing and grubbing will occur outside the nesting season. Prior to the start of construction, a survey of potential MBTA-protected nesting areas will be conducted. If inactive nests are uncovered, consultation with the local USFWS office will take place prior to removal of inactive nests of migratory birds. This might require a permit. Application for a take permit is made on USFWS form 3-200.

The DC Urban Forest Preservation Act requires a Special Tree Removal Permit for a person or non-governmental agency that removes trees with a circumference of 55 inches (17.5 inches diameter) or more. Eighteen inventoried trees with diameters greater than 17 inches are located within the 50-foot buffer area of the project.

While the Urban Forest Preservation Act may not be applicable to DDOT projects, landscaping and replacement of trees is included in DDOT's *Design and Engineering Manual*. DDOT plans for an extensive tree planting effort, both to meet its own guidelines and as part of the mitigation and the net benefits to Anacostia Park. The net benefits are detailed in Appendix H.

7.10 Floodplain Impacts

Floodplains are regulated under Executive Order 11988. This order requires the consideration of alternatives that avoid floodplain impacts for all federally funded projects. If floodplains cannot be avoided, a Finding of No Practical Alternative must be prepared for the preferred alternative. Given that the Anacostia River floodplain is located on both sides of the river near the bridge approaches, that it is not possible for the proposed improvements to avoid floodplain impacts, and that none of the build alternatives, including the Preferred Alternative, encroach on more than 2.4 acres of the approximately 1,000-acre floodplain, a formal Finding of No Practical Alternative is not necessary. The Preferred Alternative would encroach on about 0.7 acre of the floodplain.

During subsequent design efforts for a preferred alternative, a detailed hydraulic analysis of the bridge will be required to model the effects of the project on the elevation of the river during the 100-year flood event. Projects usually are evaluated using USACOE's Hydrologic Engineering Center-River Analysis System program or other computer analysis programs to determine whether floodwater elevations would be increased by the bridges before they are approved by floodplain regulation administrators.

A hydraulic analysis is not necessary at this time, given that all alternatives would be sited on the existing alignment, that the abutments would not be moved closer to the river and cause any restriction of floodflow, and that the piers will be widened in the same locations and alignment as the existing piers. There is no regulatory floodway and the impact of pier extensions would be minimal given that the Anacostia River is tidal and subject to backwater effect from the Potomac River under flood conditions. The impact of the project is a minor encroachment into the flood fringe area, which would not lead to a rise in the flood elevation approaching 1 foot. Therefore, minimal impact is expected to the floodplain's capacity, and the project would not have a significant impact on the floodplain.

7.10.1 Impacts of the No-Build Alternative

The No-Build Alternative would have no impact on floodplains.

7.10.2 Impacts of the Build Alternatives

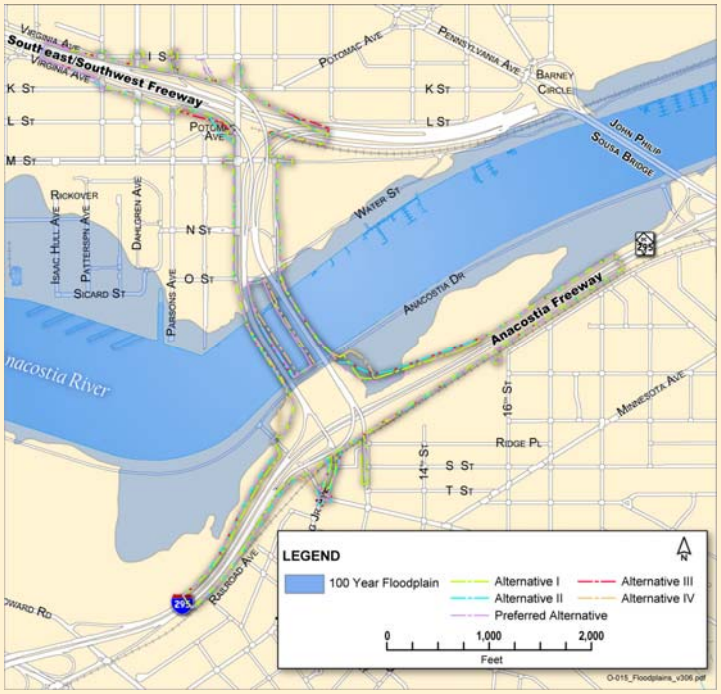
The project will require minor modifications within the 100-year floodplain. As a bridge crossing perpendicular to the river, this project is considered a transverse floodplain encroachment. In most cases, transverse encroachments can be designed to minimize impacts to the 100-year floodplain by spanning the floodway, that is, the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment to convey the 100-year flood flows. Spanning the floodway will typically avoid a backwater effect upstream of the bridge.

The length of the bridges and the proposed abutments would be essentially the same as the existing bridges, spanning the floodplain. The additional piers for widening of one or both bridges may have an impact, although this impact will likely be minimal. The piers would be

placed in line with the existing piers and parallel to the flow line, and would be designed to have minimal impact on the flow of the river. Therefore, the proposed bridges will not pose a substantially larger restriction on the flow of the river during flood stage than the existing bridges, and therefore should not cause an increase in the upstream flood elevation.

The piers would be placed in line with the existing piers and parallel to the flow line, and would be designed to have minimal impact on the flow of the river.

EXHIBIT 7-42
Floodplain Area Map
This map shows the limits of the 100-year floodplain.



The primary impact to the floodplain will be the area of additional embankment north of the eastern bridge approaches in Anacostia Park (see Exhibit 7-42). The encroachments for the build alternatives are shown in Exhibit 7-43.

This area is small compared to the area of the floodplain upstream of the bridges (approximately 1,000 acres), and therefore would not measurably reduce the floodplain storage area along the Anacostia River.

Because the floodplain impact would be to an area of mowed grass in Anacostia Park, there would be essentially no impact to the floodplain's living resource value (its ability to provide habitat for and support fish, wildlife, and plant species) or its water quality maintenance or groundwater recharge values. There would be a minor impact to the floodplain's cultural resource value, which promotes the use of floodplains for open space and recreation. The project will not support incompatible floodplain development.

EXHIBIT 7-43
Floodplain Encroachments
Floodplain encroachment would not measurably reduce floodplain storage.

Build Alternative	Floodplain Encroachment (Acres)
I	1.5
II	2.0
III	2.0
IV	2.4
Preferred Alternative	0.7

7.10.3 Temporary Construction-Related Impacts

None of the construction activities are expected to create any restrictions to the floodway nor any fill in the floodplain area.

7.10.4 Indirect and Cumulative Impacts

Indirect Impacts: No floodplain impacts are among the reasonably foreseeable effects caused by the 11th Street Bridges project that would occur later in time or farther removed in distance. No indirect impacts to floodplains would result from the project.

Cumulative Impacts: Much of the area of Anacostia Park was created by filling of the historic river channel (see Exhibit 6-61 for example). This created floodplain, but because the area is used for recreational parkland, it is a beneficial use. Development at Poplar Point could affect floodplain, but this is both speculative and unlikely. Both the 11th Street and South Capitol Street Bridges projects will be located at narrow points of the current 100-year floodplain. Both projects will span the floodplain except for the piers in the river. The minor impact of either project to the 100-year floodplain is not expected to measurably alter flood elevations along the Anacostia River. Land development or redevelopment projects are located outside of the floodplain. Therefore, no cumulative impacts to the floodplain capacity or to adjacent properties from flooding are foreseeable.

7.10.5 Mitigation Measures

FEMA has mandated, pursuant to the National Flood Insurance Act, that projects may cause no rise in the regulatory floodway and a 1-foot cumulative rise for all projects in the base (100-year) floodplain. The final construction plans will be reviewed with the DDOH Technical Services Branch, as the FEMA Designated Floodplain Administrator, for consistency with the National Flood Insurance Program. Additional fill and structures would be designed so as not to increase flood elevations and to avoid interruption to public transportation because of flood damage to the roadway or structures.

The project review will also include measures for restoring vegetation, protection against erosion/scour, and measures to minimize the accumulation of drift associated with flood events.

7.11 Threatened and Endangered Species Impacts

Federally listed endangered or threatened species are designated and protected under the Endangered Species Act, administered jointly by NMFS (for tidal waters, including the lower Anacostia River) and USFWS (for terrestrial areas and non-tidal waters).

No federal threatened or endangered species are likely to be directly affected by the project. The greatest potential for impact of this project on a protected species would be to the shortnose sturgeon, as indicated by the correspondence with NMFS and USFWS.

7.11.1 Impacts of the No-Build Alternative

The No-Build Alternative would have no impact on any protected species, including the shortnose sturgeon.

7.11.2 Impacts of the Build Alternatives

Based on input from USFWS and NMFS (Appendix F), the only protected species that may occur in the study area is the shortnose sturgeon, a federally endangered fish. No sturgeons have been documented in the Anacostia River, and annual spring fish sampling conducted by the DCFWD has found no sturgeon. However, resource agencies believe there is potential for shortnose sturgeon to travel upstream in the Potomac River as far as Little Falls, 8 miles above the mouth of the Anacostia River. Also, suitable sturgeon spawning habitat may exist north of the study area, which could result in the sturgeon being in the study area. It should be noted however, that the riverine habitat in the study area is not well suited to shortnose sturgeon needs. Shortnose sturgeons feed on crustaceans, insect larvae, worms, and small mollusks. The Anacostia River in the study area is dominated by unvegetated, subtidal areas with a mud substrate, which extends for several hundred feet up- and downriver of the project site. There are no submerged aquatic vegetated beds, and the aquatic biota is dominated by pollution-tolerant worms. Thus, the habitat that may be permanently or temporarily affected by the project is unsuitable for shortnose sturgeon spawning or foraging. Sturgeons that would theoretically occur in this reach of the river would be transient adults. Despite the lack of evidence and low likelihood of the shortnose sturgeon in the project area, in early project coordination NMFS recommended that Section 7 consultation be initiated. A draft Biological Assessment evaluating potential impacts to the shortnose sturgeon has been prepared and submitted to NMFS for review. The technical memorandum is included in Appendix F.

Subsequent to the preparation of the Draft EIS, a shortnose sturgeon was monitored near Little Falls on the Potomac River. NMFS was aware of that occurrence and reported it in its letter on Section 7 consultation for the 11th Street Bridges. That letter, included in Appendix F, concludes:

> *Based on the analysis that all effects of the proposed project, if adverse, will be discountable, NMFS is able to concur with the determination that the replacement of the 11th Street Bridges over the Anacostia River is not likely to adversely affect any listed species under NMFS jurisdiction. Therefore, no further consultation pursuant to section 7 of the ESA is required.*

7.11.3 Temporary Construction-Related Impacts

The discussions and conclusions in Section 7.11.2 equally apply to the construction phase. The project is not likely to adversely affect any listed species. Steps are being taken to use construction methods and techniques to minimize impact on all fish. This is discussed further in Section 7.11.5, Mitigation, as well as in earlier discussion in Section 7.9.5.

7.11.4 Indirect and Cumulative Impacts

Because there is no evidence that the federally endangered shortnose sturgeon is located in the general study area, the proposed improvements would not contribute to indirect or cumulative effects on the fish. The 11th Street Bridges and the South Capitol Street Bridge

projects require pier demolition and construction in the Anacostia River. While the South Capitol Street Bridge will require somewhat more extensive construction, because it will be on new alignment, comparable conservation measures would be required for both projects to guard against possible impacts to fish, in general, and to transient sturgeons. These measures would include seasonal restrictions and barriers against vibrations and shock waves from pile driving and demolition explosions, depending on the construction techniques to be used.

7.11.5 Mitigation Measures

FHWA and DDOT have completed informal consultation with NMFS concerning the project's potential impact on the shortnose sturgeon (Appendix F). DDOT will incorporate design features and construction techniques such as were developed for the Woodrow Wilson Bridge project that will minimize impacts on all fish, including the shortnose sturgeon. The primary mitigation for potential impacts is a seasonal restriction on construction in the river. DDOH/DCFWD restrict in-river construction from February 15 through June. Mitigation measures are detailed in Section 7.9.5 because they apply to all fishes, not just the protected ones.

Based on the coordination among FHWA, DDOT, and NMFS, sufficient safeguards will be incorporated into the 11th Street Bridges project to support NMFS' concurrence with a determination of "Not Likely to Adversely Affect" any listed species under NMSF jurisdiction pursuant to the Endangered Species Act.

7.12 Historic and Archaeological Preservation

To focus the archaeological and historical investigations on the areas most likely to be affected by the proposed improvements, the project's cultural resources staff developed an APE within the larger study area. An APE is the area within which the direct and indirect effects of the project may cause alterations in the character of historic properties. For the 11th Street Bridges project, the APE was delineated to be, in most cases, the first building/ property adjacent to the existing roadways proposed for improvement (see Exhibit 6-55). The project team contacted the SHPO to discuss and concur on the proposed APE. The historic significance of all structures within the APE was evaluated, and the potential of all properties to contain archaeological resources was also evaluated. This section evaluates the project's potential impacts on archaeological and historical resources within the APE.

There are five historic districts listed on the National Register of Historical Places (NRHP) located entirely or partially within the APE. Of all the structures evaluated in the APE, 34 were neither part of an existing historic district nor listed individually eligible for the NRHP. Of the 34 structures surveyed, 5, all within the wall of the Navy Yard, were considered eligible to the NRHP. Because the project would not displace any structure listed on or eligible for the NRHP, and would generally remain within existing right-of-way, the project would have no impact on historic structures. However, there would be an adverse effect to a

historic park because of the loss of 1.5 acres of open recreation area, a portion of which is currently used as a ball field.

Potential archaeological resources within the project area include locations where the physical remains of prehistoric and/or nineteenth- through twentieth-century occupations might be found. After conducting a literature search and a field review, areas within the APE were identified as having high, low, or no potential to contain archaeological resources (see Exhibits 6-79 and 6-80). Areas of high archaeological potential were found on both sides of the river. West of the river, the areas of high potential are for historic archaeological resources such as building foundations, wells, or related materials. East of the river, there are areas of high potential for prehistoric archaeological resources (Native American artifacts) as well as areas of high potential for historic archaeological resources. Because on-site archaeological testing and survey work has not been conducted, there is no way to determine if potential archaeological resources would be eligible for the NRHP.

With minor exceptions, the ground-disturbing impact footprint is almost identical for all four build alternatives. Consequently, the relative potential for the discovery of archaeological resources does not appear to be different among the build alternatives.

Potential archaeological resources are more likely to be found on the east side of Anacostia River where all four build alternatives propose an interchange from the 11th Street Bridge to I-295. Historic archaeological resources could be expected where the boundary of the impact footprint includes portions of city blocks that were occupied in the nineteenth through twentieth centuries.

FHWA, DDOT, the District SHPO, and NPS have entered into a Programmatic Agreement governing the subsequent investigation and recovery of cultural resources. The agreement is included in Appendix J. The agreement describes a program of ongoing monitoring during ground-clearing activities and describes agreed-to responses if cultural resources are uncovered.

7.12.1 Impacts of the No-Build Alternative

With the No-Build Alternative, the configuration and use of the 11th Street Bridges would remain unchanged. The No-Build Alternative would not affect any archaeological or historic resources.

7.12.2 Impacts of the Build Alternative

Historical Resources

The potential for effects on historic resources would be minimal and restricted to a small section of Anacostia Park. The project will take about 1.5 acres of open recreational land for the development of the project. With regard to standing structures, there are no known effects to any designated or potentially eligible historic structures from any of the build alternatives, including the Preferred Alternative.

On the east side of the river, within the project area located in the Anacostia Historic District, there would be no adverse effects with the construction of any build alternative. Demolition of some of the ramps, including the bridge approach at 13th Street, would be a potential benefit to the area.

The former Camp Marks site was located within the park. The use of the site has not changed, despite the construction of two new bridges with new ramps where the 11th Street drawbridge once existed. The park area was constructed of fill material, creating new parkland that has been used for public gatherings and recreational purposes. This use remains consistent to date.

Some reconfiguring of the bridges and ramping systems will occur for the 11th Street Bridges project. The project will include, but will not be limited to constructing new ramps, relocating existing ramps and reconfiguring existing traffic patterns. Of Anacostia Park's 1,200 acres of land, 1.5 acres will be converted to highway uses. Use of the land to accept a ramp system will alter the use of a small portion of the parkland now used as a ball field.

The sea walls that bound Anacostia Park are eligible for listing on the NRHP due to the construction methods that created the largest urban park in Washington, D.C. While there will be no impact to the seawalls, land close to sea wall on both sides of the Anacostia River will be impacted by the project.

A finding of No Adverse Effect is recommended for Anacostia Park as it relates to the Bonus March. The former boundaries of the park will not be impacted by the project. The project will not alter the character of the site. The site will remain flat land with roads for local traffic; or where ramps currently exist new improved ramps will be constructed in their place. In an effort to promote public awareness of the former Camp Marks site, FHWA has proposed to add interpretive signage in the park about the Bonus March. This proposal has been favorably received by the District SHPO and NPS.

Because of the proposed impact to land close to the sea wall and the change in use of the existing 1.5 acres of land within the historic park, a finding of Adverse Effect is recommended. According to the Advisory Council on Historic Preservation, this finding is in keeping with a *(iv) change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.*

Archaeological Resources

The potential for effects on archaeological resources are the same for the Preferred Alternative and Build Alternatives I, II, and III. Build Alternative IV is comparable, but carries one additional area of potential effect east of the river. Until archaeological surveys and testing have occurred, it is not possible to determine if resources that may be found during construction would have enough integrity to be eligible for the NRHP.

West of the river, cultural resources may be present in the areas underneath the existing solid structure of the highways and the open areas beneath the elevated highways. If so, the potential for finding archaeological resources could be high. If archaeological resources are

located west of the river they are likely to be historic archaeological resources rather than prehistoric resources. The project area also includes the location of the original 11th Street Bridge, which also has a high potential for the presence of nineteenth- and early twentieth-century archaeological resources. The effect of the project on archaeological material west of the river would be partly dependent on whether the new bridges would be built on existing piers. At this stage of the project where the alternatives are evaluated, preliminary design of subsurface structures has not yet been undertaken. When preliminary design is available, potential project effects to archaeological resources can be better understood.

There is also a high potential for archaeological resources in the area of the Virginia Avenue Park. Previous investigations identified resources and additional archaeological potential (Henley, 1984). Potential project effects would be greatest along the north and northeast edge of the park.

On the east side of the river, areas along and near the original shoreline adjacent to the interchange have a high potential for the discovery of prehistoric resources. Archaeological investigations along the Anacostia Freeway corridor upstream from the project area resulted in the discovery of prehistoric cultural resources within the open space of interchanges and along the margins of this highway. None of these discoveries warranted preservation in place. It is likely that the areas adjacent to 11th Street are similar. Southwest of the 11th Street Bridges interchange on the east side of the highway is another area with a high potential for prehistoric archaeological resource discoveries. The north side is constructed on man-made land. It is also likely that deeply stratified prehistoric cultural resources are present within the boundaries of the right-of-way of the existing railroad.

On the west side of Martin Luther King, Jr. Avenue there is also low potential for prehistoric cultural resources to have survived in the open space of this part of the project area.

There is the additional potential to affect an archaeological resource with Build Alternative IV in the Anacostia area, within Square 999. An 1861 historic map marks a building in Square 5710, whose associated archaeological remains could be present, indicating a high potential for cultural resources and therefore a potential adverse effect.

7.12.3 Temporary Construction-Related Impacts

Potential construction-related impacts to properties in the Anacostia Historic District include the effects of vibration from construction traffic and from pile driving. Even though analysis shows that there will be no impact from vibration, a special provision will be included in the project's construction contract to monitor for damage to buildings in the area as a result of vibration from construction activity. These are the same effects detailed in Section 7.6, Noise Impacts. No impacts on properties are anticipated from these activities because of their distance from the construction activities. Noise levels at the receiver closest to the Anacostia Historic District, R8, would be less with the Preferred Alternative than is experienced currently or would occur with the No Build Alternative. Noise levels in Camp Marks portion of Anacostia Park that is a key element in the park's NRHP eligibility would be slightly

elevated but still below the abatement criteria. Noise levels in areas of Anacostia Park away from Camp Marks would be elevated above the abatement criteria levels although the NPS has been uninterested in the construction of barriers adjacent to the park.

7.12.4 Indirect and Cumulative Impacts

For the 11th Street Bridge project alternatives, there would be no indirect impacts to archaeological resources. Indirect impacts to archaeological resources could result from an increase in the public's access to known or undiscovered archaeological resources. However, for the 11th Street Bridges, there would be no change in access that could indirectly adversely affect archaeological resources. None of the project alternatives would create new access that would expose archaeological resources to the general public.

Cumulative impacts on archaeological resources for all four build alternatives are identical because the ground-disturbing footprint is so similar. Several other major projects, planned as part of the Anacostia Waterfront Initiative, could affect archaeological resources: the Anacostia Streetcar Line, the South Capitol Street Great Streets Program, "The Yards" and Waterfront Park, the construction of a new baseball park, and the redevelopment of St. Elizabeths Hospital.

Collectively, these projects could affect archaeological resources. It is expected that each of these projects includes evaluation of potential impacts to archaeological resources and that appropriate avoidance or mitigation plans will be developed.

There would be no indirect impacts to historic resources other than Anacostia Park for any of the proposed build alternatives. The build alternatives would not alter the historic character or integrity of the historic resources in the APE. The one additional set of highway ramps will be difficult to differentiate from the existing configuration at ground level (See Section 7. 14.7), although the walls and landscaping will be more obvious than the scrub vegetation that now borders the park along the highway. The scale of the viewshed in this area and the existence of a highway and bridge minimize the potential for any of the build alternatives to create indirect visual impacts. The design modifications that resulted in the need to convert only 1.5 acres of Anacostia Park to highway use, matched with the ball field, landscaping, signage, and other improvements that constitute the mitigation and net benefit enhancements, constitute a beneficial indirect impact to the park.

Cumulative impacts on historic resources for all build alternatives would be identical because the footprint is so similar. The 11th Street Bridges project, individually, would minimally affect historic resources within the APE. Collectively, the Anacostia Waterfront Initiative projects could affect historic resources. However, according to the most recent plans for these projects, few historic resources will be adversely affected. The goals of all of these projects are to improve access to the waterfront, improve transportation in this area to remove congestion from the neighborhoods, and to restore the original street plan of the L'Enfant plan. Cumulatively, these projects also could provide a benefit to the historic districts by reducing potential stress to historic structures from traffic congestion.

7.12.5 Mitigation Measures

Anacostia Park is eligible for (but not yet listed on) the NRHP for two reasons: its association with the Bonus March in the 1930s and because of the overall design and construction of the park and its seawalls.

Though the 11th Street Bridges project will have no direct impact on the former camp site of the Bonus March in Anacostia Park because the former site of the camp will not be altered, DDOT will highlight the important cultural events that occurred in the park in the 1930s by adding interpretive markers. Interpretive markers describing Camp Marks (largest camp site of the Bonus March) would be installed (downriver of the bridges) on the east bank of the Anacostia River in the approximate area of the Bonus March camp site.

As a separate issue, the project may affect the historic seawalls. For this project, the seawalls would remain an important aspect of the Park's design and construction. All build alternatives would continue to span the seawalls; consequently, the potential for impacts to the seawall would be possible, particularly if new construction is required close to them. The structure above the seawall will need to be removed and a new structure constructed. Parallel to the seawall, extending upstream from the existing piers, additional pilings will need to be constructed parallel to the seawall. This construction would be comparable to the effort undertaken when the existing bridges were built in the 1960s. The seawall is supported by an underground pyramid approximately 40 feet wide at the base and centered on the visible portion of the seawall. The contractor needs to be certain that he does not disturb the base of the seawall that extends approximately 20 feet either side of the visible portion of the seawall.

The project would also require some land from a small portion of the Anacostia Park. With regard to lost acreage, it has been determined that 1.5 acres of the park on the east bank of the river, northeast of the 11th Street bridges, would be acquired by DDOT to support the project. Within the said acreage, a baseball field would be taken for project development. To mitigate construction activities in this area, the three remaining ball fields would be topped and leveled with 12 inches of soil to facilitate turf growth. In addition to leveling the remaining ball fields, stormwater management facilities would be incorporated to protect the ball fields from stormwater runoff.

FHWA, DDOT, the District SHPO, and NPS have entered into a Programmatic Agreement governing the subsequent investigation and recovery of cultural resources. The agreement is included in Appendix J. The agreement describes a program of ongoing monitoring during ground-clearing activities and describes agreed-to responses if cultural resources are uncovered.

7.13 Hazardous Waste Sites

Seven locations with known or suspected hazardous materials are located within the construction area for the build alternatives or in close proximity. Five sites are west of the

river and two are east of the river (see Exhibit 6-90). Of the seven sites of potential concern described in Section 6, only two—the Washington Gas & Light East Station Site located south of M Street and east of 11th Street and the Exxon Station north of M Street and west of 11th Street—remain as concerns. The other five are far enough away from the construction footprints to be potentially affected. Contaminated groundwater and/or soil could be encountered during construction adjacent to the two properties. Contaminated sediments could also be encountered during work in the Anacostia River.

Two sites remain as potential concerns for hazardous materials.

7.13.1 Impacts of the No-Build Alternative

No operational or construction impacts are anticipated for the No-Build Alternative beyond those currently present from actual and suspected hazardous materials present in the area, that is, asbestos-containing material (ACM), lead-based paint, PCBs, and contaminated soil and groundwater. These are currently being treated or removed and those actions would continue.

7.13.2 Impacts of the Build Alternatives

No operation impacts are anticipated for the Anacostia Freeway Interchange, the river-crossing bridges, or the Southeast/Southwest Freeway Interchange area and street network for the build alternatives. The primary concern for these areas would be runoff of contaminants entrained in stormwater such as fuel and lubricants, compounds from tires and brakes, and automobile engine coolants. This runoff is discussed in Section 7.7, Water Quality Impacts.

The benefit of the build alternatives would be the removal of some contaminated soils from the western portion of the East Station Site. This would reduce further groundwater contamination in the area and could reduce the potential exposure to workers who may participate in future excavation projects in the area.

7.13.3 Temporary Construction-Related Impacts

The potential impacts associated with construction of each alternative depend on the proposed areas of construction, demolition, or rehabilitation, and the presence of USTs/ASTs, PCBs, radon, ACM, lead-based paint, or other hazardous substances. Exhibit 7-44 shows the location of the build alternatives with respect to the areas of concern for hazardous materials. Exhibit 7-44A shows the Preferred Alternative.

In general, the build alternatives' construction impacts would be similar. No notable impacts are expected during construction of the Anacostia Freeway Interchange or river-crossing bridges for any build alternative, including the Preferred Alternative. The conceptual design of the bridge includes minimizing disturbance of river sediments because of known contamination. Installing form boxes around the existing piers would minimize the disturbance and migration of contaminated sediments during bridge construction. There is a low risk of spreading contamination through the use of the system proposed, which is "form

boxes" attached to the pier foundations, sealed, and then dewatered. Cofferdams with sheet pilings driven into the river bottom will not be used.

The water pumped from inside the form box would be surface water because the area only needs to be dewatered to a depth of 4 to 5 feet lower than current conditions. This depth of dewatering would have minimal impacts on river sediments. There is a low risk of spreading contaminants using this approach. The impact is considered minor. In spite of efforts to minimize disturbance to river sediments, contaminated sediment could be disturbed and migrate downstream during construction of the river-crossing bridges.

More notable contaminated materials impacts are anticipated for all build alternatives in the Southeast/Southwest Freeway Interchange and surface street network. Construction workers (and others) could be exposed to contaminated soil and groundwater on the East Station Site, in particular, during ground-disturbing activities such as constructing retaining walls, installing pier footings, or trenching for utilities.

In the vicinity of the Exxon Station at 11th and M Streets or the abandoned station at Martin Luther King, Jr. Avenue and Good Hope Road, the only construction will be what is commonly called "mill and fill," where the road surface is refurbished inside the existing curb boundaries. Contact with subsurface soils will not occur.

Beyond the potential exposure issue, the planned construction activities west of the river would create large volumes of spoils containing contaminated soil and debris and large quantities of contaminated groundwater. In addition, Washington Gas & Light currently pumps and treats contaminated groundwater at the site, so dewatering activities during construction could interfere with the effectiveness of the remediation system.

7.13.4 Indirect and Cumulative Impacts

Indirect and cumulative benefits of all the build alternatives include an overall reduction of contaminants at the East Station Site. In addition, during construction activities within the entire project area, contamination may be discovered and cleaned up that would otherwise remain in place with a potential to migrate. Ongoing development on both sides of the river will likely result in additional areas being cleaned to the standards required for the proposed uses.

Alternatively, construction activities with inadequate preventative measures could uncover contaminated material, allowing more exposure to the public and spread of contamination. This applies to the 11th Street Bridges project and to other projects in the region.

EXHIBIT 7-44
Hazardous Material Locations
The build alternatives have similar impacts to sites of potential concern.

EXHIBIT 7-44A
Hazardous Material Locations
The Preferred Alternative has similar impacts to sites of potential concern as the build alternatives.

7.13.5 Mitigation Measures

Long-term Mitigation

Mitigation of impacts during operations, primarily from stormwater runoff, is discussed in Section 7.7, Water Quality Impacts. Direct discharge of stormwater runoff to the river from the bridges would not be allowed. LID techniques would be implemented consistent with the *Anacostia Waterfront Initiative Transportation Architecture Design Standards*, to the extent possible, and may include vegetated drainage swales, vegetated holding ponds, and treatment wetlands. These options are discussed in more detail in Section 7.7.5.

Mitigation During Construction

Mitigation measures that would be required as part of the construction planning include the development of spill prevention, control, and countermeasure plans; erosion and sedimentation control plans; and plans for handling and disposal of contaminated soil, groundwater, and river sediment, both known and unanticipated. The development and implementation of the plans will be required by DDOH. Regulatory permits, including the NPDES stormwater permit, DDOH permits, and USACOE permits, will also be required.

As part of health and safety training, site construction workers should be advised of potentially hazardous areas so they exercise appropriate measures if working in these areas.

If contaminated soil or groundwater is unavoidably encountered, such media could be characterized before excavation to minimize space requirements for stockpiling and the need for double handling of the material. Depending on the nature of the contaminant, it could be stockpiled or containerized and then characterized to select appropriate disposal options.

Engineering controls such as fans and blowers could be employed to dissipate volatile contaminants.

While not in the direct impact zone of the project, the contractor may identify the Steuart Petroleum Company property as a construction staging area. The District UST Program would need to approve a site work plan.

Avoidance of the area of the East Station Site, on the east side of the demarcation line for the 12th Street sewer line, would minimize the potential for impacts to the current remediation treatment system at the site. The construction activities should be coordinated with the Washington Gas & Light environmental manager and DC Department of the Environment to minimize disruption to the current remediation treatment system at the site.

To minimize the amount of contamination that may be encountered, a Preliminary Site Investigation could be performed in areas where excavation and/or drilling are expected for roadway construction and utility relocations to identify the location and extent of contamination in order to avoid hot spots.

In areas of known groundwater contamination, special drilling methods would reduce the potential for vertical migration of contaminants during drilled shaft installation. Each

saturated zone would be cased to prevent the groundwater from entering the borehole and flowing down the open shaft, thereby isolating the saturated zone.

Utility relocations in areas of known groundwater or soil contamination would require special precautions or construction methods to limit worker exposure. Methods limiting activities within trenches would be implemented.

7.14 Visual Impacts

To aid reviewers, a series of photosimulations have been developed that interpret the preliminary engineering designs. These images are conceptual and subject to revision as the project moves forward, but they do provide a reasonable view of the completed project. The views selected for the photosimulations were requests resulting from the extensive public and agency coordination described in Section 12.

From a visual impact perspective, the project is a replacement of existing structures, bridges, ramps, retaining walls, and highways, and the addition of two ramps to the interchange east of the river. It is not a set of new structures on previously undeveloped grounds or a major reconfiguration of the existing structures. Visually, one set of large, man-made structures will replace another set of large, man-made structures in essentially the same location. Several of the views are focused on the area with the two new ramps because it is the only area where new elements will be introduced. The alternatives differ from one another and from what exists today, but most of the differences are subtle. The following section displays select views of the study area to highlight the distinguishing features of the alternatives.

7.14.1 Impacts of the No-Build Alternative

Exhibit 7-45 is an aerial photograph of the existing interchange of the Southeast/Southwest Freeway west of the Anacostia River. On the right side of the photograph is Washington Navy Yard and on the left is the Maritime Plaza development. The upstream ACBA building is the leftmost of the two waterfront buildings between the existing bridges in the upper center of the photograph. Hopkins Apartments are two buildings that sit in an "L" relationship to one another in the lower left of the photograph. Virginia Avenue Park is the small green area to the lower left. The railroad tunnel is visible in the lower center of the photo.

Exhibit 7-45 shows the existing conditions and is a reasonable approximation of the No-Build Alternative. The major difference for the No-Build Alternative is that a separate project will remove the pair of ramps that head to the lower left of the exhibit. This change, which is incorporated on all the illustrations of the build alternatives, is independent of the 11th Street Bridges project.

The four proposed build alternatives and the Preferred Alternative share many common components and may appear very similar, but there are also important, although subtle, differences.

EXHIBIT 7-45
Existing Southeast/Southwest Freeway Interchange
Aerial photograph of the existing Southeast/Southwest Freeway interchange from the west side of the Anacostia River.

E-002_West_Existing_v102

EXHIBIT 7-46
Existing Anacostia Freeway Interchange
Aerial photograph of the existing interchange of the Anacostia Freeway from east of the Anacostia River also shows the No-Build Alternative.

E-012_East_Existing_v102

Exhibit 7-46 is an aerial photograph of the existing interchange of the Anacostia Freeway east of the Anacostia River. This exhibit is also a reasonable approximation of the No-Build condition. The Anacostia Freeway runs from the lower left to the upper right and is paralleled by an unused railroad track. Portions of both the Anacostia and the Fairlawn neighborhoods are to the right and below the freeway in this photograph. Anacostia Park and the Anacostia River are the dominant features above and to the left in the photograph. An athletic field for Anacostia Senior High School is visible in the upper right.

7.14.2 Impacts of the Build Alternatives

Southeast/Southwest Freeway Interchange

Exhibit 7-47 is a photosimulation of the Preferred Alternative and Build Alternative I west of the river. The image shows the freeway connected to the network of grid-pattern, surface streets at M Street. Some touchdown points differ, most notably that M Street becomes the primary freeway access point, but most elements of the highway interchange, such as ramps, retaining walls, support piers, and grassy slopes, will be comparable to what exists today in Exhibit 7-45. Exhibits 7-71 through 7-73 assist the reader in visualizing a view from the ground.

The street network with the Preferred Alternative and Build Alternative I is typically a series of intersections on one level. M Street, Virginia Avenue, 11th Street, 12th Street, and Southeast Freeway Boulevard are all at the same elevation.

The upstream ACBA building was shown with one wing removed. Refined engineering analysis and additional field survey data have indicated that construction of any of the build alternatives, including the Preferred

Alternative, will not require the whole or partial demolition of either of the two ACBA buildings.

All the build alternatives would move the freeway farther from the Hopkins Apartments. This would remove some shade from the parking area and yield views from the area that are more expansive.

The highway exiting the photo to the lower left and adjacent to the railroad tracks is the anticipated replacement for the Southeast/ Southwest Freeway commonly referred to as Southeast Freeway Boulevard.

The local bridge would become more of an extension of 11th Street than is the case today.

The distinguishing visual element of Build Alternative II, as well as the distinguishing design element, is the use of a circle to manage traffic where the freeway ramps, 11th Street, and the anticipated Southeast Freeway Boulevard all converge between M Street and K Street.

EXHIBIT 7-47
Photosimulation: Preferred Alternative and Build Alternative I – West Side
Photosimulation of the Preferred Alternative and Build Alternative I interchange at the Southeast/Southwest Freeway viewed from the west side of the Anacostia River.

E-076_West_I&PREF-ALT_v300.pdf

Exhibit 7-48 provides a photosimulation of how this alternative would appear. From M Street to the river, there are no differences between Build Alternative I and Build Alternative II. The difference is all in the circle, how it connects to the street network, and the open space created at the center.

Also like Build Alternative I, this alternative would have most of the surface street movements on the same elevation. The circle and the local streets would be a flat plane. Southeast Freeway Boulevard would change elevation to meet the new highway to be provided in that location.

The circle would be partially covered by the elevated highway but would probably provide more of an open feel than afforded by the other build alternatives. The circle would intrude into the Hopkins Apartments parking area but would provide more green space in the center of the circle. Whether this area could be suitable as a park would depend on the plans of DPR.

Build Alternative III would provide more of a freeway approach to traffic management with different elements on different elevations.

EXHIBIT 7-48
Photosimulation: Build Alternative II – West Side
Photosimulation of the Build Alternative II interchange at the Southeast/Southwest Freeway viewed from the west side of the Anacostia River.

E-072_ AnaWest_ALT-II_v202.pdf

EXHIBIT 7-49
Photosimulation: Build Alternative III – West Side
Photosimulation of the Alternative III interchange at the Southeast Freeway viewed from the west side of the Anacostia River

E-004_West_ALT-III_v203.pdf

As shown in the photosimulation presented in Exhibit 7-49, Alternative III would provide an underpass to 11th Street and 12th Street to connect traffic from the Southeast/Southwest Freeway with Southeast Freeway Boulevard. This is in place of the at-grade intersections or the circle provided in Build Alternatives I and II.

Virginia Avenue, 11th Street, and 12th Street would all be at a constant elevation but Southeast Freeway Boulevard would be depressed. The depressed segment would provide a visual division between the Southeast neighborhoods north of the freeway and the Anacostia waterfront and Navy Yard communities south of the freeway.

From M Street to the river, Build Alternative III would be identical to Build Alternatives I and II. Build Alternative IV shares a similar configuration with Build Alternative III in the vicinity of the Southeast/Southwest Freeway and linkages to the local street network (Exhibit 7-50). Both would use an underpass to connect the Southeast/Southwest Freeway to Southeast Freeway Boulevard. The orientation of the connecting road between the M Street/12th Street intersection and the K Street/11th Street intersection would differ for the only notable visual change from Build Alternative III in the area from M Street north.

Build Alternative IV would differ in several regards from Build Alternatives I, II, and III in the area from M Street to the river. Two one-way bridges would cross the river, producing

EXHIBIT 7-50
Photosimulation: Build Alternative IV – West Side
Photosimulation of the Build Alternative IV interchange at the Southeast/Southwest Freeway viewed from the west side of the Anacostia River.

several visual differences as well. The pedestrian/bike paths that bracketed the local bridge would now bracket the entire project.

Anacostia Freeway Interchange

Exhibits 7-51 through 7-53 are photosimulations of the build alternatives from the same perspective as Exhibit 7-46 for the No-Build Alternative. Only three images are presented because the Preferred Alternative and Build Alternatives II and III are identical in this view. These views are useful to understand the design, but are a perspective that would be experienced by very few people and that vary little in their visual impact. In all cases, large man-made structures would be replaced by large man-made structures. In contrast to the west side of the river, the project does require a larger footprint than the existing highway in order to provide the missing movements that are a key feature of the project's purpose and need.

Most people would experience the visual aspects of the highway from ground level. To help visualize the changes, a series of photosimulations have been prepared that consider the alternatives from key locations in the Anacostia community, including the intersections of Martin Luther King, Jr. Avenue and Good Hope Road, 13th Street and Good Hope Road, Ridge Place and 13th Street, and in Anacostia Park.

EXHIBIT 7-51
Photosimulation: Build Alternative I – East Side
Photosimulation shows an aerial perspective of Build Alternative I on the east side of the Anacostia River.

7.14.3 Martin Luther King, Jr. Avenue and Good Hope Road

Exhibit 7-54 illustrates the existing view of the corner of Martin Luther King, Jr. Avenue and Good Hope Road. The existing highway ramp is visible in the center rear of the photo. The automobiles are at the end of the off ramp. The vacant property to the right of the photo will become a new Anacostia Gateway Government Center Building. When complete, the Preferred Alternative and Build Alternatives I, II, and III are likely to resemble the existing conditions/No-Build Alternative because the road will be a ramp linked to the larger network. With Build Alternative I, the intersection would handle one-way traffic as

EXHIBIT 7-52
Photosimulation: Preferred Alternative and Build Alternatives II and III – East Side
Photosimulation shows an aerial perspective of the Preferred Alternative and Build Alternatives II and III on the east side of the Anacostia River.

EXHIBIT 7-53
Photosimulation: Build Alternative IV - East Side
Photosimulation shows an aerial perspective of Build Alternative IV on the east side of the Anacostia River.

EXHIBIT 7-54
I-295 Exit Ramp
The exit ramp from I-295 ends at the intersection of Martin Luther King, Jr. Avenue and Good Hope Road, where the District intends to provide a new Anacostia Gateway Government Center Building.

today, and with the Preferred Alternative and Build Alternatives II and III, it would handle two-way traffic. The visual changes from existing conditions or among the No-Build Alternative, the Preferred Alternative, or Build Alternatives I, II, and III, would be minimal. With Build Alternative IV, access to the highway would be from Good Hope Road, so the extension of Martin Luther King, Jr. Avenue visible in this image would become a stub road serving adjacent properties. Exhibits 7-55, 7-56, and 7-57 are photosimulations of the build alternatives.

Exhibit 7-58 is the same simulation of Build Alternative IV shown in Exhibit 7-57, but includes a rendering of the planned Anacostia Gateway Government Center building. Although Build Alternative IV would have the most prominent profile from the intersection of Martin Luther King, Jr. Avenue and Good Hope Road, the introduction of the Gateway Center is the most prominent feature of the area. The highway does not vanish, but it becomes less evident. The Anacostia Gateway Government Center building will be developed with any alternative, including the No-Build Alternative.

EXHIBIT 7-55
Martin Luther King, Jr. Avenue and Good Hope Road – Build Alternative I
Photosimulation from the intersection of Martin Luther King, Jr. Avenue and Good Hope Road shows the exit from the local bridge in the same place as the existing exit and the connecting ramps for Build Alternative I just visible in the background.

E-017_GoodHope_ALT-I_v101

EXHIBIT 7-56
Martin Luther King, Jr. Avenue and Good Hope Road – Preferred Alternative and Build Alternatives II and III
Photosimulation from the intersection of Martin Luther King, Jr. Avenue and Good Hope Road shows on/off ramps for the local bridge in the same place as the existing exit and the connecting ramps for the Preferred Alternative or Build Alternatives II and III visible in the background.

E-019_GoodHope_ALT-II_v101

7.14.4 13th Street and Good Hope Road

At 13th Street and Good Hope Road, the existing on-ramp is supported on a retaining wall that forms a notable visual barrier for the residences to the right of the ramp (Exhibit 7-59). All build alternatives would revise this barrier and improve views from adjacent properties. Build Alternative I would have a minor impact, as shown in Exhibit 7-60. The roadway and the retaining walls would be moved further from the residences and lowered. The Preferred Alternative and Build Alternatives II, III, and IV access the highway network at either Martin Luther King, Jr. Avenue or Good Hope Road and would remove this ramp completely.

EXHIBIT 7-57
Martin Luther King, Jr. Avenue and Good Hope Road – Build Alternative IV
Photosimulation shows Martin Luther King, Jr. Avenue stubbed just past the intersection with Good Hope Road and the connecting ramps for Build Alternative IV visible in the background.

E-021_GoodHope_ALT-IV_v101

EXHIBIT 7-58
Martin Luther King, Jr. Avenue and Good Hope Road – Anacostia Gateway Government Center
View of the intersection of Martin Luther King, Jr. Avenue and Good Hope Road with Build Alternative IV and the planned Anacostia Gateway Government Center building.

E-022_GoodHope_ALT-IVB_v101

EXHIBIT 7-59
Freeway On-Ramp at 13th Street
The freeway on-ramp at 13th Street is supported by a retaining wall that creates a visual barrier for properties to the right.

E-023_13th_existing_v101

EXHIBIT 7-60
Build Alternative I Local Bridge On-Ramp
The on-ramp to the local bridge with Build Alternative I would be farther from the properties to the right than the existing ramp and lower.

E-024_13th_ALT-I_v101

7.14.5 Ridge Place and 13th Street

The perspective shown in Exhibit 7-61 provides a southwest view from the intersection of Ridge Place and 13th Street, the residential neighborhood nearest the Anacostia Freeway interchange. The on-ramp to the 11th Street Bridge is the most visible highway feature in the photograph.

The Preferred Alternative and Build Alternatives II and III, which are identical east of the Anacostia River, would be more visible from Ridge Place and 13th Street than the existing highway and ramps. Exhibit 7-62 shows the ramp from I-295 northbound connecting to the 11th Street Bridge approaches from the left of the image. Less visible on the right is the ramp connecting southbound DC-295 to the new local bridge.

EXHIBIT 7-61
Existing 11th Street Bridge from Ridge Place and 13th Street
The existing 11th Street Bridge is visible from homes near the intersection of Ridge Place and 13th Street.

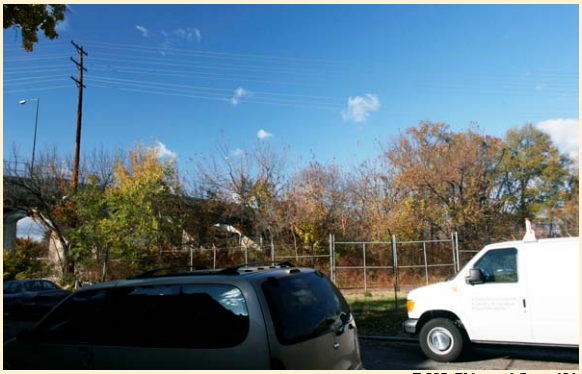

E-026_Ridge_existing_v101

EXHIBIT 7-62
Photosimulation: Anacostia Freeway from Ridge Place and 13th Street
View of the Anacostia Freeway interchange with the Preferred Alternative and Build Alternatives II and III.

E-027_Ridge_ALT-II_v101

7.14.6 Anacostia Park – View to the North

Anacostia Park is a linear facility that parallels the Anacostia River. It is much longer than it is wide. Even substantial man-made objects are quickly diminished by distance and the scale of the surrounding environment. Exhibit 7-63 shows the existing Anacostia Drive in the park, looking northeast to the east end of the bridges across the river. The interchange with I-295 is visible in the distance on the right. The ramps from the bridges to I-295 are at the lowest level than the ramp into Anacostia. The ramps leading from I-295 to the 11th Street Bridges are at the highest level.

EXHIBIT 7-63
Existing View: I-295 from Anacostia Park Looking North
Looking north from Anacostia Park, the interchange with I-295 and the river bridges is visible as a horizontal element across the photograph.

E-065_Anacostia_North_Loc10_EXIST_Crop

Exhibit 7-64 is a photosimulation that shows what Build Alternative I could look like from the same location as in Exhibit 7-63. The opening under the bridge on the left is larger than the existing because the redundant beams of the more modern design would not need to be as deep. To the right, the profile of the ramps is somewhat lower, and less visible, that is the case of the No-Build Alternative. However, the connecting road to the park would be a new element from this perspective. The Preferred Alternative and Build Alternatives II and III would appear very similar to Build Alternative I from this perspective.

EXHIBIT 7-64
Photosimulation: I-295 from Anacostia Park Looking North – Preferred Alternative and Build Alternatives I, II, and III
Looking north from Anacostia Park, Preferred Alternative and Build Alternatives I, II, and III show more clearance under the river bridge and a lower profile to the approach ramps in this photosimulation.

E-066_MarineBarracks_crop_v101

Build Alternative IV would have noticeable visual differences from the other build alternatives. The area to the left of the photosimulation in Exhibit 7-65 does not differ, but the

fact that access to the local lanes on the bridges is at Good Hope Road rather than Martin Luther King, Jr. Avenue, means that more of the pier network would be visible from Anacostia Park. The freeway lanes must go over the ground level Good Hope Road. The ramps to Good Hope Road form a diagonal element in the environment.

EXHIBIT 7-65
Photosimulation: I-295 from Anacostia Park Looking North – Build Alternative IV
Looking north from Anacostia Park, Build Alternative IV would present several visual differences from the other alternatives in this photosimulation, including the ramp to Good Hope Road and the elevated freeway ramps.

7.14.7 Anacostia Park – View to the South

A photograph of the existing view of the same interchange from the north side looking southwest is provided in Exhibit 7-66. The abutments and river-crossing bridge are visible at the limit of Anacostia Drive. The on-ramps from 13th Street can be seen to the left side of the photograph, and freeway traffic is visible through the vegetation. Vegetation obscures the remaining portions of the highway and ramps.

EXHIBIT 7-66
Existing View: I-295 from Anacostia Park Looking Southwest
Existing view from Anacostia Park looking southwest to the interchange with I-295 and the river bridges.

The photosimulation of Build Alternative I shows the same enlarged opening under the bridge where Anacostia Drive passes under the freeway (Exhibit 7-67). The connecting ramps are more obvious because the existing vegetation would have to be removed during construction. The lower ramp visible in the exhibit would be the replacement connection from the northbound Anacostia Freeway to the bridges. The upper ramp would be the new connection from the southbound Anacostia Freeway to the bridges. While the new ramps are obvious in the photosimulation, they would become less visible as soon as vegetation grows in the area.

EXHIBIT 7-67
Photosimulation: I-295 from Anacostia Park Looking Southwest – Build Alternative I
Photosimulation of Build Alternative I from Anacostia Park looking southwest to the interchange with I-295 and the river bridges.

E-069_ Anacostia_South_Loc11_ALT-I_Crop _v101

Exhibit 7-68 is a photosimulation of Build Alternatives II and III. In these, the ramp from the southbound Anacostia Freeway climbs to meet the elevation of the river-crossing bridge, while the ramp from the northbound freeway is coming down to meet the bridge.

EXHIBIT 7-68
Photosimulation: I-295 from Anacostia Park Looking Southwest – Build Alternatives II and III
Simulation of Build Alternatives II and III from Anacostia Park looking southwest to the interchange with I-295 and the river bridges.

E-070_ Anacostia_South_Loc11_ALT-II_Crop _v101

Exhibit 7-69 shows what Build Alternative IV could look like. With this alternative, the local traffic component of the westbound river crossing passes under freeway ramp before climbing to meet the river-crossing bridge. Both new movements connecting the southbound Anacostia Freeway to the bridges are visible.

EXHIBIT 7-69
Photosimulation: I-295 from Anacostia Park Looking Southwest – Build Alternative IV
Simulation of Build Alternative IV from Anacostia Park looking southwest to the interchange with I-295 and the river bridges.

E-071_ Anacostia_South_Loc11_ALT-IV _ Crop_v101

Exhibit 7-70 is a photosimulation of what the Preferred Alternative would look like when viewed from northeast of the Anacostia side of the interchange. The roadway is shown supported by a retaining wall comparable to those found elsewhere in the area. While the use of a wall minimizes the footprint of the highway in the park, it could create a more intrusive view. Use of this wall treatment and planting of a number of trees in the area will soften the view. Trees in the photosimulation are immature trees comparable to their appearance when planted, not when they become more mature. This tree planting is part of the Net Benefits 4(f) Programmatic Agreement with NPS that is included in Appendix H.

EXHIBIT 7-70
Photosimulation: I-295 from Anacostia Park Looking Southwest – Preferred Alternative
Simulation of Preferred Alternative from Anacostia Park looking southwest to the interchange with I-295 and the river bridges.

E-075_Anacostia_South_Loc11_PrefAlt_v300

7.14.8 11th Street and N Street Ramp

Exhibit 7-71 is a photograph of 11th Street adjacent to the Navy Yard showing the existing on-ramp and the remnants of 11th Street as it approaches the river. Exhibit 7-72 shows the same area if the Preferred Alternative or Build Alternatives I, II, or III were built. The approach would open the area to a more inviting vista that could serve as the gateway to the

EXHIBIT 7-71
N Street Ramp at 11th Street
The existing 11th Street and N Street Ramp area is defined by high walls close to both sides of the roadway.

E-009_11th-N-Ramp_Existing_v101

EXHIBIT 7-72
Photosimulation: Preferred Alternative and Build Alternatives I, II, and III at the Navy Yard
Photosimulation showing how the Preferred Alternative and Build Alternatives I, II, and III move the highway farther from the Navy Yard, creating a more open approach to the local bridge.

E-010_11th-N-Ramp_ALT-I_v101

EXHIBIT 7-73
Photosimulation: Build Alternative IV at the Navy Yard
Build Alternative IV would retain the appearance of the current approach

cross-river Anacostia community and a more appealing path to the riverfront. When fully developed following the selection of a preferred alternative, the local bridge would include a combination sidewalk/bikepath on both sides of the highway that would link with the existing and proposed system. Along 11th Street where the Preferred Alternative and Build Alternatives I, II, and III open the area to a more inviting vista that could serve as the gateway to the cross-river Anacostia community, Build Alternative IV would retain the appearance of the current approach (Exhibit 7-73).

7.14.9 Virginia Avenue Park

The visual effect of alternatives on Virginia Avenue Park is shown when comparing the images in Exhibit 7-74 and 7-75. The first image is the area as it exists today, with the freeway elevated on a series of piers, while the second image is an artist's interpretation of the engineering detail available to date that shows the proposed highway supported by retaining wall. There are minor differences between the build alternatives, but the effect of the retaining walls in place of the piers is the primary visual impact.

7.14.10 Temporary Construction-Related Impacts

Visual impacts associated with construction will be primarily related to construction methodology and equipment. For example, the contractor is expected to use barges in the

EXHIBIT 7-74
Existing View: Use of Piers at Virginia Avenue Park
Near Virginia Avenue Park, piers support the current freeway and provide a measure of lightness and transparency to a substantial structure.

EXHIBIT 7-75
Photosimulation: Use of Retaining Walls at Virginia Avenue Park
Photosimulation showing how all build alternatives, including the Preferred Alternative, would be supported by retaining walls near Virginia Avenue Park, thus providing a measure of substance to the structures and better defining the park boundary.

river to reconstruct the bridge piers. For the duration of that operation, the barges will be visible from several vantage points, including the existing bridge. In all areas of construction there will be temporary forms, along with equipment coming and going.

7.14.11 Indirect and Cumulative Impacts

There will be no permanent indirect visual impacts because there would be no expected relevant changes in land use or urban character caused by this project that could lead to a change in viewsheds.

The cumulative visual impacts will be maintaining the built environment that has been developing over the last several hundred years in the vicinity of the bridges.

7.14.12 Mitigation Measures

Mitigation will take several forms. The height of all structures will be kept to the lowest elevation possible in order to minimize the intrusion on viewsheds. There is also a commitment to NPS to provide a stone-like appearance on all concrete elements such as retaining walls and bridge abutments visible from park areas. The same treatments will be applied to the areas adjacent to pedestrian walkways. Landscape buffers will be added to areas where there is the necessary right-of-way to accommodate plantings. LID techniques will be used for treating runoff to reduce the amount of hard surface.

7.15 Energy Impacts

All build alternatives, including the Preferred Alternative, are designed to improve the flow of traffic on freeways and local streets without adding freeway capacity.

7.15.1 Impacts of the No-Build Alternative

With the No-Build Alternative, congestion on the freeway and local streets is expected to increase. This would lead to increased stop-and-go driving, which decreases fuel mileage and is thus less energy efficient than steady movement at reasonable speeds.

7.15.2 Impacts of the Build Alternatives

The build alternatives all would provide a measure of congestion relief for both freeway traffic and traffic on local streets. This would reduce stop-and-go driving and result in a small improvement in energy efficiency.

7.15.3 Temporary Construction-Related Impacts

In terms of construction impacts, the build alternatives, including the Preferred Alternative, are essentially identical to one another. Construction equipment would consume energy that would not be required in the No-Build Alternative. The energy consumed during construction would be offset by the energy savings during operations and thus yield a net benefit.

7.15.4 Indirect and Cumulative Impacts

Because the build alternatives would not add through capacity to the interstate system, and because the traffic modeling shows that traffic would not be drawn off the Beltway to travel on the Anacostia and Southeast/Southwest freeways, no induced or indirect energy impacts are anticipated.

There are no cumulative impacts with any of the build alternatives, including the Preferred Alternative. This is primarily because there are no adverse direct or indirect energy impacts.

7.15.5 Mitigation Measures

Improved transit, including expansion of Metro or use of commuter bus service, could result in energy savings.

Long-term Mitigation

The principal energy-saving measure that could be implemented would be for adjacent suburban areas to sponsor or foster transit opportunities for commuters to the urban core. This could take the form of additional commuter buses or, long-term, an extension of the Metro system to more outlying areas. This would require a cooperative effort between the District and adjacent states.

Additional measures to conserve energy could include greater use of high-occupancy vehicle incentives.

Mitigation During Construction

Implementation of additional commuter buses, ride-share vans, and measures to encourage the use of high-occupancy vehicles during construction would at least partially offset the energy used for construction.

7.16 Public Services and Utilities Impacts

Impacts to public services and utilities in the study area are largely temporary and construction-related in nature. The proposed build alternatives do not remove any existing or create any new services or utilities. Relocations and temporary rerouting will occur throughout the construction process.

Impacts to public services and utilities in the study area are largely temporary and construction-related in nature. The proposed build alternatives do not remove any existing or create any new services or utilities. Relocations and temporary rerouting will occur throughout the construction process.

7.16.1 Impacts of the No-Build Alternative

The No-Build Alternative would have no impact on public services or utilities. Existing transit and school bus routes would also remain unaffected by the No-Build Alternative, though increased congestion on surfaces streets east and west of the Anacostia River may impact scheduling. Emergency response times are anticipated to remain unchanged.

7.16.2 Impacts of the Build Alternatives

Public Services

Although there would be changes in access and travel patterns for emergency response vehicles as well as transit and school bus drivers, none of the proposed build alternatives would permanently displace any public services. After the project is complete, the proposed improvements are expected to improve emergency response times, increase the safety and efficiency of transit service, and improve the effectiveness of evacuation routes. Additionally, each of the proposed build alternatives, including the Preferred Alternative, is being designed to accommodate potential streetcar service across the river on the local-traffic bridge. Detailed explanations of changes to access and travel patterns for each of the proposed build alternatives are provided in Section 8, the traffic and transportation section of this Final EIS.

Utilities

None of the proposed build alternatives would remove utility services from the study area. However, overhead and underground utilities located in the study area will need to be relocated. Exhibit 7-76 illustrates the existing water, sewer, and gas lines in the study area. Construction of a selected alternative provides an opportunity to coordinate roadway and bridge improvements with planned utility improvements in the study area. As an example, the DCWASA's *Combined Sewer System Long-Term Control Plan* identifies construction of a new 49-million-gallon storage tunnel west of the Anacostia River, passing through the study area along M Street. East of the river, a planned Fort Stanton Interceptor runs from between the existing bridges south through Anacostia Park (Exhibit 7-77). Planned water improvement projects in the study area include large and small valve replacements along 11th Street.

7.16.3 Temporary Construction-Related Impacts

Public service agencies and utility providers would experience temporary impacts during the construction of any of the proposed build alternatives. These temporary impacts include lane closures, detours, and travel delays as a result of changes in travel patterns and construction activity. In all cases, the changes would have limited impact because each side of the river has a sufficient complement of schools, medical facilities, police stations, fire stations, and EMS locations to fully serve the needs of that side of the river. Cross-river service is unusual. At least three lanes across the river will remain open at all times, thus retaining most of the emergency evacuation function now provided. Pennsylvania Avenue would remain the more common route. Metrobus stops and school bus stops may need to be temporarily relocated to accommodate construction traffic routing. Close coordination with utility companies will be required throughout the construction process. Permanent structures cannot be built above the existing underground water mains (Exhibit 7-76). These lines run along M Street and 11th Street west of the river, crossing under the Anacostia River parallel to the Officer Welsh bridge. East of the river, the water mains run through Anacostia Park, along I-295, Good Hope Road, and down Martin Luther King, Jr. Avenue.

EXHIBIT 7-76
Existing Study Area Utilities
This schematic shows the location of all known utilities in the area.

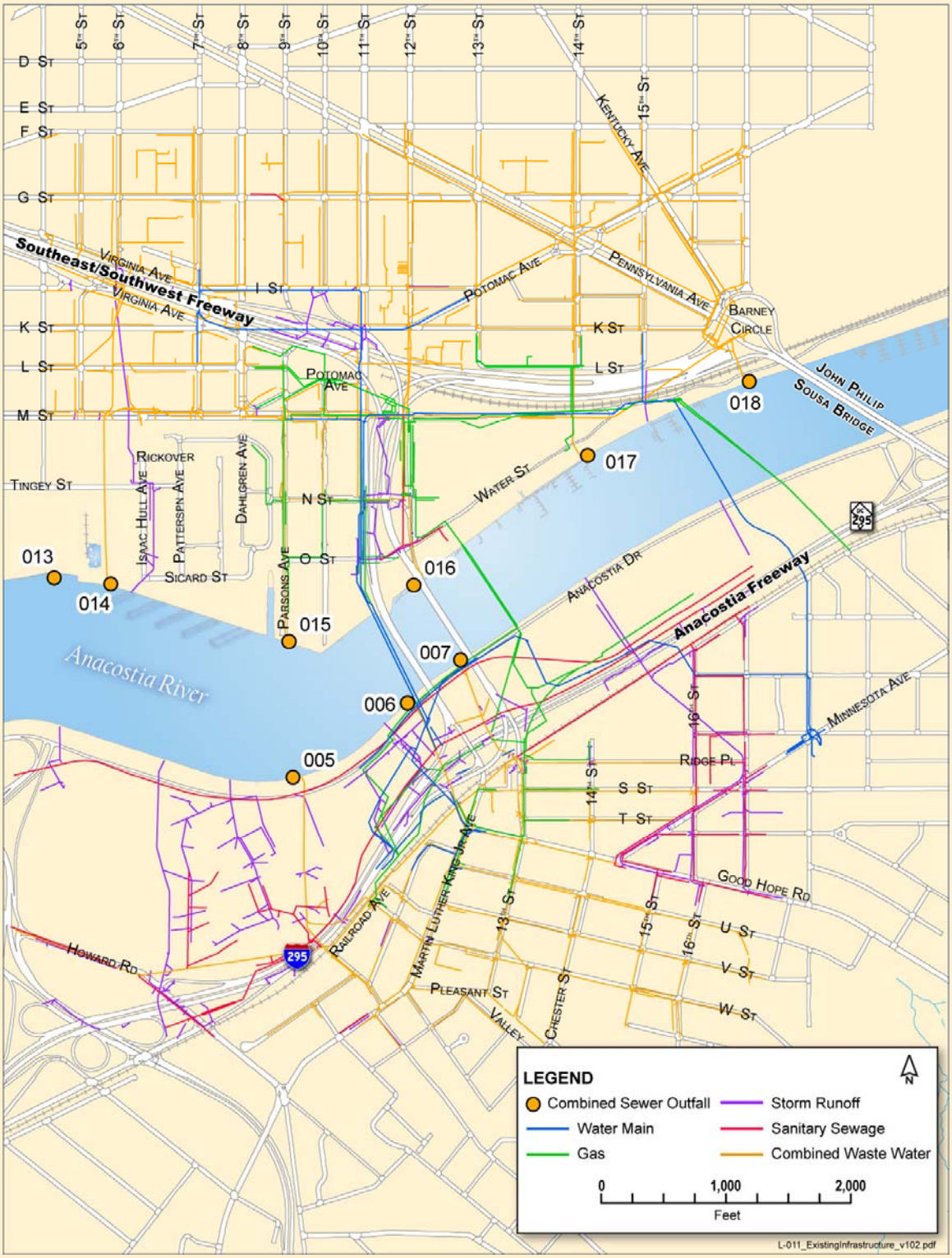


EXHIBIT 7-77
Planned Study Area Utility Improvements
This schematic shows the location of planned utilities in the area.

7.16.4 Indirect and Cumulative Impacts

Indirect Impacts: Indirect impacts are caused by a project, but unlike direct effects, they occur later in time or are farther removed in distance. Indirect effects are most often associated with highway projects that encourage or facilitate land use or development that changes the location, rate, type, or amount of growth. The 11th Street Bridges project does not have aspects that encourage or discourage growth, and no indirect impacts on public services or utilities are anticipated.

If a build alternative were selected, DDOT will develop an extensive agency coordination plan as well as a broad public information campaign, coordinate with public services, public service agencies, and utility providers to provide information about the project.

Cumulative Impacts: A cumulative impact results from the incremental impact of an action such as the 11th Street Bridges project when added to other past, present, and reasonably foreseeable future projects. The District intends to implement a streetcar system on both sides of the river. The current high-speed, pedestrian-hostile bridges are not appropriate for streetcar operation. Because the local bridge will be a low-speed, pedestrian-friendly facility, it will accommodate a cross-river streetcar system. When added to the streetcar facilities on either side of the river, this local bridge would constitute not only a cumulative impact, but a symbiotic one where the linked streetcar components have a stronger impact that the disjointed parts.

7.16.5 Mitigation Measures

Long-term Mitigation

Implementation of any of the proposed build alternatives, including the Preferred Alternative, is not expected to compromise the level of service from utility or public service providers. Depending upon the selected alternative, study area bus stops at 8th and I Streets, 12th and M Streets, and 11th Street and Good Hope Road may be relocated (Exhibit 7-78). DDOT will work with WMATA to identify appropriate locations and accommodations for relocated stops.

Because no adverse impacts on study area utilities are anticipated with any of the proposed alternatives, including the Preferred Alternative, no mitigation is proposed. If a build alternative were selected, DDOT would need to develop an extensive agency coordination plan as well as a broad public information campaign, coordinate with public services, public service agencies, and utility providers to provide information about the project, identify changes in public service operations and capital improvement projects, and discuss ways to implement the project so that necessary services and improvements are not compromised and human life is not jeopardized.

Mitigation During Construction

Close coordination with utility companies will be required throughout the construction process. During design and while developing construction schedules, coordination of utility

improvements with specific roadway and bridge construction will help avoid delays and negative impacts to all projects.

Study area residents are highly transit-dependent. Service interruption and changes during construction would impact mobility options. To mitigate the effects of temporary service changes, an extensive and coordinated public information program will be developed as the selected build alternative moves through final design and into construction. Ongoing coordination with WMATA will minimize disruptions to transit and maintain existing bus stops (Exhibit 7-78). Depending upon the selected alternative, individual bus stops may need to be temporarily relocated during construction.

Traffic will be maintained across the river on at least three lanes in each direction at all times and on at least two lanes in each direction along the Anacostia Freeway. Local signage will advise motorists of changes in traffic patterns. Access to and from Anacostia Park, to and from businesses and residences along Martin Luther King, Jr. Avenue and adjacent neighborhoods, and to and from the Navy Yard, destinations along M Street and 11th Street, and adjacent neighborhoods will be maintained at all times.

7.17 Environmental Justice Impacts

The existing highway and interchanges as well as the proposed build alternatives are located in an area with a concentration of minority and low-income populations. This is summarized in Exhibit 7-79 where six of the eight geographic areas exceed the District-wide proportion of minority and low-income populations.

Because they are in close proximity to the existing highway that is to be replaced, these populations would experience many of the localized effects, both negative and positive, regardless of which build alternative were chosen. They would also experience many of the consequences of the No-Build Alternative.

The potential for disproportionate impacts was reviewed in several issue areas: social and economic, relocation, considerations related to pedestrians and bicyclists, air quality, noise, visual quality, and construction.

No residences or businesses would be acquired with any of the alternatives. The ACBA operations will need to be temporarily relocated during construction, but that organization serves residents from throughout the greater Washington metropolitan area and is not a dedicated local community resource. There is proposed property acquisition in Anacostia Park and Virginia Avenue Park. Acquisition of the park land will proceed under the Net Benefits Section 4(f) Programmatic Evaluation, whereby, in the view of the land managers, the park will receive more benefit than harm from the highway and the project's mitigation measures. For Anacostia Park, this means provision of improved access and facilities. Details of plans for Anacostia Park are included in Appendix H.

EXHIBIT 7-78
Study Area Public Transportation
This schematic shows all of the existing bus routes in the project area.

EXHIBIT 7-79
Percent Minority and Low-income Population
Minority and low income populations are prevalent in the census tract/block groups adjacent to the project area.

Census Tract/ Block Group*	Minority Population (percent)	Low-Income Population (percent)
70/2	27	16
70/3	35	12
71/1	89	41
71/3	95	60
72/1	97	62
74.01/1	98	73
75.03/3	97	20
76.01/5	100	33
District-wide	69	20

*Exhibit 6-29 in Section 6 shows the location of these census tract/block groups.

All build alternatives improve accessibility to Anacostia Park. All build alternatives would provide pedestrians and bicyclists easier cross-river access. The Preferred Alternative and Build Alternatives II, III, and IV all provide motorists direct access to/from the Anacostia Freeway. Some residents have expressed an interest in promoting the park for residents rather than all users.

Existing community cohesion within the study area neighborhoods would be retained and perhaps slightly enhanced with all of the proposed build alternatives. No communities would be subdivided or reduced in number. The proposed improvements would largely occur within existing right-of-way, so disruption from dividing neighborhoods or removing community facilities would not occur. Reduced through traffic from non-residents would make residents' visits to neighbors and neighborhood facilities easier. The new local bridge would encourage foot and bike traffic between neighborhoods on either side of the river.

A number of residents will be within the viewshed of the revised facilities. The existing interchange and bridges already present sizeable man-made structures visible to nearby residents. The new facilities would replace those with facilities that are more noticeable from some locations and less visible from others. The existing 13th Street on-ramp, the structure closest to homes, would be removed under the Preferred Alternative and Build Alternatives II, III, and IV, and its profile would be lowered, and somewhat less intrusive than at present, under Alternative I.

7.17.1 Impacts of the No-Build Alternative

Under the No-Build Alternative, no impacts to social resources are anticipated in the near term, and current community cohesion would remain unchanged.

Street-level congestion would increase and air quality would probably get worse with the No-Build Alternative. Of the 19 existing or potential signalized intersections that were examined, congestion (defined as LOS E or worse) occurred on the Anacostia side of the river only in the no-build condition. To the degree that congestion, stop–and-go driving, is associated with air quality, these intersections would have lower air quality with the No-Build Alternative.

The No-Build Alternative would not provide safe cross-river access to the existing and planned pedestrian/bicycle facilities in the project area. Existing sidewalks are narrow and not separated from vehicular traffic.

A traffic noise impact occurs in residential areas if the noise levels equal or exceed 66 dBA or if future noise levels are 10 dBA higher than current noise levels. As noted in Section 7.6, Noise Impacts, the 66 dBA threshold is currently surpassed in a few cases, particularly in the Fairlawn neighborhood. By 2030, this situation will deteriorate everywhere with the Hopkins Apartments, Ridge Place/13th Street, and the Marine Corps study areas also exceeding the threshold at several locations with the No-Build Alternative. The Hopkins Apartments and Ridge Place/13th Street locations are both within the minority and low-income population areas of concern. The Marine Corps area is neither a low-income area nor a minority area.

7.17.2 Impacts of the Build Alternatives

The existing access from the Anacostia neighborhood would be revised with all build alternatives. With the Preferred Alternative and Build Alternatives I, II, and III, the downstream bridge would become the gateway between the Anacostia neighborhood and the Southeast and Capitol Hill neighborhoods. Build Alternative IV would continue to split the streams of freeway and local traffic, but neighborhood-to-neighborhood access would be one-way on each bridge. The Preferred Alternative and Build Alternatives II, II, and IV would provide new access for Anacostia residents to the Anacostia Freeway, supplementing the existing access at Pennsylvania and Howard Streets. Access to the Southeast/Southwest Freeway would require drivers to first cross the river.

With any build alternative, including the Preferred Alternative, the volume of traffic on Minnesota Avenue, Good Hope Road, and Martin Luther King, Jr. Avenue would be reduced because motorists seeking access to the Anacostia Freeway would be able to use the new freeway-to-freeway connector ramps rather than neighborhood streets. This would improve traffic flow through the Anacostia neighborhood.

All 19 existing or potential signalized intersections in the study area were examined to identify those that might experience an LOS of D, E, or F under one or more alternatives, including the No-Build Alternative. The six intersections shown in Exhibit 7-80 will experience an LOS of D, E, or F for one or more of the alternatives. All six intersections are projected to experience LOS D or better for the Preferred Alternative.

All of the intersections would be congested by 2030 with the No-Build Alternative. Neither of the two east-side signalized intersections would be congested with any of the build alternatives, including the Preferred Alternative. M Street and 11th Street would be congested with any alternative, but less so with any build alternative than with the No-Build Alternative. All signalized intersections on the west side would be congested with Alternative II. Only the intersections of M Street and N Street with 11th Street would be congested with either the Preferred Alternative or Build Alternative III. Congestion at intersections on the east side is more likely to affect local residents who are predominantly

EXHIBIT 7-80
Congested Signalized Intersections in 2030
Build alternatives reduce congestion at east- and west-side intersections.

Intersection	No-Build	Build Alternative I	Build Alternative II	Build Alternative III	Build Alternative IV	Preferred Alternative
M Street & 11th Street	F	E	D	D	D	D
N Street & 11th Street	E	A-C	D	D	A-C	D
Southeast/Southwest Freeway Off-Ramp & 11th Street	Does not exist	A-C	F	A-C	A-C	A-C
Southeast Freeway Boulevard NB &12th Street	Does not exist	A-C	E	A-C	A-C	A-C
Good Hope Road & Martin Luther King, Jr. Avenue	F	A-C	A-C	A-C	A-C	A-C
Good Hope Road & Minnesota Avenue	F	A-C	A-C	A-C	A-C	A-C

Level of Service (LOS): A-C (not congested) D (some congestion) E (congested) F (very congested) Does not exist

D-033_CongestSignalIntersectsl_v302.pdf

minority and more likely to be low-income. Congestion on the west side would affect minority and low-income residents, but would be most experienced by commuters to the major employment centers along M Street.

No exceedance of any NAAQS is anticipated at any location with any alternative. Residents near the project area are already subject to air emissions from local traffic activities and regional air sources. While air emissions (CO) are generally higher for the build alternatives than the No-Build Alternative, the emissions do not exceed federal standards that are designed to be protective of human health. Additionally, because the project is designed to reduce the idling time at several high-volume intersections, the result is reduced idling emissions (specifically $PM_{2.5}$), with reduced impact to affected populations.

Each of the build alternatives would result in higher noise levels in the neighborhoods (faster-moving traffic produces more noise than slower-moving traffic). This is true in low-income neighborhoods, in minority neighborhoods, and in neighborhoods that do not quality as either low-income or minority. Section 7.6 details the forecast noise levels in each neighborhood. The analysis shows an exceedance of the Noise Abatement Criteria in every neighborhood and with every alternative. The only exception is that the criteria would not be exceeded in Anacostia Park for either the No Build Alternative or Build Alternative I.

All of the proposed build alternatives except for the Preferred Alternative and Build Alternative I would require land from Virginia Avenue Park. This park is located in a predominantly minority and low-income population area and serves those residents.

7.17.3 Temporary Construction-Related Impacts

The construction impacts related to construction traffic, dust, noise, and vibration would all affect neighborhoods closest to the existing freeway. These are low-income and minority neighborhoods.

The District limits noise from construction sites to 80 dBA at 25 feet from the edge of the project (pile driving and explosives must conform to a separate set of rules) during the hours of 7:00 AM until 7:00 PM. Nighttime allowable levels in residential or waterfront areas are 55 dBA, in commercial or light manufacturing areas, 60 dBA, and in industrial zones, 65 dBA. Noise dissipates rapidly with distance from the source, so compliance with the District rules should result in no impact on nearby low-income or minority people.

If pile driving were used in construction, its usage would be restricted to the river-crossing areas and several hundred feet from any residential area. At a distance of 400 feet, a pile driver produces a noise level that some people may find annoying but does not produce vibration that will damage structures.

Access to homes and businesses on the same side of the river should not experience any noticeable change. Construction workers may use Metro and increase demand slightly, but this should not affect local residents. Cross-river commuters may experience more delay than at present during construction.

Business interests in the Anacostia neighborhood have expressed concern regarding the effects that construction activity could have on redevelopment efforts in that neighborhood. While access to businesses will not be blocked by construction, revised routes could produce some temporary confusion for consumers and other drivers.

7.17.4 Indirect and Cumulative Impacts

There are no indirect impacts related specifically to minority and low-income populations. Each of the individual sections in this Section discuss the general indirect effects associated with the proposed action.

Cumulative impacts in the project area that will have a positive effect on the low-income and minority populations relate to development opportunities. A number of factors are operating in the Southeast quadrant of the District currently. While they are all independent of the 11th Street Bridge project, they will affect residents in concert with one another.

The Federal and District of Columbia Real Property Act of 2005 transferred about 100 acres at Poplar Point to the District for redevelopment. Most of the land is to be retained as parkland, but the remaining area could be developed as apartments or condominiums, or commercial or office space. A soccer stadium has been discussed as another potential development.

Proposed developments east of the river within Anacostia include a new government center to house the DDOT. Adjacent private development could house additional office space as well as commercial uses. The Salvation Army is building a major facility on Martin Luther King, Jr. Avenue, and a developer is proposing a 600,000-square-foot building on the block bounded by Martin Luther King, Jr. Avenue, Shannon Avenue, W Street, and Chicago Street. Redevelopment at St. Elizabeths could involve up to 14,000 jobs.

Substantial redevelopment is concentrated along the M Street corridor west of the river. Plans are being developed for the South Capitol Street roadway improvement and bridge

replacement project. A professional baseball stadium is planned for a block south of the intersection of M Street and South Capitol Street. Just east are "The Yards" and the new USDOT headquarters. "The Yards," to be completed in three stages over 10 to 20 years, will cover 40 acres with 1.8 million square feet of office space, 2,800 residential units, and 160,000 to 350,000 square feet of retail. Maritime Plaza expects to expand from two buildings to five. DDOT intends to remove the ramps connecting the westbound Southeast/Southwest Freeway to the 11th Street Bridges and provide a boulevard treatment for the highway. This could open still more development opportunities. The District Office of Planning anticipates that in the next two decades the Capital Hill District population will increase from 1,850 to more than 11,000 and employment from 19,000 to more than 96,000.

Redevelopment will result in substantial changes to the areas on both sides of the river. The 11th Street Bridges project is independent of this development; it is needed whether or not the redevelopment happens. The District and DDOT are encouraging the overall redevelopment goals through the Anacostia Waterfront Initiative.

7.17.5 Mitigation Measures

Potential traffic noise mitigation measures include noise barriers, pavement treatments that limit noise, modifying speed limits, and restricting truck traffic. These are discussed in more detail in Section 7.6.5. Continuing review, with new noise analysis to be performed during final design, may result in noise barriers being warranted in the Fairlawn neighborhood between approximately Anacostia High School and Kramer Junior High. Meetings with residents and businesses will determine neighborhood preferences.

Replacement parkland would be provided to compensate if any parkland is acquired from Virginia Avenue Park for a build alternative. The Preferred Alternative would not take land from Virginia Avenue Park. Initial discussions with DPR, which will need to approve any parkland mitigation plans, have been held and a suitable parcel has been identified near the corner of 12th Street and M Street. Details are provided in Appendix I.

New and improved signage will overcome any way-finding issues that may arise for consumers, businesses, or other motorists.

Construction dust and emissions from construction equipment and vehicles will be minimized by a variety of measures. Mitigation and minimization measures that apply to all construction areas, not just those in proximity to low-income or minority residents, include covering all dirt, gravel, and debris piles to reduce wind-blown dust, covering trucks during transport of fill materials or soil, routing construction trucks away from residential and business areas, planting vegetative cover on exposed areas as soon as possible, and requiring appropriate emission-control devices on construction equipment to reduce emissions.

Providing additional transit options during construction, such as more cars on Metro or more buses, may be necessary based on the timing and duration of construction.

Based on the above discussion and analysis, the build alternatives, including the Preferred Alternative, will not cause disproportionately high and adverse effects on any minority or low-income populations as per Executive Order 12898 regarding environmental justice.

7.18 Permits

The anticipated permits and consultations required are part of the 11th Street Bridges project include:

- Section 7 Endangered Species Act Consultation—NMFS has concluded that no further consultation pursuant to Section 7 of the ESA is required.
- Section 9 Rivers and Harbors Act—U.S. Coast Guard requires a 401 permit and an approved environmental document among other requirements.
- Section 10 Rivers and Harbors Act—Permits are issued by the USACOE for any work in, over, or under navigable waters of the United States. USACOE can authorize activities by a variety of permit types. USACOE will make the determination on what type of permit is needed following formal application.
- Section 404 of the Clean Water Act—Establishes a program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands. The USACOE administers this section. The proposed project could be authorized under a Nationwide Permit or may require an Individual Department of the Army Permit, depending upon the selected alternative and the impacts to the Anacostia River and wetlands. Discussions with USACOE indicate that a Nationwide Permit will probably be appropriate.
- Section 401 Water Quality Certification—Provided by the Water Quality Division of the District's Environmental Health Administration. This permit is the District's confirmation of the USACOE Engineer's Section 404 Permit, and the District's opportunity to add specific conditions to meet the District's water quality standards.
- NPDES Permits—Required for stormwater discharge from construction sites. EPA, Region III, is the permitting authority for the NPDES program in the District. The District Water Quality Division must also review and approve plans for stormwater management and sediment and erosion control in accordance with District water quality regulations.
- National Historic Preservation Act Consultation (Section 106)—Requires FHWA and DDOT to consult with the SHPO to ensure that cultural resources are identified, and to obtain the formal opinion of the office that significant cultural resources will not be lost or damaged during construction or prepare a Memorandum of Agreement on how to manage resources. A Programmatic Agreement consistent with this issue is provided in Appendix J.

- Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefits to a Section 4(f) Property Consultation—Requires the concurrence of the NPS for Anacostia Park and the DPR for Virginia Avenue Park. The agreement for Anacostia Park is in Appendix H. The agreement for Virginia Avenue Park is in Appendix I.
- Land and Water Conservation Fund Act of 1965 Consultation (Section 6(f)) —Requires that DDOT and DPR reach an agreement on replacement property and that the NPS then assures that the replacement lands be of equal value, location, and usefulness. The NPS position needs to be documented. Replacement land has been identified near the intersection of 12th Street and M Street. The Preferred Alternative does not require use of 6(f) land.
- MBTA Permit — Requires prior approval from USFWS to remove nests of migratory birds. Application for a take permit is made on USFWS form 3-200.

7.19 Relationship of Local Short-Term Uses vs. Long-Term Productivity

All of the build alternatives for the 11th Street Bridges project involve replacing existing infrastructure in essentially the same location and adding missing highway movements. The effects of the build alternatives, while similar to each other, would likely be greater than those of the No-Build Alternative. Each build alternative would require several years of construction effort to complete. Even with the best planning and coordination, construction will be disruptive for the many people who travel, work, and live along the project corridor. The build alternatives would have local short-term effects on the surrounding environment.

However, the need to replace and improve the existing transportation infrastructure is based upon local planning, which has considered the need for present and future traffic requirements within the context of present and future land use development. Therefore, the short-term effects of this project are consistent with the maintenance and enhancement of long-term productivity for the local area.

7.20 Irreversible and Irretrievable Commitment of Resources

A few resources would be irretrievable after the project was completed. If archaeological resources were located in areas where ground needs to be cleared or excavated, they would be recovered but would no longer be available in place for future study.

Land used in the construction of the proposed facility is a commitment during the time that the land is used for a highway facility. If a greater need arises for use of the land or if the highway facility is no longer needed, the land could be converted to another use. At present, there is no reason to believe such a conversion will ever be necessary or desirable.

Large amounts of labor would be required for the fabrication and construction efforts. This would be an irretrievable commitment of this resource. Use of the labor will not have an

adverse effect upon continued availability of these resources. The regional pool of necessary skills is sufficient to meet the project needs without any disruption in development activities.

Other resources that would not be retrievable would be the physical materials used to build the project. These include resources such as aggregate used to make cement and asphalt, steel needed to make rebar and steel structures, oil to make asphalt, and fill material. These are finite resources; however, they are not currently in short supply.

Contaminated soil, spoil material, and excavated soil would be transported to landfills, so the space used for this project would not be available for other disposal uses. However, there is adequate space available for this disposal at landfills.

The energy used to build the project or keep it operating would not be retrievable. Energy consumed includes the gasoline used by cars to drive on the roadway, the electricity needed to keep lights and electrical systems running, and gasoline, oil, and electricity needed for construction. If built, the project should result in a modest reduction in energy consumption levels for any of the alternatives.

Finally, any construction would require a substantial one-time expenditure of District and federal funds that are not retrievable.

This improved transportation system requires the commitment of these resources. Residents in the immediate area, District, and region will benefit from the improved quality of the transportation system. The benefits will consist of improved accessibility and safety, savings in time, and greater availability of quality services. These benefits outweigh the commitment of resources.

7.21 Environmental Commitments

DDOT and the FHWA have made a number of environmental commitments throughout this Final EIS and in the supporting documents. These commitments include measures to avoid a potential impact, measures to reduce an impact, measures to mitigate an impact, and measures to enhance an aspect of the project in order to produce an overall positive impact. Other sections of this Final EIS detail the measures summarized for convenience in this section.

Construction Techniques

- Reuse existing piers.
- Do not use explosives to demolish the existing bridges.
- Use form boxes instead of cofferdams.
- Construct additional piers using concrete pilings in drilled shafts, steel H-piles, or pipe piles.

- If drilled shafts pilings are used, dispose of sediment extracted from the shaft at an appropriate disposal site.
- Do not use dredging.
- Prevent impact to the buildings used by ACBA. See detailed discussion under Relocation.
- Determine specific mitigation for temporary lay-down areas in and near the construction as appropriate in future design phases.
- Construction materials will either be transported on the river or on the freeway, but seldom, if ever, on local streets.

Land Use

- The Preferred Alternative is consistent with existing and future land use plans. No long-term mitigation measures are proposed.

Social

- Replace 0.33 acre of land required in Virginia Avenue Park with approximately 0.7 acre of new parkland near 12th Street and M Street adjacent to Reservation #128.
- DDOT and NPS will enter an agreement that produces a net benefit to Anacostia Park
- Details on environmental commitments to Virginia Avenue Park and to Anacostia Park are available in separate sections below.
- Confine the impact to the Hopkins Apartments parking to the existing ROW. Avoid impact to the recreation areas.
- Maintain access to parking and playground areas of Hopkins Apartments at all times.
- Construction worker parking will be in designated areas, not in neighborhood or business parking areas.

Relocation

- There will be no permanent relocations of any residence or business.
- The only temporary relocation will be for the activities at the ACBA boathouse. This will last through the construction phase only.
- Maintain ACBA operations during construction.
- Complete Washington Gas planned site remediation activities at the relocation area prior to ACBA relocation.
- Prepare the temporary site by ensuring an appropriate grade on the property and erecting a security fence around the area. DDOT will provide an asphalt surface where temporary structures are to be erected.

- Supply temporary structures with sufficient space for the inside storage of up to 60 boats on racks up to four boats high.
- Provide exterior storage for up to 80 boats. Reassess storage needs closer to the start of construction to ensure there is adequate storage to accommodate ACBA growth prior to construction.
- Provide exterior storage areas with a metal, fiberglass, or comparable roof to protect the boats from the weather, particularly UV radiation.
- Ensure that storage racks inside the temporary structure and under the storage area roofs will be comparable to the racks ACBA currently uses.
- Ensure that potable running water and electricity are available (ACBA will be responsible for any usage charges).
- Provide four portable toilets to the site. Clean and service at least weekly.
- Transfer boats, oars, and other equipment from the existing facility to the temporary facility.
- Relocate to the temporary site all the existing docks other than the high dock. Provide the equivalent of the existing high dock at the temporary location.
- Following construction, return all ACBA activities and property to current site.
- Restore the temporary site to condition when occupied but ensure trees and other landscaping are in place to meet the clean-up plan. DDOT, NPS and Washington Gas will coordinate on the tree planting process after Washington Gas has completed the soil removal actions in the relocation area.
- Require the contractor to notify directly ACBA leadership of any waterway closures at least 45 days in advance. This is in addition to any notice to mariners or other indirect notification.
- DDOT and construction contractor will maintain continued coordination with the Coast Guard throughout construction.
- If ACBA provides a list of special events, such as regattas, at least 6 months in advance, DDOT will require the contractor to ensure the waterway is open for the event.

Economic

- No adverse impacts to local or regional economy are expected.
- No business or private residential properties will be acquired for the project.
- Maintain access to businesses on both sides of the river at all times. Keep open at all times at least three of the five driveways at the Exxon station at 11th and M Streets.

- Communicate the project's status and upcoming phases to businesses and residents in the project area at least quarterly.
- Communicate any temporary changes in the transportation network through a community outreach program that includes the following elements:
  - The use of newsletters, web pages, posters, newspaper inserts, television and radio public announcements, special neighborhood public meetings, and similar methods to inform to businesses and the public any changes in the use of roadway facilities.
  - Coordination with other transportation providers—buses, taxis, tour buses, tourist industry, commercial trucking, and railroads.
  - Outreach activities to those who may be transit-dependent including meetings and flyers at schools, churches, social service agencies, neighborhood associations, transit stops, and on buses.
  - Special signage to alert motorists, pedestrians, and bicyclists of changes in access.
  - Early coordination with WMATA on alternative bus routes, stops, and amenities during construction periods on streets served by Metrobus.
- Construction worker parking will be in designated areas, not in neighborhood or business parking areas.

Air Quality

- No exceedances of the NAAQS and no adverse air quality impacts are expected to result from implementation of the Preferred Alternative. No long-term mitigation measures are required.
- Construction emissions will be local and limited to the construction duration.
- Develop an air quality emission control plan for the construction phase.
- Spray exposed soil with water or other dust suppressants to prevent visible dust emissions.
- Cover dirt, gravel, and debris piles to reduce dust and wind-blown debris.
- Cover all trucks during transport of fill materials or soil, wetting materials in trucks or providing adequate freeboard to minimize dust emissions during transportation. Cover loads of hot asphalt to minimize odors.
- Provide, and require use of, wheel washers to remove dirt that vehicles will otherwise carry offsite.
- Remove dirt deposited on any public road, sidewalk, bicycle path, or pedestrian path.
- Route and schedule construction trucks to minimize disruption or delays to traffic during peak travel times to reduce potential air quality impacts caused by congestion.

- Route construction trucks away from residential and business areas to minimize annoyance from dust.
- To the degree possible, deliver/remove materials by barge to reduce traffic congestion and localized pollution from construction trucks.
- Gravel or pave haul roads to reduce windblown dust and dirt deposited on local roads. Remove gravel or paving at the completion of construction and restore area.
- Require the use of low or ultra-low sulfur fuels in construction equipment to reduce sulfur emissions.
- Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential impacts to other resources.
- Plant vegetative cover on graded areas that will be left vacant for more than one season.
- Clean spills of transported material on public roads by frequently using a street-sweeper machine.
- Coordinate construction activities with other projects in local proximity to reduce the cumulative effects of concurrent construction projects.
- Minimize emissions by assuring proper equipment operation:
  - Turn off the engines of construction vehicles if they are left idling for more than 15 minutes.
  - Require appropriate emission-control devices (catalytic converters or particulate traps) on all construction equipment powered by gasoline or diesel fuel to reduce CO, NO_X, and particulate emissions in vehicular exhaust.
  - Use relatively new, well-maintained equipment to reduce CO and NO_X emissions.

Noise and Vibration

- Analysis based on conceptual design shows noise levels in excess of abatement criteria in several locations.
- Once final design data are available, re-examine noise issues and assess the effectiveness of potential abatement measures. The process will include input from adjacent residents and property owners.
- Determine the feasibility and reasonableness of abatement measures, such as noise barriers, based on factors of technical feasibility; any unique characteristics of the noise; cost; interest of the most directly affected residents, property owners, and businesses; and overall public interest.

- Comply with District construction noise regulations:
  - Limit noise from construction sites to 80 dBA at 25 feet from the edge of the project (pile driving and explosives are subject to separate rules) between 7:00 AM and 7:00 PM.
  - Limit noise from construction sites to 55 dBA at 25 feet from the edge of the project in residential or waterfront areas at night.
  - Develop a noise control plan per DDOT and FHWA requirements prior to the start of construction.
- Require contractor to have an advice outreach program to notify residents and business of schedules for any pile driving.
- Require contractor to monitor for damage to buildings resulting from vibrations caused by construction activity.

Water Quality

- Comply with the DC Water Quality Standards for Surface Water (21 DCMR Ch.11), DC Water Management Plan per the Water Pollution Control Act of 1984 (DC Law 5-188), and Section 402 of the Clean Water Act (NPDES).
- Require the construction contractor to develop and implement spill prevention, control, and countermeasure plans; erosion and sedimentation control plans; and plans for handling and disposal of contaminated soil, groundwater, and river sediment, both known and unanticipated.
- To the extent possible, implement LID features and best management practices for stormwater management. The practicality of specific LID technologies and locations within the project footprint will be determined during the final design phase of the project.
- Collect stormwater from roadway and bridge surfaces and discharge it to the stormwater system or LID facilities. Do not discharge stormwater directly to the river.
- Plant a large number of new trees in the project area to intercept rainfall and reduce the amount of stormwater runoff.
- Do not use dredging.
- Implement sediment and erosion control methods along the perimeter of the construction site.
- Use physical barriers and air bubble curtains to mitigate potential impacts from underwater pile driving or other construction activities as necessary.
- Install turbidity curtains around pier construction sites to exclude sensitive species and to contain suspended solids to the construction sites.

- Use a "floating pier" design to limit the area of impact to the area of the pilings.
- Affect a maximum of 0.25 acre of streambed to widen the 11th Street Bridge piers.

Wetlands

- Comply with permit requirements from USACOE and DDOE Water Quality Division pursuant to Sections 404 and 401 of the Clean Water Act.
- Adhere to the USACOE 1997 draft wetland regulations during the Section 401 process.
- Show locations of wetlands on construction documents.
- Prohibit construction staging areas and movement of construction equipment on the east side of the river around Wetland WP-005.
- If inadvertent impacts to the vegetation in Wetland 30 occur, replant with comparable species if regeneration does not occur within 1 year.
- Replace wetlands as appropriate and where required at a ratio of 1.5:1 consistent with FHWA requirements.
- Replace wetlands in kind with emergent wetland within the Anacostia River watershed and within the District.
- Separate wetland mitigation from the LID treatment methods.
- Restore wetland vegetation with native species.
- Establish a 25-foot buffer around the perimeter of the mitigation wetland.
- Monitor the wetland mitigation for 5 years to ensure success.
- Preserve wetlands in perpetuity.

Floodplain

- Place additional piers, required for widening the 11th Street Bridges, inline with existing piers and parallel to the flow line to minimize impact on the flow of the river.
- During final design, prepare a hydraulic analysis of the bridge to detail the effects of the project on the river.
- Review final construction plans by DDOE Technical Service Branch, the FEMA Designated Floodplain Administrator, for consistency with the National Flood Insurance Program.

Water Body Modifications and Wildlife

- Affect a maximum of 0.25 acre of streambed to widen the 11th Street Bridges piers.
- Do not use dredging or explosives.

- Comply with time-of-year restrictions, as designated by the DDOE to protect spawning anadromous fish. Allow no in-river construction from February 15 to July 1.
- Reuse existing piers to reduce the potential for fish kill during pier construction or bridge demolition.
- Conduct an extensive tree planting effort as part of the mitigation and net benefits to Anacostia Park.
- Use physical barriers and air bubble curtains to mitigate potential impacts from underwater pile driving or other construction activities as necessary during the project.
- Install turbidity curtains around pier construction sites to exclude sensitive species as well as to contain suspended solids to the construction sites.
- Perform clearing and grubbing outside the nesting season.
- Prior to the start of construction, conduct a survey of potential MBTA-protected nesting areas. If inactive nests are uncovered, consult with the local USFWS office prior to removal of inactive nests of migratory birds. USFWS Form 3-200 is the application for a take permit if required.
- New trees to be planted will meet both Urban Forestry Administration and NPS guidelines. Coordination will continue through final design to determine exact impact.

Threatened and Endangered Species

- No impact on federal threatened or endangered species is anticipated. USFWS identified no species of concern in the project area. NMFS concluded that the project is not likely to adversely effect any listed species under NMFS jurisdiction, specifically including the short-nosed sturgeon.
- Mitigations are the same as those for all fish species.
- Comply with time-of-year restrictions, as designated by DDOE to protect spawning anadromous fish. Prohibit in-river construction from February 15 to July 1.
- Use physical barriers and air bubble curtains to mitigate potential impacts from underwater pile driving or other construction activities as necessary.
- Install turbidity curtains around pier construction sites to exclude sensitive species and to contain suspended solids to the construction sites.

Historic and Archaeological Preservation

- FHWA, DDOT, the District SHPO, and NPS have entered into a Programmatic Agreement governing the subsequent investigation and recovery of cultural resources.
- DDOT will ensure compliance with the terms of the Programmatic Agreement.

- Prepare a formal package nominating Anacostia Park for the NRHP for submission by NPS.
- Implement active archaeological monitoring of project-related ground disturbance areas.
- Immediately suspend construction operations if a suspected historic, archaeological or paleontological item, feature, prehistoric dwelling site, or artifact of historic or archaeological significance is encountered. Do not resume construction until the District SHPO has agreed to the resumption.
- If human remains are discovered during construction, DDOT will immediately stop all project-related ground disturbances within 300 feet of the discovery and notify FHWA, the District SHPO, and the DC police or medical examiner. Written permission from FHWA is required before construction resumes.

Hazardous Waste Sites

- Require the contractor to develop and implement spill prevention, control, and countermeasure plans; erosion and sedimentation control plans; and plans for handling and disposal of contaminated soil, groundwater, and river sediment, both known and unanticipated.
- Require the preparation of a health and safety plan and compliance with state and federal hazardous waste regulations.
- Develop plans for handling and disposal of contaminated soil, groundwater and river sediment, both known and anticipated.
- Advise site construction workers as part of health and safety training of potentially hazardous areas.
- Conceptual design shall include methods to minimize the disturbance of river sediments through the installation of form boxes around the existing piers.
- Develop erosion and sedimentation control plans.
- If contaminated soil or groundwater is unavoidably encountered, characterize media before excavation to minimize space requirements for stockpiling, the need for double handling of materials, and to ensure proper safety protection for workers.
- Avoid the area of the East Station Site, on the east side of the demarcation line for the 12th Street sewer line, to minimize the potential for impacts to the current remediation system.
- Coordinate construction activities with the Washington Gas & Light environmental manager and DDOE to minimize disruption to the current remediation treatment system.
- Implement special drilling methods in areas of known groundwater contamination to reduce the potential for vertical migration of contaminants.

- Require special precautions or construction methods for utility relocations to limit worker exposure in areas of known groundwater or soil contamination. Implement methods limiting activities within trenches.
- Washington Gas shall complete planned site remediation activities at the relocation area prior to ACBA relocation.
- To the extent possible, implement LID features and best management practices for stormwater management.

Energy

- Put into service additional commuter buses, ride-share vans, and other measures to encourage the use of high-occupancy vehicles during construction.

Public Services and Utilities

- Coordinate with WMATA to identify locations and accommodations if relocation of stops is appropriate.
- Implement early and continuing coordination with WMATA on alternative bus routes, stops, and amenities during construction.
- Develop an agency coordination plan and public information campaign through the construction process.
- Develop specific public information program in cooperation with WMATA to mitigate the effects on transit.
- Coordinate utility relocations with utility companies throughout the design and construction phases.

Environmental Justice

- Implement the following measures to minimize potential impacts from construction traffic, dust, noise, and vibration on neighborhoods closest to the existing freeway:
  - Adhere to District noise limits for construction sites.
  - Traffic noise mitigation measures may be warranted.
  - Restrict pile driving to the river-crossing areas and several hundred feet from residential areas.
  - Minimize construction dust and emissions by measures noted under Air Quality.
- Perform additional noise analysis during final design to determine if noise barriers are warranted near the Fairlawn neighborhood, Anacostia High School, and Kramer Junior High School.

- If noise barriers are warranted, meet with residents and businesses to determine local preferences.
- Replace land acquired from Virginia Avenue Park with approximately 0.7 acre of new parkland near 12th Street and M Street (see Virginia Avenue Park section below).
- During construction, provide additional transit options if necessary based on timing and duration of construction.
- Provide new signage to overcome way-finding issues for consumers, businesses, and other motorists.

Visual

- Adhere to the AWI Transportation Architecture Design Standards.
- Provide stone-facing to retaining walls wherever feasible and consistent with existing walls.
- Plant a forested buffer for the southbound I-295 freeway ramps and Anacostia Park and additional trees or landscaping where appropriate.

Traffic

- Freeway design features includes a provision for shoulders on the 11th Street Bridges; lengthening of the weaving distance across the bridges; development of lane balance at the M Street exit; and addition of auxiliary lanes along the Anacostia Freeway for entering and exiting traffic at adjacent interchanges.
- Provide bicycle- and pedestrian-friendly pathways on both bridges.
- Low-speed local bridge can accommodate a streetcar system.
- Provide access to Anacostia Park on the east side from the local bridge and at Good Hope Road.
- Ensure that all pathways for pedestrians and bicycles meet AASHTO policy and ADA standards. Implement the DC Bicycle Master Plan.
- During construction phases, the following will be implemented to mitigate traffic issues:
  - Maintain three lanes of traffic in each direction across the river.
  - Maintain at least two lanes of traffic in each direction on the Anacostia Freeway and I-295 through the project area.
  - Minimize temporary roadway and temporary structures required during construction.

- Maintain access to/from Anacostia Park, businesses and residences along Martin Luther King Jr. Avenue and adjacent neighborhoods, the Navy Yard, and destinations along M Street and 11th Street and adjacent neighborhoods at all times.
- Limit traffic detours through neighborhoods on both sides of river.
- Open missing ramps serving the Anacostia Freeway on the east side of the river in the earliest possible phases.
- Work with the transit agencies to minimize delays during construction and identify alternate routes if necessary.
- Provide additional transit enhancements during peak traffic periods.
- Provide traveler information systems, including low-power highway advisory radio, and Intelligent Transportation Systems, including real-time message signs with alternate route suggestions.
- Provide event management systems, such as roving tow services.
- Enhance traffic signal systems and coordination.
- Provide incident management and surveillance systems.
- Expand vanpool/van share programs and implement public information programs.
- Establish specific truck-hauling routes focusing on primary transportation corridors and minimizing impacts to surrounding neighborhoods. Maximize the use of barges to move materials.

Virginia Avenue Park (if required)

- Replace land needed in Virginia Avenue Park with approximately 0.7 acre of new parkland near 12th Street and M Street adjacent to Reservation #128.
- Design and develop an athletic playing field on the new Virginia Avenue parkland.
- Improvements will include clearing and grubbing of the land, perimeter fencing, establishment of "general duty" grass, and park signage.
- Complete all elements of the park replacement plan within 2 years of the initiation of project construction.
- Implement a signage/fencing plan to segregate the existing Virginia Avenue Park from the project's construction areas.
- Prohibit construction staging within the existing Virginia Avenue Park. Incorporate this restriction into construction documents.

- Provide additional vegetation in the existing Virginia Avenue Park to restore/enhance the current vegetation screen along the boundary between the park and the proposed project.

Anacostia Park

- Upstream of the bridges on the east side of the river, use retaining walls in place of grass slopes to minimize the project footprint.
- Plant trees and provide additional landscaping along the retaining wall and along the stretch of the reconstructed highway.
- Implement the NPS-preferred treatment of stone-faced retaining wall with a forested buffer for the southbound I-295 freeway ramps and Anacostia Park. These should be consistent with existing treatments and the AWI Aesthetic Guidelines.
- Provide bicycle-/pedestrian-friendly access from the Anacostia neighborhood to the park at Good Hope Road.
- Retain vehicle access to the park from Good Hope Road as well as providing new access from the local bridge.
- Install interpretive markers describing the Bonus March and Camp Marks downriver of the bridges on the east bank of the Anacostia River in the approximate area of the Bonus March campsite.
- Keep the roadway alignments within the existing right-of-way to the maximum extent possible.
- Keep elevated sections of the roadway as low as possible to minimize visual intrusions into the park, historic districts, and neighborhoods.
- Create an overall net benefit to Anacostia Park through a budget of $2 million, adjusted annually for inflation until construction begins. Use this budget to:
  - Compensate NPS in the full appraised value of $980,000 for the 1.5 acres of parkland required.
  - Add 12 inches of soil amended to facilitate turf growth to the remaining three ball fields.
  - Incorporate stormwater management facilities at the base of retaining walls to protect the ball fields from stormwater runoff.
  - Provide formal park entrance signs and entrance features at park entrances.
  - Apply soil amendments and provide plantings in select areas of the park.
  - Install new picnic shelters at select locations.
  - Design and install an exercise trail with exercise facilities.

8 Traffic and Transportation Analysis

This section of the Final EIS summarizes the studies completed to evaluate the traffic and transportation characteristics of the No-Build Alternative, the build alternatives, and the Preferred Alternative. Key study assumptions, analysis tools and techniques, and the summary of results are outlined in the following sections. The purpose of this analysis is to identify and highlight the traffic operational differences and/or the similarities among the alternatives (including the No-Build, Build and Preferred Alternatives). Traffic operational considerations include system traffic, quality of traffic operations, travel times, access, safety, pedestrian and bicycle safety and mobility, freight transport, and multimodal transportation performance. These analyses provide a relative comparison among the alternatives to assist the public, DDOT, FHWA, and stakeholder agencies in identifying a preferred alternative that satisfies the purpose and need of the 11th Street Bridges project.

The foldout map inside the back cover may facilitate your review.

8.1 Traffic and Transportation Analysis Approach

The analyses completed for this project provide a systematic, step-by-step process to assess the traffic and transportation performance associated with each alternative—with a goal of developing clear and concise information for use in a meaningful basis of comparison among alternatives.

The analysis approach provides a meaningful basis for comparing alternatives.

Traffic forecasts were prepared for the year 2030, consistent with the MWCOG Travel Forecasting model (MWCOG model). These traffic forecasts were used to assess and compare travel conditions under a No-Build Alternative and each of the build alternatives, including the Preferred Alternative. The following traffic/transportation analyses were completed for each of the alternatives:

- Predicting/modeling future traffic and travel patterns
- Analysis of future traffic operations
- Comparison of access changes to key land uses or areas
- Analysis of travel times
- Evaluation of vehicular safety considerations
- Evaluation of impacts to pedestrians
- Evaluation of impacts to bicyclists
- Evaluation of impacts to transit operations
- Evaluation of impacts to freight

8.2 2030 Traffic Forecasts

The MWCOG model was used to generate traffic forecasts for the 2030 design year. The MWCOG model simulates transportation and land-use conditions in the greater Washington, DC region, encompassing more than 4,000 square miles. The model was developed to provide a basis to predict the overall expected travel trends in future years, based on planned land-use development and highway network scenarios at the regional level. MWCOG's model, which uses Version 2.1D #50 of Citilab's TP+ program, meets EPA requirements for air quality conformity analysis. It incorporates land use assumptions from MWCOG's Round 6.4A land use forecast. For additional information on the use of the MWCOG model, please refer to the MWCOG/TPB travel forecasting model Version 2.1D #50 user's guide.

DDOT obtained a copy of the MWCOG model for use in forecasting traffic volumes associated with AWI transportation projects. Forecast traffic volumes from the model were used for traffic operational analyses, air quality conformity analyses, and traffic noise analyses.

The MWCOG travel forecasting model was used to establish future travel trends based on regional land use and infrastructure plans.

The MWCOG model network was refined for this study to represent future roadway networks based on transportation projects in MWCOG's 2004 update to the CLRP and major projects in the FY2005-2010 TIP. Both of these plans represent the most current information available at the start of the 11th Street Bridges project. The land use and other inputs to the MWCOG model were not changed for the purpose of this study.

8.2.1 Travel Demand Forecast Modeling Approach

The MWCOG model is a regional traffic forecasting model that includes primary roadway links and nodes. The MWCOG model in the immediate study area was reviewed to confirm that the model adequately represents the transportation network in the study area. For the purpose of this study, the roadway network was modified by adding links and nodes within the study area to more closely reflect the transportation system characteristics. Changes made to the roadway network included the addition of links and nodes, modifying the number of lanes on a network link, and incorporation (or removal) of turn prohibitions at intersections.

The MWCOG model produced morning peak period, evening peak period, and a 24-hour period (a sum of the morning, evening, and off-peak periods) traffic forecasts for the year 2030. These travel forecasts were used to compare and contrast the expected effects on travel demand volumes and travel patterns within the study area for the No-Build and build alternatives.

2030 No-Build Network

Consistent with standard practice, the roadway network for the MWCOG model includes transportation projects listed in the CLRP and the TIP. Beyond these regional programs,

DDOT is currently working on a wide range of transportation projects in the Anacostia area, as described in detail in the AWI Transportation Master Plan. This master plan includes project funding plans and an expected construction sequence of projects. Many of the projects included in the AWI Transportation Master Plan are not currently programmed in the CLRP or the TIP. The 11th Street Bridges project and the South Capitol Street project are two major exceptions. Both projects are currently programmed in the TIP and are working through the regional process for inclusion in the CLRP; both projects are DDOT priorities; and both projects are expected to continue forward to construction. As such, after consultation with DDOT, FHWA, MWCOG, and EPA, the South Capitol Street project was included in the 2030 No-Build network.

The 2030 No-Build network includes projects in the CLRP, TIP, and the AWI Transportation Master Plan.

Other projects identified in the AWI Transportation Master Plan were examined to determine whether they should also be included in the 2030 No-Build network. With the exception of South Capitol Street, other projects in the AWI Master plan were not included in the 2030 No-Build network because they would not have a substantial impact to regional traffic patterns, they did not have a funding stream identified, or they were not identified by DDOT as priority projects.

The No-Build and the build alternatives, including the Preferred Alternative, assume that the ramps between the 11th Street Bridges and the Southeast/Southwest Freeway link to Barney Circle would be removed. The No-Build network also considers that section of freeway to be downgraded to a parkway with a link to the local street network. Actual implementation of these changes is not included in the 11th Street Bridges project and would be completed by others.

2030 Build Networks

The 2030 traffic networks for the four build alternatives and the Preferred Alternative were coded using the 2030 No-Build network and making modifications reflective of the roadway designs shown on Exhibits 5-1 through 5-5 in Section 5.

8.3 Forecast 2030 Traffic Volumes and Travel Patterns

The MWCOG model was run for the No-Build and each of the build alternatives. The ADT volumes are summarized graphically in Exhibits 8-1 and 8-2. These exhibits portray traffic volumes on key links within the study area and provide a visual representation of the differences (or the lack of differences) in travel patterns among the alternatives. The similarities and differences are discussed below.

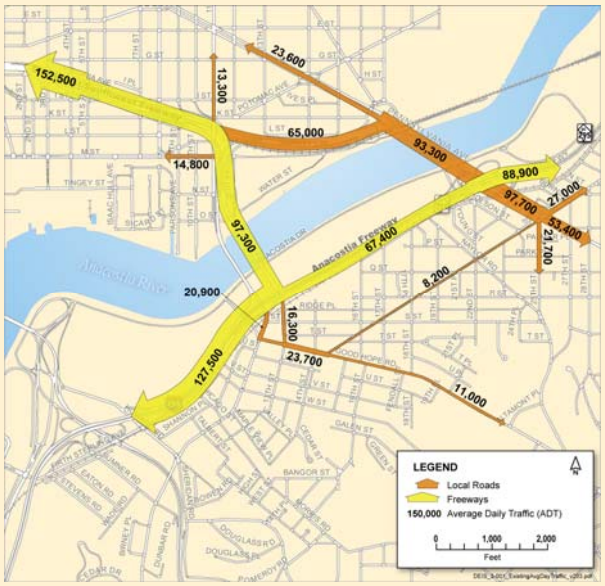
8.3.1 No-Build Alternative

Exhibit 8-1 illustrates existing (2004) ADT for the existing street system in the study area, and projected 2030 ADT volumes for the No-Build Alternative. Traffic on the I-295/Anacostia Freeway

For the No-Build Alternative, traffic across the 11th Street Bridges is expected to increase, while traffic across the John Philip Sousa Bridge will decrease. Traffic on Martin Luther King, Jr. Avenue, Good Hope Road, and M Street is also expected to increase.

EXHIBIT 8-1
Existing (2004) Average Daily Traffic Volumes (left image)
The width of the color bands indicates the average daily traffic.

2030 No-Build Alternative Average Daily Traffic Volumes (right image)
Traffic volumes will increase on most road segments.



is projected to grow from 9 to 18 percent within the study area. Daily traffic across the 11th Street Bridges is expected to grow by more than 33 percent, from 97,300 vehicles per day (vpd) to approximately 131,000 vpd by the year 2030. Under the No-Build Alternative, traffic on Pennsylvania Avenue west of the river is expected to increase by approximately 36 percent, from 23,600 vpd to approximately 32,000 vpd in the year 2030.

The traffic forecasts show a decrease in daily traffic crossing the John Philip Sousa Bridge from the Southeast Freeway Boulevard. This decrease is a result of removing the ramps from the 11th Street Bridges and downgrading the section of freeway between the 11th Street Bridges and Barney Circle to a parkway.

8.3.2 Common Trends Among the Build Alternatives

The traffic volumes on key freeway and arterial segments for the build alternatives, including the Preferred Alternative, are summarized graphically in Exhibits 8-2 and 8-2A.

The ADT traffic forecasts for the build alternatives, including the Preferred Alternative, were compared to forecasts for the No-Build Alternative. The following general trends and observations are evident:

- East of the river, the build alternatives, including the Preferred Alternative, are forecast to draw traffic from Anacostia neighborhood streets on to the regional and freeway system (I-295/Anacostia Freeway). Because missing freeway movements between the Anacostia Freeway and the 11th Street

Traffic volumes on Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue decreased for each of the build alternatives, including the Preferred Alternative. M Street and 11th Street see an increase in traffic for the build alternatives.

Bridges are provided with each of the build alternatives, including the Preferred Alternative, traffic would no longer be forced to use neighborhood streets to access the 11th Street Bridges complex. As a result, traffic is forecast to increase on the Anacostia Freeway and decrease on Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue.

EXHIBIT 8-2
2030 Average Daily Traffic Volumes on Build Alternatives
Each build alternative reduces traffic on most local roads and increases the volume on the freeways.

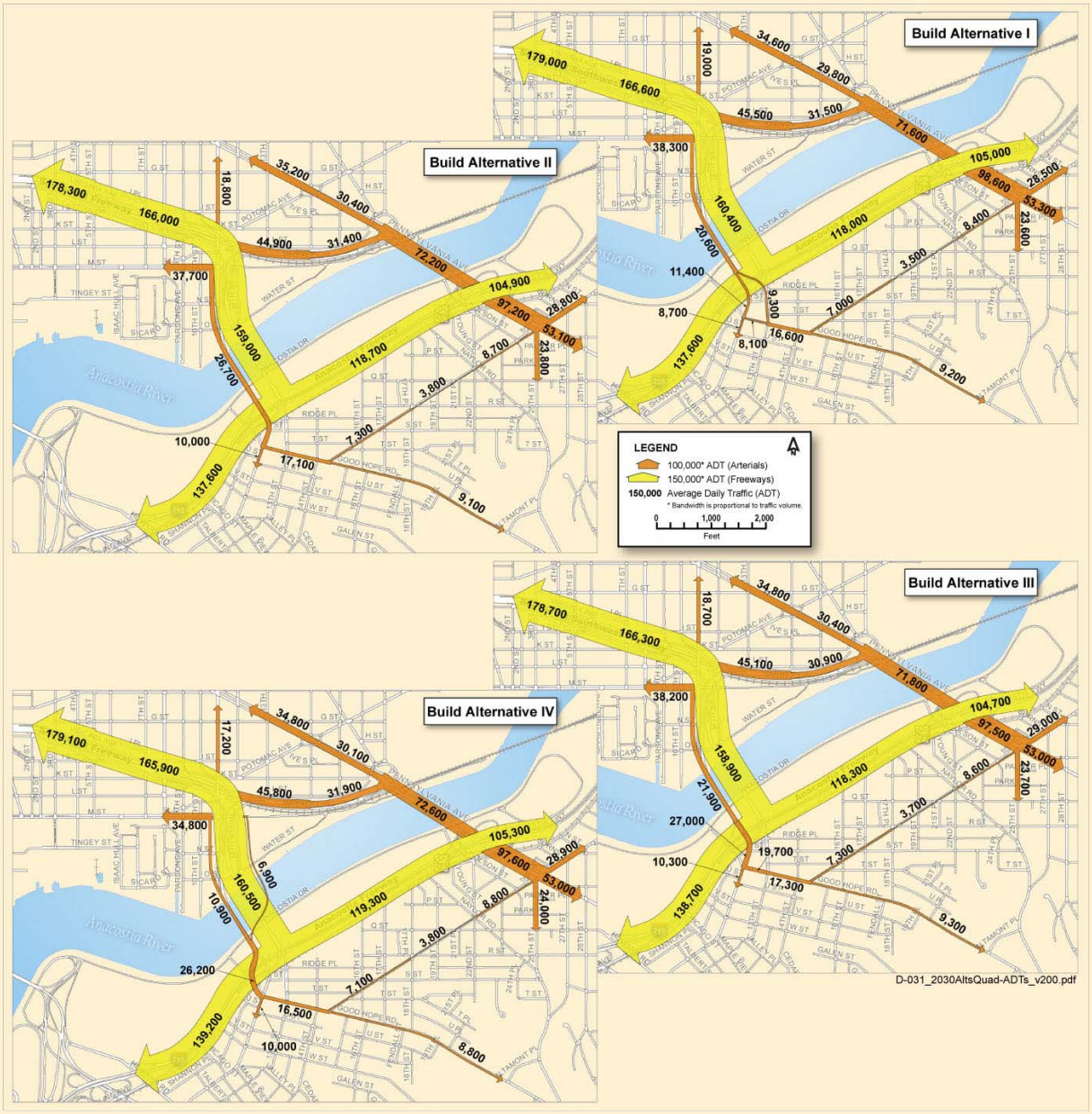


EXHIBIT 8-2A
2030 Average Daily Traffic Volumes on Preferred Alternative
Each build alternative reduces traffic on most local roads and increases the volume on the freeways.

- West of the river, the build alternatives, including the Preferred Alternative, provide a direct route for trips between the Southeast/Southwest Freeway and the Anacostia Freeway to and from the north. Provision of missing freeway movements at the 11th Street Bridges complex draws traffic from the Southeast Freeway Boulevard and reduces the forecast number of trips across the John Philip Sousa Bridge.
- Traffic volumes on Pennsylvania Avenue west of the river fluctuate very little between the No-Build Alternative and the build alternatives. In other words, the forecast level of traffic volume on Pennsylvania Avenue is essentially equal with both the No-Build and all of the build alternatives, including the Preferred Alternative. As a primary arterial in a fully developed urban environment, any reduction in demand along Pennsylvania Avenue as a result of the 11th Street Bridges project provides an opportunity for traffic from other nearby facilities to utilize excess capacity. Therefore, the total volume of traffic on Pennsylvania Avenue is expected to remain fairly static at capacity-restrained levels under the build condition.
- Arterial roadways west of the river that connect to the freeway system are forecast to carry an increased volume of traffic. The Preferred Alternative is forecast to carry increased traffic on M Street by up to 10,200 vehicles daily compared to the No-Build. Under the Preferred Alternative, traffic is expected to increase on 11th Street by 4,400 vehicles daily as a result of relocating the ramps connecting to the Southeast/Southwest Freeway and construction of a new local bridge across the Anacostia River.

8.3.3 Differences among the Build Alternatives

Overall, the traffic patterns and forecast volumes are similar for each of the build alternatives, including the Preferred Alternative. The primary differences are associated with the proposed service interchange between the Anacostia Freeway and Martin Luther King, Jr. Avenue in historic Anacostia. Build Alternatives II, III, IV, and the Preferred Alternative provide a new interchange and are expected to carry approximately 1,300 more vpd on Martin Luther King, Jr. Avenue than Build Alternative I, which does not provide the access point. However, even with the service interchange in place, the forecast traffic volumes on Martin Luther King, Jr. Avenue, Good Hope Road, Minnesota Avenue, and 13th Street are lower under the build alternatives than under the No-Build Alternative.

Forecast traffic volumes among build alternatives, including the Preferred Alternative, are similar on the Anacostia Freeway, Southeast/Southwest Freeway, Pennsylvania Avenue, M Street, 11th Street, Minnesota Avenue, and Good Hope Road. Variations in traffic volumes are generally within 3 percent or less, with up to 10 percent variation on M Street and 11th Street.

8.3.4 Diversion of Regional Traffic for the Build Alternatives

This section refers to major shifts in regional traffic patterns for trips with origins and destinations from beyond the study area. Traffic may divert from the regional freeway system through the corridor if travel through the study area becomes more attractive than other routes. This diversion may occur if the improvements to the 11th Street Bridges complex result in transportation system efficiencies that attract new traffic and in turn change regional commuting patterns. For example, under the no-build condition a certain

amount of traffic travels around the Beltway (I-495) between Maryland and Virginia. Improving the traffic flow across the 11th Street Bridges could attract some commuters from the Beltway (or other regional routes) to a new route through the city because travel times are reduced across the 11th Street Bridge.

The proposed 11th Street Bridges improvements do not draw additional trips from the regional roadway network through the District.

To determine the extent to which proposed improvements to the 11th Street Bridges may attract additional regional traffic into the study area, a cordon line was drawn around the project area and major routes leading into Washington, DC. Exhibit 8-3 shows the routes examined and summarizes the average daily traffic forecasts for the No-Build and the build alternatives on major freeways and arterials serving Washington, DC. This summary exhibit demonstrates that traffic volumes on other surrounding commuter routes are essentially the same for both a No-Build Alternative and any build alternative, including the Preferred Alternative. The 11th Street Bridge improvements do not produce a regional change in commuter travel patterns.

Review of the traffic model output suggests that the proposed 11th Street Bridges project does not draw traffic from surrounding regional roadways through the District. Projected traffic volumes outside a 1-mile radius of the 11th Street Bridges are largely unaffected by the build alternatives, including the Preferred Alternative.

8.3.5 Traffic Crossing the River on the 11th Street Bridges

Although regional travel patterns appear unaffected, there are clear changes in expected local traffic patterns associated with the build alternatives. Indeed, it is clear that traffic crossing the Anacostia River can be expected to increase for all four build alternatives and the Preferred Alternative. Traffic volumes crossing the river via the 11th Street Bridges increase from about 131,000 vpd under the No-Build Alternative to about 180,000 vpd under the build alternatives.

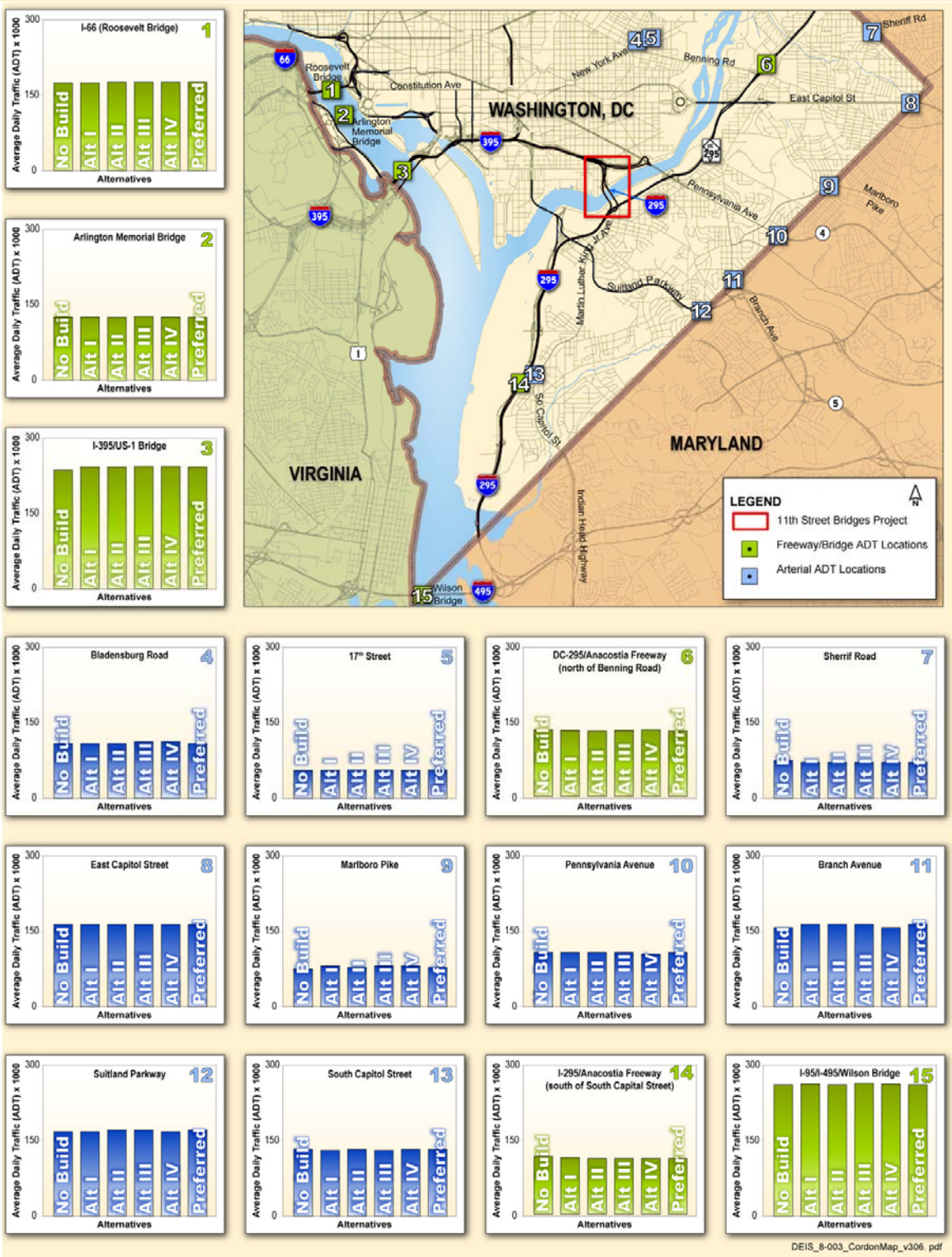
Traffic crossing the 11th Street Bridges increases for each of the build alternatives, including the Preferred Alternative.

Some of the additional traffic crossing the 11th Street Bridges is re-routed from the Pennsylvania Avenue Bridge and the South Capitol Street Bridge as a result of the improved interchange connections on the east side of the river. Other traffic, though, reflects changes in local traffic patterns caused by the greater cross-river accessibility. In effect, some local trips that now may have an origin and destination on one side of the river would in the future have an origin on one side and a destination on the other.

EXHIBIT 8-3

Regional Traffic Model Cordon Locations

Cordon locations used to identify and measure induced traffic focused on key roadways leading to the District.



8.4 Forecast Year 2030 Traffic Analysis

Forecast 2030 traffic was used as the basis of comparison for No-Build and build alternatives, including the Preferred Alternative.

Traffic operational analyses were performed on 2030 forecast traffic for the No-Build and build alternatives, including the Preferred Alternative. These operational analyses enabled comparison of important performance differences among the alternatives. Morning and evening peak-hour traffic forecasts were reviewed to identify the critical peak period. The PM peak-hour traffic forecasts represented the most congested conditions within the study area and were analyzed for comparison among the alternatives.

EXHIBIT 8-4
Traffic Study Intersections
Traffic operations at key existing intersections were evaluated during PM peak period conditions.

In response to comments received on the Draft EIS, AM peak-hour traffic analysis was conducted for the study area intersections shown in Exhibit 8-4 for the No-Build and the Preferred Alternatives. Results of the analysis, shown in Appendix B, indicate that AM traffic operations at study area intersections generally improve in the Preferred Alternative compared to the No-Build Alternative.

8.4.1 Traffic Analysis Tools

Standard analysis procedures and software tools were used to quantify differences in traffic operations between the alternatives. The procedures used were consistent with those described in the 2000 *Highway Capacity Manual* (HCM). The software tools used included Synchro and Corridor Simulation (CORSIM).

Synchro was used to analyze traffic operations at surface street intersections. The analyses were reported using the signalized intersections methodology in the HCM.

CORSIM was used to assess traffic operations, freeway travel speeds, and estimate travel times for freeway elements within the study area.

Synchro and CORSIM are routinely used for detailed traffic analyses and impact studies. For the 11th Street Bridges project, these programs were used in conjunction with the modeled long-range travel forecasts to form a comparison basis and highlight relative differences between the No-Build and each of the build alternatives, including the Preferred Alternative.

8.5 Forecast 2030 Intersection Operations

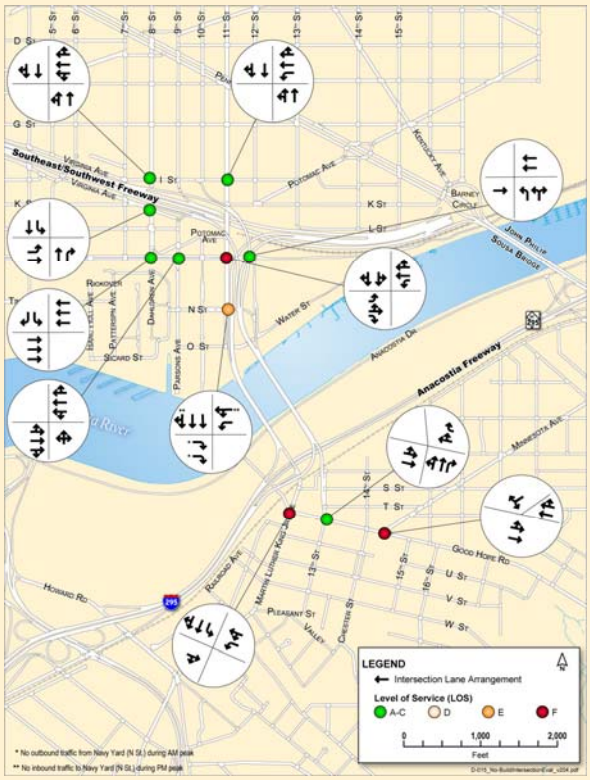
Traffic operations on the local urban street system are generally controlled by key intersections within the roadway network. In order to characterize the local street system and highlight potential differences among the alternatives, key locations throughout the project study area were selected for evaluation. Exhibit 8-4 identifies the existing intersections used to characterize the performance of the local street system.

LOS is defined in the HCM as a qualitative measure describing the operational conditions within a traffic stream and their perception by motorists. The LOS of a roadway or intersection will fall into one of six categories, A through F. LOS A represents the best operating condition and LOS F represents the worst condition, which is a facility operating under forced traffic flow with standing queues and stop-and-go operations. Under today's traffic conditions, in an urban area such as Washington, DC, a facility operating at or better than LOS E generally is considered acceptable.

LOS is a measure of traffic conditions. In general, LOS E/F are descriptive of congested conditions.

Current intersection geometry and traffic control data, based on a field review of existing intersections, were used as a starting point for the operational analyses. If overall intersection operations could be improved through a reallocation of intersection approach width (i.e., re-striping), the modifications were made. Additional capacity was not added to existing intersections and no additional right-of-way would be required. Signal timings were optimized to produce an analysis with the highest LOS and lowest volume to capacity (v/c) ratio for the geometric conditions at each intersection. This approach was applied consistently across the No-Build and build alternatives.

EXHIBIT 8-5
No-Build Alternative Lane Arrangements and 2030 Forecast Traffic Operations
LOS E/F is forecast at four key intersections.



8.5.1 No-Build Alternative

Intersection lane arrangements and forecast 2030 traffic operations are illustrated in Exhibit 8-5. Most of the intersections evaluated operate at LOS C or better. Congestion is expected at three intersections in the study area. Operation at LOS E/F is characterized by intersection cycle failures (vehicles failing to clear the intersection in one cycle), vehicle queues, and turn-lane blockages.

8.5.2 Build Alternatives

Traffic operations at key intersections for each of the build alternatives, including the Preferred Alternative, are illustrated in Exhibits 8-6 and 8-6A.

Overall, intersection operations for each of the build alternatives, including the Preferred Alternative, are improved compared to the No-Build Alternative (Exhibit 8-7). Reduced traffic on arterial roadways east of the river results in improved traffic flow and traffic operations along the Good Hope Road and Minnesota Avenue corridors under the build alternatives, including the Preferred Alternative.

West of the river, the build alternatives and the Preferred Alternative each improve intersection operations, but to varying degrees. For Build Alternatives I, III, and IV, all study intersections are expected to operate at LOS E or better. Build Alternative II experiences traffic congestion at a signalized approach to the proposed traffic circle. Provision of the circle (compared to the other build alternatives) concentrates traffic along 11th and 12th Streets and results in increased congestion. In Build Alternatives III and IV, the underpass connection from the Southeast/Southwest Freeway to Southeast Freeway Boulevard removes traffic from the local street intersections on 11th and 12th Streets, resulting in improved intersection operations west of the river compared to the other build alternatives.

In response to comments received on the Draft EIS, additional PM peak-hour traffic analysis was conducted for intersections along Pennsylvania Avenue for the No-Build and the Preferred Alternatives. Results of the analysis, shown in Appendix B, indicate that west of the Anacostia River, forecast PM peak-hour traffic operations are acceptable (LOS E or better), and indicate no changes in operations between the No-Build and Preferred Alternatives. East of the river, forecast traffic operations are acceptable at the intersection of Pennsylvania Avenue and the on-ramp to the Anacostia Freeway northbound, but are poor at the intersection with Minnesota Avenue. The analysis indicates that this location is forecast to operate at congested levels in both the No-Build and Preferred Alternatives.

8.6 Forecast 2030 Freeway Traffic Operations

The CORSIM traffic simulation model was used to evaluate travel speeds during the PM peak hour on key freeway segments in the study area. CORSIM is a traffic simulation model that has been developed and maintained by FHWA. It includes microscopic modeling capabilities for both freeways and surface streets, integrated into a single package. The vehicle behavior and roadway geometry factors in CORSIM have been developed through years of research, and have been incorporated into other simulation models. CORSIM includes detailed information on individual vehicles (at 0.1-second intervals), summary data on individual network links and intersections, and graphical output for confirming the simulation and communicating results. With these features, CORSIM is accepted by FHWA and other state and local agencies for traffic analysis and reporting.

EXHIBIT 8-6

Build Alternative Intersection Lane Arrangements and 2030 Forecast Traffic Operations

Intersection operations for each of the build alternatives are improved compared to the No-Build Alternative.

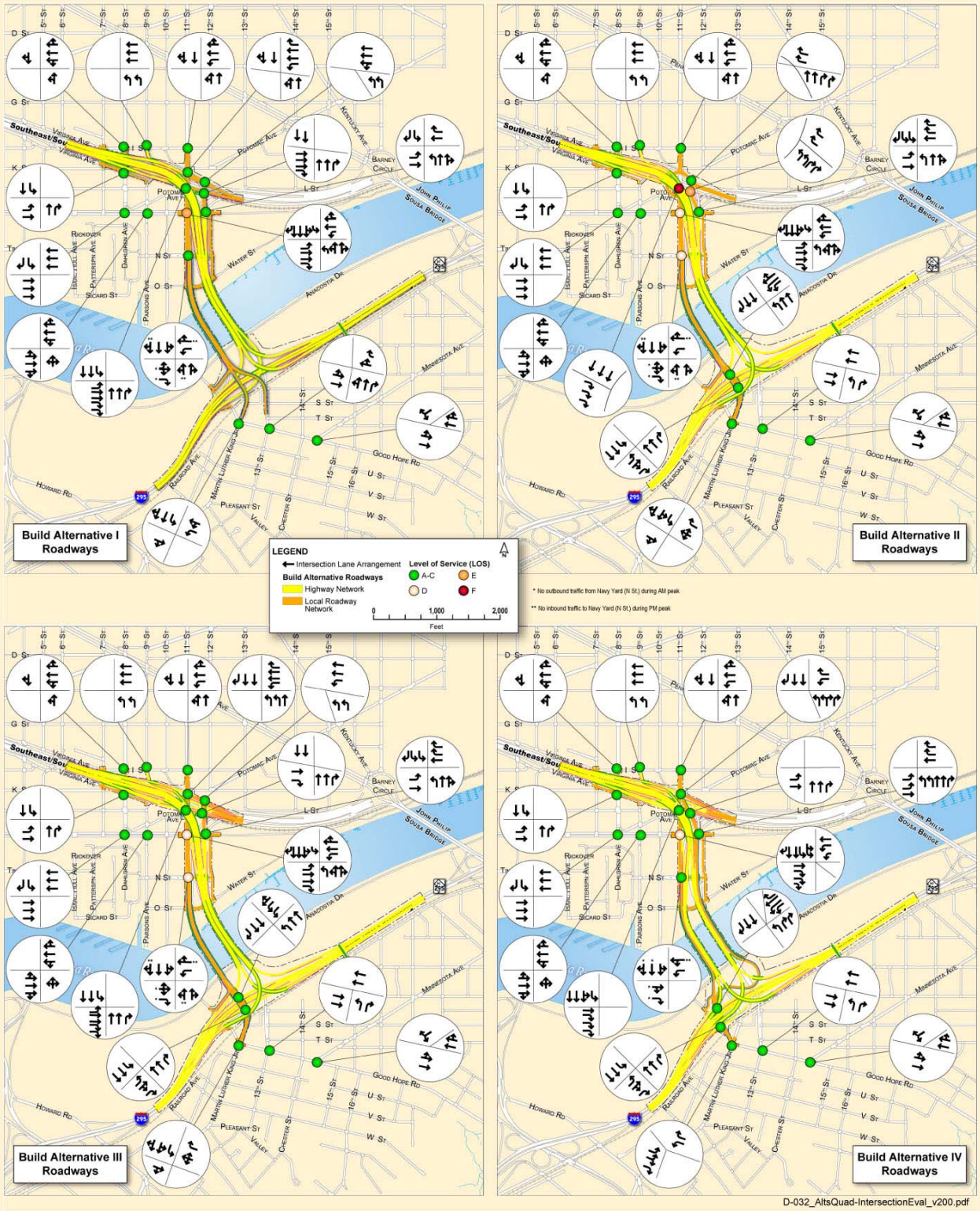
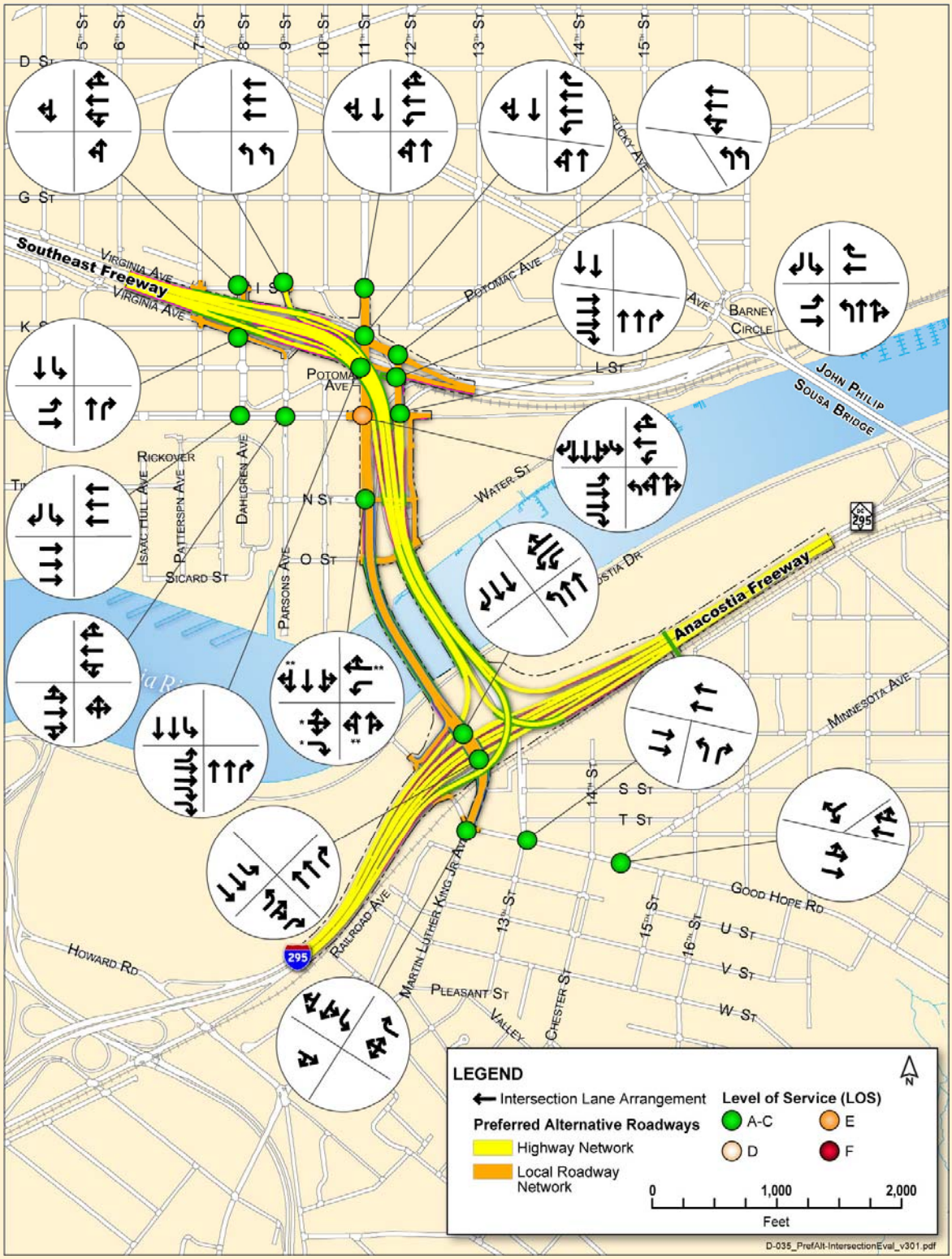


EXHIBIT 8-6A
Preferred Alternative Intersection Lane Arrangements and 2030 Forecast Traffic Operations
Intersection operations for the Preferred Alternative are improved compared to the No-Build Alternative.



Operations on the freeway were evaluated in terms of expected travel speeds on key freeway segments during the PM peak hour (Exhibit 8-8). The estimated travel speeds are summarized in Exhibit 8-9.

EXHIBIT 8-7
Summary of Signalized Intersection Operations
Signalized intersection operations for build alternatives improve relative to the no-build condition.

	Alternative					
	No-Build	I	II	III	IV	Preferred
Signalized Intersections	11	16	17	18	17	18
LOS A-C	7	15	13	16	16	16
LOS D	0	0	2	2	1	2
LOS E	1	1	1	0	0	0
LOS F	3	0	1	0	0	0

8.6.1 No-Build Alternative

Under the No-Build Alternative, the CORSIM model predicts PM peak period travel speeds of at least 45 mph with the exception of three segments. The outbound (northbound) direction of the Southeast/Southwest Freeway and the eastbound Anacostia river-crossing bridge operate at speeds ranging from 13 to 16 mph during the PM peak period, similar to current conditions. Southbound I-295 is projected to operate at a speed of 36 mph, which is indicative of a roadway at or near capacity.

EXHIBIT 8-8
Typical Congestion at 11th Street Bridge
Without improvements, continued congestion across the Anacostia River is expected in 2030.

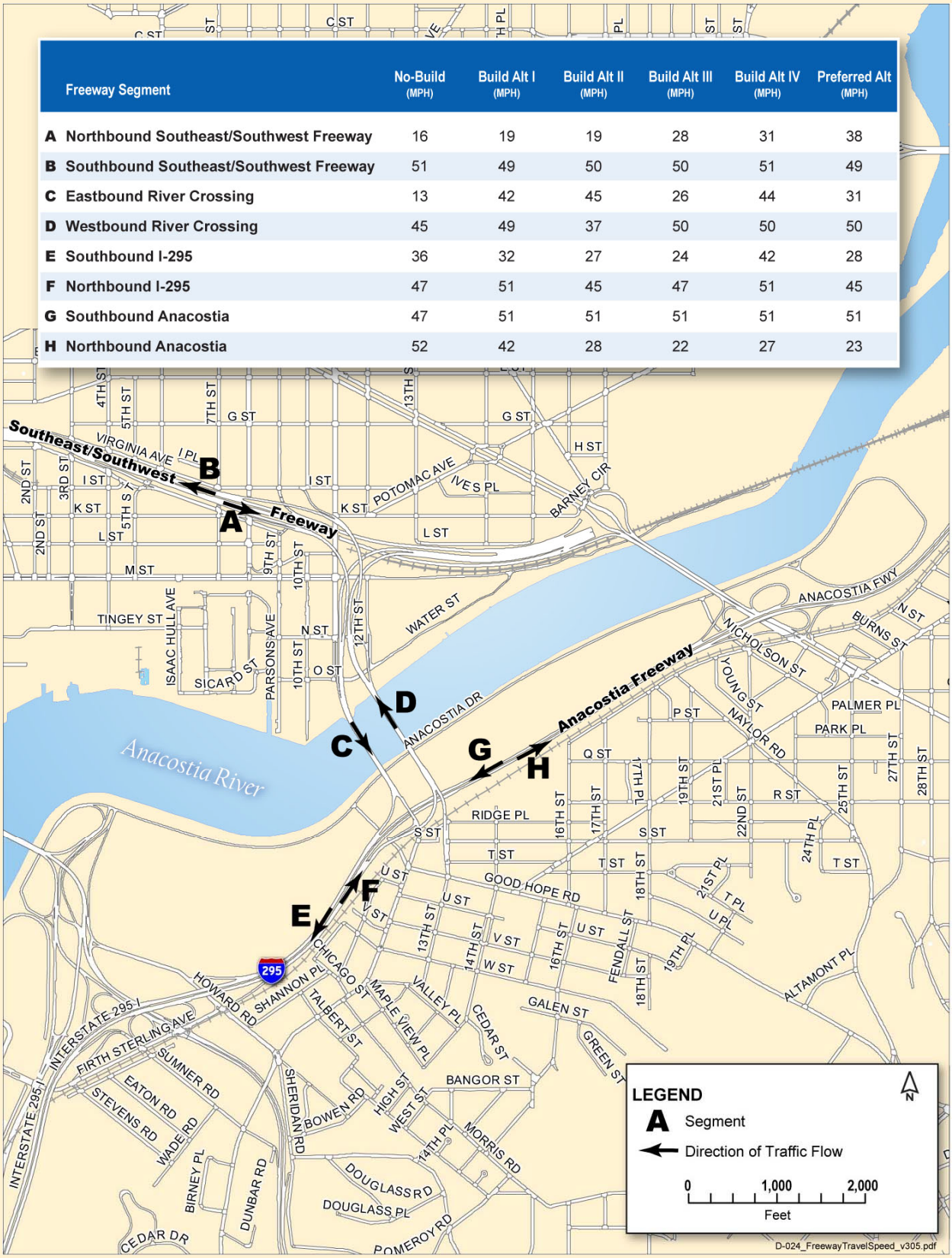
8.6.2 Comparison of Build Alternatives

With the build alternatives, including the Preferred Alternative, PM peak hour speeds are higher for some alternatives on the outbound (northbound) Southeast/Southwest Freeway. Speeds are higher for all alternatives, including the Preferred Alternative, on the eastbound river crossing. Travel speeds on the northbound Anacostia Freeway (between the 11th Street Bridge and the Pennsylvania Avenue interchange) are expected to decrease for the build alternatives. The main reason for the speed decreases is that upstream bottlenecks are being eliminated or reduced, which will increase the volume of traffic reaching these sections. Speeds on southbound I-295 are also expected to decrease for some alternatives, although the differences are relatively small.

Forecast average travel speeds on the outbound (northbound) section of the Southeast/Southwest Freeway are 19 mph for Build Alternatives I and II, 28 to 31 mph for Build Alternatives III and IV, and 38 mph for the Preferred Alternative. The reason for the difference is that Build Alternatives III and IV have an underpass to Southeast Freeway Boulevard. The underpass allows traffic to exit the freeway and travel to Southeast Freeway

EXHIBIT 8-9
2030 PM Peak-Hour Freeway Travel Speeds
Travel speeds on most freeway segments remain the same or improve with any build alternative.

Freeway Segment	No-Build (MPH)	Build Alt I (MPH)	Build Alt II (MPH)	Build Alt III (MPH)	Build Alt IV (MPH)	Preferred Alt (MPH)
A Northbound Southeast/Southwest Freeway	16	19	19	28	31	38
B Southbound Southeast/Southwest Freeway	51	49	50	50	51	49
C Eastbound River Crossing	13	42	45	26	44	31
D Westbound River Crossing	45	49	37	50	50	50
E Southbound I-295	36	32	27	24	42	28
F Northbound I-295	47	51	45	47	51	45
G Southbound Anacostia	47	51	51	51	51	51
H Northbound Anacostia	52	42	28	22	27	23



Boulevard without passing through an intersection. Under Build Alternatives I and II, this traffic must travel through an intersection that forms a queue on the exit ramp and slows speeds on the freeway.

The travel times across the eastbound 11th Street Bridge improve with each of the build alternatives, including the Preferred Alternative. Travel speed improves from 13 mph in the No-Build condition to a range of 26 to 45 mph in the build conditions, including the Preferred Alternative. Build Alternative III has somewhat lower speeds due to downstream congestion in the southbound I-295 section, which causes some queue spillback to the bridge. Because Build Alternative III also has more throughput in the upstream section (the northbound Southeast/Southwest Freeway), more traffic gets to this section sooner and congestion is increased.

On the westbound 11th Street Bridge, speeds are somewhat lower (37 mph) for Build Alternative II than for the No-Build Alternative and the other build alternatives, including the Preferred Alternative (45 to 50 mph). The reason for this difference is the traffic circle, which results in queues on the Navy Yard ramp. In turn, these result in minor queue spillback that affects travel speed on the bridge.

On southbound I-295, Build Alternative IV travel speeds are projected as 42 mph, somewhat higher than the no-build condition (36 mph). However, under Build Alternatives I, II, III, and the Preferred Alternative, the same section of freeway is projected to operate at 24 to 32 mph. In Build Alternative IV the Anacostia Freeway and the 11th Street Bridge ramp merge before the service ramp merges. With this geometry, the merge occurs before I-295, and congestion is reduced.

Each of the build alternatives would result in a reduction in travel speed on the northbound Anacostia Freeway between 11th Street and Pennsylvania Avenue. Build Alternatives II, III, IV, and the Preferred Alternative have somewhat lower speeds (22 to 28 mph) than Build Alternative I (42 mph). The reason for the difference is that the volumes for Build Alternative I are lower (approximately 400 vehicles/hour) because the connections to the freeway are different in this alternative.

8.7 Vehicle Access

Existing access to the freeway system is indirect. Motorists use a variety of neighborhood streets as shortcuts to access the freeway system.

Access to and from the freeway system from residences and businesses is a primary attribute of interest in the project. Existing traffic access to the freeway in the study area can best be described as indirect and circuitous. The freeway system partially connects longer-distance regional trips across the Anacostia River. Motorists familiar with the area use a variety of neighborhood streets and short-cuts to access the freeway system. This increases congestion on the local streets and forces low-speed, lower-capacity roadways to service the longer-distance regional trips by providing the missing connections between freeway facilities. Minnesota Avenue, Good Hope Road, and Martin

Luther King, Jr. Avenue are examples of streets east of the Anacostia River that currently service traffic that should and would be on a freeway facility if the connections existed.

Poor system connectivity can also adversely affect drivers not familiar with the area. Poor or missing guide signs, combined with confusing or "missing" ramps often result in traffic from the freeway entering the neighborhoods in search of Robert F. Kennedy Memorial Stadium, the Navy Yard, or routes to the downtown core of Washington, DC.

8.7.1 No-Build Alternative

Under the No-Build Alternative, access to and from the regional and arterial street system would not change. Regional traffic would continue to use neighborhood streets such as Martin Luther King, Jr. Avenue, Good Hope Road, and Minnesota Avenue to travel between the Anacostia Freeway and the 11th Street Bridges.

8.7.2 Build Alternatives

The proposed build alternatives, including the Preferred Alternative, would modify access between the local freeway system and the neighborhoods on the east and west sides of the river. Access to all existing land use is maintained.

Access to all existing land uses is maintained in each of the build alternatives, including the Preferred Alternative.

Consistent with the project's purpose and need, all of the build alternatives, including the Preferred Alternative, would provide the following primary changes to vehicular access:

- New direct ramps would be added between the Anacostia Freeway and the river- crossing bridges, providing access to and from the north on the Anacostia Freeway.
- Regional commuter traffic would be separated from the local traffic. The local connections between neighborhoods on the east and west side of the river are shown in orange. (See Exhibits 5-1 through 5-5 in Section 5.) Regional connections across the river are shown in yellow.
- The build alternatives, including the Preferred Alternative, modify access to Anacostia Park. Alternatives I, II, and III close vehicular access to the park from Good Hope Road, replacing it with access from the extension of Martin Luther King, Jr. Avenue to the local bridge. Pedestrian and bicycle access to the park will be maintained along the existing Good Hope Road corridor, as well as provided along the new access road. Alternative IV maintains all park access along an extended Good Hope Road, connecting it to the local traffic bridges. The Preferred Alternative maintains vehicle, bicycle, and pedestrian access at Good Hope Road while providing enhanced access for these modes via the local bridge.
- The build alternatives, including the Preferred Alternative, would remove the existing ramps between the Southeast/Southwest Freeway and 9th and 10th Streets. These ramps would be replaced by new ramps at 8th and 9th Streets.

- Each of the build alternatives, including the Preferred Alternative, would remove the ramps between the 11th Street Bridge and N Street and replace them with new ramps to M Street.

In addition to these activities, changes in access associated with each build alternative, including the Preferred Alternative, on the east and west sides of the river are described in the following sections.

Access East of the River

Build alternatives, including the Preferred Alternative, would change access between the Southeast/Southwest Freeway and Anacostia neighborhoods. Direct freeway access would be replaced by local road access across the river.

All of the build alternatives, including the Preferred Alternative, would change access between the Anacostia neighborhoods and the Southeast/Southwest Freeway. Traffic traveling from the freeway to the Anacostia neighborhood would exit the freeway via the ramps to 11th Street on the west side of the river. Traffic would then follow 11th Street to the new local bridge into the Anacostia neighborhood. The return movement from Anacostia to the Southeast/Southwest Freeway would be similar—via the new local bridge to 11th Street to the entrance ramp from 11th Street to the Southeast/Southwest Freeway.

Build Alternatives II, III, IV, and the Preferred Alternative would provide a new service interchange that allows new full access between the Anacostia Freeway/I-295 and the Anacostia neighborhoods. This new service interchange also provides an alternate means of access between the Anacostia Freeway/I-295 and locations west of the river via the new local bridge.

Build Alternatives II, III, IV, and the Preferred Alternative would provide new access between I-295 and Anacostia neighborhoods.

Access West of the River

Under each of the build alternatives, including the Preferred Alternative, the access ramps between the 11th Street Bridges and N Street would be removed and replaced with new ramps that intersect with M Street.

Access between the Southeast/Southwest Freeway and the Southeast Freeway Boulevard would be via a new service interchange with 11th Street. The location and design of interchange ramp intersections with 11th Street vary among the alternatives. For example, the ramps in Build Alternative II would intersect with 11th Street through a traffic circle, versus conventional intersections in the other alternatives, including the Preferred Alternative.

Each of the alternatives, including the Preferred Alternative, would remove the existing interchange ramps between the Southeast/Southwest Freeway and 9th and 10th Streets. These ramps would be replaced with new ramps located nearby at 8th and 9th Streets.

The build alternatives, including the Preferred Alternative, remove direct access to N Street and replace it with access at M Street.

8.8 Travel Times

Travel times between representative locations within the study area were developed and evaluated to identify differences among the four build alternatives, the Preferred Alternative, and the No-Build Alternative (Exhibit 8-10). During the critical PM peak hour, the dominant direction of travel is leaving the downtown central business district and then eastbound across the Anacostia River. Therefore, origins were selected on the west side of the river and destinations were selected east of the river.

The following origin/destination locations are shown in Exhibit 8-10.

- Location A is on the Anacostia Freeway just north of the Pennsylvania Avenue interchange.
- Location B is on the Southeast/Southwest Freeway at the 2nd Street crossing.
- Location C is the intersection of Good Hope Road and Minnesota Avenue.
- Location D is the Navy Yard Gate located at M Street and 9th Street.

Travel times between the selected locations were calculated by combining results from the CORSIM traffic model simulations for freeway segments and ramps, and the intersection delay values calculated on the local street system. Travel times on the local street system were calculated using the free-flow speed on a given roadway segment and then adding the average intersection delay from the intersection operational analysis. Total travel times between a given origin and destination are the sum of the freeway travel time and the local street system travel time.

8.8.1 No-Build Alternative

The first column of Exhibit 8-10 illustrates the forecast PM peak-hour travel times for the 2030 No-Build Alternative. The average trip during this period, starting on the Southeast/Southwest Freeway and destined for the Anacostia Freeway northbound, is forecast to take more than 7 minutes. Beginning at the Navy Yard's 9th Street gate, the average trip destined for the Anacostia Freeway northbound is forecast to take about 7.5 minutes. The average trip from the Southeast/Southwest Freeway to downtown Anacostia at Minnesota Avenue is forecast to take almost 9.5 minutes, while from the Navy Yard's 9th Street gate, the average trip is forecast to take just over 9 minutes.

8.8.2 Build Alternatives

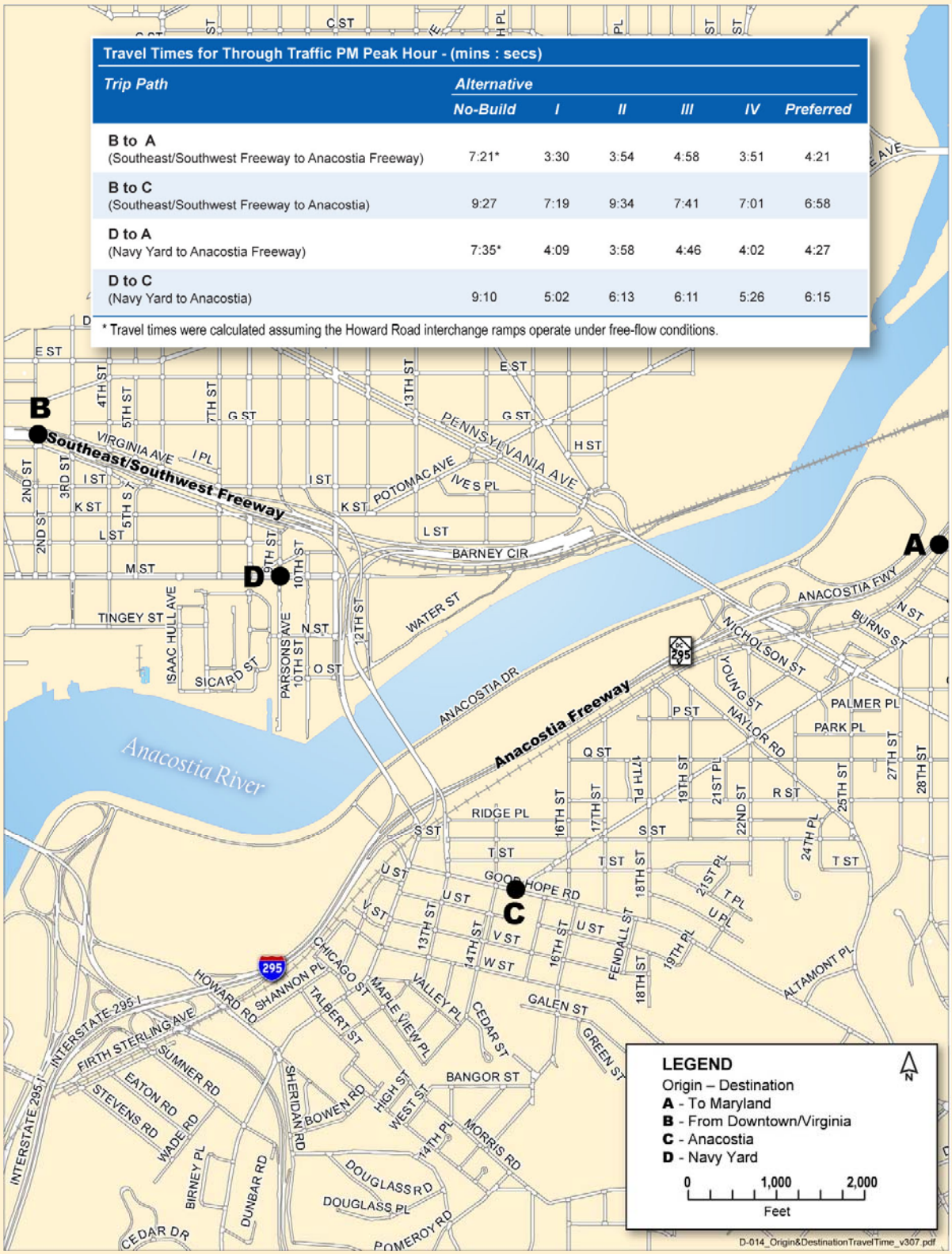
Each of the proposed build alternatives, including the Preferred Alternative, would improve travel times during peak periods between the selected origins and destinations, in most cases by 3 to 4 minutes (see Exhibit 8-10). Under the No-Build Alternative, motorists attempting to make the connection between the Southeast/Southwest Freeway and the Anacostia Freeway must either exit the freeway and travel surface streets, or circuitously travel I-295 south to the interchange with South Capitol Street to reverse direction on the freeway and continue

EXHIBIT 8-10
2030 PM Peak-Hour Travel Times
2030 PM peak-hour travel times between select locations improve relative to the No-Build condition.

Travel Times for Through Traffic PM Peak Hour - (mins : secs)

Trip Path	*Alternative*					
	No-Build	*I*	*II*	*III*	*IV*	*Preferred*
B to A (Southeast/Southwest Freeway to Anacostia Freeway)	7:21*	3:30	3:54	4:58	3:51	4:21
B to C (Southeast/Southwest Freeway to Anacostia)	9:27	7:19	9:34	7:41	7:01	6:58
D to A (Navy Yard to Anacostia Freeway)	7:35*	4:09	3:58	4:46	4:02	4:27
D to C (Navy Yard to Anacostia)	9:10	5:02	6:13	6:11	5:26	6:15

* Travel times were calculated assuming the Howard Road interchange ramps operate under free-flow conditions.



northbound. In contrast, the build alternatives, including the Preferred Alternative, each provide a direct freeway-to-freeway connection for this trip.

Peak-hour travel times from the Southeast/Southwest Freeway and the Navy Yard to historic Anacostia also would decrease with each of the build alternatives, including the Preferred Alternative. Each would provide access to the Anacostia neighborhood on the surface street system. The reduced travel time through this system is attributed to the reduced peak-hour traffic volumes on the same streets in comparison to the No-Build condition.

With Build Alternative II, the peak-hour travel times from the Southeast/Southwest Freeway to destinations on the east side of the river would be higher than the other build alternatives. During the PM peak hour, the traffic circle on 11th Street would operate at a poor LOS, resulting in queuing on the exit ramp from the Southeast/Southwest Freeway. Traffic queued on the exit ramp in turn would affect operations and reduce travel speeds on this section of the freeway. The forecast average travel times for the Preferred Alternative are lower than the No-Build Alternative.

Build alternatives, including the Preferred Alternative, would improve travel times between origins west of the river and destinations east of the river.

8.9 Traffic Safety

Expected traffic safety conditions for the No-Build Alternative and the build alternatives, including the Preferred Alternative, were assessed qualitatively based on elimination of crash-producing conditions, improvements to key roadway design features, and a reduction in traffic exposure at current high-crash locations (10 or more crashes) in the study area.

8.9.1 No-Build Alternative

For the No-Build Alternative, beyond spot improvements and maintenance, no substantive changes are expected to be made at study area intersections. In addition, deficient roadway design elements on the freeway system will not be corrected. The increasing traffic that is forecast to occur throughout the study area in the No-Build condition is expected to result in an increased number of crashes at current high-crash locations.

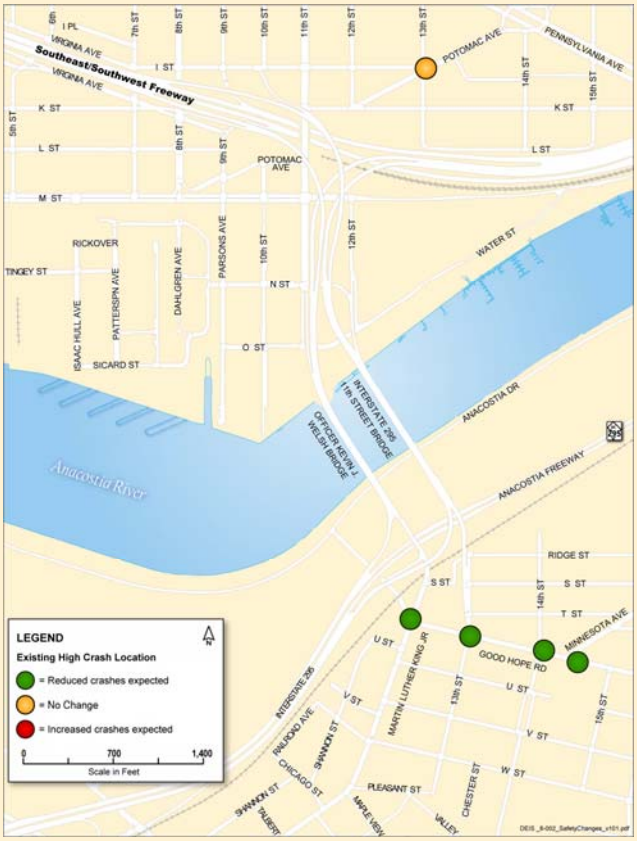
8.9.2 Build Alternatives

All of the build alternatives, including the Preferred Alternative, should produce a net benefit to highway and street system safety compared to the No-Build Alternative. Fewer crashes can be expected as a direct result of elimination of crash-producing conditions, improvements to key roadway design features at specific locations, and reduction in traffic exposure at other locations.

Each build alternative, including the Preferred Alternative, separates local street traffic from freeway traffic across the river bridges, thereby removing a substantial amount of traffic volume on the 11th Street Bridges that contributes to weaving-related crashes. Many of the high-crash intersections listed in Exhibit 6-103 (Section 6, Affected Environment) would be reconstructed and improved, with reduced traffic through some of these locations. The expected changes in safety performance at these high-crash intersections are shown in Exhibit 8-11.

Freeway design features common to all build alternatives, including the Preferred Alternative, that would improve safety include provision for shoulders on the 11th Street Bridges, lengthening of the weaving distance across the 11th Street Bridges (particularly for Build Alternatives II, III, IV, and the Preferred Alternative), development of lane balance at the M Street exit, and the addition of auxiliary lanes along the Anacostia Freeway for entering and exiting traffic at adjacent interchanges.

EXHIBIT 8-11
Expected Changes in Intersection Safety
Build alternatives result in increased safety and several high-crash locations identified in the MAC study.



Differences Among the Build Alternatives

Among the build alternatives, including the Preferred Alternative, there may be minor differences in expected safety performance. West of the river, different street system solutions at 11th Street and Southeast Freeway Boulevard should produce different crash risk. Alternatives that employ at-grade intersections (Build Alternative I and the Preferred Alternative) or a traffic circle (Build Alternative II) would have higher traffic volumes in potentially conflicting movements than Build Alternatives III and IV, which employ an underpass for the through traffic to Pennsylvania Avenue. Higher traffic volumes in conflicting movements increase the opportunities for a crash.

8.10 Considerations Relating to Pedestrians and Bicyclists

Pedestrian and bicyclist considerations for the No-Build Alternative, the build alternatives, and the Preferred Alternative were assessed based on access considerations, connectivity to

existing and planned paths and recreation facilities, safety, and ability to correct existing deficiencies in the study area.

An inventory of existing facilities and deficiencies was combined with plans from the DC Bicycle Master Plan and the Anacostia Riverwalk Trail Plan to evaluate and compare the future system of sidewalks, bike lanes, and trails within and through the study area.

8.10.1 No-Build Alternative

With the No-Build Alternative, existing pedestrian and bicycle system deficiencies will remain in place. The general atmosphere and roadway system design would discourage and in some cases preclude walking and biking in the project area. Narrow paths lacking connectivity would remain in place adjacent to increasing volumes of traffic across the river and on neighborhood streets throughout the study area (Exhibit 8-12). Increased vehicle conflicts at crossing locations would be expected to further degrade safety for pedestrians and bicycles.

EXHIBIT 8-12
Sidewalk to 12th Street from 11th Street Bridge
With the No-Build Alternative, narrow paths lacking connectivity would remain in place adjacent to increasing volumes of traffic across the river and on neighborhood streets throughout the study area.

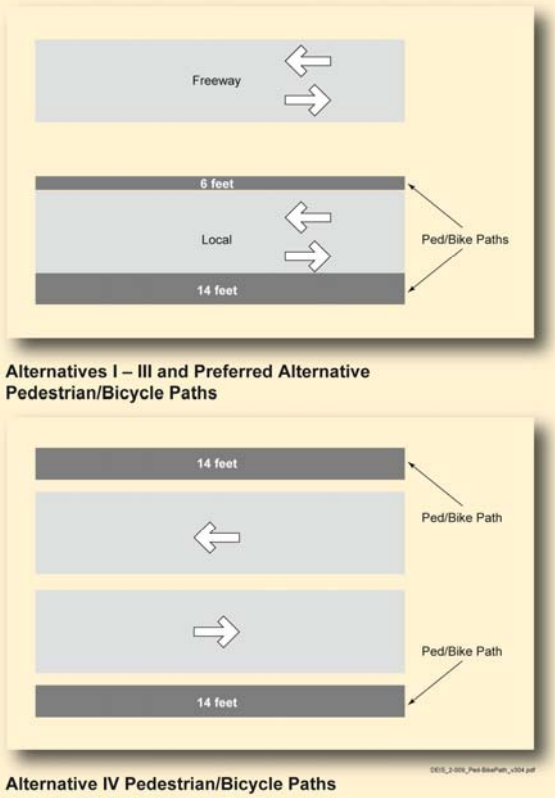
Non-continuous and inconvenient connections to/from the waterfront from area neighborhoods would remain in place, despite planned improvements to the waterfront trail system. Safety and security concerns for users accessing the current bridge spans would also remain.

8.10.2 Build Alternatives

Each of the build alternatives, including the Preferred Alternative, would enhance bicyclist and pedestrian access across the Anacostia River. Pedestrians would no longer be forced to walk alongside an interstate facility without separation. Build Alternatives I, II, III, and the Preferred Alternative each would provide a 14-foot-wide shared-use path on the downstream side of the lower-speed, local traffic bridge. They each also would provide a 6-foot-wide sidewalk on the upstream side of the local bridge. Build Alternative IV would provide 14-foot-wide shared-use paths along the outside edges of both bridges, adjacent to the local traffic lanes (Exhibit 8-13). All pathways would meet AASHTO policy and Americans with Disabilities Act standards for bicycle, pedestrian, and shared-use facilities and would provide a safer, more direct, and more comfortable experience for users crossing the river. The local bridge would provide an opportunity to enhance access and egress to and from the neighborhoods on both sides of the Anacostia River. This will allow for the creation of aesthetically pleasing gateways, safer pedestrian crossings, and safer transitions to and from on-street riding for bicyclists.

The four build alternatives and the Preferred Alternative each create opportunities to implement components of the DC Bicycle Master Plan. In addition, they also would maintain direct pedestrian access between the bridges and the waterfront on both sides of the river, and connect bicycle facilities to the Anacostia Riverwalk Trail along both banks of the river.

EXHIBIT 8-13
Build Alternative Bicycle and Pedestrian Paths
Bicycle and pedestrian access and connectivity is improved with the build alternatives.



Exhibits 8-14 through 8-18 present the proposed pedestrian and bicycle facilities for each of the build alternatives and the Preferred Alternative.

West of the river, the proposed sidewalks and bicycle paths for Build Alternatives I, II, III, IV, and the Preferred Alternative would tie into the existing and/or proposed sidewalks and bicycle paths/routes at N Street.

Under Build Alternative IV, the proposed multi-use path on the downstream structure would tie to existing and proposed facilities at N Street. The multi-use path on the upstream bridge would tie to existing and proposed facilities at M Street.

East of the river, the proposed multi-use trail would connect to the existing facilities in the vicinity of Martin Luther King, Jr. Avenue and Good Hope Road. All of the build alternatives, including the Preferred Alternative, would provide a multi-use underpass under reconstructed I-295 in the vicinity of the existing Good Hope Road underpass.

All of the build alternatives, including the Preferred Alternative, would provide a direct multi-use connection to Anacostia Park from the Anacostia neighborhood and the west side of the river. All of the build alternatives, including the Preferred Alternative, would provide a direct multi-use connection from the downstream side of the downstream bridge to Anacostia Park. DDOT will continue to coordinate with the pedestrian and bicyclist communities to detail the connections during preliminary and final engineering.

Each of the build alternatives, including the Preferred Alternative, would separate users from the high-speed freeway facility via a wide, dedicated path that connects on both sides of the river to improved sidewalks and bicycle lanes. Upgraded traffic signalization, incorporation of pedestrian/bicycle amenities (including countdown timers and visible crosswalks), and reduced traffic volumes in the Anacostia neighborhood will reduce pedestrian and bicycle conflicts and improve safety.

EXHIBIT 8-14
Build Alternative I Improved Multi-use Trails and Sidewalks
The sidewalks and multi-use trails on the local bridge will connect with the extensive network of planned trails in the area.

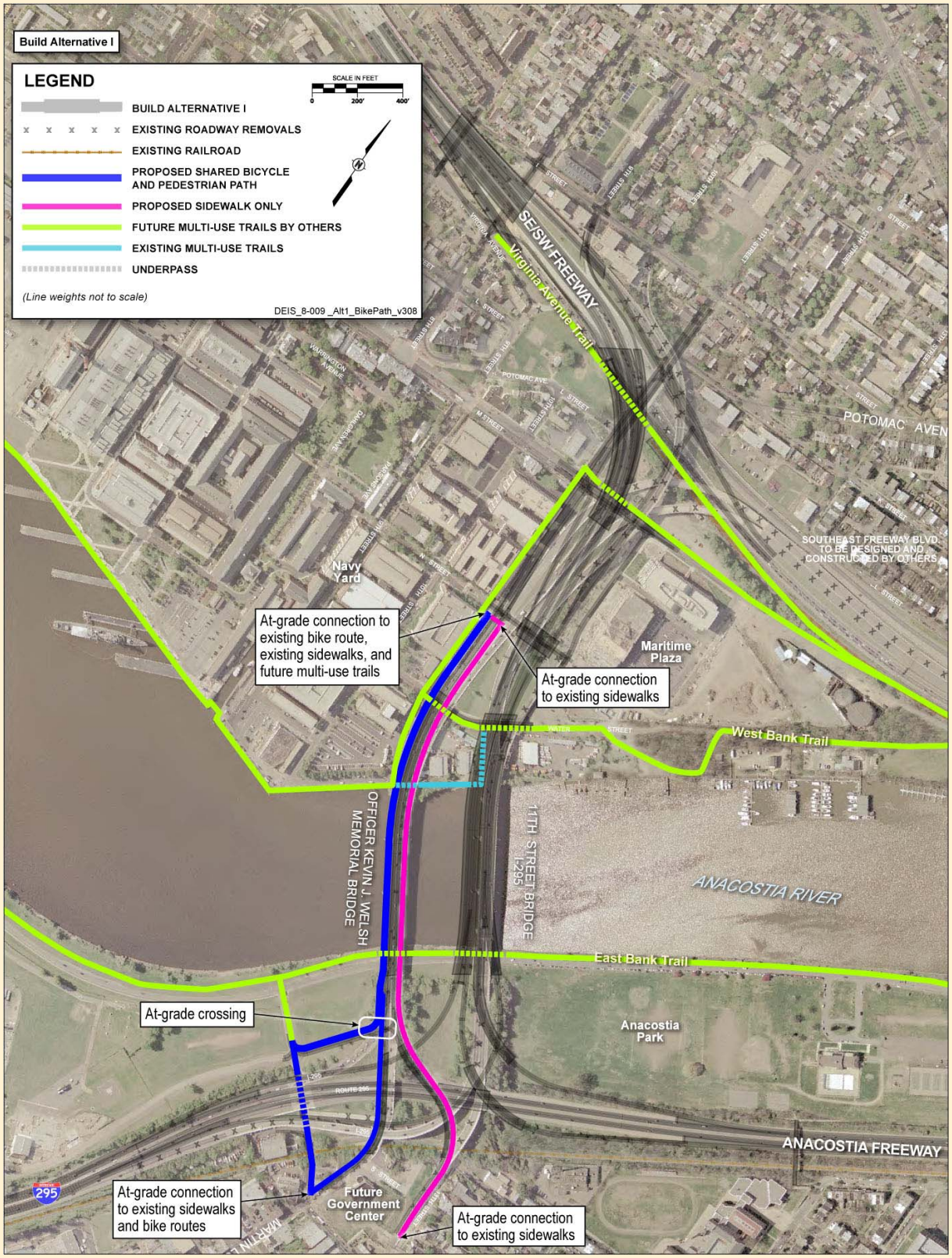


EXHIBIT 8-15

Build Alternative II Improved Multi-use Trails and Sidewalks

The sidewalks and multi-use trails on the local bridge will connect with the extensive network of planned trails in the area.

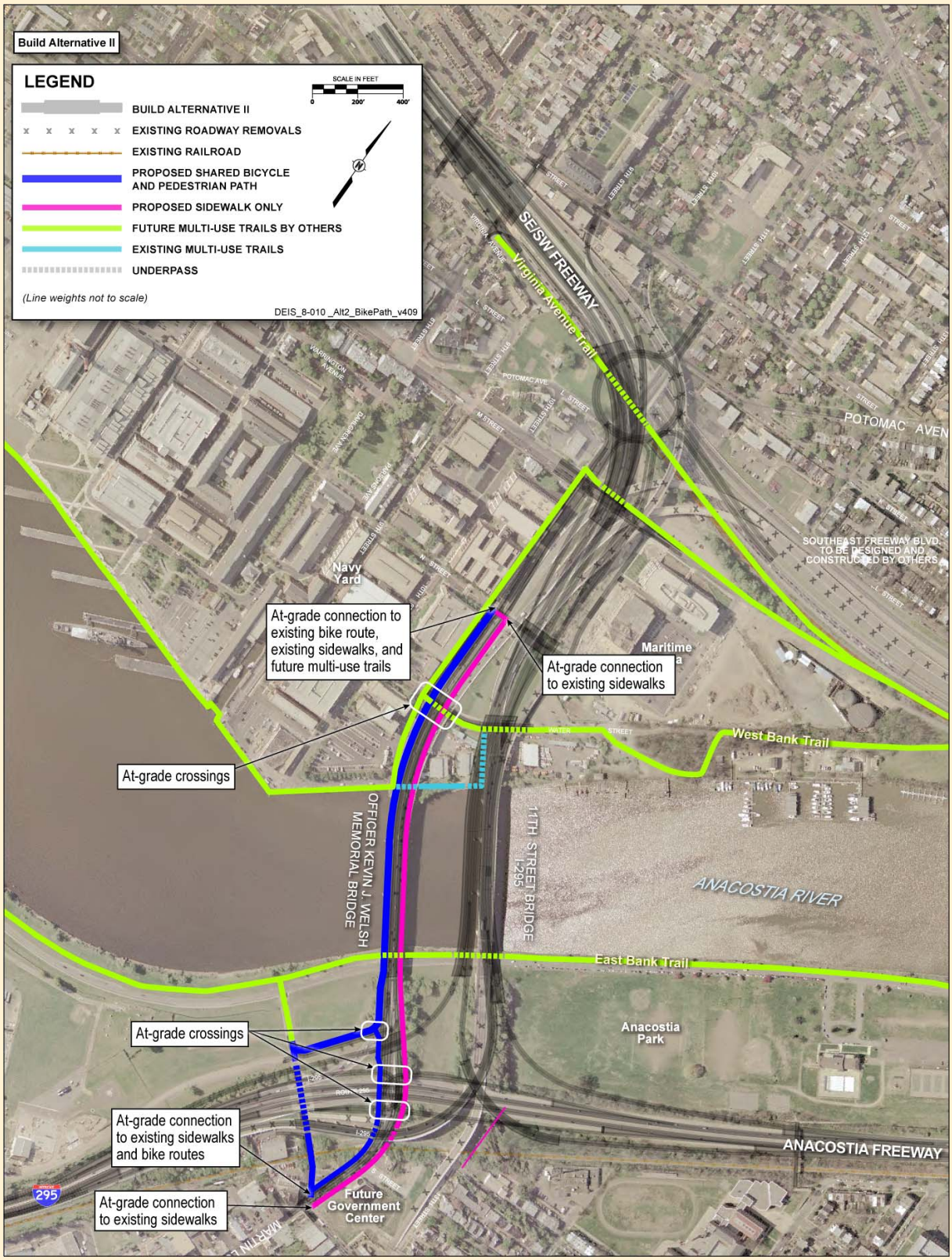


EXHIBIT 8-16
Build Alternative III Improved Multi-use Trails and Sidewalks
The sidewalks and multi-use trails on the local bridge will connect with the extensive network of planned trails in the area.

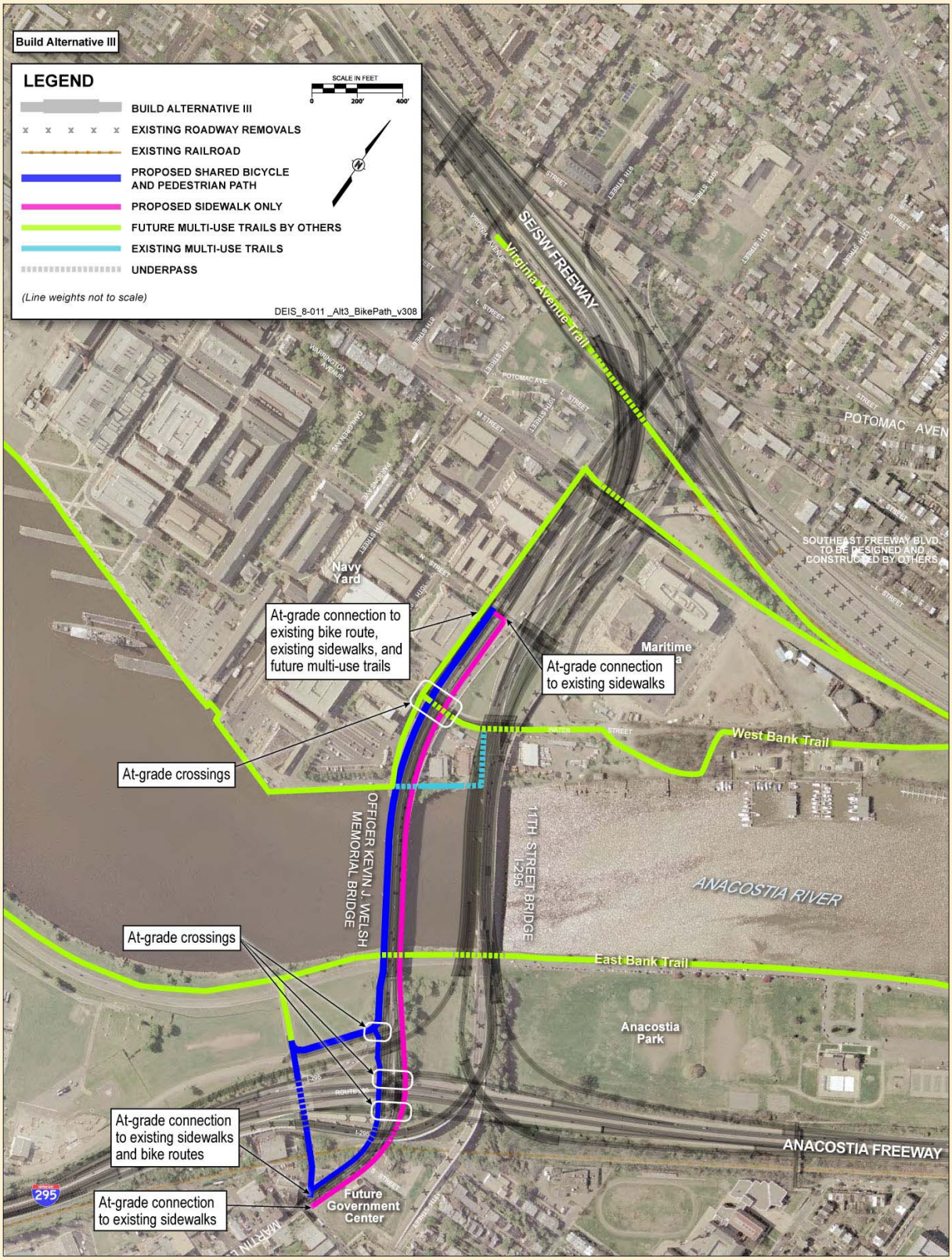


EXHIBIT 8-17
Build Alternative IV Improved Multi-use Trails
The multi-use trails on both bridges will connect with the extensive network of planned trails in the area.

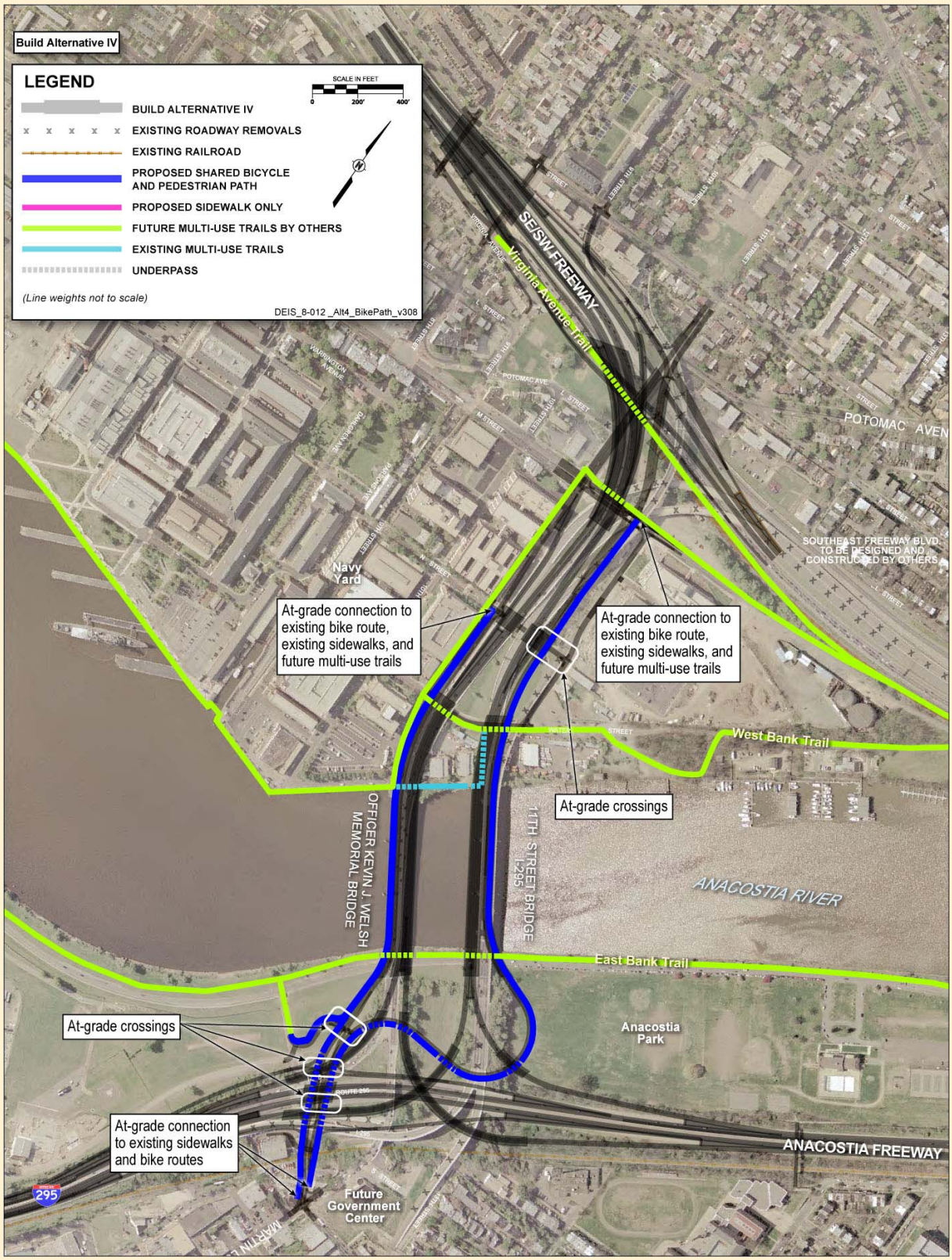
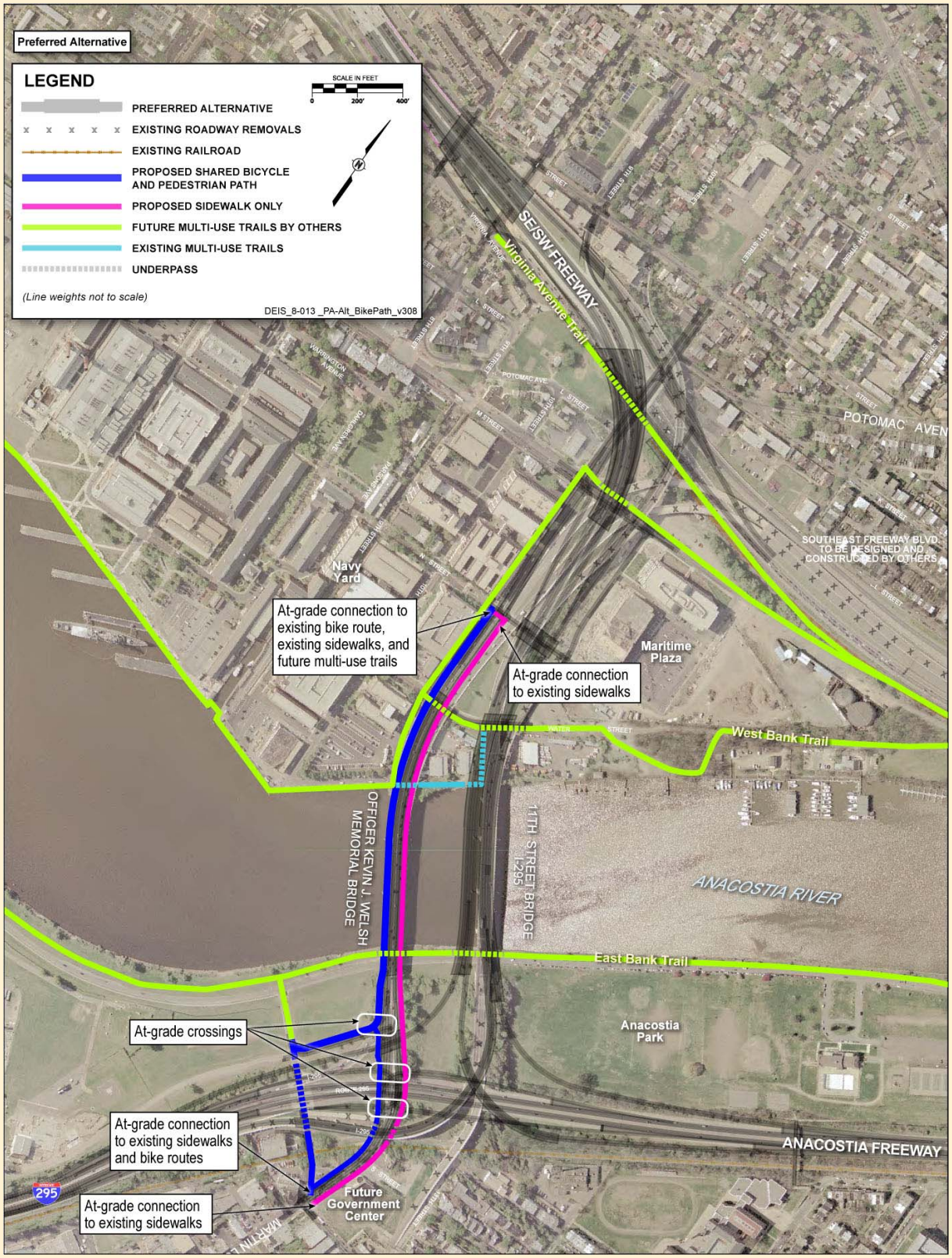


EXHIBIT 8-18
Preferred Alternative Improved Multi-use Trails and Sidewalks
The sidewalks and multi-use trails on the local bridge will connect with the extensive network of planned trails in the area.



Differences Among the Build Alternatives

There are small differences among the build alternatives, including the Preferred Alternative, in regard to pedestrian and bicycle safety and overall amenities provided.

East of the river, Build Alternative I has fewer at-grade intersection crossings than Build Alternatives II, III, IV, and the Preferred Alternative because a local interchange with the Anacostia Freeway would not be provided. The fewer at-grade crossings with Build Alternative I reduce the opportunities for a crash compared to the other build alternatives.

West of the river, different street system solutions at 11th Street and Southeast Freeway Boulevard should produce different crash risks. Alternatives that employ at-grade intersections (Build Alternative I and the Preferred Alternative) or a traffic circle (Build Alternative II) would have higher traffic volumes in potentially conflicting movements than Build Alternatives III and IV, which employ an underpass for the through traffic to Pennsylvania Avenue. Higher traffic volumes in conflicting movements increase the opportunities for a crash. The traffic circle proposed in Build Alternative II would be particularly challenging for bicyclists to navigate.

Build Alternative IV has added amenities in the form of 14-foot-wide, shared-use paths along the outside edges of both bridges, adjacent to the local traffic lanes. Build Alternatives I, II, III, and the Preferred Alternative only provide one 14-foot shared-use path.

8.11 Considerations Relating to Transit

DDOT continues to be committed to reducing congestion and parking problems within the District. Innovative transportation options, such as the Streetcar Project, the DC Circulator, and the Maryland Commuter Bus expansion, represent a sample of the intergovernmental coordination and public transportation efforts that DDOT is actively involved in.

Transit operations for the No-Build and build alternatives, including the Preferred Alternative, were qualitatively assessed based on roadway connectivity and traffic operations along transit routes. An inventory of existing transit routes provided by WMATA in the study area was used as the basis of comparison.

8.11.1 No-Build Alternative

Transit will continue to serve the project area for the No-Build Alternative. Transit is expected to remain an important transportation mode for residents and visitors to the communities within the project area. It is expected that transit access to residential and commercial land uses will remain in place while transit access to the Anacostia waterfront will remain poor, requiring a substantial walk from the nearest transit stop. There is no provision for a future streetcar crossing.

Travel times for transit vehicles in the study area would be expected to increase as traffic volume and congestion grow on both the freeway and local street network within the study area.

8.11.2 Build Alternatives

Each of the build alternatives, including the Preferred Alternative, would ultimately improve transit connectivity in the study area by providing missing movements from the 11th Street Bridge complex to the Anacostia Freeway and removing traffic from the local street system, particularly in the historic Anacostia area. Traffic operations improvements that are expected with each of the build alternatives, including the Preferred Alternative, would reduce congestion and increase travel speeds for transit vehicles in the study area. Metrorail service would not be affected by the build alternatives or the Preferred Alternative.

The build alternatives, including the Preferred Alternative, present opportunities for the creation of new transit stops east and west of the river. Siting of potential new bus stops will be conducted during detailed engineering through close coordination between DDOT and WMATA.

> The surface street network and local river crossing structure are being designed to accommodate potential streetcar service.

The potential for streetcar transit service is also being considered with each of the build alternatives, including the Preferred Alternative. Although not a part of the 11th Street Bridges project, the surface street network adjacent to the bridge complex and the local river-crossing structure are being designed to accommodate the potential for extending future streetcar service onto these facilities. Conversely stated, the build alternatives were developed in a manner that does not preclude streetcar services, should the decision be made to provide that type of service in this corridor in the future.

The build alternatives, including the Preferred Alternative, also provide improved opportunities for express bus service from surrounding jurisdictions.

8.12 Considerations Relating to Freight

Freight operations for the No-Build and build alternatives were qualitatively assessed based on traffic operations and roadway connectivity. This corridor does not represent a major link for long-distance freight movement. Trucks hauling freight are primarily for making deliveries in the region surrounding the project.

8.12.1 No-Build Alternative

Freight operators will continue to serve the project area for the No-Build Alternative. Current access to residential and commercial land uses will remain the same. Travel times would be expected to increase as traffic volumes grow on both the freeway and local street networks. Freeway and local traffic will continue to share the same roadway.

8.12.2 Build Alternatives

Each of the build alternatives, including the Preferred Alternative, would improve freight routes by providing the missing movements from the 11th Street Bridge complex to the Anacostia Freeway and thereby reducing traffic from the local streets. Trucks would also

operate for longer hours during less congested conditions. Freeway and local traffic will also be separated under all four build alternatives and the Preferred Alternative.

To determine whether the corridor would become a major link for long-distance freight movement with the Preferred Alternative, 2030 forecast daily truck traffic volumes in the MWCOG travel forecast models were compared for the No-Build and Preferred Alternatives. Additionally, the percentages of trucks in the traffic stream were compared to determine what effect the Preferred Alternative may have on the vehicle mix on the freeways in the study area.

Exhibit 8-19 compares the forecast daily truck traffic volumes and percentage of trucks in the vehicle streams of the No-Build and Preferred Alternatives. The locations selected for comparison are the major freeways serving the District shown in Exhibit 8-3. The results indicate that the forecast daily truck traffic volumes and percentages in the MWCOG model change little between the No-Build and Preferred Alternatives.

EXHIBIT 8-19
2030 Forecast Model Truck ADT Volumes and Percentages at Key Freeway Locations

Location	No-Build Alternative Truck ADT Traffic Volume (%)	Preferred Alternative Truck ADT Traffic Volume (%)
I-66/Roosevelt Bridge	0 (0%)	0 (0%)
Arlington Memorial Bridge	0 (0%)	0 (0%)
I-395/US-1 Bridge	64,000 (27%)	65,000 (27%)
I-95/I-495 Wilson Bridge	110,000 (42%)	105,000 (40%)
I-295/Anacostia Freeway South	25,000 (22%)	24,000 (22%)
DC-295/Anacostia Freeway North	28,000 (21%)	30,000 (23%)

Additionally, the forecast daily truck traffic volumes in the MWCOG model were compared by roadway facility type. Exhibit 8-20 illustrates that, network-wide, there is an approximate 1 percent shift in forecast model daily truck traffic from local streets to freeways in the Preferred Alternative, compared to the No-Build Alternative.

EXHIBIT 8-20
2030 Forecast Model Truck ADT Volumes By Roadway Network Facility Type

Location	No-Build Alternative Truck ADT Traffic Volume	Preferred Alternative Truck ADT Traffic Volume	Change from No-Build to Preferred Alternative
Freeway and Ramp Links	19,748,000	19,591,000	157,000
Non-Freeway Links	14,700,000	14,585,000	-115,000
All Roadway Links	34,178,000	34,176,000	-2,000

8.13 Construction Phasing of the Build Alternatives

Based on the engineering information available at this stage of the project, construction phasing concepts were developed for each of the build alternatives, including the Preferred Alternative. All of the build alternatives would be constructed in phases to minimize the disruption to traffic during construction. The early phases of construction would concentrate on building the new roadways or bridges necessary for the alternative. As these new facilities are completed, traffic would be shifted to them while the existing ramps, roadways, and bridges are reconstructed and/or removed.

Construction of each of the build alternatives, including the Preferred Alternative, would take approximately 5 years using typical construction practices (8 hours/day, 5 days/week, no work on weekends or holidays, construction continues year round).

The following common assumptions and objectives were used as guidelines to steer the development of the construction phasing concept for each of the build alternatives, including the Preferred Alternative. The construction phasing plan of the preferred alternative will be further developed and refined in the detailed engineering phases of the project:

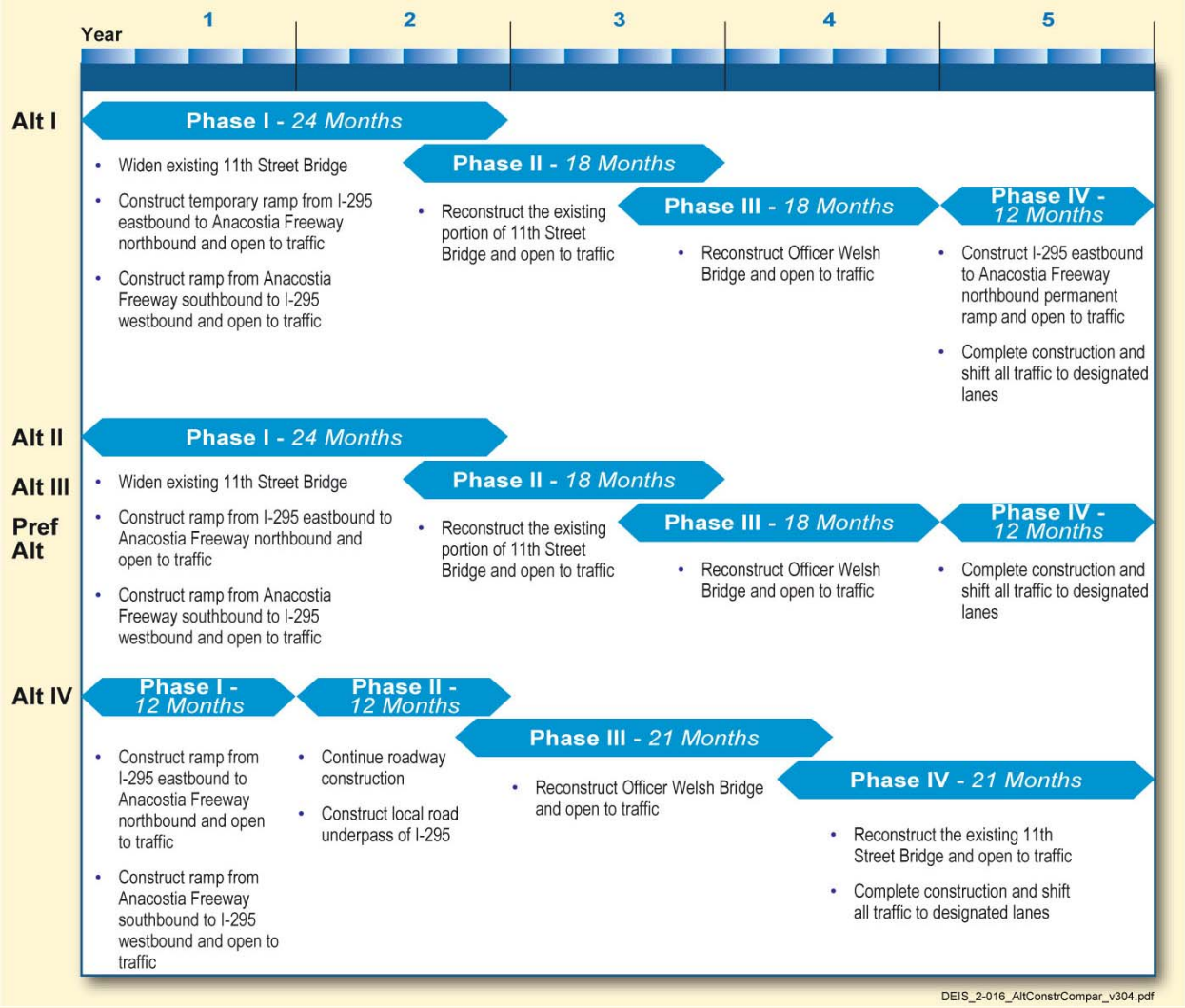
Construction of each of the build alternatives, including the Preferred Alternative, would take approximately 5 years using typical construction practices (8 hours/day, 5 days/week, no work on weekends or holidays, construction continues year round).

- Three lanes of traffic will be maintained in each direction across the Anacostia River.
- At least two lanes of traffic in each direction will be maintained on the Anacostia Freeway and I-295 through the project area.
- Temporary roadway and temporary structures required during construction will be minimized.
- Traffic detours through neighborhoods on both sides of the river will be minimized.
- Missing ramps serving the Anacostia Freeway on the east side of the river will be opened in the earliest possible phases.
- System ramp traffic may be re-directed through signalized intersections during construction.

During the detailed engineering phase of the project, some of the basic assumptions may change. However, the guidelines above provide reasonable assumptions and a basis that will allow DDOT and project stakeholders to relatively compare the four build alternatives and the Preferred Alternative with respect to construction phasing.

Exhibit 8-21 summarizes and compares the construction phasing concepts for each of the build alternatives, including the Preferred Alternative.

EXHIBIT 8-21
Build Alternative Construction Phasing
Each of the Build Alternatives can be constructed in 5 years. The timing of work performed varies by alternative.



8.13.1 Differences Among the Build Alternatives

Build Alternative I would require the construction of costly temporary structures on the east side of the river. In order to maintain two lanes of traffic in each direction on the Anacostia Freeway, three temporary ramp and roadway structures would be required to accommodate lowering the mainline profile by approximately 25 feet and constructing the tunnel.

With Build Alternative I, construction of the missing ramp serving eastbound traffic crossing the river to the northbound Anacostia Freeway early in the project is difficult due to the tunnel construction required to lower the Anacostia Freeway. This movement could be provided via a temporary connection that would be constructed on the Anacostia Gateway Government Center property.

Build Alternatives II, III, and the Preferred Alternative would require fewer temporary roadway connections and ramp structures than Build Alternatives I and IV.

Under Build Alternatives II, III, and the Preferred Alternative, traffic traveling from northbound I-295 across the river would be detoured through the new service interchange and across the new local bridge and to 11th Street to access the Southeast/Southwest Freeway. This temporary connection would likely remain in place for 2 years while the new ramp and the new bridges across the river are being constructed.

Build Alternatives II, III, and the Preferred Alternative would allow the completion of the missing ramps serving the Anacostia Freeway to be open to traffic at the end of the second year of construction.

Construction of Build Alternative IV would be the most difficult from a construction phasing standpoint. Build Alternatives I, II, III, and the Preferred Alternative ultimately provide eight freeway lanes across the river on the upstream bridge and four local lanes on the downstream bridge. Build Alternative IV would provide six lanes (four freeway and two local) on both the upstream and downstream crossings. Because the existing bridges cannot be partially widened during construction, one bridge would be removed while the other maintains traffic across the river. Under this scenario only two lanes of traffic in each direction can be maintained across the river during construction. In addition, construction of the river-crossing bridges would not start until the third year of construction.

Build Alternative IV could be constructed in 5 years, but the construction would require more sub-stages and traffic shifts and would have numerous low-speed (10 mph) temporary ramps.

8.14 Construction Effects on Traffic

Construction effects on traffic were qualitatively investigated based on conceptual stage construction plans developed for each of the build alternatives, including the Preferred Alternative. Issues investigated included the capacity of the work zone, methods for hauling materials to the work site, construction effects on transit and freight, and the potential need for traffic detours.

8.14.1 No-Build Alternative

There will be no construction activity associated with the No-Build Alternative.

8.14.2 Build Alternatives

The four build alternatives and the Preferred Alternative are similar in their effects on traffic during construction. Each construction performance measure is discussed below.

Capacity Effects of Construction

Impacts to the freeway capacity would vary, depending on the alternative selected and the phase and stage of construction. The capacity of a lane in a construction zone is about 10 to 25 percent less than a traditional freeway lane. In addition, the number of lanes provided would be reduced, further restricting the amount of traffic that can flow through the area. Each of the alternatives would require similar lane closures to complete the interchange reconstruction on the east and west sides of the river. Lane reductions during construction will be subject to construction schedule decisions.

Transportation of Materials to the Work Site

Trucks will most likely be the primary mode for transporting materials to and from the work site, and truck traffic would increase during construction for all of the build alternatives. Given the project's close proximity to the Anacostia River, materials may also be transported to and from the project area by barge.

All of the build alternatives, including the Preferred Alternative, involve similar roadway and bridge construction and are similar in nature with respect to the type and quantity of raw materials necessary for construction. As such, the level and type of truck traffic required to transport materials to and from the project site would be very similar for each alternative. Specific truck-hauling routes focusing on primary transportation corridors and minimizing impacts to surrounding neighborhoods will be established during construction.

The build alternatives, including the Preferred Alternative, are similar in their effects on traffic during construction.

Effects on Transit

The reduction of capacity within the work zone will result in increased travel times in the project area for all vehicles, including transit. All temporary lanes, shoulders, and turning radii will be designed to accommodate transit vehicles. DDOT would work with the transit agencies to minimize delays during construction and identify alternative routes if necessary.

Effects on Freight

The reduction in available capacity within the work zone will result in increased travel times for all vehicles, including trucks. Truck prohibitions within the work zone are not expected. All temporary lanes, shoulders, and turning radii will be designed to accommodate trucks. DDOT is committed to working with freight carriers to minimize the amount of delay and identify alternative routes as necessary.

Potential Detours

During construction, movements across the river and existing interchange traffic will be maintained through the use of temporary ramp connections. Some limited duration detours during specific construction activities might be necessary for local traffic. More detailed plans would be developed for a preferred alternative.

Differences Among the Build Alternatives

The primary differences among the build alternatives, including the Preferred Alternative, are associated with the number of lanes across the river that can remain open during construction. Build Alternatives I, II, III, and the Preferred Alternative can accommodate a minimum of three lanes in each direction during construction while Alternative IV can only accommodate a minimum of two lanes in each direction during construction.

8.14.3 Mitigation of Traffic Impacts During Construction

DDOT will, through close coordination with transportation providers in the region, implement a program of strategies during construction of this project to maximize capacity and minimize disruption. This program will include the following:

- Transit enhancements, including temporary bus routes, additional bus stops, and consideration of priority bus lane usage during peak periods
- Traveler information systems, including highway advisory radio
- Event management systems, such as roving tow services
- Enhanced traffic signal systems and coordination
- Incident management and surveillance systems
- Expanded vanpool/vanshare programs
- Public information programs
- Intelligent Transportation Systems, including real-time message signs with alternate route suggestions

These strategies would help reduce travel demand, maximize the available capacity, and inform the public. These and other potential strategies would be evaluated further at a later stage of project development.

9 Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property

This section discusses the Section 4(f) issues associated with the 11th Street Bridges project. All of the build alternatives will require the use of Section 4(f) property. Because of the location of the Section 4(f) properties directly adjacent to the existing facility and on both sides of the river, there are no feasible and prudent build alternatives to using these properties. Therefore, the 11th Street Bridges project is being developed to enhance (i.e., provide a net benefit to) the affected Section 4(f) resources. The "Section 4(f) Evaluation and Approval for Transportation Projects That Have a Net Benefit to a Section 4(f) Property" (referred to hereafter as the "Net Benefits 4(f) Programmatic") is being used to process this project. Coordination among NPS, DPR, and DDOT has been extensive regarding the assessment of impacts, the proposed measures to minimize harm, and the mitigation necessary to provide a net benefit to the Section 4(f) resources. Nine meetings with NPS (jurisdiction for Anacostia Park) and three with DPR (jurisdiction for Virginia Avenue Park) have been held. This coordination resulted in letters from each of the agencies with determinations that there would be a net benefit to the parks with the implementation of the mitigation and enhancement measures provided with the Preferred Alternative. See Appendix H and Appendix I.

The improvements for the 11th Street Bridges project are being proposed in a manner to take advantage of the FHWA Net Benefits 4(f) Programmatic.

9.1 Basic Requirements of Section 4(f)

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 USC §303, declares that

> *[i]t is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites.*

Section 4(f) specifies that

> *[t]he Secretary [of Transportation] may approve a transportation program or project…requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of a historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if:*
>
> 1. *There is no prudent and feasible alternative to using that land; and*
> 2. *The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.*

In general, a Section 4(f) "use" occurs with a Department of Transportation–approved project or program when (23 CFR §771.135 [p][1] and [2]):

- Section 4(f) land is permanently incorporated into a transportation facility.
- There is a temporary occupancy of Section 4(f) land that is adverse in terms of the Section 4(f) preservationist purposes as defined by specified criteria (23 CFR §771.135[p][7]).
- Section 4(f) land is not incorporated into the transportation project, but the nearby impacts of the projects are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired (constructive use).

9.1.1 Definition of the Net Benefits 4(f) Programmatic

This nationwide programmatic Section 4(f) evaluation has been prepared for certain federally assisted transportation improvement projects on existing or new alignments that will use property of a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic property, which in the view of the Administration and official(s) with jurisdiction over the Section 4(f) property, the use of the Section 4(f) property will result in a net benefit to the Section 4(f) property. This programmatic evaluation can be applied to any project regardless of class of action under the National Environmental Policy Act. A "net benefit" is achieved when the transportation use, the measures to minimize harm, and the mitigation incorporated into the project results in an overall enhancement of the Section 4(f) property when compared to both the future do-nothing or avoidance alternatives and the present condition of the Section 4(f) property, considering the activities, features, and attributes that qualify the property for Section 4(f) protection. Conversely, a project does not achieve a "net benefit" if it will result in a substantial diminishment of the function or value that made the property eligible for Section 4(f) protection.

9.1.2 Applicability of the Net Benefits 4(f) Programmatic

The applicability criteria for a Net Benefits 4(f) Programmatic include the following:

1. The proposed transportation project uses a Section 4(f) park, recreation area, wildlife or waterfowl refuge, or historic site.
2. The proposed project includes all appropriate measures to minimize harm and subsequent mitigation necessary to preserve and enhance those features and values of the property that originally qualified the property for Section 4(f) protection.
3. For historic properties, the project does not require the major alteration of the characteristics that qualify the property for the National Register of Historic Places such that the property would no longer retain sufficient integrity to be considered eligible for listing. For archaeological properties, the project does not require the disturbance or removal of the archaeological resources that have been determined important for preservation in-place rather than for the information that can be obtained through data recovery. The determination of a major alteration or the importance to preserve in-place will be based on consultation consistent with 36 CFR Part 800.
4. For historic properties, consistent with 36 CFR Part 800, there must be agreement reached among the SHPO and/or Tribal Historical Preservation Officer, as appropriate, the FHWA, and the Applicant on measures to minimize harm when there is a use of Section 4(f) property. Such measures must be incorporated into the project.
5. The official(s) with jurisdiction over the Section 4(f) property agree in writing with the assessment of the impacts; the proposed measures to minimize harm; and the mitigation necessary to preserve, rehabilitate and enhance those features and values of the Section 4(f) property; and that such measures will result in a net benefit to the Section 4(f) property.
6. The Administration determines that the project facts match those set forth in the Applicability, Alternatives, Findings, Mitigation and Measures to Minimize Harm, Coordination, and Public Involvement sections of this programmatic evaluation.

Any project that satisfies these criteria may make use of the Net Benefits 4(f) Programmatic and will not require the preparation of an individual Section 4(f) Evaluation.

9.1.3 Purpose of and Need for the 11th Street Bridges Project

The purpose of and need for the 11th Street Bridges project is discussed in Section 4 of this Final EIS.

9.2 Summary of Section 4(f) Resources

This section identifies the resources within the 11th Street Bridges study area that qualify for consideration under Section 4(f). The important details of these resources will be discussed,

in the balance of this section, as they relate to impacts, minimization of impacts, or the net benefit analysis.

EXHIBIT 9-1
Location of Section 4(f) Resources Prior to the Land Transfer
There are four distinct resources located within this study area.

9.2.1 Public Park and Recreation Resources

Four distinct Section 4(f) resources are located within the 11th Street Bridges study area. These are depicted on Exhibit 9-1. Section 9.8 contains representative photos of these resources.

Anacostia Park

Divided by the existing 11th Street Bridges, with nearly 1,200 acres of park area and approximately 11 miles of shoreline along the Anacostia River, Anacostia Park is one of Washington, DC's largest parks. Owned by NPS, Anacostia Park is home to a variety of recreational and outdoor activities. It spans roughly from the Frederick Douglass Bridge up to the Maryland/District of Columbia border. Community facilities within the park include swimming pools, field houses, pavilions, picnic areas, boathouses, boat ramp, ball fields, and other amenities.

Anacostia Park is one of Washington, DC's largest parks, with more than 1,200 acres of park area and 11 miles of shoreline along the Anacostia River.

Within the study area, the portions of the Anacostia Park on the east side of the river are dedicated to passive recreation, such as ball playing, bike riding, picnicking, and waterfront recreation. The park extends through (under) the existing 11th Street Bridges. On this side of the river, the park is approximately 800 feet wide. There are no permanent park structures/amenities within the 11th Street Bridges study area on the east side of the river. Most of the area is grass, with limited areas of woody vegetation along the edges of the park.

Along the western bank of the river, Anacostia Park ends at Washington Navy Yard. Within the study area, the parkland on the western side of the Anacostia River is relatively narrow

(approximately 400 feet). The parkland within this area is best described as a built environment used primarily for boathouses or marinas. The most distinctive resources are two buildings operated by the ACBA, located below and between the existing bridges. DDOT leases these buildings that were previously used as storage and maintenance facilities from NPS. Since 2003, the ACBA has subleased the buildings from DDOT for use as a boathouse. The ACBA represents a variety of rowing/crew organizations whose members come from throughout the District and adjacent states. The boats are stored in these buildings and serve as a launching point for the rowers.

Since 2003, the ACBA has subleased the buildings from DDOT for use as a boathouse.

ACBA provides a number of benefits to the surrounding community through non-motorized recreational boating programs and other events and services that bring water sport opportunities to thousands of people each year. These programs include:

- Free learn-to-row and learn-to-paddle clinics
- Rowing programs at local high schools otherwise unable to afford them
- Summer youth rowing camps run in coordination with DPR and the University of the District of Columbia
- Environmental projects run by the Anacostia Watershed Society, which uses the site for water quality monitoring, cleanup, and shoreline and habitat restoration
- Support for non-boating programs, such as the "Trips for Kids" program, which sets up a bicycle storage and repair shed at the ACBA buildings

ACBA hosts a variety of events throughout the year. A typical year now includes six school regattas each spring, one or more collegiate regattas in the spring, two major club-organized regattas in the summer, and an autumn club rowing race. These 10 events are open to the public and are often attended by several hundred spectators.

National Capital Parks – East

Also administered by NPS, the National Capital Parks–East encompasses numerous parcels in downtown Washington. This unit of the NPS includes some of the capital's most prominent resources. However, only three small undistinguished parcels fall within the study area. None are actively managed for recreation. None serve passive recreational needs. These resources are best described as out-parcels that retain the nature of abandoned lots. One of the National Capitol Parks–East parcels is a mowed island at the intersection of M Street and 9th Street (smaller than 0.1 acre). One is a vacant lot adjacent to the Maritime Plaza (approximately 0.3 acre), and a final parcel is a sliver of land adjacent to the Southeast/Southwest Freeway at the intersection of Virginia Avenue and 7th Street (approximately 0.5 acre).

Virginia Avenue Park

This park is administered by DPR. Virginia Avenue Park encompasses approximately 2.63 acres and is bounded by the Southeast/Southwest Freeway, 9th Street, Potomac Avenue, and Virginia Avenue. This park is identified as one of the District's 71 recreational centers. It has recently undergone renovation, featuring amenities such as community gardens, picnic areas, and maintained grassy areas.

K Street Triangle Park

This land is owned by DDOT and administered by DPR. The park is located at the intersection of Potomac Avenue and K Street (between 12th and 13th Streets), across from the Hopkins Apartments. At approximately 0.1 acre, this park is open for passive recreation. Amenities are limited to benches.

9.2.2 Significant Historic Sites

The Section 106 survey undertaken pursuant to 36 CFR Part 800 (National Historic Preservation Act as codified) for the 11th Street Bridges project have concluded that six historic sites eligible for consideration under Section 4(f) are present within the 11th Street Bridges study area. These are depicted on Exhibit 9-2. This survey was conducted and the determination made by researchers qualified in the Department of the Interior (DOI) standards and then coordinated with the DC SHPO.

Anacostia Park

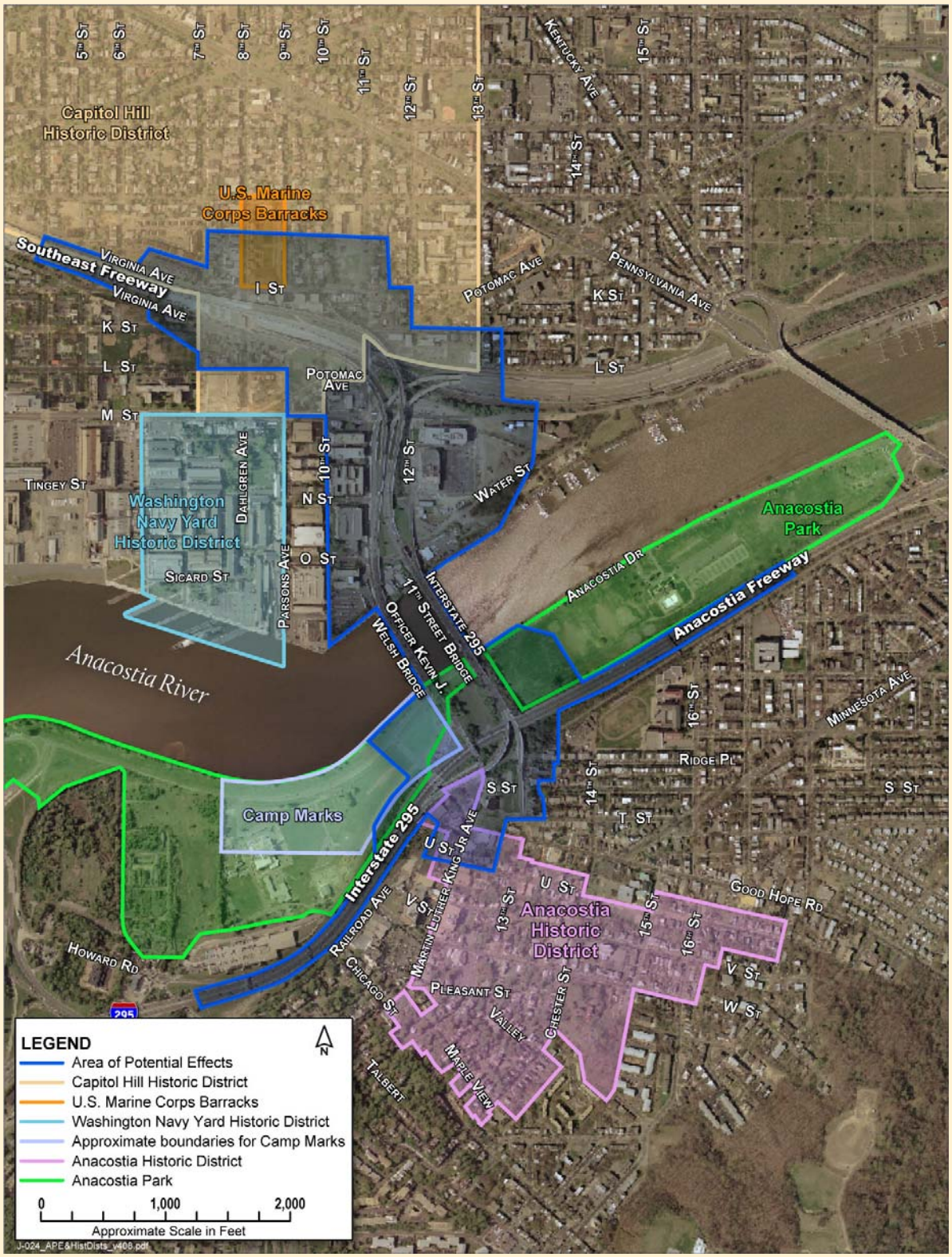
Anacostia Park was established as an urban park in 1919 for the residents of Washington, DC In addition to serving recreational purposes, the park is also being treated as eligible for the NRHP. The park has a place in American history as one of several campsites of the Bonus March protesters. In 1932, World War I veterans, who were promised a bonus after their service in the war, marched on Washington, DC to demand their pay.

Anacostia Park was part of the McMillan Plan to ring the city with parks. Frederick Law Olmstead urged the members of the Senate Park Improvement Commission, which formed in 1901 and was led by Senator McMillan, to fill in the mud flats of Anacostia and create park space for recreational use. Named the Anacostia Water Park by the Commission of Fine Arts in 1914, much of the area of the current park was created by dredging the silted Anacostia River and depositing the material behind newly constructed sea walls.

Anacostia Historic District

This area was incorporated in 1854 and was the first suburb of Washington to be planned as a working-class neighborhood for many laborers from the nearby Navy Yard. Prior to its incorporation, the area was primarily agricultural land. The prevalent architectural styles include those popular in the late nineteenth and early twentieth centuries, including the Cottage Style, Italianate, and Washington Row styles.

EXHIBIT 9-2
Historic Properties
There are several historic properties in the vicinity of the 11th Street Bridges Project.



Washington Navy Yard Historic District

Washington Navy Yard was the first Navy Yard established for the new nation, and is the U.S. Navy's oldest shore establishment. Prior to establishment of the yard, all vessels for the American Navy were built at private shipyards. By 1798 it was clear that this method of construction was no longer viable for the newer classes of vessels required. Congress authorized purchase of land for a new naval shipyard in July of that year, and the property was formally transferred to the federal government in October 1799.

Capitol Hill Historic District

The Capitol Hill neighborhood was one of the first areas to contain permanent residential buildings in the newly formed District. The basic framework of the area follows L'Enfant's plan of broad avenues stretching from the Capitol building imposed on a residential grid pattern. Much of the early construction in the area included primarily residential developments associated with the nearby Navy Yard and Marine Barracks.

U.S. Marine Corps Barracks and Commandant's House

The oldest continually active post in the Corps, the Marine Barracks served as Marine Corps Headquarters from 1801 to 1901. As the home of the Marine Band, which has played for every President since John Adams, the Marine Barracks witnessed a significant epoch in American musical history when John Philip Sousa, the "March King," served as the band's leader from 1880 to 1892.

L'Enfant Plan of the City of Washington

The plan of the City of Washington was designed in 1791 by Pierre L'Enfant and remains largely in place. The plan was realized fairly gradually for the first 100 years until the McMillan Commission's recommendations for planning the federal city in 1901-1902. The plan was implemented over the next 30 years and continued sporadically thereafter. The historic footprint consists of a grid of regular orthogonal streets designated numerically and alphabetically within four quadrants, with the U.S. Capitol at the center. A series of diagonal avenues, named for states, are superimposed on this grid.

Archaeological Resources

The possibility of archaeological resources being present under the fill material supporting the existing bridge has been suggested. However, it has also been concluded that any potential historic materials located under the existing fill will have minimal or no value for preservation in place because of the extensive disturbance during original construction. Treatment of these potential resources is discussed in the Programmatic Agreement contained in Appendix J.

9.3 Alternatives and Findings

The project alternatives, including the No-Build Alternative, are described in detail in Section 5 of this Final EIS. One additional alternative that avoids impacts to Anacostia Park is described below.

9.3.1 No-Build Alternative

The No-Build Alternative is the only pure avoidance alternative because, as depicted on the exhibits, the current project right-of-way is bordered on all sides by park and historic resources. It is not feasible and prudent because it would neither address nor correct the transportation need cited as the project purpose and need described in Section 4, which necessitated the proposed project. Refer to Section 5.2.1 for the complete description of the No-Build Alternative.

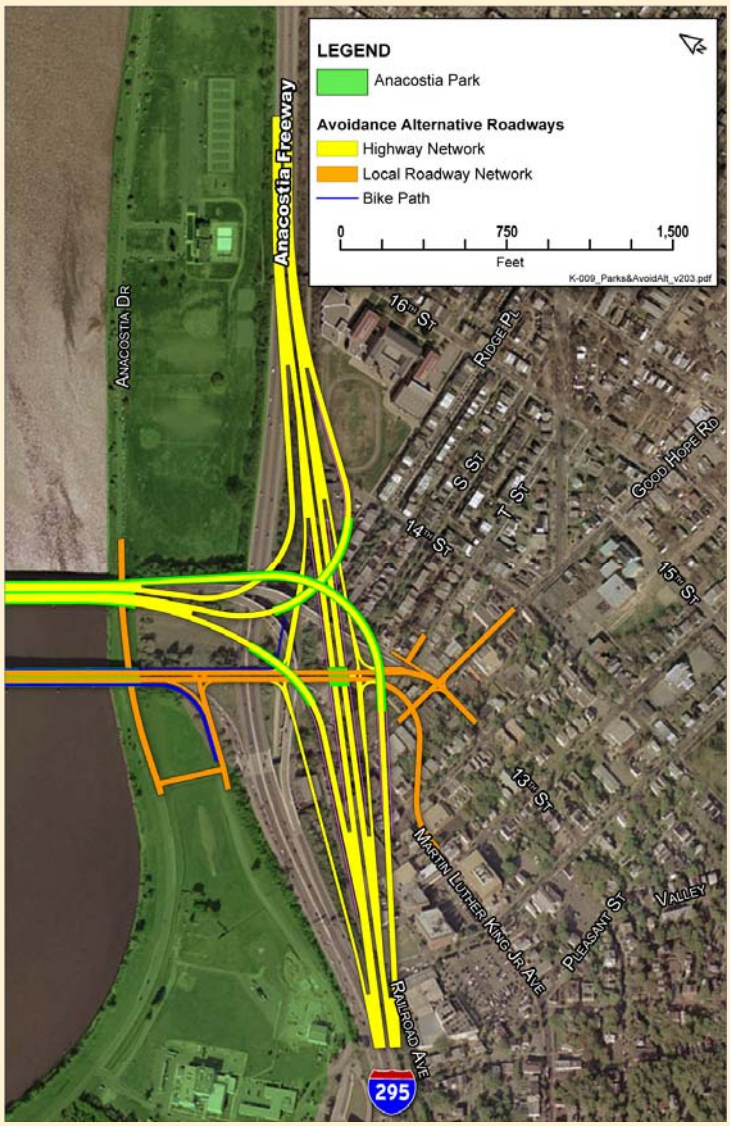
The avoidance alternative is not a prudent option. It would result in substantial disruption to a low-income, minority community in a historic district.

9.3.2 Avoidance Alternative for Anacostia Park

With the exception of the No-Build Alternative, all reasonable alternatives satisfying the project purpose and need require property from Anacostia Park. An avoidance build alternative that meets the project purpose and need was developed to investigate the consequences of avoiding all permanent right-of-way acquisition from the Section 4(f) resources within Anacostia Park on the east side of the river. This alternative is not among the alternatives considered prudent because it would result in substantial disruption to a low-income, minority community in a historic district. The avoidance alternative was created for this evaluation. DDOT will not construct this alternative. As shown on Exhibit 9-3, an avoidance strategy would force construction within the adjoining neighborhoods. The result would be numerous relocations and acquisitions. The first two blocks of the historic Anacostia neighborhood (also a Section 4(f) resource) would need to be acquired and the existing alignments of the Anacostia Freeway and I-295 would need to be relocated.

The Anacostia Park avoidance alternative is similar to Alternatives II and III in that local access to the Anacostia Freeway would be provided, the freeway would be maintained at approximately the current grade, and the bridges would be along the existing alignment. To maximize the avoidance of parkland, unlike Alternatives II and III, the avoidance alternative would not start branching the ramps to and from the bridges until the existing DDOT right of way or other non-park lands were reached. This occurs in the vicinity of the existing Anacostia Freeway so all new construction and reconstruction would occur east of the existing freeway. Providing the revised alignment for the mainline and the necessary ramps and other linkages among freeways and surface streets would push the highway structure into the Fairview and Anacostia neighborhoods from the existing pedestrian bridge near Fairlawn Avenue and 16th Street SE to Railroad Avenue and Chicago Street. To minimize intrusion in the neighborhood, the mainline is essentially a straight line between these points. Any curvature toward the park would impact the park. Any curvature away from the park would impact more of the community.

EXHIBIT 9-3
Avoidance Alternative
An alternative developed to avoid parkland would have substantial impacts on a low-income, minority community in a historic district.



The Anacostia Park avoidance alternative would require the destruction of homes and businesses for the first two or three blocks of 13th Street, Good Hope Road, and Martin Luther King Jr., Avenue. Structures would be removed along Fairlawn Avenue, Ridge Place, S Street, T Street, 13th Street, Good Hope Road, Martin Luther King Jr., Avenue, U Street, V Street, Shannon Avenue, and Railroad Avenue. Residents in this area who would be directly impacted by this alternative are predominately low income and minority. The Anacostia neighborhood is a historic district on the National Register so that avoiding impacts to one 4(f) property, Anacostia Park, would result in impacts to another, Historic Anacostia.

Of important note in the application of the Net Benefits 4(f) Programmatic evaluation are the provisions that deal specifically with improving the transportation facility in a manner that addresses purpose and need without use of the Section 4(f) property. In particular, Article 2 of the findings section prescribes that it is not feasible and prudent to avoid Section 4(f) by using engineering design or transportation system management techniques, such as minor location shifts, changes in engineering design standards, use of retaining walls and/or other structures and traffic diversions, or other traffic management measures if implementing such measures would result in, among other things, a substantial missed opportunity to benefit a Section 4(f) property.

Essentially, this language encourages the win-win solution by determining that it is not feasible and prudent

The Net Benefits 4(f) Programmatic encourages the win-win solution by determining that it is not feasible and prudent to avoid a 4(f) property if doing so foregoes the opportunity to provide a net benefit to that property.

to avoid a 4(f) property if doing so foregoes the opportunity to provide a net benefit to that property.

9.3.3 Alternative at a Location Not Requiring the Use of Section 4(f) Property

Similar to the discussions for the No-Build Alternative and the avoidance alternative, there is no alternative at another location that satisfies the project purpose and need. Section 4.2 explains in detail the deficiencies and operational problems associated with the existing location, primarily the result of the two missing freeway movements that cause freeway and local traffic to share facilities.

9.4 Impacts of the Alternatives

Each of the four build alternatives and the Preferred Alternative would have impacts to Anacostia Park. Build Alternatives II, III, and IV would also have impacts to Virginia Avenue Park. Build Alternative I and the Preferred Alternative would have no long-term impacts to Virginia Avenue Park. No other Section 4(f) resources would be affected by any alternative. Impacts are described in this section.

9.4.1 Anacostia Park

The impacts to Anacostia Park will take several forms, including land acquisitions, temporary relocation of the ACBA operations, and alterations to park access, both temporary and permanent. The acquisition impacts associated with the build alternatives are shown on Exhibit 9-4 and Exhibit 9-4A for the Preferred Alternative. Public Law 109-396 provided for the conveyance of certain lands from federal jurisdiction to the District and other lands from the District into Federal jurisdiction (henceforth referred to as the "NPS land transfer"). Exhibit 9-5 shows the extent of the transfer from NPS to the District in the vicinity of the 11th Street Bridges alternatives. Because of the NPS land transfer, there is a reduction in the amount of property now required from NPS for all of the alternatives. In addition, NPS has expressed a preference for vertical walls with stone texture and a landscaped buffer as opposed to slopes on the east side of the river north of the bridges. Original estimates for the needed acquisition of Anacostia Park property were based on the conservative assumption of 3:1 slopes in that area.

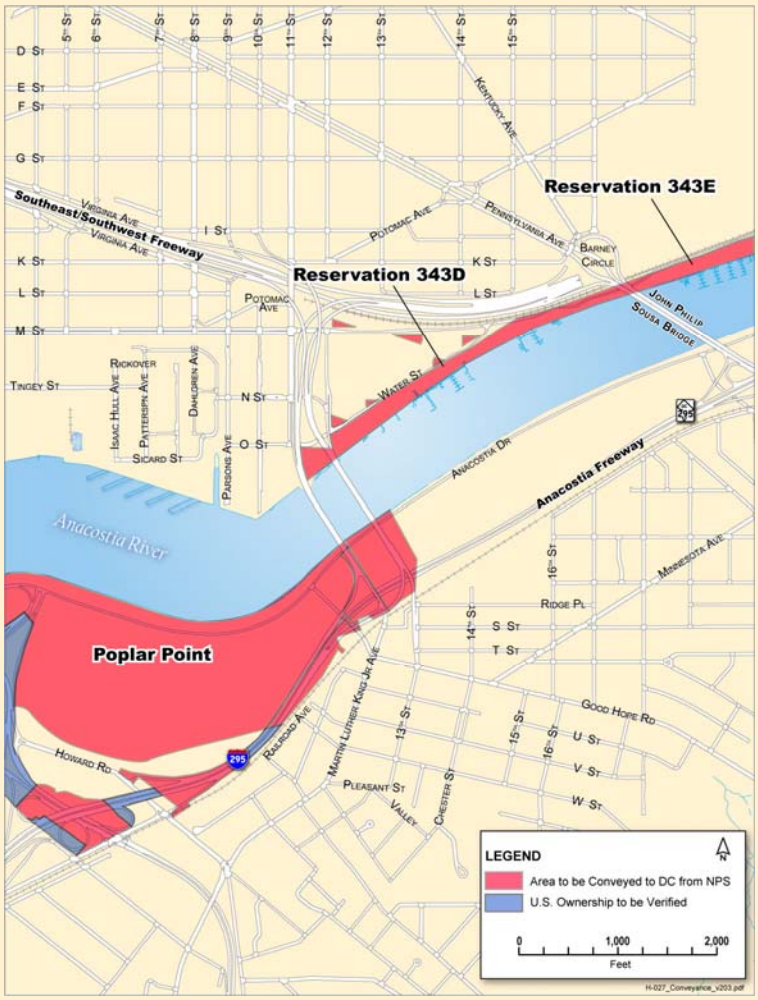
Preferred Alternative

The detailed discussion of the selection of the Preferred Alternative is contained in Section 5.2.5. The Preferred Alternative is expected to require the acquisition of 1.5 acres of land from Anacostia Park. This land is on the east side of the river, north of the bridges. The 1.5 acres would be required to construct the new ramps from Anacostia Freeway (southbound) to the 11th Street Bridges. Aside from a woody border along the existing property line, this land is maintained as a mowed lawn. The existing connection at Good Hope Road would be periodically disrupted during construction. Other park access points would remain open throughout and after construction.

EXHIBIT 9-4
Anacostia Park Build Alternative Impact Areas
Anacostia Park impacts are similar for the four build alternatives.

EXHIBIT 9-4A
Anacostia Park Preferred Alternative Impact Areas
Anacostia Park impacts are reduced for the Preferred Alternative.

EXHIBIT 9-5
National Park Service Land Transfer
The land conveyance from the federal to District government includes the majority of parkland needed to construct the 11th Street Bridges alternative.



Based on refined engineering analysis and additional field survey data, construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternative site during the period of construction in the vicinity of the ACBA buildings. NPS, in close cooperation with DDOT and ACBA, had designated a site for this purpose. This location is part of the NPS land transfer and is now within the jurisdiction of the District of Columbia (the District). The District is in agreement with continuing to make this site available for the ACBA operations. See Appendix H.

There are two existing Anacostia Park access points in the immediate vicinity of the project. One is a pedestrian overpass from 16th Street, in the vicinity of Anacostia Senior High School, to the park in the vicinity of the Anacostia Aquatic Center. The other access point is via Good Hope Road. This is a general pathway that accommodates vehicles, pedestrians, and bicycles. Good Hope Road passes under I-295, creating a tunnel-like experience. There is also a ramp to Good Hope Road directly from the downstream bridge.

The Preferred Alternative would maintain the pedestrian crossing from 16th Street to the park in its existing location and configuration and would add to the Good Hope Road access. The new configuration would include a connection from the local roadway (from the Officer Welsh Bridge) directly to Anacostia Park. In Anacostia, local traffic over the downstream bridge would be composed of eastbound and westbound traffic, consolidated on Martin Luther King, Jr. Avenue. See Exhibit 5-5. Therefore, vehicle, bicycle, and pedestrian access will be maintained at both the local bridge and Good Hope Road for the Preferred Alternative. Access to the park would be provided during normal hours.

Build Alternative I

Build Alternative I is expected to require the acquisition of approximately 2.4 acres of land from Anacostia Park. This land is on the east side of the river, north of the bridges. The 2.4 acres would be required to construct the new ramps from Anacostia Freeway (southbound) to the 11th Street Bridges. Aside from a woody border along the existing property line, this land is maintained as a mown lawn. The existing connections at Good Hope Road will be periodically disrupted during construction and would be relocated. Other park access points would remain open throughout and after construction.

Based on refined engineering analysis and additional field survey data, construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternate site during the period of construction in the vicinity of the ACBA buildings. DDOT, in close cooperation with NPS and ACBA, had designated a site for this purpose. This location is part of the NPS land transfer and is now within the jurisdiction of the District. The District is in agreement with continuing to make this site available for the ACBA operations. See Appendix H.

There are two existing Anacostia Park access points in the immediate vicinity of the project. One is a pedestrian overpass from 16th Street, in the vicinity of Anacostia Senior High School, to the park in the vicinity of the Anacostia Aquatic Center. The other access point is via Good Hope Road. This is a general pathway that accommodates vehicles, pedestrians, and bicycles. Good Hope Road passes under I-295, creating a tunnel-like experience. There is also a ramp to Good Hope Road directly from the downstream bridge.

Build Alternative I would maintain the pedestrian crossing from 16th Street to the park in its existing location and configuration and would reconfigure the Good Hope Road access. The new configuration would include a connection from the local roadway directly to Anacostia Park. In Anacostia, local traffic over the downstream bridge would be composed of west-bound 13th Street and eastbound Martin Luther King, Jr. Avenue movements. These two roadways would come together in the vicinity of the park. An intersection and a connecting roadway (from the Officer Welsh bridge) would provide direct access to the park, eliminating the need to maintain the Good Hope Road access point for motorized traffic. See Exhibit 5-1. This connection would be maintained to serve pedestrian and bicycle trips. Each local road would also include a corresponding bike path to provide pedestrian/bicycle access. Access to the park will be provided during normal hours.

Build Alternative II

Build Alternative II is expected to require the acquisition of approximately 3.5 acres of land from Anacostia Park. This land is on the east side of the river, north of the bridges. The 3.5 acres would be required to construct the new ramps from the Anacostia Freeway (southbound) to the 11th Street Bridges.

Based on refined engineering analysis and additional field survey data, construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternate site during the period of construction in the vicinity of the ACBA buildings. NPS, in close cooperation with DDOT and ACBA, had designated a site for this purpose. This location is part of the NPS land transfer and is now within the jurisdiction of the District. The District is in agreement with continuing to make this site available for the ACBA operations. See Appendix H.

Build Alternative II would maintain the pedestrian crossing from 16th Street to the park in its existing location and configuration and would reconfigure the Good Hope Road access. The new configuration would include a connection from the local roadway directly to Anacostia Park. In Anacostia, local traffic over the downstream bridge would be composed of eastbound and westbound traffic consolidated on Martin Luther King, Jr. Avenue. An intersection and a connecting roadway (from the Officer Welsh bridge) would provide direct access to the park, eliminating the need to maintain the Good Hope Road access point for motorized traffic. See Exhibit 5-2. This connection would be maintained to serve pedestrian and bike trips. Each local road also would include a corresponding bike path to provide pedestrian/bicycle access. Access to the park will be provided during normal hours.

Build Alternative III

This alternative is expected to require the acquisition of approximately 3.5 acres of land from Anacostia Park. This land is on the east side of the river, north of the bridges. Build Alternatives II and III are identical on this side of the river. The 3.5 acres would be required to construct the new ramps from the Anacostia Freeway (southbound) to the 11th Street Bridges.

Based on refined engineering analysis and additional field survey data, construction of any of the build alternatives, including the Preferred Alternative, will not require the whole or partial demolition of either of the two ACBA buildings. For safety purposes, the ACBA operations will need to be temporarily relocated to an alternate site during the period of construction in the vicinity of the ACBA buildings. NPS, in close cooperation with DDOT and ACBA, had designated a site for this purpose. This location is part of the NPS land transfer and is now within the jurisdiction of the District. The District is in agreement with continuing to make this site available for the ACBA operations. See Appendix H.

Build Alternative III would maintain the pedestrian crossing from 16th Street to the park, in its existing location and configuration, and would reconfigure the Good Hope Road access. The new configuration would include a connection from the local roadway directly to Anacostia Park. In Anacostia, local traffic over the downstream bridge would be composed of eastbound and westbound traffic consolidated on Martin Luther King, Jr. Avenue. An intersection and a connecting roadway (from the Officer Welsh bridge) would provide direct access to the park, eliminating the need to maintain the Good Hope Road access point for motorized traffic. See Exhibit 5-3. This connection would be maintained to serve pedestrian

and bike trips. Each local road would also include a corresponding bike path to provide pedestrian/bicycle access. Access to the park will be provided during normal hours.

Build Alternative IV

Build Alternative IV would require the acquisition of approximately 3.3 acres of parkland. This acquisition is on the east side of the river, north of the bridges. The 3.3 acres would be required to construct the new ramps from the Anacostia Freeway (southbound) to the 11th Street Bridges.

For safety purposes, the ACBA operations will need to be temporarily relocated to an alternate site during the period of construction in the vicinity of the ACBA buildings. NPS, in close cooperation with DDOT and ACBA, had designated a site for this purpose. This location is part of the NPS land transfer and is now within the jurisdiction of the District. The District is in agreement with continuing to make this site available for the ACBA operations. See Appendix H.

Build Alternative IV would maintain the pedestrian crossing from 16th Street to the park, in its existing location and configuration, and would reconfigure the Good Hope Road access See Exhibit 5-4. The new configuration would have westbound local traffic on the upstream bridge and eastbound traffic on the downstream bridge. A new, 1,500-foot local roadway would be constructed in the park, going from the upstream bridge to the downstream bridge. Where the eastbound and westbound roadways join, there would be an intersection into Anacostia Park. From this point, the local roadways would travel under I-295 and along Good Hope Road to the Martin Luther King, Jr. Avenue intersection. Each local road would also include a corresponding bike path to provide pedestrian/bicycle access. Access to the park will be provided during normal hours.

9.4.2 National Capital Parks - East

None of the build alternatives would take any property from any of the parcels administered by NPS that constitute the National Capital Parks–East. The forecast difference in traffic does not result in any measurable change in noise or visual effects.

9.4.3 K Street Triangle Park

None of the build alternatives would take any property from the K Street Triangle Park. The forecast difference in traffic does not result in any measurable change in noise or visual effects.

9.4.4 Virginia Avenue Park

Build Alternatives II, III, and IV would require the acquisition of portions of this 2.63-acre facility. Additional engineering work has been done to avoid impacts to Virginia Avenue Park for Build Alternative I and the Preferred Alternative and reduces impacts for Build Alternatives II, III, and IV. Because of required intersection spacing for signal operations and vehicle storage, further reductions are not possible. Exhibits 9-6 and 9-6A depict the

approximate impacts associated with the build alternatives and the Preferred Alternative. The impacts are the result of the reconstruction of the ramps from the Southeast/Southwest Freeway to the 11th Street Bridges, the construction of a northbound connection of the Southeast/Southwest Freeway through the interchange, and the reconfiguration of the local roadways that lie immediately adjacent to the park. No structures or equipment lie within the affected areas, which have recently been landscaped with trees and other plants.

Under the Preferred Alternative or Build Alternative I on the west side of the river, no permanent take would be required. The highway would be on retaining walls that would limit the ability to store materials under the highway ramps. The local roadways surrounding the park would remain in their existing configuration.

Build Alternative II would acquire approximately 0.2 acre from the park. A traffic circle would be constructed in the area of 11th Street that would affect the northeast corner of the park.

Build Alternatives III and IV present identical impacts to Virginia Avenue Park. These alternatives would require the acquisition of approximately 0.4 acre of parkland. Both alternatives would use two roadways to connect the Southeast/Southwest Freeway through the interchange—one for local traffic and one for through traffic. This requires a strip along the northern border of the park. Along the western edge only existing right-of-way would be used.

9.4.5 Anacostia Historic District

None of the build alternatives, including the Preferred Alternative, would take any property from the Anacostia Historic District.

9.4.6 Washington Navy Yard

None of the build alternatives would take any property from the Washington Navy Yard.

9.4.7 Capitol Hill Historic District

None of the build alternatives, including the Preferred Alternative, take any property from the Capitol Hill Historic District.

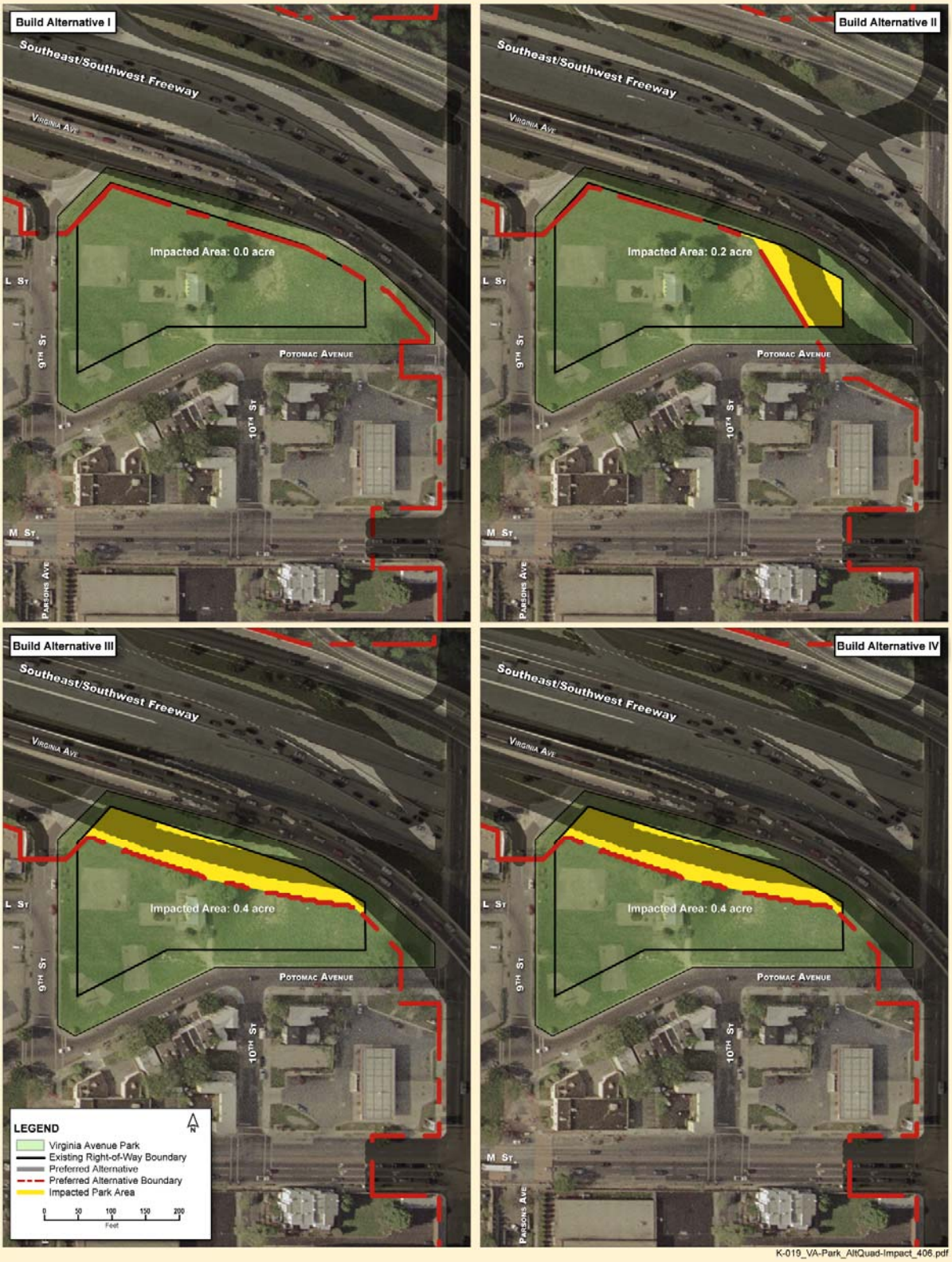
9.4.8 U.S. Marine Corps Barracks and Commandant's House

None of the build alternatives, including the Preferred Alternative, take any property from the U.S. Marine Corps Barracks and Commandant's House.

9.4.9 L'Enfant Plan of the City of Washington

None of the build alternatives, including the Preferred Alternative, take any property from the L'Enfant Plan of the City of Washington.

EXHIBIT 9-6
Virginia Avenue Park Build Alternative Impact Areas
Virginia Avenue Park impacts are slightly larger for Build Alternatives II, III, and IV.



K-019_VA-Park_AltQuad-Impact_406.pdf

9.4.10 Archaeological Resources

Appendix J contains a Programmatic Agreement that details the treatment of archaeological resources that may be discovered during construction activities.

EXHIBIT 9-6A
Virginia Avenue Park Preferred Alternative Impact Boundary
Virginia Avenue Park impacts are the same for Build Alternative I and the Preferred Alternative.

9.5 Coordination

The 11th Street Bridges project included the implementation of a large-scale public/stakeholder involvement effort. The general public outreach effort is described in Section 12. This section focuses on coordination with the administrators of Section 4(f) properties affected by the 11th Street Bridges project. Coordination has been extensive and will continue through any design and construction.

At the outset of the 11th Street Bridges project, it was clear that Section 4(f) issues would need to be addressed comprehensively for the project to proceed in a timely manner. As a result, coordination with the administrators of Anacostia Park (NPS) and the Virginia Avenue Park (DPR) began at the outset of the project and continues today. Because of the location and condition of the affected Section 4(f) properties, DDOT proposed, and got tentative agreement from the NPS and DPR that the use of the Net Benefits 4(f) Programmatic Evaluation was appropriate. In other words, it is the appropriate approach to achieve a net benefit to the parks while at the same time recognizing the potential impacts from the transportation improvements. Coordination is complete regarding the assessment of impacts, the proposed measures to minimize harm, and the mitigation necessary to preserve the values of the

> Coordination with the administrators of Anacostia Park (NPS) and the Virginia Avenue Park (DPR) began at the outset of the project and continues today.

Section 4(f) resources. NPS has prepared a letter of determination of the net benefit to Anacostia Park and DPR has prepared a letter of determination of the net benefit to Virginia Avenue Park. Subsequent to the preparation of this letter, additional engineering analysis has concluded that the Preferred Alternative will avoid any use of Virginia Avenue Park and therefore will make the use of the net benefit unnecessary. These letters are presented in Appendixes H and I, respectively. FHWA has concluded that the criteria and procedures of the programmatic evaluation have been satisfied and no further Section 4(f) coordination is required for Anacostia Park.

9.5.1 Coordination with NPS

NPS administers Anacostia Park. The existing 11th Street Bridges cross the parklands that flank the Anacostia River in this area. Consequently, the reconfiguration of the bridges is a matter of concern for the park. Project-specific coordination with NPS began in October 2005 and continues. Coordination has consisted of meetings and telephone conversations with NPS staff.

Completed Transfer of Anacostia Park Lands

On July 15, 2005, a legislative proposal was sent to Congress that would authorize the conveyance of certain land parcels between the federal government and the government of the District of Columbia. Known as the Federal and District of Columbia Government Real Property Act of 2005, it proposed the transfer of lands to improve the administration of public property. Among the transfers are the Poplar Point and U.S. Reservations 343D/343E transfers. These affect portions of Anacostia Park in the vicinity of the 11th Street Bridges project. Exhibit 9-5 shows the transfer areas as depicted in the July 2005 legislation, although DDOT already owns the area between the bridges. Public Law 109-396, approved December 15, 2006, concluded the transfer.

Poplar Point is located on the east side of the Anacostia River and comprises approximately 100 acres of Anacostia Park. It contains the NPS headquarters for National Capital Parks-East and the U.S. Park Police Anacostia Operations and Helicopter facilities. The Act purports that "the conveyance of title to the District would permit redevelopment of the property by the District consistent with the Anacostia Waterfront Framework Plan, dated November 2003." The conveyance is subject to a number of terms. The Poplar Point transfer covers all east-side park lands affected by the build alternatives, with the exception of a portion of those required to construct the Anacostia Freeway to 11th Street Bridge ramps.

U.S. Reservations 343D and 343E include the narrow stretch of Anacostia Park along the west side of the river occupied by District Public Works facilities, USACOE facilities, District Water and Sewer facilities, the ACBA buildings, Washington Yacht Club, District Yacht Club, Eastern Power Boat Club, Seafarers Boat Club, and the Anacostia Marina. The Act purports that the "conveyance of title to the District provides the opportunity for the District to redevelop and enhance the marina. This cannot be achieved under NPS authorities." This transfer covers all west-side Anacostia Park lands affected by the build alternatives.

With a transfer, it is not expected the affected parklands will undergo changes that would alter their Section 4(f) status. Finally, DDOT is actively coordinating with DPR about Virginia Avenue Park. This creates a situation where all appropriate agencies are still involved in coordination over these lands. Consequently, DDOT is proceeding under existing circumstances.

The Status and Operation of the ACBA Buildings

The ACBA buildings are located directly under the existing bridges. DDOT leases the buildings that are located on the NPS property. The ACBA subleases the buildings from DDOT. The ACBA represents a variety of rowing/crew organizations where members are drawn from throughout the District and neighboring states. The boats are stored in these buildings and serve as a launching point for the rowers. The primary concerns considered during the coordination process have included the historic status of the buildings, the operational needs of the users, and the future development plans of the site.

Based on studies conducted for the 11th Street Bridges project, it has been concluded that the existing ACBA buildings are not eligible for the NRHP.

Based on studies conducted for the 11th Street Bridges project, it has been concluded that the existing ACBA buildings are not eligible for the National Register of Historic Places.

The operational needs of the users include vehicular access to a riverside site, adequate storage space for numerous rowing vessels, access to the river, and unobstructed use of the river for rowing events.

Plans to renovate the building adjacent to the boathouse have been developed. DDOT provided a $300,000 grant to implement these plans.

DDOT has committed to maintaining ACBA operations through construction, although this may involve temporary relocation of some facilities and activities. Continuation of this use following construction is also desirable because the activity provides a measure of safety and security to the bridge facility.

The Goals of NPS Regarding General Park Access/Operation

Even though the build alternatives are very similar, they would affect Anacostia Park in different ways. Coordination with NPS has taken place to inform the agency of the differences and potential impacts of the alternatives. In addition to the general discussion, the coordination has focused on minimization and/or mitigation of impacts and net benefits. Among the most discussed issues are the following:

- Visual Impacts: Because of its prominence in the viewshed, a preferred alternative preference may relate to visual impacts.
- Noise Impacts: There is general interest in post-construction noise levels.

DDOT has committed to maintaining ACBA operations through construction, although this will involve temporary relocation of some facilities and activities.

- Bicycle/Pedestrian Facilities: NPS is interested in both pathways along the river, across the river, and connections to neighboring communities.
- Access to Anacostia Park: Currently, Good Hope Road provides a primary access point to the park. All build alternatives would alter access. NPS is interested in providing an adequate access for the neighborhood and for regional users of the park.
- Vegetative Screens: Over time, woody vegetation has grown in abandoned areas between the park and the adjacent roadways. These have become unintentional screens. This screening, in general, is viewed positively by NPS.
- Maintenance of Traffic/Staging Areas: NPS is concerned about vehicular access/staging not only for the post-construction scenario, but also during construction.
- Replacement Sites: Because of the potential need for a site to house a boathouse replacement, as well as for the potential need for replacement property associated with Section 6(f) impacts to Virginia Avenue Park, preliminary investigations have occurred. To date, no approved replacement sites have been identified.
- General Park Amenities: The operation of Anacostia Park could be enhanced by improvements to the park's amenities. This discussion has been wide-ranging, from ball parks and signage to internal park transportation systems.

9.5.2 Coordination with DPR

As a result of more detailed engineering analysis, the Preferred Alternative and Build Alternative I would not require use of any land in Virginia Avenue Park. Neither Section 4(f) nor Section 6(f) would apply. Build Alternatives II, II and IV would require the use of portions of the Virginia Avenue Park. As with NPS, agreement with regard to impacts, minimization of harm, and necessary mitigation to result in a net benefit was reached with DPR. Coordination with DPR, which has consisted of meetings and phone conversations, has focused on the following issues:

Impact Differences among Alternatives

As expected, a great deal of project coordination has gone into discussing the differences and potential impacts of the alternatives. The Preferred Alternative has no impact on Virginia Avenue Park.

Park Boundaries

The park is the result of a land transfer from the 1960s. The highway right-of-way parallels the edge of the pavement, although vegetation leaves the incorrect impression that the park extends to the edge of pavement. The space is used for storage and is not managed or maintained for any park or recreation purpose and is not part of the Section 4(f) consideration.

Section 6(f) Issues

Land and Water Conservation Act funds have been used to fund improvements to the park. This creates Section 6(f) issues for Build Alternatives II, II and IV, which are described further in Section 9.7. The replacement land issues have been discussed with Ms. Leslie Schill, former DPR Chief of Planning. The appropriateness of the replacement lands will also require concurrences from NPS.

Mitigation

To date, DPR officials have been receptive to the working toward a mitigation plan that would result in a net benefit to Virginia Avenue Park. Park planners are working on plans that would reconfigure the park to improve the functions and values that make the park eligible for Section 4(f) protection. See Appendix I for the determination of net benefit from DPR.

9.6 Net Benefit Analysis

This section provides data to support a finding that the No-Build and the avoidance alternative for Anacostia Park are not feasible and prudent, and outlines the measures to minimize harm that have been incorporated into the build alternatives. Mitigation elements that will result in a net benefit for the affected Section 4(f) properties are also discussed.

9.6.1 Net Benefit Findings and Applicability

For the Net Benefits 4(f) Programmatic Evaluation to be utilized there must be a finding that the No-Build and avoidance alternatives are not feasible and prudent.

The No-Build Alternative is the only alternative that avoids use of all Section 4(f) resources and is not feasible and prudent because it would neither address nor correct the transportation needs cited in the project's purpose and need. The complete Purpose and Need discussion is contained in Section 4.

Exhibit 9-3 depicts a configuration that avoids Anacostia Park Section 4(f) property, reconfigures the facility in its existing location, and satisfies the major elements of the project purpose and need. That alternative would have substantial impacts on homes and businesses in a low-income, minority neighborhood in a historic district and is not considered prudent for these reasons. Section 9.3 includes a more complete discussion of the Anacostia Park avoidance alternative and application of the Net Benefits 4(f) Programmatic evaluation.

Of important note, as stated previously, are the actual "findings" contained in the Net Benefits 4(f) Programmatic. In addressing the requirement of improving the transportation facility in a manner that addresses purpose and need without the use of Section 4(f) property, it directly states:

> *It is not feasible and prudent to avoid Section 4(f) property by using engineering design or transportation system management techniques, such as minor location*

shifts, changes in engineering design standards, use of retaining walls and/or other structures and traffic management measures if implementing such measures would results in <u>*any*</u> [emphasis added] *of the following:*

- *Substantial adverse community impacts to adjacent homes, businesses or other improved properties; or*
- *Substantially increased transportation facility or structure cost; or*
- *Unique engineering, traffic, maintenance, or safety problems; or*
- *Substantial adverse social, economic, or environmental impacts; or*
- *A substantial missed opportunity to benefit a Section 4(f) property; or*
- *Identified transportation needs not being met; and*
- *Impacts, costs, or problems would be truly unusual, unique or of extraordinary magnitude when compared with the proposed use of Section 4(f) property after taking into account measures to minimize harm and mitigate for adverse uses and enhance the function and value of the Section 4(f) property.*

Essentially, this language encourages the win-win transportation-Section 4(f) solution by determining that it is not feasible and prudent to avoid a Section 4(f) property if doing so foregoes the opportunity to provide a net benefit to that property (fifth bullet). This is further reinforced by the fourth bullet that discusses substantial adverse social, economic, or environmental impacts.

9.6.2 Minimization

DDOT is committed to minimizing impacts by minimizing the footprint of project to the extent possible. The impacts reported in this Final EIS reflect the best estimates available based on the current engineering. As the design process advances, it may be possible that the footprint of the project can continue to be minimized. Retaining walls are being investigated, as practical, to achieve additional reductions in project footprint. Walls will be used in Anacostia Park east of the river and north of the bridges to reduce the amount of park property to be acquired.

9.6.3 Mitigation, Enhancement, and Beneficial Measures

Coordination among NPS, DPR, and DDOT is ongoing regarding the assessment of impacts, the proposed measures to minimize harm, and the mitigation necessary to preserve the values of Section 4(f) resources. This coordination has been completed for inclusion into this Final EIS. Below is a summary of the major mitigation elements, as confirmed by the letters contained in Appendix H and Appendix I. Because the Preferred Alternative avoids the use of Virginia Avenue Park, Appendix I is for information only.

Maintenance of ACBA Operations

DDOT has committed to maintaining the current operations of the ACBA. The ACBA buildings will remain in place, but the operations will be temporarily relocated. Section 7.3.5 contains a more detailed description of the commitments during construction.

Anacostia Park Entrance

Currently, the entrance to Anacostia Park is from Good Hope Road. The build alternatives would separate local from highway traffic, and the entrance to the park would come from the reconstituted local roadway system. This will bring the entrance to the front of the community, rather than being hidden, as it is now. See Exhibits 5-1 through 5-6. Along with the reconfiguration of the roadways, the nature of the typical entrance details (signs, landscaping, etc) can be updated.

The entrance to Anacostia Park will be brought to the front of the community rather than hidden as it is now.

Bicycle/Pedestrian Network

All of the alternatives include improvements to the bicycle/pedestrian network. Refer to Section 8.10. Each has a pathway across the river and into the park and the adjacent Anacostia and Capitol Hill neighborhoods. This improves existing conditions. Each of the alternatives has slightly different configurations. To some extent, there is flexibility in providing these facilities. In addition to access across the river, the build alternatives would maintain access under the bridges.

General Park Amenities

In the immediate vicinity of the project area, Anacostia Park is generally open space. Proposals for improvements as part of the benefits to the park include ball field construction, landscaping, bike racks, and interpretive signage. Part of the signage commitment will be a ceremonial marker to commemorate the Bonus March and Camp Marks. This was part of the negotiation with NPS, the District SHPO, and DDOT to compensate for the adverse effect to Anacostia Park from the encroachment in the area of the ball fields. Refer to Appendix J for additional details.

Replacement Properties

Virginia Avenue Park was improved using Land and Water Conservation Act funds. This is a Section 6(f) issue (see Section 9.7). Ongoing engineering studies have avoided impact to Virginia Avenue Park in the Preferred Alternative and Build Alternative I.

9.7 Section 6(f)

State and local governments often obtain grants through the Land and Water Conservation Fund Act to acquire or make improvements to parks and recreation areas. Section 6(f) of the Act prohibits the conversion of property acquired or developed with these grants to non-recreational purpose without the approval of DOI. Section 6(f) directs DOI to ensure that the replacement lands are of equal value, location, and usefulness as conditions to such

conversions. Consequently, where conversions of Section 6(f) lands are proposed for highway projects, replacement lands will be necessary.

Section 6(f) funds have been used to improve Virginia Avenue Park. This 2.63-acre site was historically known as the Virginia Avenue Boxing Center. That facility was demolished in 2003. Then a landscaping program was implemented. Section 6(f) status covers the entire park. Virginia Avenue Park is bounded by the Southeast/Southwest Freeway, 9th Street, Potomac Avenue, and Virginia Avenue. This park is identified as one of the District's 71 recreational centers. Among the amenities include community gardens, picnic areas, and mown grassy areas.

Three of the five build alternatives would require the acquisition of portions of this 2.63-acre facility. Neither the Preferred Alternative nor Build Alternative I would require any land from the park.

If an alternative other than the Preferred Alternative became the selected alternative, DDOT would provide appropriate mitigation, including replacement lands, for Section 6(f) impacts.

9.8 Representative Photos of 4(f) Resources

Representative photos of 4(f) resources are presented on the following pages.

K Street Triangle Park

Virginia Avenue Park

Anacostia Park

National Capital Parks - East

10 List of Preparers

Name Affiliation	Contribution	Education	Years of Experience
Nick Antonucci CH2M HILL	EIS Author, Project Manager	MS, Transportation Engineering, Pennsylvania State University (in progress) BS, Civil Engineering, Pennsylvania State University	14
Todd Ashby CH2M HILL	Public Services and Utilities, Economics	MPA, University of Missouri BS, Science, Iowa State University	14
James Bard CH2M HILL	Cultural Resources	PhD, Anthropology, University of California at Berkeley MA, Anthropology, University of California at Berkeley BA, Anthropology, University of California at Berkeley	32
James Bednar CH2M HILL	EIS Author	BS, Civil/Environmental Engineering, Purdue University	27
Mark Bennett CH2M HILL	Air Quality	PhD, Chemical Engineering, Massachusetts Inst. of Tech BS, Biological Engineering, University of Pennsylvania	23
Jodi Bergeman CH2M HILL	Editor	BA, Communications, Virginia Polytechnic Institute and State University	14
Loren Bloomberg CH2M HILL	Traffic Modeling	ME, Civil Engineering, University of California at Berkeley MS, Civil Engineering, University of California at Berkeley BS, Systems Engineering, University of Virginia	16
Kavita Boddu CH2M HILL	Traffic and Transportation	MS, Civil Engineering, University of Kentucky BS, Civil Engineering, Osmania University, India	2
Trish Bourdage CH2M HILL	Document Management, Editing	BBA, National University	29
Mark Bradley CH2M HILL	Graphics Designer	BS, Business Management, Nova University	30
John Burgess CH2M HILL	Ecology and Water Quality	MS, Zoology, University of Maine BA, Biology, University of Southern Maine	11

Name Affiliation	Contribution	Education	Years of Experience
Elizabeth Calvit CH2M HILL	Cultural Resources	MA, American Studies/Graduate Program in Historic Preservation, The George Washington University BID, Interior Design, FIDER accredited, Louisiana State University BS, General Studies (Psychology and Art History), Louisiana State University	24
Lindsey Carr CH2M HILL	Ecology and Water Quality	BS, Wildlife Biology, Virginia Polytechnic Institute and State University	8
Angela D'Agostino CH2M HILL	Lead Graphic Designer	AAS, Art & Design, Fashion Institute of Technology	24
John Dames CH2M HILL	Utilities	MS, Civil Engineering, Virginia Polytechnic Institute and State University BS, Construction Engineering Management, Purdue University	12
Lori Durio CH2M HILL	Cultural Resources	MFA, Historic Preservation and Architectural History, Savannah College of Art and Design BA, English and Political Science, Louisiana State University	20
Dan Dupies CH2M HILL	Senior Review	BS, Political Science, University of Wisconsin Stevens Point MUP, University of Wisconsin at Milwaukee	26
Virginia Farris CH2M HILL	Agency and Public Coordination	BA, Psychology, George Mason University	26
Emad Farouz CH2M HILL	Geotechnical, Structures	MS, Civil Engineering, Stevens Institute of Technology BS, Civil Engineering, Cairo University	17
Cynthia Gahagan CH2M HILL	Editor	BS, Mechanical Engineering, University of California at Irvine	17
Walter Gonzales CH2M HILL	Land Use, Social Resources	MA, Urban Planning, University of California at Los Angeles BS, Communications, University of Texas, Austin	7
Thomas Hamilton CH2M HILL	Visualization	BA, Graphics, Kennesaw State College AS, Computer Information Systems, Art Institute of Atlanta	8
Robert Hook CH2M HILL	Ecology and Water Quality	MS, Biology/Applied Ecology, Eastern Kentucky University BS, Biology, Thomas More College	28
Donna Howard CH2M HILL	Project Website	——	26
Steve Linhart CH2M HILL	Environmental Justice	MBA, Loyola College BS, Geography and Environmental Planning, Towson State University AA, General Studies, Anne Arundel Community College	13

Name Affiliation	Contribution	Education	Years of Experience
Mark Hunter CH2M HILL	Traffic and Transportation	BS, Civil Engineering, Ohio State University	19
Paul Landers CH2M HILL	Geotechnical, Structures	MS coursework, Geotechnical Engineering, Virginia Tech BS, Civil Engineering, Virginia Polytechnic Institute and State University	10
Scott MacEwen CH2M HILL	Hazardous Materials	MS, Environmental Engineering, University of California BS, Civil Engineering, Duke University	22
Mark Maday CH2M HILL	Structures	MS, Civil Engineering, University of Colorado BS, Civil Engineering, University of Illinois	23
Robert Miller CH2M HILL	Noise and Vibration, Section 4(f)	MS, Environmental Resources/Forest Ecology, Pennsylvania State University BS, Natural Resources Management, Rutgers University Geographic Information Systems Certification Program, Pennsylvania State University – World Campus	17
Jason Moller CH2M HILL	Alternatives Development	BS, Civil Engineering, Bradley University	4
Jeannine Moore CH2M HILL	Visualization	BAS, Graphic Design, Boise State University AAS, Drafting Technology, Boise State University	39
Tim Neuman CH2M HILL	Alternatives Development, Traffic and Transportation	MS, Engineering, University of Michigan BS, Civil Engineering, University of Michigan	31
Suresh Parashar CH2M HILL	Geotechnical Engineering	PhD ,Geotechnical Engineering, Nanyang Technological University, Singapore MS, Geotechnical Engineering, Indian Institute of Technology, Madras, India B.Eng (Honors), Rani Durgavati University, Jabalpur, India	17
Mary Pickens CH2M HILL	Lead Editor	BA, English, Western Illinois University, 1974	30
Jonathan Rees CH2M HILL	Public Services and Utilities	MS, Transportation Planning, Iowa State University BS, Community Planning, Iowa State University	4
Joseph Showers CH2M HILL	Structures Lead	MS, Civil Engineering (Structural Option), Virginia Polytechnic Institute and State University Masters in Architecture (emphasis on public works), Virginia Polytechnic Institute and State University BS, Civil Engineering, University of Delaware	21

Name Affiliation	Contribution	Education	Years of Experience
Kevin Slack CH2M HILL	EIS Author, Roadway Alternatives Lead	ME, Civil Engineering, Pennsylvania State University BS, Civil Engineering, Pennsylvania State University	19
Cheng Soong CH2M HILL	Alternatives Development	MS, Transportation Engineering, Purdue University BS, Civil Engineering, Taiwan Cheng-Kung University	36
W. Geoffrey Spaulding CH2M HILL	Archaeology	PhD, Geological Sciences, University of Arizona MS, Geological Sciences, University of Arizona BA, Anthropology, University of Arizona	34
David Vomacka CH2M HILL	EIS Author, NEPA Team Leader	PhD, Political Science/ Quantitative Methods, Florida State University MA, Political Science/ Public Opinion, Florida State University BS, Political Science, Florida State University	36
Timothy Wagner CH2M HILL	EIS Author	MS, Civil Engineering, University of Massachusetts, Lowell BS, Community and Regional Planning, Iowa State University	12
Kim Watkins CH2M HILL	Air Quality	BS, Chemical Engineering, Howard University	10
Keisha Wilson CH2M HILL	Hazardous Materials	BS, Environmental Science, University of South Florida	8
Mary Beth Yansura CH2M HILL	Air Quality	BA, Chemistry, Rutgers University AA, Chemistry, County College of Morris	17
John Deatrick District of Columbia DOT	Management Oversight and Document Review	BS, Civil Engineering, University of Cincinnati, BA, Business and History, University of Maryland	29
Kathleen Penney District of Columbia DOT	Management Oversight and Document Review	Graduate Coursework, Public Administration, The George Washington University BS, Civil Engineering, Marquette University	15
Faisal Hameed District of Columbia DOT	Management Oversight and Document Review	PhD, Civil and Environmental Engineering, Virginia Tech (in progress) MS, Civil and Environmental Engineering, The George Washington University BS, Chemical Engineering, NFC Institute of Technology	5
Anne Hassoun District of Columbia DOT	Management Oversight and Document Review	BS, Civil Engineering, University of Dayton	26
Natasha Goguts District of Columbia DOT	Management Oversight and Document Review	MS, City Planning, University of California Berkeley BS, Civil Engineering, Georgia Institute of Technology	2

Name Affiliation	Contribution	Education	Years of Experience
Bart Clark District of Columbia DOT	Management Oversight and Document Review	BS, Civil Engineering, University of Delaware	41
Gary Willoughby Justice & Sustainability Associates, LLC	Public Involvement	MS, Conflict Analysis and Resolution, George Mason University BA, Political Science and International Relations, The American University	1
Don Edwards Justice & Sustainability Associates, LLC	Public Involvement	Masters of Public Health, Yale University MS, Nursing, Yale University BA, Duke University	30
Chuck Goode John Milner Associates	Cultural Resources	MA, Anthropology, The Catholic University of America BA, Anthropology, The American University	11
Bob Patten Toole Design Group	Bicycles and Pedestrians	BA, Speech Communications and English	27
Eric Mongelli Toole Design Group	Bicycles and Pedestrians	BS, Urban Planning and Cartography, Frostburg State University	14
C.Y. Jeng Gallop Corporation	Traffic Forecasting	PhD, Civil and Transportation Engineering, University of California Berkeley	20

11 Distribution List

11.1 Final EIS Distribution List

Various federal and district agencies, as well as many other organizations and groups representing project stakeholders, were provided with copies of this Final EIS. The Final EIS is also available for review by the general public at various locations.

11.1.1 Federal and District Agencies

Advisory Council on Historic Preservation
Architect of the Capitol
DC Department of Environment
DC Department of Parks and Recreation
DC Housing Authority
DC Water and Sanitary Sewer Authority
General Services Administration
Maryland Department of Transportation
National Capital Planning Commission
National Marine Fisheries Service
Naval District Washington (Washington Navy Yard and Anacostia Annex)
State Historic Preservation Office
U.S. Army Corps of Engineers
U.S. Commission of Fine Arts
U.S. Coast Guard
U.S. Department of Housing and Urban Development
U.S. Department of the Interior
U.S. Environmental Protection Agency
U.S. Federal Transit Administration
U.S. Fish and Wildlife Service
U.S. National Park Service
Washington Metropolitan Area Transit Authority

11.1.2 Libraries/Places to Review the Final EIS

Anacostia Branch Library
Anacostia Economic Development Corporation
Francis A. Gregory Branch Library
Martin Luther King Memorial Library
Office of Council Member Marion Barry
Parklands-Turner Community Library
Southeast Branch Library
Southwest Branch Library

11.1.3 Advisory Committee Members

Jim Connolly, Anacostia Watershed Society
Linda Eckles, ANC 7B01
Richard Evans, Hillcrest Community Association
Brian Forehand, Anacostia Community Boathouse Association
Linda Greene, Office of City Council Member Marion Barry
LaTesha Hudson, ANC 8A04
James Louis, East of Sousa Bridge Pennsylvania Ave. Revitalization Task Force
Glen O'Gilvie, Earth Conservation Corps
Calvin Oslen, Penn-Branch Association
Alaine Perry, Hill East Waterfront Action Network
Graylin Presbury, Fairlawn Civic Association
Tom Speight, Eastern Power Boat Club
Pat Taylor, Hill East Neighborhood
Jacqueline West, Potomac Gardens Family Resident Council
Yavocka Young, Main Street Anacostia

11.1.4 Business and Civic Organizations

Anacostia Community Boathouse Association
Anacostia Coordinating Council
Anacostia Economic Development Corporation
Anacostia Main Streets
Anacostia Waterfront Corporation
Anacostia Watershed Society
Earth Conservation Corps
Fairlawn Civic Association
Sierra Club
Washington Navy Yard

11.1.5 Elected Officials and Political Organizations

ANC 6B
ANC 6D
ANC 7B
ANC 8A
City Council Member Tommy Wells
City Council Member Marion Barry
City Council Member Yvette Alexander
City Council Chairman Vincent Gray
Congresswoman Eleanor Holmes Norton
Mayor Adrian Fenty

11.2 Entities Providing Comments on the Draft EIS

Comments on the Draft EIS were provided by a range of federal and district agencies, civic and business organizations, political organizations, and the general public. Entities that provided comments are summarized below.

11.2.1 Federal and District Agencies

DC Department of Environment
DC Department of Parks and Recreation
National Capital Planning Commission
State Historic Preservation Office
U.S. Department of the Interior
U.S. National Park Service
U.S. Environmental Protection Agency
Washington Metropolitan Area Transit Authority

11.2.2 Business and Civic Organizations

Alexandria Crew Boosters Club, Inc.
Anacostia Community Boathouse Association
Anacostia Waterfront Corporation
Anacostia Watershed Citizens Advisory Committee
Bishop Ireton Crew Association
Bishop Ireton High School
Capitol Hill Restoration Society
Capital Rowing Club
Gonzaga College High School
Hill East Waterfront Action Network
Hoop Dreams Scholarship Fund
National Capital Area Women's Paddling Association, Inc.
Potomac Boat Club

Potomac Officers Club
Sierra Club
Trips for Kids, Metro DC
Washington Area Bicyclist Association
Washington Regional Network for Livable Communities
We Can Row DC

11.2.3 Elected Officials and Political Organizations

ANC 6B
City Council Member Adrian Fenty

11.3 Draft EIS Distribution List

Various federal and district agencies, as well as may other organizations and groups representing project stakeholders, were provided copies of the Draft EIS. The Draft EIS was also available for review by the general public at various locations.

11.3.1 Federal and District Agencies

Advisory Council on Historic Preservation
Architect of the Capitol
DC Department of Health
DC Department of Parks and Recreation
DC Housing Authority
DC Water and Sanitary Sewer Authority
General Services Administration
Maryland Department of Transportation
National Capital Planning Commission
National Marine Fisheries Service
Naval District Washington (Washington Navy Yard and Anacostia Annex)
U.S. Army Corps of Engineers
U.S. Coast Guard
U.S. Commission of Fine Arts
U.S. Department of Housing and Urban Development
U.S. Department of the Interior
U.S. Environmental Protection Agency
U.S. Federal Transit Administration
U.S. Fish and Wildlife Service
U.S. National Park Service
State Historic Preservation Office
Washington Metropolitan Area Transit Authority

11.3.2 Libraries/Places to Review the Draft EIS

Anacostia Branch Library
Anacostia Economic Development Corporation
Francis A. Gregory Branch Library
Martin Luther King Memorial Library
Office of Council Member Marion Barry
Parklands-Turner Community Library
Southeast Branch Library
Southwest Branch Library

11.3.3 Advisory Committee Members

Jim Connolly, Anacostia Watershed Society
Linda Eckles, ANC 7B01
Richard Evans, Hillcrest Community Association
Brian Forehand, Anacostia Community Boathouse Association
Linda Greene, Office of City Council Member Marion Barry
LaTesha Hudson, ANC 8A04
James Louis, East of Sousa Bridge Pennsylvania Ave. Revitalization Task Force
Glen O'Gilvie, Earth Conservation Corps
Calvin Oslen, Penn-Branch Association
Alaine Perry, Hill East Waterfront Action Network
Graylin Presbury, Fairlawn Civic Association
Tom Speight, Eastern Power Boat Club
Pat Taylor, Hill East Neighborhood
Jacqueline West, Potomac Gardens Family Resident Council
Yavocka Young, Main Street Anacostia

11.3.4 Business and Civic Organizations

Anacostia Community Boathouse Association
Anacostia Coordinating Council
Anacostia Economic Development Corporation
Anacostia Main Streets
Anacostia Waterfront Corporation
Anacostia Watershed Society
Earth Conservation Corps
Fairlawn Civic Association
Sierra Club
Washington Navy Yard

11.3.5 Elected Officials and Political Organizations

ANC 6B
ANC 6D
ANC 7B
ANC 8A
City Council Member Sharon Ambrose
City Council Member Marion Barry
City Council Member Vincent Gray
Congresswoman Eleanor Holmes Norton
Mayor Anthony Williams

12 Comments and Coordination

The 11th Street Bridges study team has engaged in an extensive effort informing, involving, and encouraging feedback from the public and agencies. Public and agency involvement is required by a variety of regulations, including those of the Council on Environmental Quality and FHWA, that implement NEPA and the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). However, the benefits of implementing an active outreach program go beyond those requirements.

The purpose of the coordination and outreach program is to help make the 11th Street Bridges project successful and a benefit to the community, by identifying and managing potential issues as early in the process as possible. DDOT recognizes and values the local knowledge and diverse expertise that government agencies, regional councils and commissions, community groups, and individuals can offer.

The outreach program was designed to provide:

- A public involvement process with many opportunities for the public and agencies to be involved in the decisionmaking process and with documentation of the input received
- A process that strongly encourages early and continued active participation by the public and agencies
- A process rich in information for all stakeholders and participants

DDOT recognizes and values the local knowledge and diverse expertise that government agencies, regional councils and commissions, community groups, and individuals can offer.

12.1 Public and Agency Coordination Process

Public involvement in the need for and conceptual framework of the 11th Street Bridges project began in 2004 with DDOT's MAC Study with a series of public meetings and a Technical Assistance Group.

Project-specific outreach for the 11th Street Bridges project began in August 2005, building on the MAC Study's outreach program. A Notice of Intent to prepare the EIS was published in the *Federal Register* on September 13, 2005 (70 FR 54101). Notices of public scoping meetings were published in daily, weekly, and monthly local newspapers from late September to early October (see Appendix A, Attachment 1).

During the scoping phase, individuals and agencies were invited to comment on the scope of issues that the study should consider, the purpose of and need for the project, and the working alternatives.

Outreach for the Draft EIS public comment phase began in June 2006. Public notices were published in daily, weekly and monthly local newspapers from June 29 and into July, informing the public about where to find the Draft EIS and how to submit comments, as well as advertising the public hearings that were held in July 2006. EPA also published a Notice of Availability in the *Federal Register* on July 3, 2006 (70 FR 37934) (see Appendix A, Attachment 1).

Outreach has included the following activities:

- Identifying and inviting any federal and non-federal agencies that may have an interest in the project to be designated as "participating agencies" in the environmental review process.
- Using agency coordination meetings to solicit input into key components of the project development and study methods.
- Providing briefings at regularly scheduled community meetings, including ANCs, neighborhood associations, recreational associations, and business organizations.
- Identifying and inviting informed and representative residents, business proprietors, and recreation users from the study area as Advisory Committee members to provide pre-public meeting feedback.
- Attending AWI Interagency Coordinating Committee meetings to increase cooperation among participating agencies and to share information among other related projects in and around the study area.
- Discussion at public meetings of the role of all participants in a complex decisionmaking process (Exhibit 12-1).
- Using extensive and varied communication methods, before and after public meetings, to enhance the public's understanding of all information.
- Documenting substantive input and showing its relationship to the project recommendations.

At each public, group, and agency meeting, contact information for project managers and mechanisms to provide feedback and comments were presented. The fact sheets and newsletters provided information on how to submit comments by telephone, mail, fax, and email. The project website also contained this information and forms for submitting comments electronically.

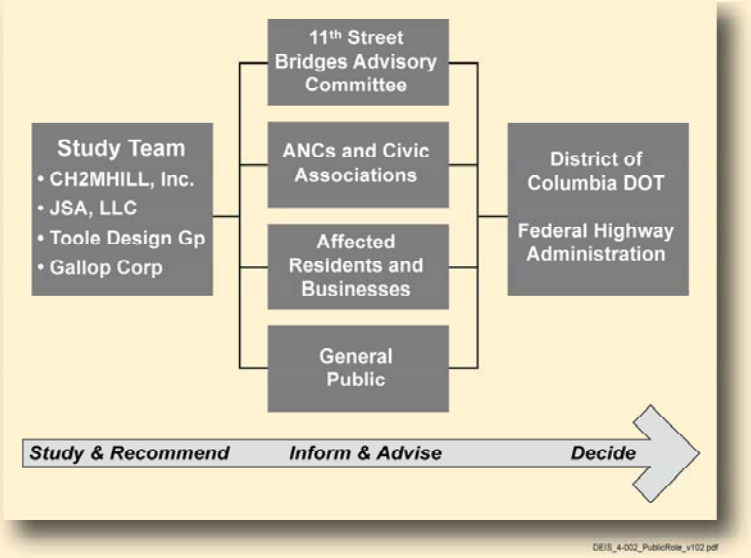
During six public meetings, a court reporter was present to record spoken comments during the question-and-answer sessions. People wishing to provide additional spoken comments

for the record were encouraged to visit the court reporter during the open house sessions. Forms were available for written comments on the project or the alternatives. Meeting evaluation forms were provided to collect feedback about the displays and presentations, and to help the team continuously improve the communication of complex information. Submittal of comments by mail, fax, and email was also encouraged.

12.2 Communication Methods

Information about the project, public meetings, and how to provide input has been distributed to the public through:

EXHIBIT 12-1
Decisionmaking Flowchart
The role of the public and other interested citizens is to inform and advise the decisionmakers at DDOT and FHWA.



- Public meetings
- Community group briefings
- Newsletters, project overviews, and other written materials that were mailed to interested persons, distributed in public locations, and handed out at meetings (see Appendix A, Attachment 2)
- Public information website (www.11thStreetBridgesEIS.com)
- A postal mailing list and email listserv, continually updated from meetings, website sign-up, and direct requests to be added
- Public meeting flyers taken to two nearby elementary schools to go out in students' backpacks, provided to business owners for posting in stores, and distributed in public places
- Newspaper notices of public meetings

To reach more people, DDOT and the study team attended a variety of neighborhood meetings and events.

12.2.1 Community Group Briefings

To reach people who may not typically attend public meetings, DDOT and study team members attended a variety of neighborhood meetings and events throughout the study area. Exhibit 12-2 lists the community group meetings that were held through early June 2007.

EXHIBIT 12-2
Project Briefings
Project briefings have been given to a range of interest groups throughout the study area.

Organization	Date of Meeting
African American Heritage Preservation Foundation	November 10, 2005
Anacostia Community Boathouse Association	October 18, 2005 November 29, 2005 August 14, 2006 August 28, 2006 September 27, 2006
Anacostia Coordinating Council	November 29, 2005 July 25, 2006
Anacostia Economic Development Corporation	January 26, 2006
Anacostia Main Streets	November 9, 2005
Anacostia Transportation and Development Projects Information Fair	February 25, 2006
Anacostia Waterfront Corporation	April 12, 2007
Anacostia Watershed Society (Ecosite)	November 15, 2005 June 21, 2006
ANC 6B	February 14, 2006 July 5, 2006 July 11, 2006
ANC 6D	March 13, 2006
ANC 7B	November 17, 2005 September 21, 2006
ANC 8A	December 6, 2005 August 1, 2006
Capitol Hill Restoration Society	June 19, 2006
Champs Economic Development Committee	October 19, 2006
DC Bicycle Advisory Committee	March 8, 2006
DC Strokes Rowing Club	November 14, 2005
District Yacht Club	December 3, 2005
Earth Conservation Corps & Anacostia Riverkeeper	November 15, 2005
Eastern Powerboat Club	November 15, 2005
Fairlawn Civic Association	November 15, 2005
Penn Branch Citizens Civic Association	September 26, 2006
River Users Meeting (DDOT/Coast Guard)	December 15, 2005
Seafarers Boat Club	February 8, 2006
Sierra Club	September 26, 2006
State of the Ward Meeting—Ward 8	March 14, 2006
Ward 8 Business Council	February 21, 2006
Ward 8 Concerned Citizens	August 23, 2006

The study team identified key groups to meet with, advertised the availability of speakers for community group meetings in project newsletters, and responded to requests for meetings.

The study team used input and feedback from community groups to refine alternatives.

The meetings ranged from quick overviews to extensive presentations, as requested by each group. All the briefings included time for people to voice concerns, ask questions, and identify key values and desired outcomes that were important to their neighborhoods or interests.

The purpose of these community group meetings was to maintain a two-way flow of information while the conceptual design alternatives and the evaluation of impacts continued. Group members were briefed on the need for the project, how it developed from the MAC Study process, and the projected schedules and features of the project. The team invited input on the working alternatives during the scoping phase, and comments on the alternatives and their impacts during the Draft EIS comments phase. Local groups could pass on what they had learned to their members or other interested persons in their neighborhoods. Study team members used the comments and questions to aid in their analyses and help refine the alternatives and the analysis of impacts and mitigation.

Common questions and concerns are summarized in Section 12.3 (scoping phase) and Section 12.4 (Draft EIS comment phase).

12.2.2 Advisory Committee

In late November 2005, DDOT invited a volunteer group of representatives from ANCs, neighborhood associations, elected officials, and recreational and business organizations to give feedback on the working alternatives and the draft exhibits for the December public meetings. This Advisory Committee was formed to provide a community perspective on the information before taking it to the community as a whole.

The Advisory Committee was convened again in July 2006, before the public hearings for the Draft EIS were held, to provide feedback on the displays and other informational materials for clarity and accessibility to the public.

Exhibit 12-3 lists the members of the Advisory Committee and the groups they are affiliated with, as well as other groups that were invited to send a representative.

12.2.3 AWI Interagency Coordinating Committee

The AWI Interagency Coordinating Committee is composed of representatives from federal, state, and local government agencies, consulting firms, and other organizations involved in the ongoing projects in and around the AWI area. The committee meets on a regular basis to increase cooperation and share information among agencies and to avoid or reduce potential conflicts between projects.

EXHIBIT 12-3
11th Street Bridges Advisory Committee
The 11th Street Bridges Advisory Committee was convened to provide a broad community perspective on work in progress.

Committee Members and Affiliations	
Jim Connolly Anacostia Watershed Society	Glen O'Gilvie Earth Conservation Corps
Linda Eckles Commissioner, ANC 7B01	Richard Hawkins Penn-Branch Association
Richard Evans Hillcrest Community Association	Alaine Perry Hill East Waterfront Action Network
Dylan Cors Anacostia Community Boathouse Association	Graylin Presbury Fairlawn Citizens Association
Albert "Butch" Hopkins Anacostia Economic Development Corporation	Pat Taylor Hill East Neighborhood
E. Faye Williams Office of City Council Member Marion Barry (Ward 8)	Tom Speight Eastern Power Boat Club
LaTesha Hudson Commissioner, ANC 8A04	Jacqueline West Potomac Gardens Family Resident Council
James Lewis East of Sousa Bridge Pennsylvania Avenue Revitalization Task Force	Yavocka Young Main Street Anacostia
Other Invited Organizations	
Anacostia Coordinating Council	City Council Member Sharon Ambrose (Ward 6)
ANC 6D, Chair	District Yacht Club
ANC 7B, Chair	Anacostia Riverkeeper
ANC 8C, Chair	Kentucky Courts Sr. Resident's Council
ANC 6B, Chair Commissioner, ANC 6B02 Commissioner, ANC 6B03 Commissioner, ANC 6B07	Washington Area Bicyclist Association
ANC 8A, Chair Commissioner, ANC 8A01 Commissioner, ANC 8A02	

The AWI and the Committee existed before this Draft EIS was initiated. Committee meetings have provided a valuable forum for integrating the 11th Street Bridges project into the big picture. Exhibit 12-4 lists the organizations participating in the Committee.

12.2.4 Resource Agencies

In accordance with the provisions of SAFETEA-LU, the study team identified and invited federal and non-federal agencies that may have an interest in the project to be designated as participating agencies in the environmental review process. The legislation specifies that

federal agencies that do not decline the invitation in writing are by default considered participating agencies. It also states that non-federal agencies that do not provide written acceptance are not considered participating agencies.

EXHIBIT 12-4
AWI Interagency Coordinating Committee
The AWI Interagency Coordinating Committee is composed of representatives from federal, state, and local government agencies, consulting firms, and other organizations involved in the ongoing projects in and around the AWI area.

Agencies	
Anacostia Waterfront Corporation	US General Services Administration
Architect of the Capitol	US Department of Housing and Urban Development
Bolling Air Force Base	Maryland Department of Transportation
US Commission of Fine Arts	Maryland State Highway Administration
DC Department of Health	Metropolitan Washington Council of Governments
DC Department of Housing and Community Development	National Capital Planning Commission
DC Department of Parks and Recreation	Naval District Washington (Washington Navy Yard and Anacostia Annex)
DC Department of Transportation	National Park Service
DC Water and Sewer Authority	US Army
DC Office of Planning	US Coast Guard
US Environmental Protection Agency	US Fish & Wildlife Service
US Federal Highway Administration, DC Division	Washington Metropolitan Area Transit Authority
Fort McNair (Fort Myer Military Community)	
Firms	
Baker	HNTB
CH2M HILL	Justice & Sustainability Associates
DMJM Harris	KCI
Earth Tech	Parsons Brinckerhoff
EEK	STV
FLM Architects	Symetra Design
Gorove-Slade	T.Y. Lin International
HDR	Wiley and Watson
Environmental Groups	
Earth Conservation Corps	Sierra Club

Letters of invitation were sent on October 13, 2005. Exhibit 12-5 lists the agencies that were invited to participate and their status as either participating or cooperating agencies.

EXHIBIT 12-5
Participating Agencies
Various agencies were invited to be participating agencies for the 11th Street Bridges EIS and studies.

Agency	Status
Federal Agencies	
Advisory Council on Historic Preservation	Participating
Architect of the Capitol	Participating
National Capital Planning Commission	Participating
U.S. Commission of Fine Arts	Participating
National Park Service/DOI	Cooperating
U.S. Army Corps of Engineers, Baltimore District	Participating
U.S. Environmental Protection Agency	Participating
U.S. Coast Guard, Fifth District	Participating
U.S. Department of Housing and Urban Development	Participating
U.S. Federal Railroad Administration	Declined
U.S. Federal Transit Administration	Participating
U.S. Fish and Wildlife Service	Participating
National Marine Fisheries Service	Participating
State, Local and Regional Agencies	
DC State Historic Preservation Office	Participating
DC Department of Health	None – No Response
DC Department of Parks and Recreation	None – No Response
DC Housing and Community Development	Participating
DC Water and Sanitary Sewer Authority	Participating
Metropolitan Washington Council of Governments	None – No Response
Washington Metropolitan Area Transit Authority	Participating
Interstate Commission on the Potomac River Basin	None – No Response
Maryland Department of Transportation	Participating
Maryland Department of the Environment	None – No Response
Montgomery County Department of Environmental Protection	None – No Response
Prince George's County Department of Environmental Resources	Declined

Regardless of formal designation, study team members have and will continue to work directly with all resource agencies who provide relevant data and information or who request information about the project.

Extensive individual and joint coordination meetings have been held frequently with participating agencies and other resource agencies to facilitate involvement in the following project activities:

Individual and joint coordination meetings have been held frequently with resource agencies to define the purpose and need and discuss alternatives.

- Establishing the schedule for completing the environmental review process
- Defining the purpose and need for the project
- Defining the range of alternatives to be considered for the project
- Providing relevant data and other information that agencies have collected
- Selecting the methodologies to be used and the level of detail required in the analysis of project alternatives
- Developing mitigation measures where needed

Exhibit 12-6 provides a list of the agencies and other organizations that the study team has met with to date. Appendix A, Attachment 3, contains copies of all written correspondence received from resource agencies.

12.2.5 Public Meetings

Public meetings have been conducted in a modified open house format, including opening remarks, one-on-one conversations between the public and staff, a question-and-answer session, poster displays, maps to mark up, forms for written comments, and a stenographer to record spoken comments. Copies of the poster displays and handouts were made available on the project website and, on request, by mail.

Multiple public meetings have been held at each milestone to make it easier for people to attend close to home or provide an alternative meeting date.

All public meetings for the 11th Street Bridges project have been held on both the east and west sides of the Anacostia River, to make it easier for people to attend a meeting near their homes and to provide alternate meeting dates for people who are involved in multiple civic events.

Public meeting notices have been published in local newspapers: the *Hill Rag*, *East of the River*, *Washington Informer*, and the *Washington Post's* local news weekly edition ("District Extra"). Meetings were posted on the project website's calendar, with an email alert to those who had signed up, and on the District of Columbia's citywide community calendar website. Meeting notices were distributed to the project mailing list and a wider civic interest email listserv.

EXHIBIT 12-6
Government Organization Meetings
Meetings were held with government organizations to discuss the 11th Street Bridges project.

Agencies and Organizations	Meeting Date
Architect of the Capitol	November 17, 2005
DC Department of Health	October 17, 2005 February 8, 2006
DC Department of Parks and Recreation	January 20, 2006 March 28, 2006 October 4, 2006
DC Fish and Wildlife	February 8, 2006
DC State Historic Preservation Office	October 6, 2005 May 17, 2006
DC Water and Sanitary Sewer Authority	August 29, 2006
General Services Administration	January 24, 2006
Metropolitan Washington Council of Governments	September 23, 2005 January 18, 2005 February 8, 2006
National Capital Planning Commission	October 27, 2005
National Park Service-National Capital Parks East	October 3, 2005 December 22, 2005 February 8, 2006 February 13, 2006 May 19, 2006 August 30, 2006 September 12, 2006 November 20, 2006 December 4, 2006
National Trust for Historic Preservation, Southern Regional Field Office	November 10, 2005
Naval District Washington (Washington Navy Yard)	October 21, 2005 November 10, 2005
US Army Corps of Engineers, Baltimore District	November 14, 2005 February 8, 2006 February 21, 2006
US Environmental Protection Agency, Region 3	November 15, 2005 January 25, 2006
US Coast Guard	January 5, 2006 October 3, 2006
Washington Metropolitan Area Transit Authority	August 31, 2005 September 13, 2005 May 23, 2006

A summary of the comments and questions at the initial public and community group meetings follows. Section 12.3 summarizes the issues that were identified and cross-references where these issues are discussed in the EIS.

Appendix A, Attachment 3 provides copies of other written correspondence from agencies, non-governmental organizations, and individuals.

Public Scoping Meetings

Public scoping meetings were held on October 5, 2005, at the Old Naval Hospital (ANC 6B's meeting place) on Pennsylvania Avenue in the Barracks Row/Capitol Hill area, and on October 6, 2005, at the Anacostia Professional Building on Martin Luther King, Jr., Avenue. The purpose of the scoping meetings was to present early information about the project and to collect public comments, opinions, and suggestions about the range of issues the EIS should consider. After the open house period, a presentation was used to explain the purpose of and need for the project, the project's goals and objectives, and the EIS process; and to answer questions. Approximately 40 people attended these two meetings.

Public scoping meetings were held on October 5 and 6, 2005. Public alternatives review meetings were held December 13 and 14, 2005.

At the scoping meetings, residents were interested in where access ramps might be placed and the effects on residential streets, and how the project will affect existing congestion and traffic spillover into local neighborhoods. The boating community wanted to know how the project would affect river access for boating and other forms of recreation. Environmental issues that people wanted evaluation of and discussion in the EIS were air quality, historic places, avoiding eagle and osprey nests, and controlling stormwater runoff to protect water quality in the river.

Alternatives Review Meetings

A second set of public meetings was held on December 13, 2005, at the Anacostia Professional Building on Martin Luther King, Jr. Avenue and on December 14, 2005, at Tyler Elementary School at 10th and G Streets, SE, in the Capitol Hill/Barracks Row neighborhood (Exhibit 12-7). These meetings were held to discuss and gather public input on the working alternatives for the 11th Street Bridges project. Nearly 60 members of the public came out to view and comment on the working alternatives for the 11th Street Bridges.

People were encouraged to mark up maps of the working alternatives with their specific suggestions and concerns. Photosimulations were produced to show how the new ramps might look from key viewpoints in the neighborhoods compared to existing views. Additional display boards were used to explain the purpose of and need for the project, the project goals, and to walk people through the EIS process.

In reviewing the alternatives, people wanted to know how separating local and freeway traffic on the new bridges would affect access from Anacostia to downtown and Virginia locations, and whether improving freeway connections would draw additional through traffic from the Beltway. Residents offered opinions about which alternatives would best discourage cut-through traffic on local streets and how effective the project would be in reducing traffic volumes on Capitol Hill streets.

Boaters wanted to know how impacts to the ACBA buildings would be mitigated. Bicyclists offered suggestions about the widths of bicycle/pedestrian lanes and connections to surface trails and asked how pedestrian and bicycle traffic will be maintained during construction. People from Washington Navy Yard and Maritime Plaza were interested in the effects of the new street patterns on traffic and how the intersection of 12th and M Streets will operate.

EXHIBIT 12-7
Public Meetings
Public meetings were held in December 2005 to review alternatives.

In addition to comments on different features of the alternatives, several people stressed environmental and social issues that should be considered in the EIS, including the effects of construction noise, vibration, aesthetics, air pollution, and stormwater.

Local business members asked that the EIS discuss a process for supporting existing businesses that could be disrupted during construction. Others wanted to see a process for providing contracting opportunities and construction employment/training to local residents.

EXHIBIT 12-7A
Public Hearings
Meetings in July 2006 encouraged both formal comments and one-on-one discussions.

Draft EIS Public Hearings

Public hearings on the Draft EIS were held on July 26, 2006, at St. Matthews Baptist Church on M Street (in the vicinity of Washington Navy Yard) and on July 27, 2006, at the Anacostia Professional Building on Martin Luther King, Jr., Avenue (Exhibit 12-7A). These meetings were held to present the findings of the Draft EIS and to provide the public with the opportunity to provide both spoken and written comments.

At these meetings, informational displays were provided to illustrate the alternatives and other aspects of the project. Study team members were present to answer questions in one-on-one discussions with the public. A court reporter was available to record verbatim comments, both during the general meeting and privately. These meetings were advertised by the same methods, including distribution of flyers, mailings, email, and notices in the same newspapers, as for previous public meetings.

Public hearings on the Draft EIS were held July 26 and 27, 2006.

Section 12.4 summarizes the issues raised by comments on the Draft EIS, including spoken comments recorded at the public hearings. Appendix L provides copies of and responses to all substantive comments on the Draft EIS.

12.2.6 Public Involvement and Agency Coordination after the Draft EIS

There was a 60-day public comment period after the Draft EIS was released, during which the public and agencies were offered the opportunity to comment on the alternatives, their potential impacts, and the proposed mitigation measures identified. The Draft EIS was made available to the public in hardcopy format at a number of accessible locations (see Exhibit 12-8). The document was also made available electronically in the common PDF format on the project website. Hard copies and/or CD-ROM versions were provided directly to those on the Distribution List (Section 11).

The Government Documents collection in the Martin Luther King Memorial Library is the official repository for EISs and other government documents made available for public review in the District of Columbia.

After this Final EIS is released, there will be a 30-day period before final project decisions are made. Additional meetings with agencies and selected stakeholder groups will be held as needed, to further develop the mitigation measures.

12.2.7 Commenting on the Draft EIS

During the 60-day public comment period, the public was encouraged to provide comments and suggestions by a variety of means:

The Final EIS provides responses to all substantive comments submitted on the Draft EIS.

- Mailing written comments to:
  11th Street Bridges EIS
  (c/o Justice and Sustainability Associates)
  1920 L Street, NW, Suite 500
  Washington, DC 20036
- Faxing comments to (202) 610-4471
- Emailing comments to EleventhSt@ch2m.com
- Calling (202) 610-0005 to give spoken comments
- Using comment forms provided at public meetings

- Using comment forms on the project website at *www.11thStreetBridgesEIS.com*

The Final EIS provides responses to all substantive comments submitted on the Draft EIS.

EXHIBIT 12-8
Draft EIS Review Locations
Locations where the Draft EIS were available for public review were spread throughout the project area. The Final EIS will be available at the same locations.

Location	Hours		Telephone
Southeast Branch Library 403 7th Street, SE 20003	M, W, F, Sa T, Th Su	9:30 a.m. - 5:30 p.m. 1:00 p.m. - 9:00 p.m. Closed	202.698.3377
Southwest Branch Library 900 Wesley Place, SW 20024	M, W T, Th, F, Sa Su	1:00 p.m. - 9:00 p.m. 9:30 a.m. - 5:30 p.m. Closed	202.724.4752
Office of Council Member Marion Barry 2100 Martin Luther King, Jr. Ave., SE 20020 Suite 303	M-F	9:00 am – 5:00 pm	202.698.2185
Anacostia Economic Development Corporation 2021 Martin Luther King, Jr. Ave., SE 20020	M-F	9:00 am – 5:00 pm	202.889.5100
Parklands-Turner Community Library 1600 Alabama Ave., SE 20020	M-F Sa-Su	9:30 a.m. - 5:30 p.m. Closed	202.698.1103
Francis A. Gregory Branch Library 3660 Alabama Ave., SE 20020	M, W T, Th, F, Sa Su	1:00 p.m. - 9:00 p.m. 9:30 a.m. - 5:30 p.m. Closed	202.645.4297
Martin Luther King Memorial Library[1] 901 G Street, NW 20001 Washingtonian Division, Room 307	M-Th F, Sa Su	9:30 a.m. - 9:00 p.m. 9:30 a.m. - 5:30 p.m. 1:00 p.m. - 5:00 p.m.	202.727.1213

[1] The Government Documents collection in the Martin Luther King Memorial Library is the official repository for EISs and other government documents made available for public review in the District of Columbia.

12.3 Project Issues Identified Prior to the Draft EIS

The extensive public outreach efforts during scoping in fall/winter 2005 and prior to the preparation of the Draft EIS in summer 2006 produced a set of issues of particular interest to those stakeholders. All issues identified were considered in the development of the alternatives and study of potential impacts presented in this EIS. Those issues raised in multiple forums or by multiple stakeholders are summarized in Exhibit 12-9 along with an identification of where in this Final EIS the issue is addressed.

EXHIBIT 12-9
Summary of Issues
Issues commonly identified through public involvement prior to preparation of the Draft EIS.

Issue	Where Discussed
Concern about potential direct and indirect impacts to the buildings the Anacostia Community Boathouse Association leases from DDOT including a concern with the continuation of operations during and after construction.	Section 7.3
Will people be displaced from their homes?	Section 7.3
What will the project look like from people's homes? Will the ramps be over people's houses like in Baltimore?	Section 7.14
Consider the air quality and possible health impacts in Ward 8	Section 7.5
How will the project improve access to the waterfront trails? We're looking at a more pedestrian-friendly community	Section 8.10
Will any businesses be displaced or lose business due to construction?	Sections 7.3 and 7.4
Residents are concerned about noise, dust, vibration, and traffic safety during construction.	Sections 7.5, 7.6, 8.9, and 8.13
How will you maintain traffic during construction?	Section 8.13
What are the potential effects on parkland, green space, and trees?	Section 7.2 and 9.4
How will you control stormwater runoff to protect water quality in the river?	Section 7.7
Martin Luther King, Jr. Avenue is only 40 feet wide, too narrow to make it two-way.	This project does not convert M. L. King to two-way operation except on a short rebuilt segment west of Good Hope Road for Alternatives II and III.
Will the project increase travel time between Anacostia and downtown Washington?	Section 8.8
Removing direct access to the SE/SW Freeway at 13th Street and M. L. King Avenue/Good Hope will negatively affect the ability to attract business to Anacostia.	Section 7.4
How effective will the project be at reducing traffic volumes on local streets including Capital Hill neighborhoods, Southeast neighborhoods, and Anacostia neighborhoods?	Section 8.3
Concern that the project will only help non residents (commuters) with traffic, not residents.	Section 8.3
The new bridge plan will complicate the ability of emergency vehicles stationed at Bolling AFB and the Naval Research lab to respond to Capital Hill emergencies.	Sections 7.21, 8.3, and 8.8
Concern about how the new street patterns will affect Navy Yard traffic and how the intersection of 12th and M Streets will work.	Section 8.7
Ensure that the traffic analysis examines induced effects of traffic and additional traffic form the new baseball stadium, the DDOT building at 11th Street, development at St. Elizabeth's, etc.	Section 8.2
Avoid eagle and osprey nests.	Sections 7.9 and 7.11

12.4 Project Issues from Comments on the Draft EIS

During the Draft EIS comment period of June 30, 2006, through August 28, 2006, DDOT received 148 comment letters, faxes, and emails from agencies, organizations, and concerned citizens. This section provides an overview of the issues raised by those comments. Appendix L presents copies of all the comments received during the comment period and provides responses to those comments.

Eight agencies provided comment letters: Anacostia Waterfront Corporation, the City Council of the District of Columbia, the District of Columbia Department of the Environment, DC SHPO, NCPC, EPA, WMATA, and NPS.

Six organizations provided comment letters: ACBA, Anacostia Marina Foundation, Capitol Hill Restoration Society, the Sierra Club's DC Division, and ANC 6B.

A total of 121 people submitted 136 comment letters. Additionally, ACBA organized a petition drive and submitted nearly 1,700 signatures on a petition to "save the boathouse."

A total of 17 people provided testimony at one or both of the public hearings that were held on July 26 and 27, 2006.

12.4.1 Agency Comments

Comments received from government agencies generally focused on the resources for which each agency is responsible. Issues in agency comments included:

- Comparison of alternatives
- Mitigation measures
- Viewshed impacts
- Air quality impacts
- Noise impacts
- Aquatic wildlife and habitat
- Wetlands, stormwater, and water quality
- Park land and access to Anacostia Park
- Historic districts and archaeological resources
- Coordinating transit during construction

Exhibit 12-10 is organized by agency and presents a summary of the main issues identified by agency comments. It is not intended to capture all the details and nuances of the comments. (See Appendix L for copies of all the agency comment letters that were received, along with response to those comments.)

12.4.2 Public Comments

Comments received from non-governmental organizations and individuals covered a wide range of issues. The highest volume of public comments had to do with impacts to the operations of ACBA and its upstream building (the boathouse) and concerns about traffic on local streets and the freeways. More than 120 individual comments were received on each of these two topics.

EXHIBIT 12-10
Summary of Agency Comments
Issues raised by comments on the Draft EIS received from government agencies

Anacostia Waterfront Corporation
All aspects of this project should be considered in a manner to positively mitigate the existing environmental and pollution conditions associated with the Anacostia River. The entire project should explore how the re-construction of the bridge itself can become a solution to chronic challenges faced by the river, its waterfront, and adjacent neighborhoods.
The project's addition of 12 to 17 acres of impervious surface is an unfortunate reality needed to achieve the project's purpose and need, but should be carefully mitigated through low impact development strategies that filter stormwater runoff and reduce its flow into the river.
A viewshed analysis from the perspective of both drivers and pedestrians on the bridges is needed to ensure that the proposed improvements do not adversely impact the urban and architectural scale of the Navy Yard and the historic district of Anacostia.
East of the River: We want to ensure that the following criteria are met: access from the bridge to Poplar Point; not only safe, but gracious pedestrian and bicycle movements; interchanges with the smallest possible footprint; direction of through traffic off of local roads.
East of the River: AWC supports Build Alternative I as the preferred alternative for the following reasons: its total land footprint is less; least amount of Anacostia park land converted to highway use; the high point is only 40 feet compared to 63+ feet in the other alternatives; views from the Anacostia neighborhood are better; and it offers improved access to Anacostia Park for bicyclists, pedestrians, and vehicles.
West of the River: We are pleased that DDOT has committed to maintaining ACBA operations during construction. We strongly encourage that the boathouse building be preserved whether in its current location or somewhere nearby on boathouse row.
City Council of the District of Columbia
Attached a constituent letter concerned about impacts to the Anacostia Community Boat House Association; requested a response to the individual and the Councilman's office.
District of Columbia Department of Environment
Water Quality: The Water Quality Division recommends the use of low-impact development facilities or stormwater treatment wetlands to treat stormwater collected from roadway and bridge surfaces.
Water Quality: Mitigation is required for any District-permitted impacts to streams and wetlands [and] should be conducted within the District's portion of the Anacostia River watershed.
Water Quality: While Build Alternative I is more attractive due to the minimized impact to wetland DP-1 [only 0.17 acre, or about half of it], the Water Quality Division will withhold stating a preference for a build alternative until additional information is provided about the proposed mitigation.
Water Quality: Please clarify if Wetland DP-1 mentioned in Section 7.8.2 is one of the two wetlands mentioned in Appendix A [wetland WP005 (also called DC Wetland 29), wetland WP005B and a border of riverbank vegetation (consistent with DC Wetland 30)] or a different wetland.
Water Quality: The Water Quality Division will withhold comments on the pier construction, bridge demolition, and dredging until more definitive information is available, such as whether the existing piers will be reused or replaced by new structures and the types of cofferdams that will be used.
Fisheries: The Fisheries and Wildlife Division (F&WD) finds that there would most likely be no significant impact to wildlife and habitat as a result of this project, except possibly a short-term effect on nursery area for American shad and river herring [and] potential for adverse effects to shortnose sturgeon. F&WD finds that the Draft EIS sufficiently addresses the concerns of wildlife habitat, such as osprey nesting habitats.

EXHIBIT 12-10
Summary of Agency Comments
Issues raised by comments on the Draft EIS received from government agencies

District of Columbia Department of Environment (continued)
Fisheries: Please provide more information on the possible existence of vernal pools on or near the project site.
Fisheries: There is minimal to no expected impact to fish habitat and SAV. [However] F&WD does not concur with the assertion that herring and alewife do not use the project site. F&WD has documented the project site as prime nursery habitat for those species, as well as for American shad.
Fisheries: Some of the fish data provided by F&WD has already become outdated. Since the writing of the Draft EIS, the federally endangered shortnose sturgeon was documented by the USFWS in the Potomac River migrating upstream to at least Chain Bridge. While this species was not found in the Anacostia River, the project could impact the species, given the distance and location where this species was found.
Wildlife: Our data show that 17 "species of greatest conservation need" utilize Poplar Point. Due to the distance and location of Poplar Point to the project site, there is no expected significant impact to these species.
Wildlife: F&WD concurs with the statement from the National Park Service that the construction efforts should not harm nesting birds or the bald eagle. However, please take all possible precautions to avoid temporary construction-related impacts, including possible disturbances such as noise and dust.
District of Columbia Historic Preservation Office (SHPO)
Historic District: Support the goal of two-way, local traffic along Martin Luther King, Jr. Avenue and 13th Street to promote preservation of the Anacostia Historic District. Build Alternative I would not accomplish this.
Historic District: A single, two-way, four-lane bridge to Martin Luther King, Jr. Avenue might be the ideal alternative from a historic preservation perspective.
Viewshed: Concerned about effects upon views *toward* the Anacostia Historic District. Prefer a view *without* a ramp crossing over the bridge in the foreground (as in Build Alternatives II and III).
Viewshed: It is important to have ramps as unobtrusive as possible within views *from* the Anacostia Historic District and from the old Fairlawn neighborhood. The best appears to be Build Alternative I. Build Alternatives II and III are essentially identical in this respect and perhaps merely acceptable. Build Alternative IV appears to be the worst.
Viewshed: The spans across the river themselves as represented in each alternative are roughly equivalent as to effects on views along the river.
Archaeological resources: Build Alternative I is best in terms of retaining parkland east of the river and, thus, setting and potential archaeological resources there.
Archaeological resources: The alternatives have small differences in configuration and compactness that could affect archaeological resources in the areas adjacent to the ramps around 11th Street between L and I Streets.
Archaeological resources: The Draft EIS provides a thorough review of the archaeological and paleontological resources that may be affected by the project. We concur with the conclusion that the potential for archaeological resources is high in certain areas. When the final alternative is selected, DDOT must continue consultation with our office to determine the extent of the archaeological work that might be needed.
National Capital Planning Commission (NCPC)
NCPC's 2001 *Memorials and Museum Master Plan* identified two possible sites for new commemorative works at the base of the 11th Street Bridges on both banks of the Anacostia River. This plan should be referenced in the Final EIS and the impact to these sites should be considered when developing detailed project design.
Section *5* of the National Capital Planning Act of 1952 requires that NCPC review development plans proposed by federal and District agencies. The EIS should list NCPC as a review agency and the project should be submitted for NCPC review once a conceptual design has been developed.

EXHIBIT 12-10
Summary of Agency Comments
Issues raised by comments on the Draft EIS received from government agencies

EPA, Region III
Alternatives: The environmental impacts of the 11th Street Bridge project are generally similar for all four build alternatives. EPA rates all of the build alternatives EC-2, environmental concerns, based mainly on the lack of a selected preferred alternative and the resultant insufficient information provided on mitigation measures. It is anticipated that upon the selection of the preferred alternative, mitigation of the impacts will be fully detailed.
Alternatives: EPA understands that this approach was adopted to fully identify community concerns of all of the alternatives and appreciates that this approach will give the community an unbiased discussion of the alternatives from which they can be evaluated.
Alternatives: Was the DC Department of Planning involved in the planning and review process of the EIS?
Alternatives: [Although] the build alternatives have similar impacts, there are some differences that may be worth noting. For example, there is approximately a 10-acre difference in footprint and a 2-acre difference in parkland impacts among the alternatives.
Exhibit 2-4 -The impact tables were very helpful and well thought out.
Bridge demolition: in other bridge construction projects, impacts to aquatic species [have occurred] as the result of sheet piling installation and bridge pier construction. Most notably during the Woodrow Wilson Bridge project, there have been instances of fish kills due to pier construction. We would ask that these instances be reviewed and appropriate precautions be incorporated into this design.
Alternatives: Section 7.2.1: Does the No-Build Alternative include maintenance for the existing roadway? If so the conclusion provided in the second sentence may not be accurate.
Parks: EPA supports minimizing impacts to parks and recreation facilities with the use of retaining walls if possible.
Relocation: EPA recommends that negotiations [about the ACBA buildings] address temporary relocation during construction, as well as permanent relocation if necessary, and that the Final EIS elaborate on any remaining negotiations or assurances required to meet the goals of the Uniform Relocation Assistance and Real Property Acquisition Act of 1970.
Air Quality: The Final EIS should document compliance with requirements of all applicable environmental laws, Executive Orders, and related requirements, including the transportation conformity provisions of the Clean Air Act. However, if full compliance is not possible by the time the Final EIS is prepared, the Final EIS can document consultation with the appropriate agencies and provide reasonable assurance that the requirements will be met.
Air Quality: The Final EIS should: document all pertinent consultation and information; discuss the procedural steps that remain in order for all of the transportation conformity requirements to be met; document hot-spot analyses in non-attainment and maintenance areas for carbon monoxide and particulate matter (PM-10); and document compliance with any relevant PM-10 control measures.
Noise: An increase of 10 dBA is a Federal Highway criteria [but] some states use a 5 dBA criteria as the increase over existing conditions to determine an impact. Does the District impose the 5 dBA criteria? EPA is concerned with the specific noise impacts that may occur and looks forward to reviewing the proposed mitigation for the preferred alternative.
Stormwater: We commend the project sponsors in their commitment to implementing low-impact development (LID) techniques [which would] reduce the runoff of pollutants to the Anacostia River and should be fully implemented for this project. The Region will offer any assistance required to fully implement LID for this project.
Stormwater: Could you estimate the reduction of stormwater impacts of this project by implementing LID techniques and other best management practices? If possible, please provide examples of LID practices that could be applied to this project.

EXHIBIT 12-10
Summary of Agency Comments
Issues raised by comments on the Draft EIS received from government agencies

EPA, Region III (continued)
Wetlands: We are concerned with the approach of using stormwater management for wetlands mitigation. We suggest that this issue be coordinated with the Corps and our EPA wetlands program. The Final EIS should indicate that appropriate mitigation for the loss of [wetlands] function will be achieved.
Habitat: The Draft EIS states that 8 acres of naturalized habitat would be affected by the project. While there may not be any federal requirement for mitigation, we strongly support any effort that would restore this naturalized area, especially in light of the minimal type of this habitat in an urban setting. Any effort that would support the goals [of the Chesapeake Bay program] would be appreciated.
We are very appreciative of the proactive approach taken in the development of this EIS and the efforts, through several meetings, of providing information in support of this project review.
Washington Metropolitan Area Transit Authority (WMATA)
The 11th Street Bridges EIS complements our goal of providing more community-focused transportation services that include better connections to Metrorail and better interconnections between District neighborhoods. We are encouraged by the reference [in the MAC study and the 11th Street Bridges Draft EIS] to the *WMATA Regional Bus Study: Final Report*.
Bus stops: WMATA supports the recommended improvements to several specific WMATA and DDOT bus stops in the project area and suggests that WMATA System maps be added for all bus stops with shelters.
Metrobus: Short-term changes in bus service in the 11th Street Bridges project area [include] elimination of Route W9 between Anacostia Station and Bolling AFB due to low ridership [as of September 24, 2006]. Longer term, implementation of recommendations from the District of Columbia Comprehensive Plan Transportation Element (Section 4) and build-out of the St. Elizabeths campus could impact transit in the project area.
Metrorail: There are currently no short-term studies or plans that would affect rail service in the 11th Street Bridges project area. We recommend consistent and early coordination with the Planning Development and Engineering (PDEC) Office to identify longer-term station access planning for the Navy Yard, Anacostia and Potomac Avenue Metrorail Stations because they will be affected by [several planned] developments.
MetroAccess: We recommend early coordination of alternative bus routes, stops, and amenities during construction periods on streets served by Metrobus, given the high number of transit-dependent residents in the 11th Street Bridges project area, in particular, east of the Anacostia River (620 registered MetroAccess riders in Zip Code 20020 as of June 30, 2006).

Public comments can be grouped into the following general topics:

- General comments
- Project goals, purpose and need
- Alternatives development
- Impacts to the boathouse
- Traffic and freeway capacity
- Potential streetcar on the bridges
- Consistency with local/regional plans
- Mitigation
- The river-crossing bridges
- Pedestrian & bicycle facilities
- Air quality and noise impacts
- Environmental justice
- Historic District and archaeological resources
- Net Benefits (f) Programmatic evaluation
- Other issues

See Appendix L for copies of the individual comments that were received from the public, along with responses to those comments.

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15 Acronyms

AASHTO	American Association of State Highway and Transportation Officials
ACBA	Anacostia Community Boathouse Association
ACM	asbestos-containing material
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
AEDC	Anacostia Economic Development Corporation
AME	African Methodist Episcopal (Church)
ANC	Advisory Neighborhood Commission
ANSI	American National Standards Institute
AOC	area of contamination; area of concern
APE	area of potential effect
AQI	Air Quality Index
ASLA	American Society of Landscape Architects
AST	aboveground storage tank
ATR	Automatic Traffic Recorder
AWI	Anacostia Waterfront Initiative
AWRC	Anacostia Watershed Restoration Commission
AWTA	Anacostia Watershed Toxics Alliance
B-IBI	Benthic Index of Biotic Integrity
BTEX	benzene, toluene, ethylbenzene, xylene
CAA	Clean Air Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CFR	Code of Federal Regulations
CLRP	Constrained Long-Range Plan
cm/s	centimeters per second
CO	carbon monoxide
CORRACTS	Corrective Action Sites
CORSIM	Corridor Simulation
CSO	combined sewer overflow
CSS	combined sewer system
CWSP	Citywide Strategic Plan

dBA	A-weighted decibel
dbH	diameter at breast height
DC	District of Columbia
DCDHP	District of Columbia Department of Historic Preservation
DCFWD	DC Fisheries and Wildlife Division
DDE	dichlorodiphenyldichloroethylene
DDOE	District Department of the Environment
DDOH	District Department of Health
DDOT	District Department of Transportation
DDT	dichlorodiphenyltrichloroethane
DEOG	diesel exhaust organic gases
DNAPL	dense non-aqueous phase liquid
DOI	Department of the Interior
DPM	diesel particulate matter
DPR	District Department of Parks and Recreation
EA	Environmental Assessment
ECHO	Enforcement & Compliance History Online
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement
EMS	emergency response services
EPA	U.S. Environmental Protection Agency
ERNS	Emergency Response Notification System
^{o}F	degrees Fahrenheit
FAR	floor area ratio
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FINDS	Facility Index System
FOIA	Freedom of Information Act
ft^2	square foot
GHG	greenhouse gas
GSA	General Services Administration
GWP	global warming potential
H.R.	House Resolution (U.S. Congress)
HAP	hazardous air pollutant
HBRR	Highway Bridge Replacement and Rehabilitation Program
HCM	Highway Capacity Manual
HMIRS	Hazardous Materials Incident Report System
HOPE VI	Housing Opportunities for People Everywhere
HOV	high-occupancy vehicle

IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
L_{10}	sound level exceeded 10 percent of the time
L_{10}(h)	hourly value of L_{10}
Leq	equivalent steady rate sound level which in a stated period of time continues the same acoustic energy as the time-varying sound level during the same time period
L_{eq} (h)	hourly value of Leq
LID	low-impact development
LOS	level of service
LQG	large quantity generators
LTCP	Long Term Control Plan
LUST	leaking underground storage tank
$\mu g/m^3$	micrograms per cubic meter
MAC Study	Middle Anacostia River Crossings Transportation Study
MEV	millions of entering vehicles
MHW	mean high water
MLTS	Material Licensing Tracking System
MOU	Memorandum of Understanding
mph	miles per hour
MSAT	mobile source air toxic
MSE	mechanically stabilized earth/embankment
MTBE	methyl tertiary butyl ether
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NCPC	National Capital Planning Commission
NDW	Naval District Washington
NEPA	National Environmental Policy Act
NFRAP	No Further Remedial Action Planned
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NMNH	National Museum of Natural History
NO_2	nitrogen dioxide
NO_x	nitrogen oxide
NPDES	National Pollution Discharge Elimination System
NPL	National Priority List
NPS	National Park Service
NRC	Nuclear Regulatory Commission; National Response Center
NRCS	Natural Resources Conservation Service

NRHP	National Register of Historic Places
NWI	National Wetland Inventory
PAH	polynuclear (or polycyclic) aromatic hydrocarbons
PCB	polychlorinated biphenyls
pCi/L	picocuries per liter
PDO	property-damage only
PM	particulate matter
POM	polycyclic organic matter
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Act Information System
ROD	Record of Decision
RPTA	Real Property Tax Administration
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SAV	submerged aquatic vegetation
SHPO	State Historic Preservation Office
SMD	Single Member District
SNAP	Strategic Neighborhood Action Plan
SO_2	sulfur dioxide
SPAWAR	Space and Naval Warfare Systems Command
SQG	small quantity generators
SVOC	semivolatile organic compound
TCP	traditional cultural property
TEA	Transportation Equity Act for the 21st Century
TEL	threshold effects level
TIP	Transportation Improvement Program
TNM	Traffic Noise Model
TPB	Transportation Planning Board
tpd	tons per day
TPH	total petroleum hydrocarbons
TRC	Thunderbird Research Corporation
TSM	Transportation System Management
TSP	total suspended particulates
TSS	total suspended solids
USACOE	U.S. Army Corps of Engineers
USC	U.S. Code
USCGS	U.S. Coastal and Geodetic Survey
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
UST	Underground Storage Tank
v/c	volume to capacity
VIMS	Virginia Institute of Marine Science
VMT	vehicle miles traveled
VOC	volatile organic compound
vpd	vehicles per day
WASA	District of Columbia Water and Sewer Authority
WMATA	Washington Metropolitan Area Transit Authority