Draft
ENVIRONMENTAL IMPACT STATEMENT FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON, D.C.

April 2015

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ENVIRONMENTAL IMPACT STATEMENT FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON, D.C.

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Draft Environmental Impact Statement for
Multiple Projects in Support of Marine Barracks Washington, D.C.
April 2015

Lead Agency:	Department of the Navy (DON), U.S. Marine Corps
Title of Proposed Action:	Multiple Projects in Support of Marine Barracks Washington, D.C.
Affected Jurisdiction:	Washington, D.C.
Designation:	Draft Environmental Impact Statement (EIS)
Public Comments Due by:	May 26, 2015 midnight (EDT)

Abstract

This Draft EIS has been prepared to evaluate the potential environmental impacts of implementing repair, renovation, and construction projects at Marine Barracks Washington (MBW), District of Columbia (DC) anticipated to occur within an approximately 5-year planning horizon from the publication of the Record of Decision (anticipated early 2016). The principal project analyzed in this EIS is the construction and potential land acquisition for a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Additional projects evaluated include renovation and improvement projects to Building 7 at the Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building façades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The Draft EIS also takes a programmatic look at the potential effects of several additional projects anticipated to occur beyond the 5-year planning horizon for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available. Principal among these projects is the potential reuse of Building 20 or the Building 20 site. Other longer-term projects include renovation of Building 9 to accommodate the consolidation of various administrative functions, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the Proposed Action is to address existing and anticipated facility deficiencies at MBW. The Proposed Action is needed to better support the functions of the Marine Corps units assigned to MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions; space configurations; Department of Defense quality of life standards; and life safety, sustainability, energy efficiency, and Anti-Terrorism and Force Protection requirements.

This Draft EIS has been prepared in compliance with Section (102)(2)(c) of the National Environmental Policy Act of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), DON NEPA regulations (32 CFR Part 775), and U.S. Marine Corps NEPA directives (Marine Corps Order P5090.2A, Change 3).

Potential impacts from five action alternatives and the No Action Alternative have been analyzed in this Draft EIS. Potential impacts have been analyzed for land use; transportation and circulation; cultural resources; socioeconomics, environmental justice, and protection of children; public health and safety; utilities and infrastructure; public services; noise; natural resources; and air quality. The Marine Corps has not selected a preferred alternative at this time.

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EXECUTIVE SUMMARY

The Marine Corps is preparing this Environmental Impact Statement (EIS) to analyze the potential environmental effects that could result from the Proposed Action of implementing several construction, repair, and renovation projects at or proximate to Marine Barracks Washington (MBW), in the District of Columbia (DC). These projects would occur within an approximately 5-year planning horizon from the publication of the Record of Decision (ROD) (anticipated early 2016), address existing and anticipated facility deficiencies at MBW, and better support the functions of the Marine Corps units assigned to MBW. The Proposed Action does not include any change to the MBW mission or staffing levels. Figure ES-1 shows the location of the three existing MBW properties, the Main Post (located at the intersection of 8th and I Streets SE), the Building 20 site (located at the intersection of 8th and I Streets SE), and the Annex (located at the intersection of 7th and K Streets SE), within the context of Southeast DC.

The principal project analyzed in this EIS is constructing a replacement Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) for functions currently housed in Building 20. This would require either private land acquisition, establishing a tenant site on federal or DOD property, or a site on MBW property capable of accommodating a portion of the replacement BEQ requirement (BEQ and support facilities) while retaining the below grade parking at the Building 20 site. Other projects include renovations and improvements to Building 7 at the Main Post; MBW Annex gate at 7th and K Streets; and to Main Post building façades, fencing, infrastructure, pedestrian amenities, and landscaping (Figure ES-2). The EIS also takes a programmatic look at the potential effects of several additional projects anticipated to occur beyond the 5-year planning horizon for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available. A programmatic approach was used because detailed analysis of impacts are dependent on the alternative selected in the ROD and future design considerations, and therefore are not reasonably foreseeable at this time. Principal among these projects is the potential reuse of Building 20 or the Building 20 site. Other longer-term projects include renovating Building 9 to accommodate the consolidation of various administrative functions, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, the appropriate level of NEPA analysis will be completed.

Figure ES-1. MBW Properties and Location Map

Key

MBW Sites

Park

MBW Projects

Within the 5 Year Planning Horizon

Beyond the 5 Year Planning Horizon

0 150 300 600 Feet

Source: DC GIS Data Clearinghouse/Catalog

Figure ES-2. Proposed Projects at MBW Properties

Founded in 1801, MBW provides a provisional infantry battalion in order to support ceremonial commitments within the National Capital Region (NCR), provide security at designated locations, conduct enlisted distance education mission for the Marine Corps, and prepare Marines for service in the operating forces. On order, MBW supports contingency security missions. This mission includes Presidential support duties, light infantry training, ceremonial marchers, funeral support at Arlington National Cemetery, and the functions of nationally recognized units, including the Marine Corps Silent Drill Platoon, Marine Corps Body Bearers, Marine Corps Color Guard, Marine Drum and Bugle Corps, and the United States (U.S.) Marine Band. MBW is the oldest active post in the U.S. Marine Corps, and the Main Post is listed on the National Register of Historic Places (NRHP) and is designated a National Historic Landmark (NHL).

MBW is part of the highly urbanized metropolitan area of DC. The MBW Main Post and Building 20 are located at the intersection of 8th and I Streets SE in the Capitol Hill neighborhood, the largest historic district and one of the most densely populated residential neighborhoods in DC. The MBW Annex is located at the intersection of 7th Street SE and Virginia Avenue SE in the Near Southeast neighborhood, which has been an emerging growth area as a result of revitalization efforts that began in the 1990s and is transitioning to an established neighborhood with a growing residential community.

ES.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The overall purpose of the Proposed Action is to address existing and anticipated facility deficiencies at MBW in order to better support the functions of the Marine Corps units assigned to MBW. The Proposed Action is needed for the Marine Corps to meet current Quality of Life (QOL), efficiency, sustainability, life safety, Anti-Terrorism and Force Protection (AT/FP) requirements, and facilities standards. Most of these requirements are set forth in the Department of Defense (DOD) UFCs for planning, design, construction, sustainment, restoration, and modernization.

To comply with current standards and continue to meet MBW mission requirements, the Marine Corps needs to either acquire land, establish a tenant site on federal or DOD property, or select a site on MBW property to accommodate a portion of the replacement BEQ requirement (BEQ and support facilities) and construct a replacement BEQ near the MBW Main Post. The 212,594-square foot (SF) Building 20 is located adjacent to the MBW Main Post and currently has multiple deficiencies relating to force protection, minimum space requirements, QOL, life safety, sustainability, and energy efficiency. The facility cannot be renovated or redesigned at the existing site to meet today's requirements and standards; however, the below-grade parking at the Building 20 site could be retained to meet parking needs associated with the replacement BEQ Complex. No existing MBW property can accommodate the entire replacement BEQ requirement (BEQ, support facilities, and parking) at a single site.

Building 7 interior renovations are required to improve space utilization, meet life safety standards, improve attainment of sustainability goals, and address certain AT/FP shortfalls (limited to measures such as installation of AT/FP compliant windows and doors since Building 7 has reduced AT/FP requirements due to it being a low occupancy building).

The following projects are required to foster MBW integration with the community consistent with current UFC guidance (primarily the elements of UFC 2-100-01 that address master planning to create

more connected and visually pleasing environments by coordinating development, removing clutter, enforcing consistent architectural themes, creating appropriate pedestrian and vehicle circulation patterns, and focusing attention to installation appearance):

- Improve the MBW Annex gate located at 7th and K Streets SE to provide a "sense of arrival" for both installation personnel and visitors.
- Make subtle improvements (e.g., signs, door awnings, lighting, and landscaping) so that all building exteriors present a more attractive, less utilitarian appearance to the surrounding neighborhood.
- Incorporate pedestrian-friendly amenities (e.g., pedestrian paths, signage systems, seating, lighting, and landscaping) into MBW properties that are safe and appropriately sized to their surroundings.

Each of these projects is a separate, distinct, and independently complete and actionable project.

Finally, the purpose and need for long-term projects introduced programmatically in this EIS are associated with the need for optimal reuse of Building 20 or the Building 20 site and long-term solutions for MBW space needs.

ES.2 PROPOSED ACTION AND ALTERNATIVES

ES.2.1 OVERVIEW OF THE PROPOSED ACTION

The Proposed Action would implement the following projects at or proximate to MBW within the next 5 years (funding permitting) to meet the purpose and need. These projects are analyzed in detail in this Draft EIS.

- The BEQ Complex replacement project: This is the principal project analyzed in this Draft EIS and includes
    1) securing a site either by acquiring land, establishing a tenant site on federal or DOD property, or selecting a site on MBW property to accommodate a portion of the replacement BEQ requirement (BEQ and support facilities) and
    2) constructing an approximately 191,405 SF BEQ Complex (including supporting facilities) to replace Building 20.
- Main Post renovation projects: These include interior renovations to Building 7 at the Main Post.
- Projects to foster integration of MBW with the community: These include improvements to the MBW Annex gate at 7th and K Streets SE and improvements to building façades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation.

The Proposed Action also includes projects anticipated to occur beyond the 5-year planning horizon for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of Building 20 or the Building 20 site by both federal and non-federal entities (aside from the possible retention of below-grade parking to support the replacement BEQ Complex parking requirement). Other longer-term projects include renovation of Building 9 to accommodate the consolidation of various administrative functions, as well as some additional landscaping and maintenance projects. Once sufficient details on these actions become available to

conduct a detailed analysis, additional NEPA analysis will be completed and applicable public involvement conducted.

Sustainable design principles would be included in the design and construction of all projects in accordance with Executive Order (EO) 13123, *Greening the Government through Efficient Energy Management*, and other applicable regulations. Areas affected by repair and construction would be in compliance with applicable AT/FP, fire suppression, seismic, accessibility, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, U.S. Green Building Council Leadership in Energy & Environmental Design Silver, and Energy Policy Act of 2005 standards (as required) upon completion of the project.

Standard construction-related Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) would be implemented to address and minimize potential impacts to include construction safety, waste management, spill prevention and response, stormwater management, and dust control. Additional considerations include scheduling and staging of construction activities so as not to visually or otherwise disrupt the neighborhood, including traffic impacts or parking scarcity in the area.

ES.2.2 PRE-SCOPING SCREENING CRITERIA

The Community Integrated Master Plan (CIMP) process that preceded this EIS was a first-of-its-kind planning process that sought solutions to challenging security and space requirements at MBW through an open and transparent process that took place primarily between January and November of 2010. The process proved effective in identifying potential planning solutions that are community-driven and built on consensus through a series of public meetings, interviews, and workshops designed to gather data and stakeholder input. The CIMP resulted in a foundation for the required rigorous exploration of a reasonable range of alternative sites meeting the purpose and need with respect to the replacement BEQ Complex project.

ES.2.2.1 Pre-Scoping Screening Criteria

For the purposes of this EIS, the following screening criteria were used to further refine and narrow the range of alternative sites for the replacement BEQ Complex before the Notice of Intent (NOI) to prepare this EIS was published.

- **Criterion 1: Must be within reasonable walking distance (2,000 foot radius) of the Main Gate entrance to the MBW Main Post.** The National Capital Planning Commission (NCPC) Comprehensive Plan for the NCR defines "reasonable walking distance" as ”2,000 feet, or somewhere between a quarter mile and a half mile – about a 10-minute walk”. Consistent with widely accepted planning principles, a radial distance of 2,000 feet from the destination point (the MBW Main Post Main Gate) was used to define “reasonable walking distance” for the Proposed Action. This reasonable walking distance criterion is required for operational efficiency, unit cohesion, safety, and ensuring that the MBW Commanding Officer can maintain adequate command and control of the enlisted Marines assigned to the BEQ. The 10-minute walking distance ensures that MBW can meet operational tempo efficiency requirements to assemble personnel for training, ceremonies, support activities, and other command functions multiple times during a single work day. The existing BEQ Complex at Building 20 is a “hub” for

both the Marines that live in the BEQ who are required to maintain a level of health, wellness, and hygiene, as well as for the entire MBW population that use the existing BEQ support facilities for training, administrative functions, community support, armory, and parking.

- **Criterion 2: Must meet the minimum developable area requirements for the 191,405 SF BEQ Complex (which includes supporting facilities and parking), while also complying with applicable laws governing height restrictions.** Table ES-1 summarizes the single site acreage estimate for the replacement BEQ Complex configurations, including the parking requirement of 212 spaces. Although the configuration would ultimately be refined through a design process, a planning-scale estimate is provided for the purposes of this EIS. The acreage estimate includes a minimum standoff distance of 66 feet for vehicles and 33 feet for pedestrians. To allow for AT/FP standoff distance requirements, the assumption is that parking would be primarily underground, but not directly beneath the enlisted quarters or gathering areas. Table ES2-1 also provides acreage estimates for a 5-story, 8-story, and 9-story configuration for the BEQ component requirement. The 5-, 8-, and 9-story BEQ configurations were developed for planning purposes and were derived from a combination of the space requirements, construction economies of scale, and agency and public input through the CIMP agency and public involvement process. Stakeholders favored minimizing the footprint to the extent practicable (i.e., the 8- or 9-story configuration) and restricting building heights in areas with historic building inventories to respect the historic scale of buildings and structures and protect historic viewsheds (i.e., the 5-story configuration).

Table ES-1. Minimum Acreage Requirement (Planning Estimates)

BEQ/Support Facilities Configuration	Minimum Required Acreage
5-Story BEQ and Support Facilities	2.42
8-Story BEQ and Support Facilities	2.07
9-Story BEQ and Support Facilities	1.70

- **Criterion 3: Must not relocate public services to DC residents, to include public housing, education, or public recreation services.** This criterion refers to areas dedicated to public services (current or planned), and is not intended to include supporting elements such as roads, parking, sidewalks, and utilities.

ES.2.2.2 Methodology for Identification of Action Alternatives

Step 1: Exclude all parcels not located within a 2,000-foot radius of the Main Gate entrance to the MBW Main Post. Excluding these parcels ensures that the remaining parcels fall within a reasonable walking distance of the Main Post. This narrowed the study area to approximately 288 acres in Southeast DC.

Step 2: Evaluate sites located within the 2,000-foot radius that have the potential to meet the minimum required developable area for an approximately 191,405-SF replacement BEQ Complex while also complying with applicable laws governing height restrictions. Sites that currently provide or that are planned to provide public services to DC residents, to include public housing, education, or public recreation services, were not considered. This resulted in the identification of four alternative replacement BEQ Complex sites that were carried forward into the NEPA scoping process and presented at the scoping meeting.

Step 3: Invite scoping comments and adjust the reasonable range of alternatives based on comments received. Two important developments occurred during this step:

- comments received from the public indicated a preference for siting the replacement BEQ Complex on DOD-owned land
- further analysis determined that construction of a replacement BEQ Complex at Washington Navy Yard (WNY) exactly as presented at scoping was not feasible due to the structural integrity of Buildings 219 and 220 and the potential permanent displacement of approximately 620 current occupants of these buildings to another location outside WNY

In consideration of these factors, screening Criterion 2 was modified to allow for potentially siting the replacement BEQ Complex on DOD-owned land. The application of this addition to screening Criterion 2 resulted in a revision to the Site D alternative, such that below-grade parking would be retained at the Building 20 site to meet the parking requirement, and the footprint of the BEQ replacement facility was moved to the west of the original footprint and the size slightly reduced.

ES.2.2.3 Final Screening Criteria

The screening criteria were refined based on public comments, key stakeholder input, and additional analysis. The final screening criteria used to develop a reasonable range of alternatives carried forward for analysis in this EIS are:

- **Criterion 1: Must be within reasonable walking distance (2,000-foot radius) of the Main Gate entrance to the MBW Main Post.** No revisions were made to this criterion based on scoping comments.
- **Criterion 2: Must meet the minimum developable area requirements for the approximately 191,405-SF BEQ Complex (which includes supporting facilities and parking) *at a single site* (while also complying with applicable laws governing height restrictions) *or for DOD-owned sites only at a split site that retains the existing parking assets below Building 20 and replaces the remaining BEQ Complex functions (approximately 116,101 SF)*.** No revisions were made to the single site aspect of this criterion; however, modifications were made to accommodate a two-site alternative on DOD-owned land. However, a two-site alternative on DOD-owned land would only be considered if it: 1) negates the land acquisition requirement and 2) results in confined and manageable impacts to existing facilities that would be displaced or modified to satisfy the space requirements (i.e., no permanent displacement of personnel or facility functions and construction-phase impacts that do not degrade MBW or WNY critical mission capabilities). For alternative sites located on DOD-owned land, a 5/6-story or 6/7-story replacement BEQ can be constructed on a smaller site (Table ES-2) than indicated in Table ES-1 since the AT/FP setbacks are reduced inside a controlled perimeter.

Table ES-2. Minimum Acreage Requirement for Split-Sites (Planning Estimates)

BEQ/Support Facilities Configuration	Minimum Required Acreage
5/6-Story BEQ and Support Facilities (WNY)	0.78
6/7-Story BEQ and Support Facilities (MBW Annex)	0.48

The result of applying these screening criteria was the identification of the alternatives carried forward for detailed analysis.

ES.2.3 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

These alternatives identified below, and shown in Figure ES-3, balance the Marine Corps' facility requirements with the public's concerns regarding acquisition of non-DOD owned land and public streets. Alternatives 1-3 require acquisition of non-DOD owned land to fully meet MBW's space requirements in a single BEQ Complex. Alternatives 4 and 5 use DOD-owned land to create split-site alternatives that meet the requirements but lack the synergies of a cohesive replacement BEQ Complex.

ES.2.3.1 Alternative 1 – Site A

Under Alternative 1, the Marine Corps would acquire privately owned land and a government-owned right-of-way (ROW) for the proposed BEQ Complex. Alternative 1, Site A, consists of 3.0 acres in Squares 929 and 930 and an approximate 340-foot segment of L Street between 8th and 9th Streets SE. The affected segment of L Street SE would be closed to vehicular and pedestrian traffic and street parking. For the purposes of this EIS, it is expected that the replacement BEQ Complex would be constructed within the L Street ROW, affecting the L'Enfant Plan viewshed.

ES.2.3.2 Alternative 2 – Site B

Under Alternative 2, the Marine Corps would acquire privately owned land and a government-owned ROW for the replacement BEQ Complex. Alternative 2, Site B, consists of 1.8 acres composed of privately owned land at Square 976 and an approximate 315-foot segment of the L Street ROW between 10th and 11th Streets SE. Unlike Alternative 1, there would be no construction within the L Street ROW. This segment of L Street would be closed to vehicular traffic and on-street parking, but it would remain open for pedestrians. No structures would be constructed within the adjacent Virginia Avenue Park and the park would remain open to public use. The segment of the ROW and the adjacent portion of Virginia Avenue Park are included within this site as a means of satisfying the AT/FP vehicular standoff distance while also allowing public use to continue.

ES.2.3.3 Alternative 3 – Site C

Under an agreement with the General Services Administration (GSA) that was authorized by special legislation, Forest City legally controls the future development of the Southeast Federal Center (SEFC) which encompasses Site C. A future agreement with Forest City and GSA that would provide for the transfer of Site C to the Marine Corps/DON for the purpose of future development would be required in order for Site C to be selected. Under Alternative 3, the Marine Corps would obtain appropriate real estate interest in a portion of the federally owned land at the SEFC for the proposed replacement BEQ Complex and a 3-story above ground parking structure. Alternative 3, Site C, is 2.1 acres composed of a

portion of Square 853, bound by M Street SE to the north and Tingey Street SE to the south. Under this alternative, the SEFC "The Yards" Redevelopment Master Plan for the area would require revision.

ES.2.3.4 Alternative 4 – Site D

Under Alternative 4, the Marine Corps would establish a tenant site on 1.67 acres of federally owned land in the northern portion of Square 953, within the boundary of the WNY. The existing land use includes an administrative building (Building 169) as well as tennis and basketball courts located east of Building 169, all of which have been identified as areas for potential redevelopment in the WNY Master Plan (approved by NCPC on November 6, 2014). Also included is the parking lot south of Building 169 (16 spaces) and potentially a portion of Poor Street that connects Parsons Avenue and 10th Street SE. If sited as shown in Figure ES-3, BEQ construction on this site would require the demolition of Building 169. Building 169 is currently occupied by MBW functions (MBW is a tenant to WNY at this site). The Marine Corps has determined that it does not have a long-term need for the Building 169 function. The existing below-grade parking at the Building 20 site would be maintained on both the eastern and western portions of the site.

ES.2.3.5 Alternative 5 – Site E

Under Alternative 5, the Marine Corps would use 0.89 acre of federally owned land at Site E, which consists of Squares 881 and 881W within the boundary of the MBW Annex. For the purposes of this EIS, it is expected that the replacement BEQ Complex construction would occur within the 6th Street L'Enfant Plan viewshed between Building 25 and Building 26. The new facility would be sited as close to Building 25 as possible and would connect via a breezeway between the replacement BEQ Complex and the western end of Building 25. The site currently contains a basketball court that would be relocated to the north of Building 25. The existing below-grade parking at the Building 20 site would be maintained.

ES.2.3.6 Summary of Action Alternatives

Table ES-3 provides a comparison of key elements of the five action alternatives. The Marine Corps has not identified a preferred alternative at this time.

Table ES-3. Comparison of Replacement BEQ Complex Site Action Alternatives

Component	Alternative 1 – Site A	Alternative 2 – Site B	Alternative 3 – Site C	Alternative 4 – Site D	Alternative 5 – Site E
Replacement BEQ Location	Squares 929 and 930, Capitol Hill Historic District	Square 976	Square 853 (SEFC)	Portion of Square 953 (within WNY)	Portions of Squares 881 W and 881 (MBW Annex)
Parcel Size (acres)	3.0	1.8	2.1	1.67	0.89
Estimated Number of Stories	5	9	8	5/6	6/7

Table ES-3. Comparison of Replacement BEQ Complex Site Action Alternatives

Component	Alternative 1 – Site A	Alternative 2 – Site B	Alternative 3 – Site C	Alternative 4 – Site D	Alternative 5 – Site E
Real Estate Acquisition Considerations	Private land acquisition (24 properties)	Private land acquisition (5 properties)	Agreement with Forest City Washington and GSA for transfer of land for Marine Corps development and modification to SEFC Master Plan	Not applicable (existing WNY property)	Not applicable (existing MBW property)
BEQ Complex Parking Requirement Location	At Site A	At Site B	At Site C	At Building 20 Site	At Building 20 Site
Affected Street ROW	L Street SE (340 feet between 8th and 9th Streets SE)	L Street SE (315 feet between 10th and 11th Streets SE)	Not applicable	Poor Street (within WNY boundary)	6th Street (within MBW Annex boundary)
Street ROW Impacts	Closed to vehicular and pedestrian traffic and parking	Closed to vehicular traffic and parking (L Street and Virginia Avenue Park remain open to pedestrians)	Not applicable	Closed to vehicular and pedestrian traffic and parking	6th Street viewshed (74 feet between L Street SE and K Street SE)
Demolition	14 buildings	5 buildings	2 small buildings	1 building, tennis and basketball courts, parking lot	1 basketball court

ES 2.3.7 No Action Alternative

The Council on Environmental Quality (CEQ) regulations that implement NEPA require that a no action alternative be included and analyzed in an EIS in order to provide a clear basis for choice among options by the decision maker and the public (40 Code of Federal Regulations [CFR] Section 1502.14[d]). For this EIS, the no action alternative means that no private land acquisition would take place/no federal site would be used for the purposes of constructing a replacement BEQ Complex and no replacement BEQ Complex would be constructed; no interior renovations to Building 7 would occur, and substandard conditions would persist and worsen; no projects to better integrate MBW with the community would occur. The purpose and need of the Proposed Action would not be met under the No Action Alternative.

ES.2.3.8 Preferred Alternative

The CEQ regulations on NEPA (40 CFR 1502.14(e)) direct agencies to identify the preferred alternative or alternatives in the Draft EIS if one or more exists. The Marine Corps does not have a preferred alternative at this time. Each of the action alternatives involve trade-offs among economic, technical,

environmental, and Marine Corps statutory mission requirements. A preferred alternative will be identified in the Final EIS after regulatory consultations are complete and public comments on this Draft EIS are evaluated.

ES.3 PUBLIC INVOLVEMENT

The Marine Corps received 22 comments during the public scoping period, all of which have been reviewed, considered, and addressed as applicable in this Draft EIS. The scoping process began with the publication of the NOI to prepare an EIS published in the *Federal Register* on 6 September 2013. The NOI formally initiated a 30-day public scoping process, the official closing of which was extended to 25 October 2013 to accommodate the partial federal government shutdown that occurred during that time. In addition, newspaper announcements of NOI publication and information about the public scoping meeting were published in *The Washington Post* and *The Washington Business Journal* and the Marine Corps mailed similar notification letters to federal, state, and local representatives and governmental agencies, as well as non-governmental organizations and individuals most likely to be interested in the proposal.

The NOI materials advertised the public scoping meeting, which was held at John Tyler Elementary School (1001 G Street SE, Washington, DC 20003) on 24 September 2013. Twenty-four stakeholders signed in at the scoping meeting. An email distribution list including more than 200 email addresses was used to keep stakeholders informed throughout the NEPA process.

ES.4 ENVIRONMENTAL CONSEQUENCES

Summaries of the environmental impact determinations and environmental consequences for all alternatives analyzed in this Draft EIS are provided in Table ES-4 and Table ES-5, respectively. This analysis focuses on the projects that would occur within an approximately 5-year planning horizon from the publication of the ROD (anticipated early 2016). Though potential impacts associated with longer-term projects anticipated to occur beyond the 5-year planning horizon are identified in the Draft EIS, particularly the reuse of Building 20 or the Building 20 site, detailed analysis of impacts is dependent on the alternative selected in the ROD and future design considerations; therefore, these impacts are not reasonably foreseeable at this time. Once sufficient details on these actions become available to conduct a detailed analysis, additional NEPA analysis will be completed and applicable public involvement conducted. Table ES-6 summarizes the cumulative impacts for the resource areas evaluated in detail.

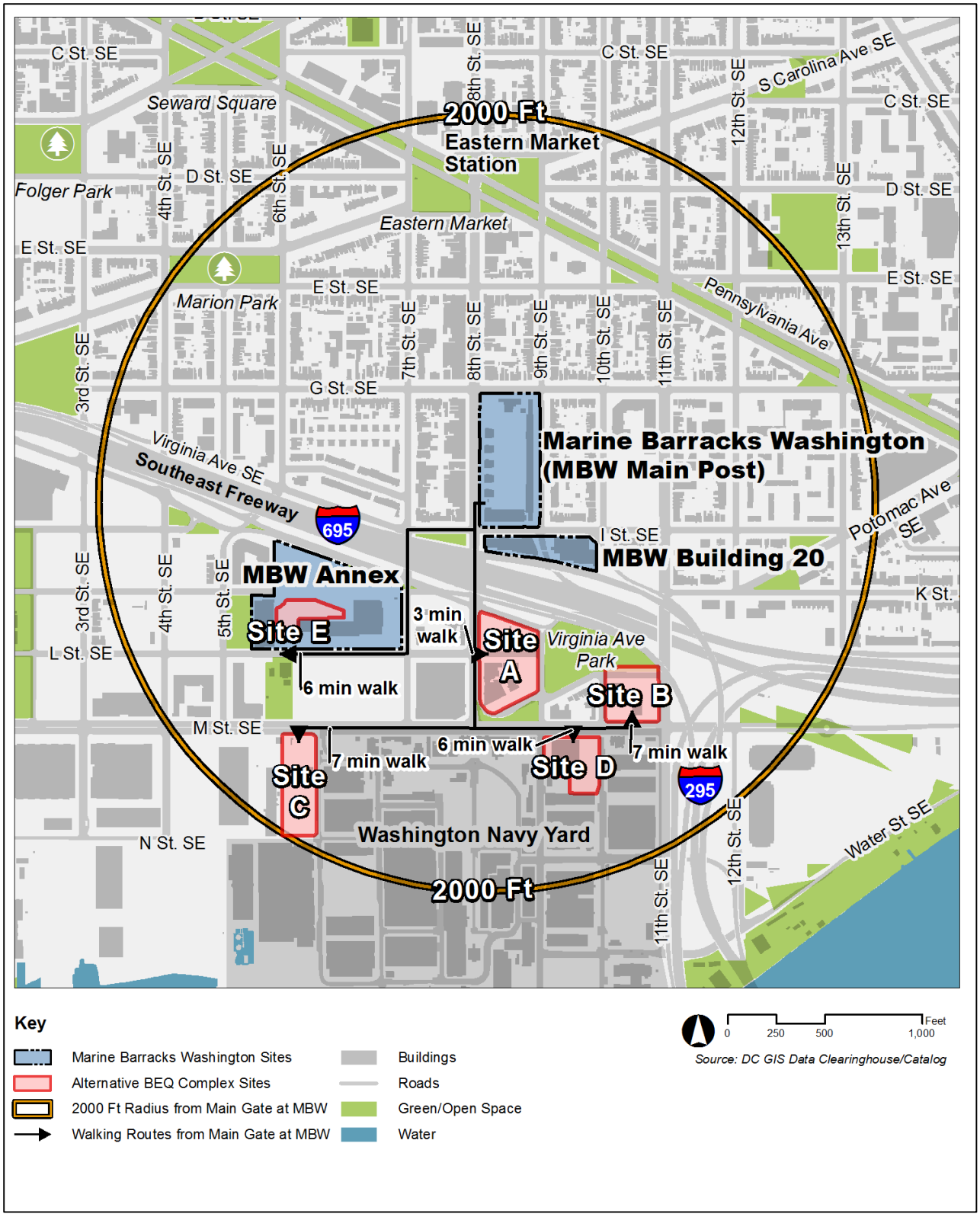

Figure ES-3. Alternative MBW BEQ Complex Site Locations

Table ES-4. Summary of Impacts Determinations

	Resource	Impact Duration, Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Land Use	**BEQ Complex Replacement**	*S, L, A*	***SI-M***	***SI-M***	*LSI*	*LSI*	***SI-M***	*NI*
	Main Post Renovation Projects	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Projects to Foster MBW Integration with the Community	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
Transportation and Circulation	**Demolition, Construction, and Repair Activities**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation							
	Pedestrian and Bicycle Accessibility	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Transit Service	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Traffic	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Parking Spaces	*L, A*	*LSI*	*NI*	*NI*	*NI*	*NI*	*NI*
Cultural Resources	**BEQ Complex Replacement**	*L, A*	***SI-M***	***SI-M***	*LSI*	***SI-M***	***SI-M***	*LSI*
	Main Post Renovation Projects	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Projects to Foster MBW Integration with the Community	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
Socioeconomics	**Population and Population Trends**	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Employment and Income	*S, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Housing	*L, A*	*LSI*	*LSI*	*LSI*	*NI*	*NI*	*NI*
	DC Tax Base	*L, A*	*LSI*	*LSI*	*LSI*	*NI*	*NI*	*NI*
Environmental Justice	**Human Health**	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Environmental Effects	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
Public Health and Safety	**Hazardous Materials**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Hazardous Waste	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Toxic Substances	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Contaminated Sites	*L, B*	*NI*	*LSI*	*LSI*	*LSI*	*NI*	*NI*
	Underground Storage Tanks	*L, B*	*NI*	*LSI*	*NI*	*NI*	*LSI*	*NI*
	Protection of Children							
	Noise	S, A	LSI	NI	NI	*LSI*	LSI	*NI*
	Dust Emissions	S, A	LSI	NI	NI	*LSI*	LSI	*NI*
	Traffic	*S, A*	*LSI*	*NI*	*NI*	*LSI*	*LSI*	*NI*

Table ES-4. Summary of Impacts Determinations

	Resource	Impact Duration, Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Utilities and Infrastructure	Electrical Distribution	*S, L, A*	*NI*	*NI*	*LSI*	*NI*	*NI*	*LSI*
	Telecommunications	*L, A*	*NI*	*NI*	*NI*	*NI*	*NI*	*LSI*
	Potable Water	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Stormwater / Wastewater Collection	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Wastewater Treatment	*L, A*	*NI*	*NI*	*NI*	*NI*	*NI*	*LSI*
	Natural Gas	*L, A*	*NI*	*NI*	*NI*	*NI*	*NI*	*LSI*
	Solid Waste Disposal	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
Public Services	**Demolition, Construction, and Repair Activities**	*S, A*	*NI*	*NI*	*NI*	*NI*	*LSI*	*NI*
	Operation	*L, A*	*LSI*	*LSI*	*NI*	*NI*	*NI*	*NI*
Noise	**Demolition, Construction, and Repair Activities**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
Geology and Soils	**Demolition; Construction, and Repair Activities**							
	Geology	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Soils	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation							
	Geology	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Soils	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
Water Resources	**Demolition, Construction, and Repair Activities**							
	Surface Water	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Groundwater	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Floodplains	*NI*	*NI*	*NI*	*LSI*	*NI*	*NI*	*NI*
	Operation							
	Surface Water	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Groundwater	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Floodplains	*L, A*	*NI*	*NI*	*LSI*	*NI*	*NI*	*NI*
Biological Resources	**Demolition, Construction, and Repair Activities**							
	Vegetation	*S, V*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Wildlife	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation							
	Vegetation	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Wildlife	*L, V*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
Air Quality	**Demolition, Construction, and Repair Activities**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*

Legend: S = short-term; L = long-term; A = adverse; B = beneficial; V = varied (adverse & beneficial); *NI* = no impact; *LSI* = less than significant impact; *SI* = significant impact; *SI-M* = significant impact, but mitigation to be implemented; *UNK*= Unknown, further analysis required.
Note: Impacts considered ***SI*** or ***SI-M*** are shown in **bold red print**.

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Land Use	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DC Office of Planning (DCOP), DC Historic Preservation Office (HPO), and the Advisory Council on Historic Preservation (ACHP) • Required change to zoning (from C-3-A to unzoned/federal lands) • Consistent with planned land use, but height of 5-story BEQ Complex inconsistent with 45 feet maximum allowed by Southeast Overlay District • 340 feet of L Street ROW between 8th and 9th Street SE would be removed from vehicle and pedestrian transportation network	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Required change to zoning (from C-M-1 to unzoned/federal lands) • Consistent with planned land use and height of buildings west of Site B along M Street • 315 feet of L Street ROW between 10th and 11th Streets SE would be removed from vehicle transportation network	• Impacts to land use would not be considered significant and would be minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Generally consistent with current and planned land use at Site C and the Anacostia Waterfront Framework Plan, though there would be inconsistencies in federal residential use vice planned community residential use in the SEFC "The Yards" Master Redevelopment Plan, as well as density and neighborhood character • Would require an agreement with Forest City Washington and GSA for transfer of land for Marine Corps development	• Impacts to land use would not be considered significant • Consistent with current and planned land use, zoning (federal use), and the WNY Installation Master Plan	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Inconsistent with prior land use commitments for the 6th Street L'Enfant ROW on MBW Annex property (as approximately 74 feet of the L'Enfant Plan 6th Street Viewshed would be lost to construction of the replacement BEQ Complex) • Consistent with current and planned land use and zoning (federal use)	• No impact to planned land uses and zoning

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Transportation and Circulation	• Less than significant short-term traffic impacts associated with demolition, construction, and repair activities • Less than significant impacts caused by permanent closure along L Street SE between 8th and 9th Streets SE • Less than significant impacts due to 700-foot increase in civilian pedestrian trip due to diversion around replacement BEQ Complex and 300-foot increase in military pedestrian trips between BEQ Complex and Main Post • No impacts to area mass transit • A minor net loss of 11 parking spaces; however, this would be offset by a reduction in parking demand due to the demolition of existing occupied uses, and the impact would be less than significant	• Short-term construction-related traffic impacts same as Alternative 1 • Less than significant impacts due to 1,200- foot increase in military pedestrian trip between BEQ and Main Post • No impacts to area mass transit • A minor net loss of 9 parking spaces; however, this would be offset by a reduction in parking demand due to the demolition of existing occupied uses, and the impact would be less than significant	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to 1,700-foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to the 1,200-foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to the 1,200 foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Traffic increases resulting from planned or approved infrastructure and development projects in the SE waterfront area would increase the delay at most intersections in the area but the effect would not be significant • Minimal changes to pedestrian and bicycle accessibility and transit service • No changes to area mass transit • No changes to parking

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Cultural Resources	• Adverse effects to the Capitol Hill Historic District by demolishing contributing resources and to the L'Enfant Plan by closing L Street SE. • Visual impacts would result in adverse effects to the WNY NHL, the Main Gate, Quarters A, Quarters B, Washington and Georgetown Railroad Car House, and Capitol Hill Historic District • No adverse effects to the U.S. Marine Corps Barracks, Commandant's House, or the Capitol Hill Historic District from the renovation projects and the projects to foster integration of MBW with the community • Potential to impact archaeological resources at replacement BEQ Complex, Main Post renovation	• Adverse effect to the Capitol Hill Historic District, L'Enfant Plan, WNY NHL, and WNY East Extension from visual impacts • Adverse effect to the Main Gate, Quarters A, and the Washington and Georgetown Railroad Car House from visual impacts • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect for is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural	• No adverse effect to the WNY NHL or NRHP-listed historic district, or the individually listed Main Gate, Quarters A, or Quarters B (consistent with Historic Preservation Design Guidelines for new construction at the SEFC) • Consistent with L'Enfant Plan • No adverse effect to the Washington and Georgetown Railroad Car House or the Capitol Hill Historic District • Marine Corps' overall finding of effect is "no historic properties adversely affected" • All other effects to historical resources are same as Alternative 1 • Potential to impact archaeological resources at Main Post renovation projects and projects to foster MBW integration	• Adverse effect to the NRHP-eligible WNY East Extension by demolition of a contributing resource • No adverse effect to the WNY NHL, the Main Gate, Quarters A, and Quarters B (height and design would be compatible with surrounding context) • Consistent with L'Enfant Plan • No adverse effect to the Capitol Hill Historic District or the Washington and Georgetown Railroad Car House • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse	• Adverse effect to L'Enfant Plan viewshed at 6th Street SE • No adverse effect to the WNY NHL or NRHP-listed historic district, the Capitol Hill Historic District, or the Washington and Georgetown Railroad Car House (height and design compatible with surrounding context) • No effect to the WNY Main Gate, Quarters A, or Quarters B • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the	• No adverse effect to cultural resources; cultural resources at MBW would continue being managed in accordance with the MBW Integrated Cultural Resources Management Plan • No significant impacts to cultural resources

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	projects, and projects to foster MBW integration with the community • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	resources	with the community • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	
Socioeconomics and Environmental Justice	• No impacts to short- or long-term population • Negligible regional economic impacts resulting from short-term increase in employment and expenditures associated with repair, renovation, and construction activities	• Same as Alternative 1	• Similar to Alternative 1, no impacts to population, population trends, employment, and income • Potential significant loss in the DC tax base due to removing the potential for a 218-unit residential	• Similar to Alternative 1, no impacts to population, population trends, employment, and income • Less than significant impacts to the DC tax base from the temporary relocation of 20-25 military personnel	• No impacts to population, population trends, employment, income, housing, or the DC tax base • No disproportionately high or adverse human health or environmental effects on minority and low-income	• Existing socioeconomic conditions would continue, no impacts from the No Action Alternative

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	• Less than significant but long-term localized loss of employment and expenditures associated with displacement of current and potential future business and residents at site • No significant impacts to housing; displaced property owners would be relocated and compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 • Less than significant 1 percent impact on DC tax base from conversion of residential/ business properties to federal property; localized loss of future tax base • No disproportionately high or adverse human health or environmental effects on minority		development as noted in the SEFC "The Yards" Master Redevelopment Plan • No disproportionately high or adverse human health or environmental effects on minority and low-income populations	during construction • No disproportionately high or adverse human health or environmental effects on minority and low-income populations	populations	

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	and low-income populations					
Public Health and Safety	• Implementation of Occupational Health and Safety Act standards, as well as construction BMPs/SOPs avoid significant impacts to workers and others in vicinity of construction, demolition, and renovation activities • Implementing standard BMPs/SOPs avoids significant impacts from hazardous materials and hazardous waste • Less than significant impacts related to toxic substances due to surveys prior to demolition and proper removal and disposal of all toxic substances • No impacts to contaminated sites as none are within or near proposed project sites • No disproportionate environmental	• Similar to Alternative 1. Site B is residually contaminated due to a former leaking underground storage tank (UST) • Significant impacts avoided by coordinating with DC Department of the Environment to ensure that proper precautions associated with earth moving activities are taken	• To avoid significant impacts, the Marine Corps would coordinate with the U.S. Environmental Protection Agency (USEPA) to ensure that proper precautions associated with earth moving activities are taken	• Similar to Alternative 1; however, a contaminated site is located inside Site D • While no further remedial action determination was concluded, to avoid significant impacts, the Marine Corps would coordinate with the USEPA to ensure that proper precautions associated with earth moving activities are taken	• Similar to Alternative 1; however, a UST is located within Site E footprint • Proper coordination for either avoidance, closure/removal, or relocation in accordance with applicable regulations during construction would avoid significant impacts	• Adverse impacts to public health and safety would remain due to existing deficiencies relating to AT/FP, minimum space requirements, QOL, and life safety • No impacts; existing programs for management of hazardous materials, hazardous waste, toxic substances, and contaminated sites would continue

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	health and safety risks to children					
Utilities and Infrastructure	• Construction and renovation projects would result in a net reduction (estimated 20 percent) in energy and water use/wastewater collection and treatment from replacing inefficient systems with sustainable technology • No impacts to electrical supply systems, telecommunications systems, water demand, stormwater collection, or natural gas • Temporary, but less than significant increase in solid waste disposal associated with construction, demolition, and renovation activities	• Same as Alternative 1	• Similar to Alternative 1 with two exceptions: • Existing Potomac Electric Power Company electrical substation would have to be removed and relocated; however, impacts would be less than significant because Pepco already has plans to relocate it to address increased demand • Less than significant impacts would result because a pump house (Building 199) would either need to be relocated or incorporated into the design of the replacement BEQ Complex	• Same as Alternative 1	• Same as Alternative 1	• No change to utilities and infrastructure would occur • Inefficiencies and high maintenance costs resulting from aging utilities and infrastructure would continue. A potential 20 percent reduction in energy and water use/wastewater collection and treatment would not be realized
Public Services	• Closure of a portion of L Street SE would eliminate public access to Virginia Avenue	• Similar to Alternative 1; no impact to emergency response; medical,	• No impact to public services	• Same as Alternative 3	• Similar to Alternative 1; no impact to emergency response; medical,	• No change to public services would occur

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	Park from this road segment; however, several other roads provide access so no significant impacts • No impact to emergency response or medical services • No impact to educational, social services, or religious facilities	educational, and social services; or religious facilities • Impacts due to displacement of the Humane Society Spay and Neuter Clinic would be less than significant because of real property compensation and relocation assistance			educational, and social services; or religious facilities • Temporary, but less than significant impacts to public use of MBW Annex multi-purpose recreation field	
Noise	• Short-term, direct impacts associated with construction, demolition, and repair activities would not be significant • A sensitive receptor, Richard Wright Public Charter School, exposed to elevated noise levels but implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, sensitive receptors are residents located adjacent to Site B, on the west side of 10th Street • Implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, sensitive receptors are Van Ness Elementary School and Joy Evans Before and After School Care • Implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, no sensitive receptors and no significant impacts	• Similar to Alternative 1; however, sensitive receptors are Joy Evans Before and After School Care and the Arthur Cappers Senior Center • Implementation of management actions and mitigation measures avoids adverse impacts	• No change to existing noise conditions would occur
Natural Resources: *Geology and Soils*	• No impacts to geology • Implementing BMPs and SOPs would avoid significant	• Similar to Alternative 1, but 1.8 acres would be impacted	• Similar to Alternative 1, but 2.1 acres would be impacted	• Similar to Alternative 1, but 1.67 acres would be impacted	• Similar to Alternative 1, but 0.89 acre would be impacted	• No change to geology and soils would occur

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	impacts to sediments • 3.0 acres impacted					
Natural Resources: *Water Resources*	• Temporary, but less than significant impacts to groundwater levels during construction of below-grade parking at the replacement BEQ Complex • No significant impacts to hydrology, floodplains, wetlands, or water quality • BMPs and SOPs would avoid significant impacts to water quality	• Same as Alternative 1	• Similar to Alternative 1 with the exception of floodplains • 1.9 acres of Site C are within 100-year floodplain; significant impacts would be mitigated to less than significant by following EO 11988	• Similar to Alternative 1;,except no below-grade parking would be needed and thus lessen potential of groundwater inundation	• Same as Alternative 4	• No change to water resources would occur
Natural Resources: *Biological Resources*	• No significant impacts to vegetation or wildlife • No impacts to ecologically critical habitat areas or threatened or endangered species • No violations of applicable laws or requirements • Replacement BEQ Complex may block sunlight from reaching the Virginia Avenue	• No significant impacts to vegetation or wildlife • No impacts to ecologically critical habitat areas or threatened or endangered species • No violations of applicable laws or requirements • No impacts to the Virginia Avenue Park Community Garden and	• Similar to Alternative 2; however, little vegetation exists at Site C	• Similar to Alternative 2; however little vegetation exists at Site D	• Similar to Alternative 2; however, little vegetation exists at Site E	• No change to natural resources would occur

Table ES-5. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	Park Community Garden during afternoon hours (depending on height and configuration of BEQ Complex) which may create less than ideal conditions for many common garden species	smaller area impacted				
Air Quality	• Estimated emissions generated by demolition and construction activities would be well below significance thresholds and comply with the General Conformity Rule • BMPs and SOPs would be employed to further reduce emissions • Long-term net emissions reductions from replacement of existing stationary sources (boilers, generators) with energy-efficient systems	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Minor negative impact to regional air quality would occur because aging stationary sources would not be replaced with newer more efficient equipment

Table ES-6. Summary of Cumulative Impacts

Resource	Cumulative Impacts
Land Use	• Potential for long-term minor, adverse cumulative impacts to zoning under Alternatives 1 and 2 as the land could be "downzoned" from mixed use and commercial to federal/unzoned; no zoning impacts to Alternatives 3, 4, and 5. • Planned Admiral Barracks Row project would not occur under Alternative 1. Potential cumulative impacts with respect to project funding, land acquisition, and future land use at Site A. • Potential for minor cumulative impacts with planned development at Squares 906 and 907 west of Site A.
Transportation and Circulation	• The transit system within study area would continue to be unable to handle increased demand by 2035; however, the Proposed Action would not contribute to any long-term changes in demand. • Less than significant cumulative impacts to traffic, transit service, parking, and pedestrian and bicycle accessibility under all alternatives.
Cultural Resources	• No change in the adverse effects findings to historic properties under Alternatives 1, 2, 4, and 5 in the Area of Potential Effects when the effects of each alternative are considered in combination with the potential impacts to historic resources imposed by past, present, and reasonable foreseeable projects. • Unlikely that cumulative impacts would occur to archaeological resources; however, archaeological monitoring during construction to determine the presence of archaeological sites would be necessary under all alternatives.
Socioeconomics	• No significant cumulative socioeconomic or environmental justice impacts.
Noise	• Construction-related noise affecting sensitive receptors in the area would be minimized to the maximum extent possible under all alternatives. • No long-term cumulative noise impacts.
Air Quality	• No significant cumulative impacts anticipated; emissions would be well below any significant thresholds and sources of Green House Gasses would be minor.

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ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
ABA	Architectural Barriers Act
ACHP	Advisory Council on Historic Preservation
ACM	asbestos containing material
ANC	Advisory Neighborhood Commission
APE	Area of Potential Effects
ARPA	Archaeological Resources Protection Act
AT/FP	Antiterrorism/Force Protection
AUMP	African Union Methodist Protestant
AWRC	Anacostia Watershed Restoration Committee
BEQ	Bachelor Enlisted Quarters
BFR	Basic Facilities Requirement
BID	Business Improvement District
BMPs	Best Management Practices
BPAWTP	Blue Plains Advanced Wastewater Treatment Plant
ca.	circa
CAA	Clean Air Act
CDC	Community Development Corporation
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CH_4	Methane
CHC	Capitol Hill Commercial
CHRS	Capitol Hill Restoration Society
CIMP	Community Integrated Master Plan
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	CO_2 equivalent
CSO	Combined Sewer Overflow
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DC	District of Columbia
DC Water	DC Water and Sewer Authority
DCFEMS	DC Fire and Emergency Medical Services
DCHA	DC Housing Authority
DCOP	DC Office of Planning
DCOZ	DC Office of Zoning
DDOE	District Department of the Environment
DDOT	District Department of Transportation
DERP	Defense Environmental Restoration Program
DNL	Day-Night Average Sound Level
DOD	Department of Defense
DON	Department of the Navy
DPR	Department of Parks and Recreation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ES	Eighth Street Southeast Neighborhood Commercial
ESA	Endangered Species Act
FAR	Floor Area Ratio
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FICUN	Federal Interagency Committee on Urban Noise
FIRM	Flood Insurance Rate Map
FONSI	Finding of no Significant Impact
FY	Fiscal Year
GHG	Greenhouse Gas
GSA	General Services Administration
GWP	global warming potential
HAP	Hazardous Air Pollutant
HCM	Highway Capacity Manual
HPO	Historic Preservation Officer
HVAC	heating, ventilation, and air conditioning
Hz	Hertz
I-	Interstate
IAP	Installation Appearance Plan
IBC2012	International Building Code 2012
ICRMP	Integrated Cultural Resources Management Plan
IPCC	Intergovernmental Panel on Climate Change
IRP	Installation Restoration Program
JBAB	Joint Base Anacostia-Bolling
LBP	lead based paint
LEED	Leadership in Energy & Environmental Design
LID	Low Impact Development
LOS	level of service
MBTA	Migratory Bird Treaty Act
MBW	Marine Barracks Washington
MCO	Marine Corps Order
MOU	Memorandum of Understanding
MSAT	Mobile Source Air Toxic

MWCOG	Metropolitan Washington Council of Governments
N/A	Non-Applicable
NAAQS	National Ambient Air Quality Standards
NAVFAC	Naval Facilities Engineering Command
NCIAQCR	National Capital Interstate Air Quality Control Region
NCPC	National Capital Planning Commission
NCR	National Capital Region
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRHP	National Register of Historic Places
NSR	new source review
O_3	Ozone
OPTEMPO	operational tempo
ORM	Operational Risk Management
OSHA	Occupational Safety and Health Administration
OTR	Office of Tax and Revenues
PA	Programmatic Agreement
PAH	Polycyclic Aromatic Hydrocarbon
PAO	Public Affairs Office
Pb	Lead
PCB	polychlorinated biphenyl
Pepco	Potomac Electric Power Company
$PM_{2.5}$	particulate matter with an aerodynamic diameter of 2.5 microns or less
PM_{10}	particulate matter with an aerodynamic diameter of 10 microns or less
ppb	parts per billion
ppm	parts per million
PUD	Planned Unit Development
QOL	quality of life
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
ROW	Right of Way
SEFC	Southeast Federal Center
SF	square feet/foot
SIP	state implementation plan
SO_2	sulfur dioxide
SOP	Standard Operating Procedure
SVOC	semi-volatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TPB	Transportation Planning Board
TRB	Transportation Research Board
TSCA	Toxic Substance Control Act
UFC	Unified Facilities Criteria
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USCB	U.S. Census Bureau
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
UXO	Unexploded Ordinance
VOC	volatile organic compound
WNY	Washington Navy Yard

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The Marine Corps is preparing this Environmental Impact Statement (EIS) to analyze the potential environmental effects that could result from implementing several construction, repair, and renovation projects at or proximate to Marine Barracks Washington (MBW), District of Columbia (DC). The Proposed Action is anticipated to occur within an approximately 5-year planning horizon from the publication of the Record of Decision (ROD) (anticipated early 2016). The proposed projects address existing and anticipated facility deficiencies at MBW to better support the functions of the Marine Corps units assigned to MBW. The Proposed Action does not include any change to MBW mission or staffing levels.

The principal project analyzed in this EIS is the replacement of a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20 (construction and potentially land acquisition). Renovation and improvement projects to Building 7 at the Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building façades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation are also analyzed. The EIS also takes a programmatic look at the potential effects of several additional projects anticipated to occur beyond the 5-year planning horizon for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available. A programmatic approach was used because detailed analysis of impacts are dependent on the alternative selected in the ROD and future design considerations, and therefore are not reasonably foreseeable at this time. Principal among these projects is the potential reuse of the Building 20 or the Building 20 site. Other longer-term projects include renovation of Building 9 to accommodate the consolidation of various administrative functions, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

Sunset Parade, MBW Main Post

Marine Corps Body Bearers, Arlington National Cemetery

Drum and Bugle Corps at Marine Corps War Memorial

Marine Corps Silent Drill Platoon performing at U.S. Naval Academy

1.2 BACKGROUND

1.2.1 MBW Location and Mission

MBW is the oldest active post in the United States (U.S.) Marine Corps. Existing MBW properties consist of the Main Post (located at the intersection of 8th and I Streets SE), the Building 20 site (located at the intersection of 8th and I Streets SE), and the Annex (located at the intersection of 7th and K Streets SE). In addition, MBW occupies two tenant sites: one at Washington Navy Yard (WNY) and the other at Joint Base Anacostia-Bolling (JBAB) (Figure 1.2-1).

Figure 1.2-1. MBW Properties and Location Map

The Main Post's location at 8th and I Streets SE was selected by President Thomas Jefferson and Lieutenant Colonel William Ward Burrows, the second Commandant of the Marine Corps, in 1801 based on the site's proximity to the WNY and easy marching distance to the Capitol (NPS 1972). The Main Post facilities consist of officer housing, parade grounds, and administrative space. The Main Post is listed on the National Register of Historic Places (NRHP) and is designated a National Historic Landmark (NHL). Building 20 consists of the BEQ; administrative, fitness, and training facilities; food services; armory; and parking facilities. The Annex consists of enlisted housing, training and parking facilities, and a sports field shared by the community and the Marine Corps. The WNY tenant site consists of the administrative space and a dedicated print shop. The JBAB site hosts the MBW motor pool.

Founded in 1801, MBW provides a provisional infantry battalion in order to support ceremonial commitments within the National Capital Region (NCR), provide security at designated locations, conduct enlisted distance education mission for the Marine Corps, and prepare Marines for service in the operating forces. On order, MBW supports contingency security missions. This mission includes Presidential support duties, light infantry training, ceremonial marchers, funeral support at Arlington National Cemetery, and nationally recognized units, including the Marine Corps Silent Drill Platoon, Marine Corps Body Bearers, Marine Corps Color Guard, Marine Drum and Bugle Corps, and the U.S. Marine Band. The MBW operational tempo (OPTEMPO) is high, as the command is required to be available for events such as ceremonial and Presidential support duties on a short-notice basis.

During the summer months, MBW performs a sunset parade every Tuesday evening at the Marine Corps War Memorial (also called the Iwo Jima Memorial) in Rosslyn, Virginia, near Arlington National Cemetery. In addition, MBW hosts an evening parade at the Main Post (located at the corner of 8th and I Streets) every Friday evening from late spring until the end of summer. The Friday evening parades are typically attended by 1,500 to 2,000 people.

1.2.2 Area Context

Washington, DC is administratively divided into four geographical quadrants of unequal size, each delineated by their ordinal directions from the Capitol. The Southeast Quadrant is south of East Capitol Street and east of South Capitol Street. Southeast Washington encompasses the neighborhoods of Capitol Hill, Anacostia, Eastern Market, Navy Yard, and Barracks Row. Southeast Washington is bisected by the Anacostia River, with the portion northwest of the river and south of the Southeast Freeway commonly referred to as Near Southeast. The MBW Main Post and Building 20 are located in the Capitol Hill neighborhood. The MBW Annex is located in the Near Southeast neighborhood.

Capitol Hill is the largest historic district and one of the most densely populated residential neighborhoods in Washington, DC. Capitol Hill is united by history, architectural tradition, and relatively consistent urban form, including a system of grid and diagonal streets that has remained faithful to the L'Enfant Plan, developed in 1791 to guide urban development in Washington, DC. Capitol Hill has always had an active and involved citizenry. The Capitol Hill Restoration Society, founded in 1955, led the efforts that resulted in the designation of the Capitol Hill Historic District in 1976. The area is highly served by public transportation and riverfront parks. The Barracks Row business district, located on 8th Street west of MBW, is the best remaining example of neighborhood commercial service areas that

historically aligned some north-south streets in Capitol Hill (DC Council 2006). Efforts to revitalize Barracks Row began in the 1990s. In 2002, Barracks Row was selected as one of the first five official DC Main Streets programs (Barracks Row Main Street 2010).

After the construction of the Southeast Freeway (Interstate 695 [I-695]) in the late 1960s, Near Southeast experienced decline and abandonment for decades. Between 1980 and 2000, the population in Near Southeast decreased an estimated 26 percent. A period of substantial change and heightened public and private investment in Near Southeast began in the 1990s and has included the following milestones:

- Increases in on-site employment at WNY and in adjacent office buildings as a result of a Base Realignment and Closure decision to increase the WNY population
- Implementation of the HOPE VI Capper-Carrollsburg residential, mixed-use redevelopment project
- Establishment of the U.S. Department of Transportation Headquarters at M Street and New Jersey Avenue SE
- Redevelopment of the Southeast Federal Center (SEFC) west of WNY
- Construction of Major League Baseball's Washington Nationals stadium

Since 2000, the residential population of Near Southeast increased from approximately 4,600 people to approximately 5,700 people in 2010. Residential/business growth and development are expected to continue. The Capitol Riverfront Business Improvement District (BID), one of eight commercial areas of DC that collect a "self-tax" from property owners to provide services and programs to the entire BID, supports the development of the area as a new mixed-use riverfront community (Capitol Riverfront BID 2013).

View of Building 20 below grade parking entrance and overhead berthing

View of the service area south of Building 20

1.3 Purpose of and Need for the Proposed Action

The overall purpose of the Proposed Action is to address existing and anticipated facility deficiencies at MBW in order to better support the functions of the Marine Corps units assigned to MBW. The Proposed Action is needed for the Marine Corps to meet current quality of life (QOL), efficiency, sustainability, life safety, Anti-Terrorism and Force Protection (AT/FP) requirements, and facilities standards. Most of these requirements are set forth in the Department of Defense (DOD) Unified Facilities Criteria (UFC) for planning, design, construction, sustainment, restoration, and modernization.

1.3.1 Purpose and Need for the BEQ Complex Replacement Project

The purpose of the BEQ Complex replacement project is to meet current requirements for adequate space and mission support functions; space configurations; DOD QOL standards;

and life safety, sustainability, energy efficiency, and AT/FP requirements. The 212,594-square foot (SF) Building 20, located adjacent to the MBW Main Post, currently has multiple deficiencies relating to force protection, minimum space requirements, QOL, life safety, sustainability, and energy efficiency. It cannot be renovated or redesigned at the existing site to meet the functional needs of today's requirements and standards; however, the below-grade parking at Building 20 could be retained to meet parking needs associated with the replacement BEQ Complex. No existing MBW property can accommodate the entire replacement BEQ requirement (BEQ, support facilities, and parking) at a single site. To comply with these standards and continue to meet MBW mission requirements, the Marine Corps needs to either acquire land, establish a tenant site on federal or DOD property, or select a site on MBW property to accommodate a portion of the replacement BEQ requirement (BEQ and support facilities) and construct a replacement BEQ near the MBW Main Post.

Key deficiencies driving the purpose and need to replace Building 20 include the following:

- Conventional Construction Standoff Distance requirements for the existing facility (reinforced concrete construction, high occupancy billeting facility) are 86 feet to roads and parking located outside a controlled perimeter (per UFC 4-010-01). Building 20 does not meet minimum setback requirements to the surrounding major interstate (I-695) and adjacent streets I and 8th Streets SE. Building 20 setbacks to adjacent roads and parking ranges from 8 to 33 feet. Demolition and on-site replacement for like functions must address the same constraints. This presents a number of moderate to significant challenges for meeting AT/FP compliance. Notable AT/FP deficiencies include minimum standoff distances, unobstructed space, parking beneath building footprint, progressive collapse avoidance, exterior walls performance, windows, doors, and ventilation. To support the continued use of Building 20 as a BEQ, extensive structural mitigation measures (e.g., building hardening) would be required; however, these measures would reduce the usable space on the interior of Building 20, resulting in either a reduced number of rooms to house Marines, or displacement of other functions to provide additional quarters in the building.
- Existing BEQ rooms in Building 20 do not meet the current standards for unaccompanied housing (UFC 4-721-10N). The standard Marine Corps bachelor housing unit (388 SF) is 20 percent larger overall than the current bachelor housing units in Building 20 (310 SF). Additionally, the existing BEQ layout lacks residential quality bathrooms with double vanities, lavatories, and medicine cabinets; adequate laundry accommodations with one washing machine, two dryers, folding tables, and clothes hanging areas for every 12 Marines; kitchenettes with storage space; private closets with a minimum size of two square meters; bulk storage areas; adequate lighting; and closed circuit television (U.S. Marine Corps 2006). When combined with the structural reinforcements mentioned above, renovation to the

View of two-person BEQ unit in Building 20

Makeshift MBW body bearers training area

existing facility to meet the current standard room size would result in an overall decrease in the number of BEQ rooms in Building 20, resulting in an immediate capacity deficit. This deficit cannot be accommodated elsewhere at MBW.

- Per UFC 1-200-01 General Building Requirements, Building 20 violates life safety standards due to the lack of adequate updated fire protection systems (including partial coverage, inadequate emergency egress lighting, and needed fire alarm systems upgrades) and the lack of an adequate roof tie-off system required for secured roof access.
- Building 20's functional use is diminishing and there are limited opportunities to make effective upgrades. This results in increased real property operations costs and hinders MBW's ability to meet energy efficiency and environmental management goals related to the execution of Executive Order (EO) 13423: *Strengthening Federal Environmental, Energy, and Transportation Management* (72 *Federal Register* 3919) and EO 13154: *Federal Leadership in Environmental, Energy, and Economic Performance* (74 *Federal Register* 52117). The current building envelope limits options for modern upgrades to facility systems.
- The below grade parking directly beneath the enlisted quarters that exists at Building 20 does not meet current AT/FP and Physical Security requirements. Under current standards, parking is not permitted beneath a facility such as a BEQ due to risk of progressive collapse, and the access control point for underground parking must be offset from the BEQ by the vehicular standoff distance (DOD 2013; U.S. Marine Corps 2009). Due to the physical space limitations of the existing below-grade parking at Building 20, the structure cannot be modified to accommodate the 212-space parking requirement while meeting AT/FP standards. That said, the below-grade parking at the Building 20 site could be retained to meet parking needs as long as the use of any above-ground structure/space is not classified as a DOD primary gathering space (i.e., buildings routinely occupied by 50 or more DOD personnel and with a population density of greater than one person per 430 gross SF) or billeting space (i.e., routinely used for housing of more than 11 DOD personnel) (DOD 2013).

1.3.2 Purpose and Need for Building Renovations at the Main Post

The interior renovations for Building 7 are required to improve space utilization, meet life safety standards, improve attainment of sustainability goals related to EOs 13154 and 13423, and address certain AT/FP shortfalls (limited to measures such as installation of AT/FP compliant windows and doors since Building 7 has reduced AT/FP requirements due to it being a low occupancy building).

Building 7, constructed in 1934 as a general warehouse, has not undergone a comprehensive modernization since its initial construction. The Marine Corps needs to renovate Building 7 to better configure it for administrative use to support the Marine Aide Program, which is currently housed in Building 8 and other disparate areas of the Main Post.

Key deficiencies driving the purpose and need for the Building 7 renovation project include the following:

- The electrical and communication systems are obsolete and do not meet applicable UFC, including International Building Code 2012 (IBC2012).

- The building lacks a fully functional fire suppression system.

The Building 7 interior renovation project is a separate, distinct, and independently complete and actionable project.

View of Building 7

1.3.3 Purpose and Need for Projects to Foster MBW Integration with the Community

MBW is a unique Marine Corps installation in that it is sited in an urban environment within the heart of Washington, DC. Consistent with current UFC guidance (primarily the elements of UFC 2-100-01 that address master planning to create more connected and visually pleasing environments by coordinating development, removing clutter, enforcing consistent architectural themes, creating appropriate pedestrian and vehicle circulation patterns, and focusing attention to installation appearance) and planning and design practices related to sense of place and neighborhood cohesiveness, the Marine Corps has identified the following:

- Improve the MBW Annex gate located at 7th and K Streets so that it provides a "sense of arrival" for both installation personnel and visitors. Gate improvements call for a substantial but pedestrian-scaled brick, steel, and concrete gateway with vertical laser-cut powder-coated panels inset into the brick piers, centered on the main mass of the Annex's west façade. A small plaza immediately in front of the gateway will lend a sense of arrival and a decorative paving inset will echo the inset in the garden at the Home of the Commandant. Foot traffic may be directed by bollards or a sign wall designed to echo the lines of the bollards and sign wall at the Main Post. In addition, the existing steel pickets in the perimeter fence may be retrofitted with decorative laser-cut power-coated steel panels to improve the aesthetics of the fence, while remaining AT/FP compliant. These improvements would present a positive public image and ensure the gate is scaled to the neighborhood character, while providing proper access control to the MBW Annex.
- Make subtle improvements to building exteriors (e.g., signs, door awnings, lighting, and landscaping) so that the exteriors present a more attractive, less utilitarian appearance to the surrounding neighborhood. Examples of these projects include replacing the garage doors on the eastern side of Building 7 with swing-out doors similar to the original design; embellishing the concrete apron on the eastern side of Building 7 with concrete etching and/or installing granite and brass or bronze medallions; adding AT/FP compliant landscaping that is both low maintenance and consistent with the landscaping throughout the MBW properties; and adding discrete signage that directs visitors to the MBW Main Post pedestrian entrance.
- Incorporate appropriate pedestrian-friendly amenities into MBW properties, which are safe and appropriately sized to their surroundings. Potential amenities include pedestrian paths that help guide Marines and visitors through and between MBW properties, visual wayfinding elements including signage systems, benches and street furniture, and lighting and landscaping that increase pedestrian safety and flow throughout the MBW properties. Given that city streets are

used for access between MBW properties, the Marine Corps needs to coordinate with DC to achieve mutually-beneficial solutions for safe, comfortable, and efficient pedestrian movement.

Each of these projects is a separate, distinct, and independently complete and actionable project.

1.3.4 Purpose and Need for Projects Planned for Beyond the 5-Year Planning Horizon

The purpose and need for long-term projects introduced programmatically in this EIS are as follows:

- Once a replacement BEQ Complex has been constructed and the current functions housed in Building 20 are relocated, there would be a need for optimal reuse of Building 20 or the Building 20 site. Options for future DOD use are limited due to AT/FP setbacks for occupied buildings; however, Building 20 could still be used by the DOD for non-occupied uses. If a decision is made to no longer use Building 20 or the Building 20 site for Marine Corps purposes, the Corps has identified a long-term interest in its future use. If Building 20 or the Building 20 site is divested and redeveloped by a non-federal entity, the Marine Corps may be interested in leasing back up to 25 percent of the redeveloped space for Marine Corps purposes. The Marine Corps is also committed to ensuring that any Building 20 or Building 20 site redevelopment addresses compatibility with Main Post security and historic preservation requirements to the greatest extent practicable.
- The interior layout and infrastructure of Building 9 are unable to accommodate the consolidation of various administrative functions. In order to meet this requirement, renovations are required to meet interior layout and space requirements, as well as to meet QOL, life safety, sustainability, and energy efficiency standards.

1.4 ENVIRONMENTAL REVIEW PROCESS

NEPA requires federal agencies to examine the potential effects of their proposed actions on the human environment, which includes the natural and physical environment and the relationship of people with that environment (40 Code of Federal Regulations [CFR] Section 1508.14). The NEPA process is designed to be an open and transparent process with opportunities for public involvement. An EIS is a detailed public document that complies with the requirements of NEPA by assessing the potential effects that a major federal action may have on the human environment. Due to the scope of this proposal, the Marine Corps has determined that preparation of an EIS is necessary to ensure compliance with the regulations set forth under NEPA. This Draft EIS identifies the Proposed Action and evaluates the potential environmental effects associated with a range of reasonable alternatives. Components of the NEPA process are outlined below.

1.4.1 Public Scoping Process

The scoping process began with a notice announcing the Department of the Navy (DON), U.S. Marine Corps' intent to prepare an EIS for multiple projects in support of MBW. The notice was published in the *Federal Register* on 6 September 2013. The Notice of Intent (NOI) provided a description of the Proposed Action and action alternatives, solicited public input on the proposal, and informed the public of the date and location of the public scoping meeting. The NOI formally initiated a 30-day public scoping process. Concurrent with publication of the NOI in the *Federal Register*, an announcement of

the NOI publication and information about the public scoping meeting were published in *The Washington Post* and *The Washington Business Journal*. Appendix A contains copies of the public scoping materials.

During the public scoping process, the Marine Corps provided the public and interested parties with information on the proposal, and solicited comments to identify key issues for the environmental analysis and to identify additional potential action alternatives to the Proposed Action. On 10 September and 18 September 2013, the Marine Corps mailed notification letters to federal, state, and local representatives and governmental agencies, non-governmental organizations, and to individuals most likely to be interested in the proposal, including all owners of land that is at or within 50 feet of each of the potential replacement BEQ Complex sites. Many of the stakeholders that received notification letters were also involved in the Community Integrated Master Plan (CIMP) process (see Section 1.4.4). The letters described the Proposed Action and alternatives, provided information on the public scoping meeting, requested information applicable to the Proposed Action, and solicited input regarding issues and/or concerns related to the Proposed Action and alternatives, as well as concerns associated with the Section 106 consultation process under the National Historic Preservation Act (NHPA) of 1966 (54 U.S. Code [USC] 300101 et seq.).

A public scoping meeting was held at John Tyler Elementary School (1001 G Street SE, Washington, DC, 20003) on 24 September 2013. Federal, state, and local agencies were invited to attend beginning at 4:30 PM and the doors were opened to the public between 5:30 PM and 8:30 PM. Twenty-four stakeholders signed in at the scoping meeting, including DC Council staff for Tommy Wells and representatives from the Advisory Neighborhood Commission (ANC) 6B, National Capital Planning Commission (NCPC), and Capitol Hill Restoration Society (CHRS).

The initial 30-day public scoping period was scheduled to close on 7 October 2013; however, due to the partial federal government shutdown that occurred from 1 October 2013 to 16 October 2013, the public comment period was extended to allow ample time for comments to be received. The public comment period officially closed on 25 October 2013. An email distribution list including more than 200 email addresses was used to keep stakeholders informed throughout the NEPA process. The first email was sent on 30 September 2013 thanking those who participated in the scoping meeting and advising that the scoping comment period would be adjusted if a partial government shutdown were to occur. Subsequent emails sent on 10 October 2013 and 17 October 2013 provided information about the comment period extension, during and at the close of the partial government shutdown, and an email sent on 28 October 2013 provided a reminder regarding the end of the scoping period.

The Marine Corps received 22 comments during the public scoping period. Ten comments were submitted electronically via the MBW EIS public website, 11 letters/comments were submitted via mail postmarked prior to the official close of the scoping period (25 October 2013), and one comment was submitted electronically and by mail. A summary of comments received by topic is included in Table 1.4-1. There was one comment received after the official close of the public comment period and prior to the finalization of this Draft EIS for public release. Issues identified in that comment were consistent with issues already identified in Table 1.4-1.

Table 1.4-1. Issues Identified During Scoping Period

Topic and Summary of Comment	Location Comment is Addressed in the Draft EIS
Scope of Analysis	
A "programmatic" analysis seems insufficient for the projects planned beyond 2018, with particular concern about the reuse of Building 20	Section 2.1
Initiation of the NEPA process based on nearly 3-year old CIMP discussions is troubling	Section 1.4
Information gathered from the CIMP process should be used in developing the EIS	Section 1.4. Comment noted
Consider modifying current Friday night evening parade schedule to reduce traffic congestion	Comment noted. Outside the scope of this EIS
Alternative Site Identification	
Please provide more details on AT/FP requirements for each of the sites	Section 3.5
Site A should be eliminated from consideration	Sections 2.2 and 2.3
Site B should be eliminated from consideration	Sections 2.2 and 2.3
Site C should be removed from further consideration	Sections 2.2 and 2.3
A Federal Site (Site C or D) is preferred	Sections 2.2 and 2.3
Site D, WNY site, is preferred	Sections 2.2 and 2.3
The MBW Annex site should be reconsidered	Sections 2.2 and 2.3
An alternative site in Spotsylvania County should be considered for the BEQ Complex	Comment noted. Does not meet the Screening Criteria presented in Section 2.2.1
An alternative site southeast of 12th Street and M Street SE intersection (Squares 1025E, 1048S, 1067S, and the right of way [ROW] of Virginia Avenue) should be considered for the BEQ Complex	Comment noted. Does not meet the Screening Criteria presented in Section 2.2.1
Building 20 site should remain under control of the Marine Corps	Section 2.1
Building 20 renovation options should include using it as a potential BEQ	Sections 2.2 and 2.3
Potential Effects	
Construction for Buildings 7 and 9 would cause a great disruption and inconvenience to surrounding residents and businesses (e.g., parking, noise, traffic congestion, rodents, construction debris)	Sections 2.2.2, 4.2, 4.5, 4.6, 4.8, and 4.10
Sites A and B would trigger adverse impacts under Section 106 of NHPA	Section 4.3
Consider effects on L'Enfant Plan	Section 4.3
Area of Potential Effects (APE) needs to be expanded surrounding Site C to address WNY historic resources	Section 3.3
Reuse of Building 20 should include massing that continues to block views of the freeway from neighbors to the north and any retail be limited to along 8th Street	Section 4.2
The EIS needs to address the protected view corridors in the area (K Street SE, Virginia Avenue SE between 6th and 7th Streets SE)	Section 4.3
Development of Sites A and B as a BEQ Complex would not be consistent with several policies in the Comprehensive Plan for the National Capital	Section 4.1

Table 1.4-1. Issues Identified During Scoping Period

Topic and Summary of Comment	Location Comment is Addressed in the Draft EIS
Address impacts the action would have on DC tax rolls	Section 4.4
Address impacts to DC zoning when land is federally acquired	Section 4.1
Consider impacts to the Anacostia River watershed	Section 4.1
Site C is located within a high risk flood zone; any development is subject to requirements of DC's floodplain regulations	Section 4.9
Public and/or Agency Involvement	
Need to offer subsequent information sessions and community outreach availability to make informed decisions	Sections 1.4.5 and 1.4.6
Proper communication between the EIS team and surrounding community should have been done with the rollout of the EIS	Sections 1.4.5 and 1.4.6
Relevant ANCs need to be involved in the process	Section 1.4
Sufficient notice was not provided for the scoping meeting	Section 1.4
Coordination with General Services Administration (GSA) should occur	Section 1.4
Cumulative Effects	
Consider the numerous other projects in the area (Virginia Avenue Tunnel Reconstruction Project, 11th Street Bridge and Barney Circle Transportation Improvements [including associated changes to on- and off-ramps], Anacostia Waterfront Initiative and M Street improvements)	Section 5.3

1.4.2 Cooperating Agencies

As identified in 40 CFR Section 1508.5, a cooperating agency "means any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. A State or local agency of similar qualifications…may by agreement with the lead agency become a cooperating agency." A cooperating agency's responsibilities include participation in the NEPA process as early as possible, participation in the scoping process, and on the lead agency's request, development of information to be included in the EIS and staff support during EIS preparation (40 CFR Section 1501.6). Under 40 CFR Section 1501.6, federal agencies with jurisdiction by law shall be cooperating agencies if requested by the lead agency.

In a letter mailed on 11 September 2013, the Marine Corps invited the following agencies to serve as cooperating agencies for this Draft EIS (see sample letter in Appendix B):

- National Park Service (NPS)
- NCPC
- District Department of Transportation (DDOT) - Washington, DC
- District Office of Planning (DCOP) - Washington, DC
- District Department of Consumer and Regulatory Affairs - Washington, DC
- District Department of the Environment (DDOE) - Washington, DC
- District Department of Parks and Recreation (DPR) - Washington, DC

- ANC 6B
- ANC 6D

The NCPC and DCOP have agreed to be and are acting as cooperating agencies on this EIS. During the development of this Draft EIS, Navy and Marine Corps representatives met with NCPC and DCOP representatives and these agencies reviewed and commented on an internal working version of the document. The Capitol Riverfront BID requested to become a cooperating agency on this EIS; however, the Marine Corps could not accommodate the request because the BID does not meet the criteria for a cooperating agency. Although GSA is not a cooperating agency, Navy and Marine Corps representatives has coordinated with GSA in the development of this Draft EIS.

1.4.3 Consultation and Other NEPA-Related Compliance Requirements

In addition to considerations under NEPA, the Proposed Action is subject to other federal regulatory requirements. The following are major laws and regulations that are included in this NEPA process.

- Section 106 NHPA consultation must be completed with the DC Historic Preservation Officer (HPO), the Advisory Council on Historic Preservation (ACHP), concerned federally-recognized Native American tribes, and other interested parties. During scoping, the Marine Corps invited the NPS, NCPC, CHRS, Barracks Row Main Street, ANC 6B, and ANC 6D to be Section 106 consulting parties (see Appendix B). The GSA, NCPC, and ANC 6B have agreed to be consulting parties under Section 106 of the NHPA.
- In accordance with the Clean Water Act (CWA) (33 USC 1251 et seq.), the Marine Corps would ensure that, prior to construction, a National Pollutant Discharge Elimination System (NPDES) General Construction Permit is obtained to manage stormwater runoff during construction to minimize the discharge of pollutants to waters of the U.S.
- In accordance with EO 11988, *Floodplain Management* (42 Federal Register 26951), if the Proposed Action includes construction within the floodplain, the Marine Corps would minimize potential harm to or within the floodplain (e.g., flood proofing buildings) and take appropriate steps to notify the public. In addition, EO 13653, *Preparing the United States for the Impacts of Climate Change* (78 *Federal Register* 66819), requires the Marine Corps to evaluate its climate change risks and vulnerabilities so as to manage the short- and long-term effects on its missions and operations.
- In accordance with the Clean Air Act (CAA) (42 USC 7401 et seq.), the Marine Corps would obtain all appropriate permits or registrations for any new on-site stationary emission sources. This EIS must demonstrate that project-related construction emissions are below any applicable General Conformity Rule *de minimis* levels or must provide a detailed air quality conformity analysis. Equipment used to perform any renovation or construction activities would be owned or leased and brought on-site by contractors, who would ensure they are properly permitted.

The Proposed Action study area does not include habitat for threatened and endangered species protected under the Endangered Species Act (ESA) of 1973 (16 USC 1531 et seq.), so associated compliance requirements do not apply to the Proposed Action. The Coastal Zone Management Act (16 USC Section 1451, et seq.) also does not apply, as DC has no Coastal Zone Management Plan.

1.4.4 Related Planning Efforts

Preceding the EIS process, the Marine Corps facilitated a CIMP discussion for MBW. This first-of-its-kind planning process sought solutions to challenging security and space requirements at MBW through an open and transparent process that took place primarily between January and November of 2010. The process proved effective in identifying potential planning solutions that are community-driven and built on consensus through a series of public meetings, interviews, and workshops designed to gather data and public input. The CIMP process provided an opportunity for a rigorous exploration of a reasonable range of alternative sites that could potentially accommodate the replacement BEQ Complex project.

Concurrent with this EIS, the Marine Corps is preparing an update to the existing MBW Master Plan. The MBW Master Plan was last updated in 2001 and needs revision to address the requirements of UFC 2-100-01, *Installation Master Planning*, which addresses requirements for thoughtful and thorough master planning (DOD 2012). The goal of the Master Plan is to provide for continued efficient and orderly development of real estate and facilities resources so MBW can successfully continue its assigned mission. The Master Plan is intended to serve as a tool for all echelons of decision making relative to MBW's physical development issues. The CIMP process that preceded this EIS was an independent analysis, and while it provided a foundation for the development of a reasonable range of alternatives with respect to the replacement BEQ project, it did not influence the Master Plan process in the same manner.

In accordance with the National Capital Planning Act of 1952, as amended, the MBW Master Plan Update will require approval from the NCPC, which is charged with planning for the appropriate and orderly development of the national capital and the conservation of its important natural and historical features. The NCPC coordinates all federal planning activities in the region, and one of NCPC's responsibilities is approving federal master plans and construction proposals in the District of Columbia.

The Master Plan process has been coordinated with the NHPA Section 106 consultation process and the NEPA process as indicated in Figure 1.4-1.

1.4.5 Draft EIS Review

This Draft EIS document analyzes the potential environmental consequences of the Proposed Action and a range of reasonable of alternatives, including the No Action Alternative. The EIS includes the Purpose and Need for the Proposed Action, the description of the alternatives, the existing environmental conditions where the Proposed Action would take place, and the potential environmental consequences associated with the alternatives. The Draft EIS is supported by detailed technical studies.

This Draft EIS was published for comment by elected officials, agencies, and the interested public and distributed as detailed in Chapter 8. The Draft EIS is available at the project website, www.mbweis.com, and at the following libraries:

- Southeast Public Library, 403 7th Street SE, Washington, DC 20003
- Southwest Public Library, 900 Wesley Place SW, Washington, DC 20004
- Northeast Public Library, 330 7th Street NE, Washington, DC 20022

The 45-day Draft EIS review period began with the publication of the Notice of Availability and Notice of Public Meetings in the *Federal Register* on April 10, 2015. The Marine Corps plans to hold a public meeting to solicit comments on the Draft EIS on Wednesday, April 22, 2015 at Tyler Elementary School (1001 G St SE, Washington, DC 20003) from 5:30 to 8:30 p.m.

1.4.6 Final EIS and Record of Decision

Following public review of the Draft EIS, comments will be considered and integrated into the Final EIS. The Final EIS will document the comments received on the Draft EIS and will include responses to all comments. Possible responses may include modifying alternatives, including the Proposed Action; developing and evaluating additional alternatives; supplementing, improving, or modifying the analysis; making factual corrections; or providing an explanation why the comment does not warrant further agency response. The Marine Corps/DON will then make a determination on how to implement the Proposed Action based on the analysis provided in the Final EIS. This determination will be made public in a ROD. The ROD states the decision; identifies the alternatives considered, including the environmentally preferred alternative; and discusses mitigation measures and monitoring commitments where applicable.

1.5 SCOPE AND ORGANIZATION OF THIS EIS

NEPA requires all federal agencies to consider potential environmental impacts of their proposed actions and to consider various and reasonable alternatives in making decisions about those actions. With public involvement and environmental analysis, the NEPA process helps the Marine Corps arrive at the most informed decision possible. Informed decisions are based on a candid and factual presentation of potential environmental impacts. These facts come from collecting information on a variety of resource areas (e.g., socioeconomics, cultural resources, and land use) potentially affected by the proposal and subsequently identifying the type and extent of potential impacts resulting from the proposal. This information has been compiled into the Draft EIS.

The Draft EIS is organized into nine chapters. Chapter 1 contains a description of the Proposed Action, Purpose and Need, relevant prior environmental documents, background information on MBW, and a discussion of agency coordination and public involvement. Chapter 2 provides an overview of the Proposed Action, a description of the alternatives analysis, and a description of the no action and action alternatives. Chapter 3 contains a characterization of the affected environment or existing environmental conditions for each resource area potentially affected by the proposal. Chapter 4 describes the environmental consequences that would potentially result from implementation of the no action and action alternatives. Chapter 5 provides an analysis of potential cumulative effects. Chapter 6 addresses other considerations including consistency and compliance with other plans, policies, and regulations; unavoidable adverse environmental effects; relationship between short-term use of man's environment and maintenance and enhancement of long-term productivity; and irreversible and irretrievable commitments of resources. Chapter 7 lists the preparers of this document. Chapter 8 identifies the Draft EIS distribution list, and Chapter 9 lists the references cited in this document. Supporting technical documents are provided as appendices.

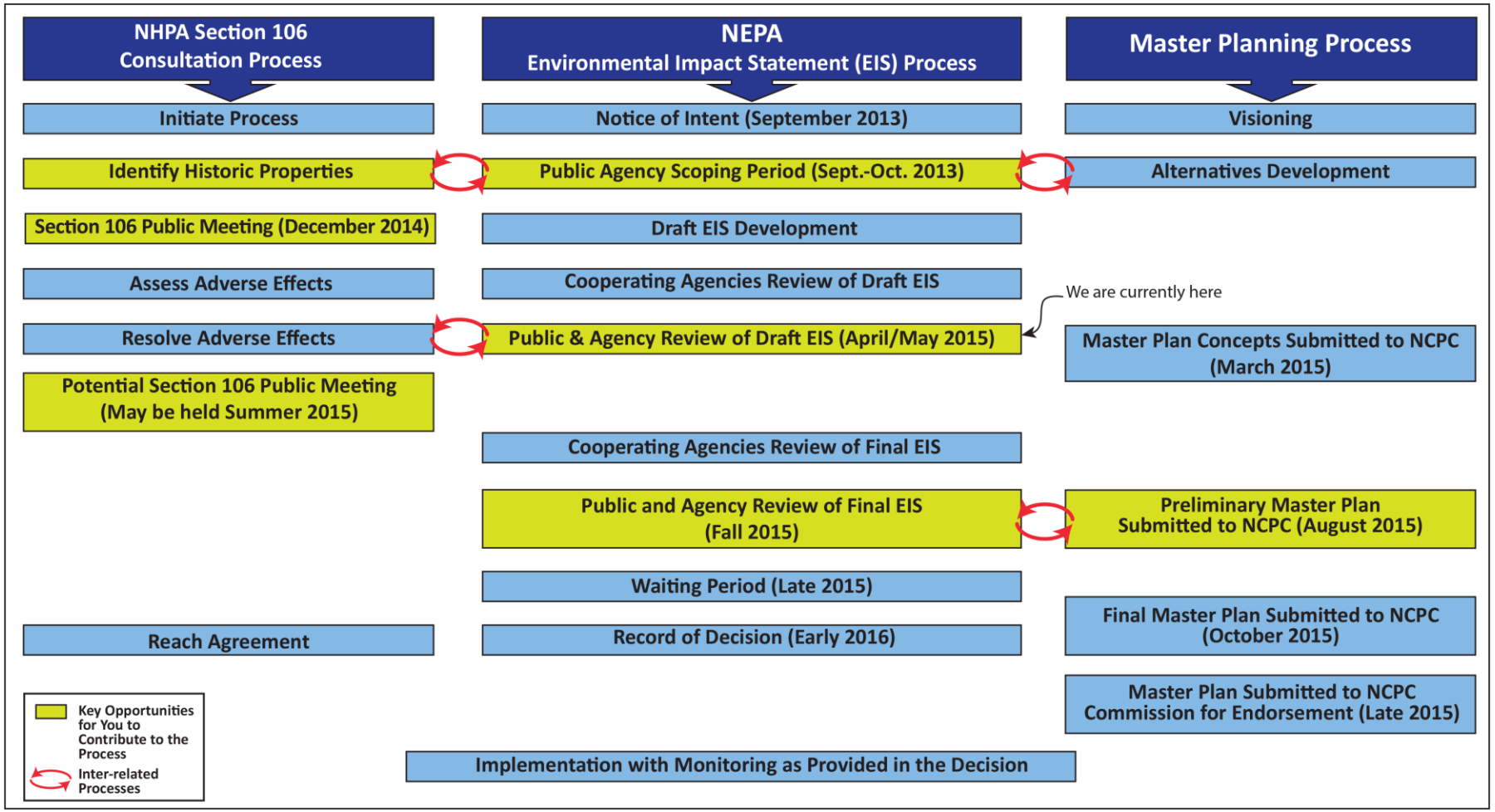

Figure 1.4-1. Coordinated Planning Processes

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2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 OVERVIEW OF THE PROPOSED ACTION

The Proposed Action would implement the following projects at or proximate to MBW within the next 5 years (funding permitting) to meet the purpose and need described in Section 1.2 (Figure 2.1-1). These projects are analyzed in detail in this Draft EIS.

- The BEQ Complex replacement project: This is the principal project analyzed in this Draft EIS and includes:
    1) securing a site (acquiring land, establishing a tenant site on federal or DOD property, or selecting a site on MBW property to accommodate a portion of the replacement BEQ requirement [BEQ and support facilities]) and
    2) constructing an approximately 191,405 SF BEQ Complex (including supporting facilities) to replace the BEQ at Building 20.
- Main Post renovation projects: These include interior renovations to Building 7 at the Main Post.
- Projects to foster MBW integration with the community: These include improvements to the MBW Annex gate at 7th and K Streets SE and improvements to building façades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation.

The Proposed Action also includes projects anticipated to occur beyond the 5-year planning horizon for which information sufficient to conduct detailed NEPA analysis is not yet available (Figure 2.1-1). Principal among these projects is the potential reuse of Building 20 or the Building 20 site by both federal and non-federal entities (aside from the possible retention of below-grade parking to support the replacement BEQ Complex parking requirement). Other longer-term projects include renovation of Building 9 to accommodate the consolidation of various administrative functions, as well as some additional landscaping and maintenance projects. Once sufficient details on these actions become available to conduct a detailed analysis, additional NEPA analysis will be completed and applicable public involvement conducted.

2.2 ELEMENTS COMMON TO ALL ACTION ALTERNATIVES AND ANALYZED IN DETAIL IN THIS DRAFT EIS

The Marine Corps evaluated a reasonable range of alternatives for all projects included in the Proposed Action. Many of the project elements are proposed for specific operational and functional needs associated with the MBW mission and no viable alternative was identified for these project elements. The project elements described in this section are identical across all alternatives (i.e., would be implemented under all action alternatives). These common elements include general Best Management Practices (BMPs) and Standard Operating Procedures (SOPs) that would occur with project implementation regardless of which alternative is selected and implemented.

2.2.1 Replacement BEQ Complex

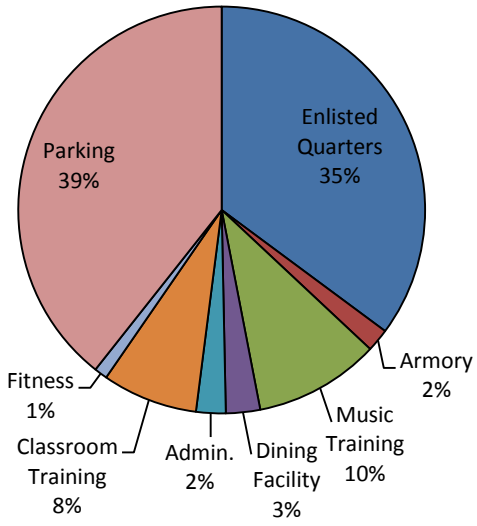
All action alternatives would construct a multi-story BEQ Complex (including parking and support facilities). The proposed replacement BEQ Complex would accommodate 125 standard Marine Corps

2+0 berthing rooms, which would provide a 250-bed sleeping capacity. The replacement BEQ Complex would be designed and constructed consistent with requirements of applicable DOD standards, including UFC 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings* and the *United States Marine Corps Bachelor Enlisted Quarters Campaign Plan* (U.S. Marine Corps 2006). The BEQ Campaign Plan addresses the essential need for the Marine Corps to provide bachelor enlisted Marines with housing that promotes their professional development, sustains Marine Corps core values, and supports QOL.

Figure 2.1-1. Proposed Action Project Sites at Existing MBW Properties

In addition, the BEQ Complex would be constructed to accommodate the following supporting uses: music training, enlisted dining facility, company administration space, classroom training space, fitness facility, and armory. Space requirements for each of these facilities are shown in Table 2.2-1. These requirements were derived from a detailed analysis of the long-term MBW Basic Facilities Requirements (BFRs) completed in December 2013 and were scaled to the minimum size necessary to meet the mission and/or mission support requirement (NAVFAC 2013).

Table 2.2-1. BEQ Complex Space Requirements

BEQ Complex Components	Required Square Footage	Graphical Representation
125 Standard Marine Corps 2+0 Berthing Rooms	67,274	
Armory	3,500	
Marine Drum and Bugle Corps Music Training Facility	19,106	
Enlisted Dining Facility	14,521	
Company Administration Space	5,200	
Classroom Training Space	4,500	
Fitness Facility	2,000	
Parking (212 spaces)	75,304	
Total Space Requirement	**191,405**	

Source: NAVFAC 2013

It is important to note the requirement for support facilities is not based solely on the population to be housed in the BEQ. The following would support the entire MBW population: dining facility, fitness facility, classroom training space, and armory. The administrative space requirement is to support Companies Alpha and Bravo, and the music training facility requirement is to support the Marine Drum and Bugle Corps, which is housed in Building 9 on the Main Post.

The 212 space parking requirement for the replacement BEQ Complex is based on the existing 212 spaces below-grade at Building 20. These 212 parking spaces make up a portion of the 534 total parking spaces available across all MBW properties, which includes 34 spaces at the Main Post (north of Building 9 and inside Building 7) and 288 spaces at the MBW Annex. Of these 534 total parking spaces, 350 spaces are allocated to support the 500-person enlisted population residing in the Building 20 and MBW Annex BEQs. There are eight controlled garage spaces provided inside Building 7 that are allocated for residents of the Senior Officers Quarters at the Main Post and 26 surface spaces adjacent to the parade ground for government owned vehicle use only. The remaining 150 spaces are allocated for the 641-person commuter population. This equates to a commuter parking ratio of 1:4.27, which surpasses the NCPC parking standard of 1:4. Depending on the alternative chosen for the replacement BEQ Complex, the 212 parking spaces would either be retained at the Building 20 site or they would be replaced by new parking at the replacement BEQ Complex site.

DOD BFR requirements are space planning factors, criteria, and techniques that provide the space demand or support requirement for shore-based facilities, by category, necessary to perform the peacetime missions of installations. A BFR justification is the calculation of an installation, command, or region's facilities allowances based upon established planning criteria. BFRs encompass entire functional categories of use, such as administrative offices, general warehouses, or public works shops, for both host and tenant commands. For each of the activity's functional categories, if the sum of all current assets assigned to that category code is greater than the calculated requirement in the BFR, there is a surplus of space; if it is less, there is a deficiency. The BFR criteria are considered guidelines, not regimented formulas. BFRs are typically updated during the course of a master plan update and were updated for the MBW Master Plan (DOD 2014).

It is anticipated that land acquisition would occur in 2016 (if necessary) and construction funded in Fiscal Year (FY) 2017 and completed in FY 2019. Further elements associated with the proposed land acquisition and construction of the BEQ Complex would vary by alternative and are detailed in Section 2.3.

2.2.2 Interior Renovations at the Main Post

Building 7

Building 7 was constructed in 1934. Based on historic maps, it appears two smaller buildings may have been consolidated to form Building 7. This rectangular-plan, 2-story, 4,100 SF brick building is appended to Building 8 on its south façade. Building 7 originally functioned as a garage and tool shop. Since 1934, the building has been altered, and it currently serves as a garage on the first floor and warehouse on the second floor (MBW 2013). The proposed interior renovations to Building 7 would convert the warehouse to administrative space and include replacement and modernization of the building structure and all obsolete and inefficient infrastructure systems to sustain them for the next 50 years. The proposed renovation would transition the space in a manner that maximizes the existing footprint to become a flexible, efficient, modern, functional, and safe administrative facility.

The Building 7 project addresses a multitude of functional and operational deficiencies; currently planned funding would occur in FY 2018. It is estimated that this project would take approximately six months to complete. Implementation of the proposed project would result in the following improvements:

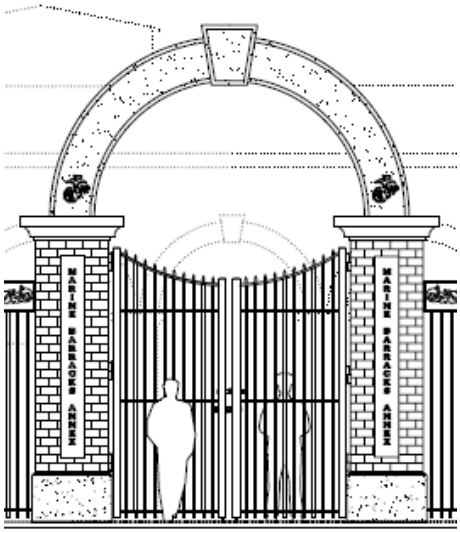
- Changes to non-load bearing interior partitions that are modifications to the original structure.
- Replacement and structural reinforcement of windows, interior and exterior doors, and related components with windows, doors, and related components that would approximate the originals while meeting applicable AT/FP requirements.
- Replacement of floor finishes, wall paneling, tile and plaster ceilings, and interior light fixtures.
- Installation of fire detection and suppression systems.
- Replacement of all plumbing systems and fixtures.
- Upgrades to all heating, ventilation, and air conditioning (HVAC) systems.
- Replacement of electric power and lighting distribution lines and equipment.
- Upgrades to communication, security, and alarm systems.

- Construction of an at-grade, Architectural Barriers Act (ABA) compliant access.
- Testing for presence of asbestos containing material (ACM) and lead based paint (LBP) prior to commencement of renovation efforts. If found, development and execution of a plan for abatement of hazardous building materials in a manner that is in accordance with all federal and District protocols would occur.
- Improvements to exterior aesthetics consistent with historic context.

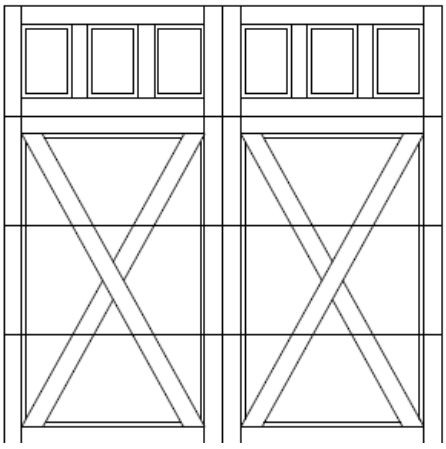
2.2.3 Projects to Foster MBW Integration with the Community

Proposed improvements to the MBW Annex gate at 7th and K Streets SE are currently planned for FY 2017 (see Figure 2.2-1). This project includes the addition of signage to the exterior of the gate. Similar to the signage found at the MBW Main Post Main gate, this sign would properly identify the property while also being consistent with the neighborhood context. The proposed gate improvements call for a substantial but pedestrian-scaled brick, steel, and concrete gateway that draws on the strong vertical lines of the existing architecture. The structure would incorporate an archway to match the blind arches immediately behind the gate and vertical laser-cut, powder-coated panels inset into the brick piers, incorporating Marine Corps branding and providing a level of transparency to preserve sightlines. The structure would be "flat" rather than dimensional to eliminate potential hiding places. In addition, a very small plaza would be constructed immediately in front of the gateway with a decorative paving inset that echoes the inset in the garden at the Home of the Commandant. Foot traffic would be directed by bollards or a sign wall, both designed to echo the lines of the Main Post's bollards and sign wall.

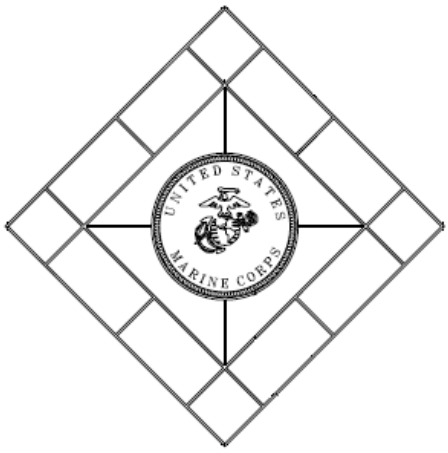
Subtle improvements would be made to the façade, landscaping, and lighting of the portion of Building 7 that faces 9th Street (see Figure 2.2-1). Such improvements make the buildings blend with the homes on the other side of the street and be consistent with the historic characteristics of the Main Post. These improvements may include replacing the industrial looking garage doors with swing-out type doors similar to the original Building 7 doors, painting the door trim, and embellishing the pavement along 9th



Potential MBW Annex Gate Improvement

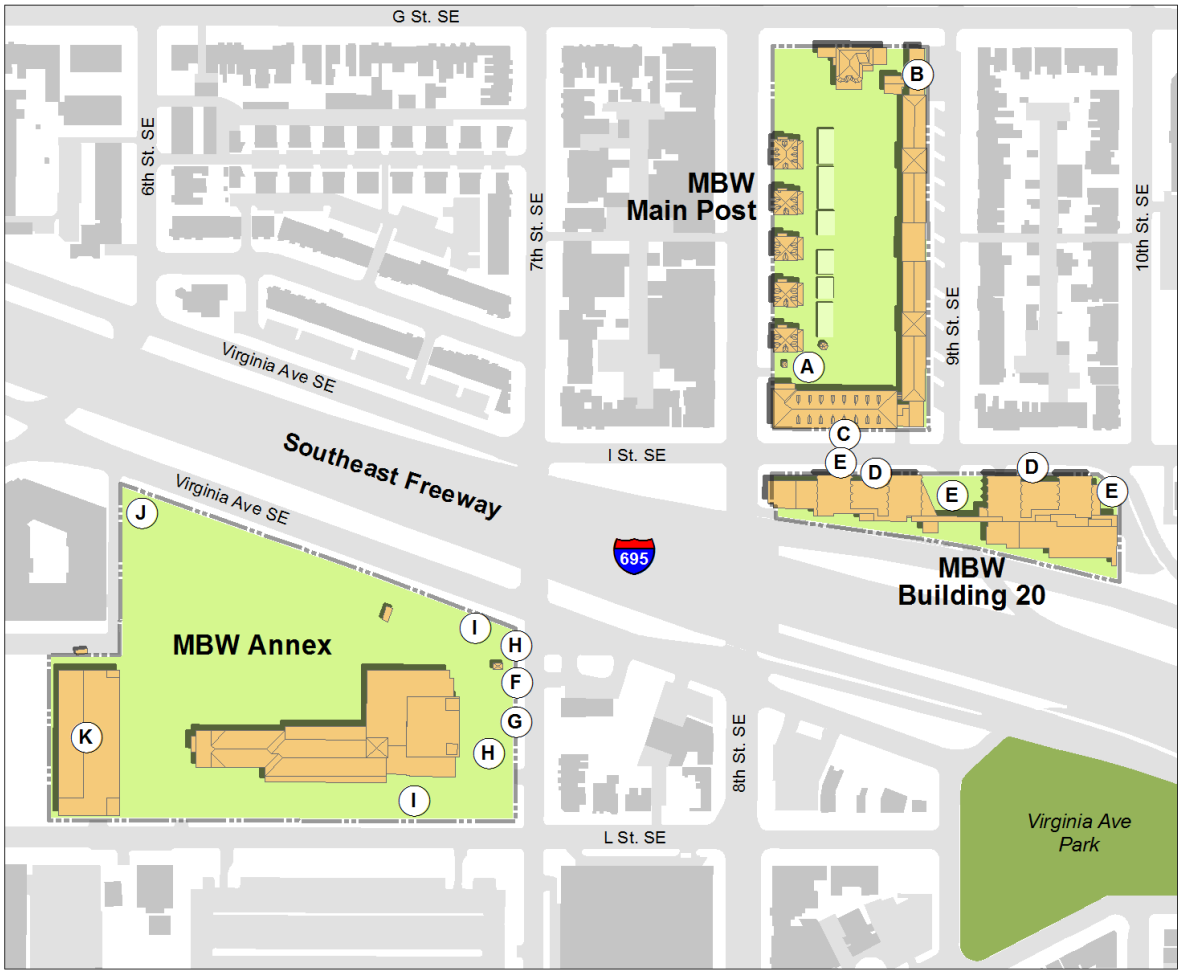


Potential MBW Main Post Building 7 Door Replacement



Potential Pavement Embellishment on 9th Street (east of MBW Main Post)

Street with inset materials such as granite and brass, bronze medallions, or etching patterns. Landscaping efforts would be consistent with the other improvements throughout the MBW properties (depending upon sun-shade tolerance). In keeping with AT/FP standards, plant species would be limited to those with a maximum mature height of 6 inches.



Key

MBW Sites

Park

Projects to Foster MBW Integration with the Community

- (A) Resurface entrance and parking lot surfaces
- (B) Replace garage doors, coordinate signage, enhance pavement
- (C) Install Benches
- (D) Coordinate main entrance signage
- (E) Enhance streetscape
- (F) Redesign entry gate and perimeter fencing
- (G) Install low sign wall or bollards to direct pedestrian traffic
- (H) Resurface entrance with split granite (flamed finish)
- (H) Resurface parking lot with permeable pavement
- (I) Replace lawn with evergreen and semi-evergreen plants
- (J) Install sign, landscaping at Northwest corner
- (K) Enhance garage facade

Figure 2.2-1 Projects to Foster MBW Integration with the Community

Pedestrian amenities would be provided to promote walkability and increase safety throughout MBW facilities (see Figure 2.2-1). These improvements may include paved sidewalks enhanced with landscaping to drive pedestrian traffic, well-defined pedestrian walkways in parking lots, and improved lighting.

2.2.4 Standard Construction BMPs and SOPs

Sustainable design principles would be included in the design and construction of all projects in accordance with EO 13123, *Greening the Government through Efficient Energy Management*, and other applicable regulations. Areas affected by repair and construction would comply with applicable AT/FP, fire suppression, seismic, accessibility, American Society of Heating, Refrigerating, and Air-Conditioning Engineers, U.S. Green Building Council Leadership in Energy and Environmental Design (LEED) Silver, and Energy Policy Act of 2005 standards (as required) upon completion of the project.

Industry standard construction-related BMPs and SOPs would be implemented to address and minimize potential impacts, and may include, but are not limited to implementing:

- A Stormwater Pollution Prevention Plan (SWPPP) to ensure stormwater remains free of contaminants. Potential BMPs may include silt fencing, sediment traps and basins, storm drainage inlet protection, straw bale dikes, gravel/sand berms, stabilized construction entrances/exits, and perimeter dikes/swales.
- An Erosion Control Plan to eliminate and/or minimize the potential for nonpoint source pollution. Potential BMPs may include check dams, fiber rolls, erosion control blankets, and soil stabilization with vegetation/sod/mulch.
- Low Impact Development (LID) methods to capture stormwater that would otherwise flow into nearby watersheds. Potential BMBs may include the use of stormwater retention/detention ponds, infiltration and/or filtering practices, and minimizing exposure.
- Spill prevention and response procedures that detail procedures for cleaning up spills or leaks, notifying the appropriate personnel, and following the reporting procedures.
- Equipment sequencing during construction so that noise-producing heavy equipment is not concentrated in areas adjacent to sensitive receptors.
- A construction period/construction site management plan that identifies measures to be implemented during construction activities. Potential BMPs may include traffic control measures by construction phase; specific locations for equipment and material staging and laydown areas; location and cleaning schedule for portable toilet facilities; notification procedures for adjacent property owners; a process for receiving, tracking, and responding to construction-related complaints; coordination with utility providers to minimize utility outages; and provisions for parking management.
- Measures to reduce energy and water consumption through conservation, efficiency, use of Energy Star appliances, building orientation, insulation to reduce energy use, setback thermostats, cool roof technology, solar energy, and efficient and/or natural lighting

2.2.5 Additional Management Measures to Lessen Potential Construction-Related Neighborhood Impacts

Based on input received during the scoping process, the Marine Corps is committed to implementing the following management measures to lessen potential adverse impacts to the surrounding community.

- Scheduling construction activities to occur during normal working hours (generally between 8 AM and 5 PM on weekdays).
- Providing advance notification to neighbors if construction activities are planned for Saturdays (per the DC Noise Control Act, no construction-generated noise is allowed on Sundays or legal holidays).
- Staging construction materials inside the MBW Main Post property line whenever possible.
- Placing dumpsters on MBW property so parking availability on 9th Street is not impeded and residents are not exposed to garbage disposal noises.
- Not scheduling deliveries of supplies or materials to occur during rush hours (i.e., 6 AM to 9 AM and 3 PM to 6 PM) to lessen traffic impacts.
- Placing portable restrooms so that they would be as unobtrusive as possible to 9th Street neighbors and making sure that the restrooms are regularly serviced.

2.2.6 Other Longer-Term Projects Analyzed Programmatically

All action alternatives address the potential reuse of the 1.56-acre Building 20 site, renovation of Building 9, and select landscaping and maintenance projects from a programmatic perspective. This EIS will provide as much information as currently available on these projects; however, there is currently not sufficient information to conduct detailed NEPA analysis of these projects that would occur beyond the 5-year planning horizon. A programmatic approach was used because detailed analysis of impacts are dependent on the alternative selected in the ROD and future design considerations, and therefore are not reasonably foreseeable at this time. These projects include the following:

- The potential reuse of Building 20 or the Building 20 site. Building 20 is a 5-story steel and brick building with two separate wings connected by a pedestrian bridge. Two levels of below-grade parking, accommodating approximately 212 vehicles, are located under the building. A portion of the Building 20 site lies within the Capitol Hill Historic District. Full reuse of the site by the Marine Corps as an inhabited building is not possible due to the AT/FP setback requirements and the space needed to reinforce the structure for building hardening. The 20 percent increase in the current standard size of unaccompanied housing, compared to existing Building 20 BEQ units (see Section 1.3.1), would also not be accommodated. When the AT/FP vehicle standoff distance of 66 feet is applied to the current Building 20 site, the net developable area is reduced to 0.25 acres. Although building hardening techniques could be used to reduce the AT/FP standoff distance, the design and engineering of hardened systems would not decrease the standoff to less than 45 feet for a BEQ facility. A 45-foot standoff at Building 20 would result in a net developable area of 0.62 acres. In addition, the cost of new construction would increase considerably with hardening, and there would be limitations in what kind of hardening would be appropriate at the site due to potential impacts to historic sites and neighborhood compatibility.

The west side of the site is too narrow and has no redevelopment potential for sole use as a DOD occupied facility. Once the new BEQ Complex has been completed and the Marines and support functions have been transferred to the new facility, Building 20 or the Building 20 site would be available for a number of potential functions, including:

  - Using the existing facility by another government group that does not need to comply with DOD AT/FP setback requirements.
  - Turning the existing facility over to a private entity that could serve a number of commercial and/or residential needs.
  - Demolishing the existing facility in favor of new public or private development.

- Renovating Building 9 to accommodate the consolidation of various administrative functions. This would require renovation of interior workspaces in Building 9, as well as renovations to meet QOL, life safety, sustainability, and energy efficiency standards. However, no renovation to the rehearsal halls, offices, and concert band hall would be needed as they were renovated in 2004.
- Additional landscaping and maintenance projects as necessary.

2.2.7 Projects Removed Following the Scoping Process

Building 8. The MBW Command Post/Building 8 was originally constructed in 1902 and expanded in 1912 to its current size of 47,983 SF. The building has not seen a major renovation since 1954. All the essential building infrastructure systems are obsolete, inefficient, and have reached or exceeded their useful life. The proposed renovation project, programmed for funding in FY 2016, would 1) create a positive and collaborative working environment to significantly improve communication, flow, and QOL in the workplace; 2) maximize the existing footprint to become a flexible, efficient, and modern administrative facility capable of meeting the future needs of the Command Post; 3) meet AT/FP requirements; and 4) address operational and functional space deficiencies and provide a high-performance, sustainable, and safe working environment.

The Building 8 renovations were originally presented during scoping as part of the Main Post renovations to be analyzed in the EIS concurrent with the replacement BEQ Complex. The Building 8 project is being completed with funds already programmed in FY 2016, and is estimated to take approximately 18 months to execute. Given that the EIS schedule has shifted from what was originally presented during scoping due to various factors (including federal government shutdowns and revisions to the alternatives presented during the scoping process), the Building 8 project was removed from consideration in this EIS. The Marine Corps is conducting the appropriate level of NEPA analysis and Section 106 consultation for this renovation prior to construction, and this EIS evaluates the potential cumulative impacts of the Building 8 project in Chapter 5.

2.3 ALTERNATIVES ANALYSIS FOR THE REPLACEMENT BEQ COMPLEX

Regulations for implementing NEPA (40 CFR Section 1502.14), DON procedures for implementing NEPA (32 CFR Part 775), and Marine Corps Order (MCO) P5090.2A provide guidance on the consideration of alternatives to a federal proposed action and require rigorous exploration and objective evaluation of all

reasonable alternatives. Each alternative must be feasible and reasonable in accordance with Council on Environmental Quality (CEQ) regulations that implement NEPA (40 CFR Parts 1500–1508) and MCO P5090.2A. Reasonable alternatives must meet the stated purpose of and need for the Proposed Action and must be feasible. Alternatives that are outside the scope of what Congress has approved or funded must still be evaluated if they are reasonable because the EIS may serve as the basis for modifying the Congressional approval or funding in light of NEPA's goals and policies.

The NEPA process includes public involvement, which is an essential element for ensuring informed decision making at the federal level, including development of a reasonable range of alternatives. Although the NEPA process was not formally initiated until publication of the NOI in the *Federal Register*, the Marine Corps has conducted extensive community involvement as part of the CIMP public engagement process that began in January 2010. The CIMP process included formation of a Community Leadership Group, public meetings and workshops, and meetings with agency representatives.

The CIMP process that preceded this EIS provided a foundation for the required rigorous exploration of a reasonable range of alternative sites meeting the purpose and need with respect to the replacement BEQ Complex project.

2.3.1 Initial Screening Criteria

For the purposes of this EIS, the following screening criteria were used to further refine and narrow the range of alternative sites for the replacement BEQ Complex before the NOI to prepare this EIS was published.

- **Criterion 1: Must be within reasonable walking distance (2,000 foot radius) of the Main Gate entrance to the MBW Main Post.** The NCPC Comprehensive Plan for the NCR defines "reasonable walking distance" as "2,000 feet, or somewhere between a quarter mile and a half mile – about a 10-minute walk" (NCPC 2004). Consistent with widely accepted planning principles, a radial distance of 2,000 feet from the destination point (the MBW Main Post Main Gate) was used to define "reasonable walking distance" for the Proposed Action. This reasonable walking distance criterion is required for operational efficiency, unit cohesion, safety, and ensuring that the MBW Commanding Officer can maintain adequate command and control of the enlisted Marines assigned to the BEQ. The 10-minute walking distance ensures that MBW can meet OPTEMPO efficiency requirements to assemble personnel for training, ceremonies, support activities, and other command functions multiple times during a single work day. The existing BEQ Complex at Building 20 is a "hub" for both the Marines that live in the BEQ who are required to maintain a level of health, wellness, and hygiene, as well as for the entire MBW population that use the existing BEQ support facilities for training, administrative functions, community support, armory, and parking.
- **Criterion 2: Must meet the minimum developable area requirements for the approximately 191,405 SF BEQ Complex (which includes supporting facilities and parking), while also complying with applicable laws governing height restrictions.** Table 2.3-1 summarizes the single site acreage estimate for the replacement BEQ Complex configurations, including the parking requirement of 212 spaces. Although the configuration would ultimately be refined

through a design process, a planning-scale estimate is provided for the purposes of this EIS. The acreage estimate includes a minimum standoff distance of 66 feet for vehicles and 33 feet for pedestrians. To allow for AT/FP standoff distance requirements, the assumption is that parking would be primarily underground, but not directly beneath the enlisted quarters or gathering areas. Table 2.3-1 also provides acreage estimates for a 5-story, 8-story, and 9-story configuration for the BEQ component requirement. The 5-, 8-, and 9-story BEQ configurations were developed for planning purposes and were derived from a combination of the space requirements, construction economies of scale, and agency and public input through the CIMP agency and public involvement process. Stakeholders favored minimizing the footprint to the extent practicable (i.e., the 8- or 9-story configuration) and restricting building heights in areas with historic building inventories to respect the historic scale of buildings and structures and protect historic viewsheds (i.e., the 5-story configuration). The final design of the BEQ Complex would be influenced by a variety of factors, including the historic character of the surrounding buildings at the chosen site. Additional analysis, including conceptual massing diagrams of potential BEQ/support facility configurations at alternative sites, is provided in Section 2.4.

Table 2.3-1. Minimum Acreage Requirement (Planning Estimates)

BEQ/Support Facilities Configuration	Minimum Required Acreage
5-Story BEQ and Support Facilities	2.42
8-Story BEQ and Support Facilities	2.07
9-Story BEQ and Support Facilities	1.70

- **Criterion 3: Must not relocate public services to DC residents, to include public housing, education, or public recreation services.** This criterion refers to areas dedicated to public services, and is not intended to include supporting elements such as roads, parking, sidewalks, and utilities.

2.3.2 Methodology for Identification of Action Alternatives

The following process was used to apply the screening criteria and respond to input received during the public scoping process to identify a reasonable range of alternatives for the Proposed Action:

Step 1: Exclude all parcels not located within a 2,000-foot radius of the Main Gate entrance to the MBW Main Post. Excluding these parcels ensures remaining parcels fall within a reasonable walking distance of the Main Post. This narrowed the study area to approximately 288 acres in Southeast Washington.

Step 2: Evaluate sites located within the 2,000-foot radius that have the potential to meet the minimum required developable area for an approximately 191,405-SF replacement BEQ Complex while also complying with applicable laws governing height restrictions. Sites that would relocate public services to DC residents, to include public housing, education, or public recreation services, were not considered. This resulted in the identification of four alternative replacement BEQ Complex sites that were presented at scoping.

Step 3: Invite scoping comment and adjust the reasonable range of alternatives based on comments received. Two important developments occurred during this step:

- Comments received from the public indicated a preference for siting the replacement BEQ Complex on DOD-owned land.
- Further analysis determined that construction of a replacement BEQ Complex at WNY (Site D as presented at scoping) was not feasible due to the structural integrity of Buildings 219 and 220 and the potential permanent displacement of approximately 620 current occupants of these buildings to another location outside WNY.

In consideration of these factors, screening Criterion 2 was modified (as shown in Section 2.3.3) to allow for potentially siting the replacement BEQ Complex on DOD-owned land. The application of this addition to screening Criterion 2 resulted in a revision to the Site D alternative, such that below-grade parking would be retained at the Building 20 site to meet the parking requirement, and the footprint of the BEQ replacement facility was moved to the west of the original footprint, with the size slightly reduced.

2.3.3 Final Screening Criteria

The screening criteria were refined based on public comments, key stakeholder input, and additional analysis. The final screening criteria used to develop a reasonable range of alternatives carried forward for analysis in this EIS are:

- **Criterion 1: Must be within reasonable walking distance (2,000-foot radius) of the Main Gate entrance to the MBW Main Post.** No revisions were made to this criterion based on scoping comments.
- **Criterion 2: Must meet the minimum developable area requirements for the approximately 191,405-SF BEQ Complex (which includes supporting facilities and parking) *at a single site* (while also complying with applicable laws governing height restrictions) *or, for DOD-owned sites only, at a split site that retains the existing parking assets below Building 20 and replaces the remaining BEQ Complex functions (approximately 116,101 SF)*.** No revisions were made to the single site aspect of this criterion; however, modifications were made to accommodate a two-site alternative on DOD-owned land. However, a two-site alternative on DOD-owned land would only be considered if it: 1) negates the land acquisition requirement and 2) results in confined and manageable impacts to existing facilities that would be displaced or modified to satisfy the space requirements (i.e., no permanent displacement of personnel or facility functions and construction-phase impacts that do not degrade MBW or WNY critical mission capabilities). For alternative sites located on DOD-owned land, a 5/6-story or 6/7-story replacement BEQ can be constructed on a smaller site (Table 2.3-2) than indicated in Table 2.3-1 since the AT/FP setbacks are reduced inside a controlled perimeter. The final design of the BEQ Complex would be influenced by a variety of factors, including the historic character of the surrounding buildings at the chosen site. Additional analysis, including conceptual massing diagrams of potential BEQ/support facility configurations at alternative sites, is provided in Section 2.4.

Table 2.3-2. Minimum Acreage Requirement for Split-Sites (Planning Estimates)

BEQ/Support Facilities Configuration	Minimum Required Acreage
5/6-Story BEQ and Support Facilities (WNY)	0.78
6/7-Story BEQ and Support Facilities (MBW Annex)	0.48

- **Criterion 3: Must not relocate public services to DC residents, to include public housing, education, or public recreation services.** No revisions were made to this criterion based on scoping comments.

The alternatives carried forward for detailed analysis (Figure 2.3-1), presented in Section 2.4, represent the results of this application of the NEPA screening criteria. The resulting range of alternatives balance the Marine Corps' facility requirements with the public's concerns regarding acquisition of non-DOD owned land and public streets. Alternatives 1-3 require acquisition of non-DOD owned land to fully meet MBW's space requirements in a single BEQ Complex. Alternatives 4 and 5 use DOD-owned sites to meet the requirements, but lack the synergies of a cohesive replacement BEQ Complex.

2.4 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

2.4.1 Alternative 1 – Site A

Under Alternative 1, the Marine Corps would acquire privately owned land and a government-owned ROW for the proposed BEQ Complex. The Alternative 1 potential BEQ site, Site A, consists of 3.0 acres in Squares 929 and 930 and an approximately 340-foot segment of L Street between 8th and 9th Streets SE (Figure 2.4-1). The affected segment of L Street SE would be closed to vehicular and pedestrian traffic and street parking. For the purposes of this EIS, it is expected that the replacement BEQ Complex construction would occur within the L Street ROW, affecting the L'Enfant Plan viewshed of this ROW segment.

Existing parcel and land use data for privately owned land to be acquired under this alternative are detailed in Table 2.4-1. The buildings within Squares 929 and 930 are included in the Capitol Hill Historic District. If the land is acquired by the Marine Corps and rezoned as Federal, the 45-foot height limit established by the 1999 Eighth Street Overlay District would not be applicable, as DC Zoning does not apply to federally owned lands. However, the 1910 Height of Buildings Act would apply. Under this Act, the maximum building height for Site A is 90 feet (based on the width of Virginia Avenue). The notional massing presented in Figure 2.4-2 provides a general reference to what a 5-story BEQ configuration may look like at Site A.

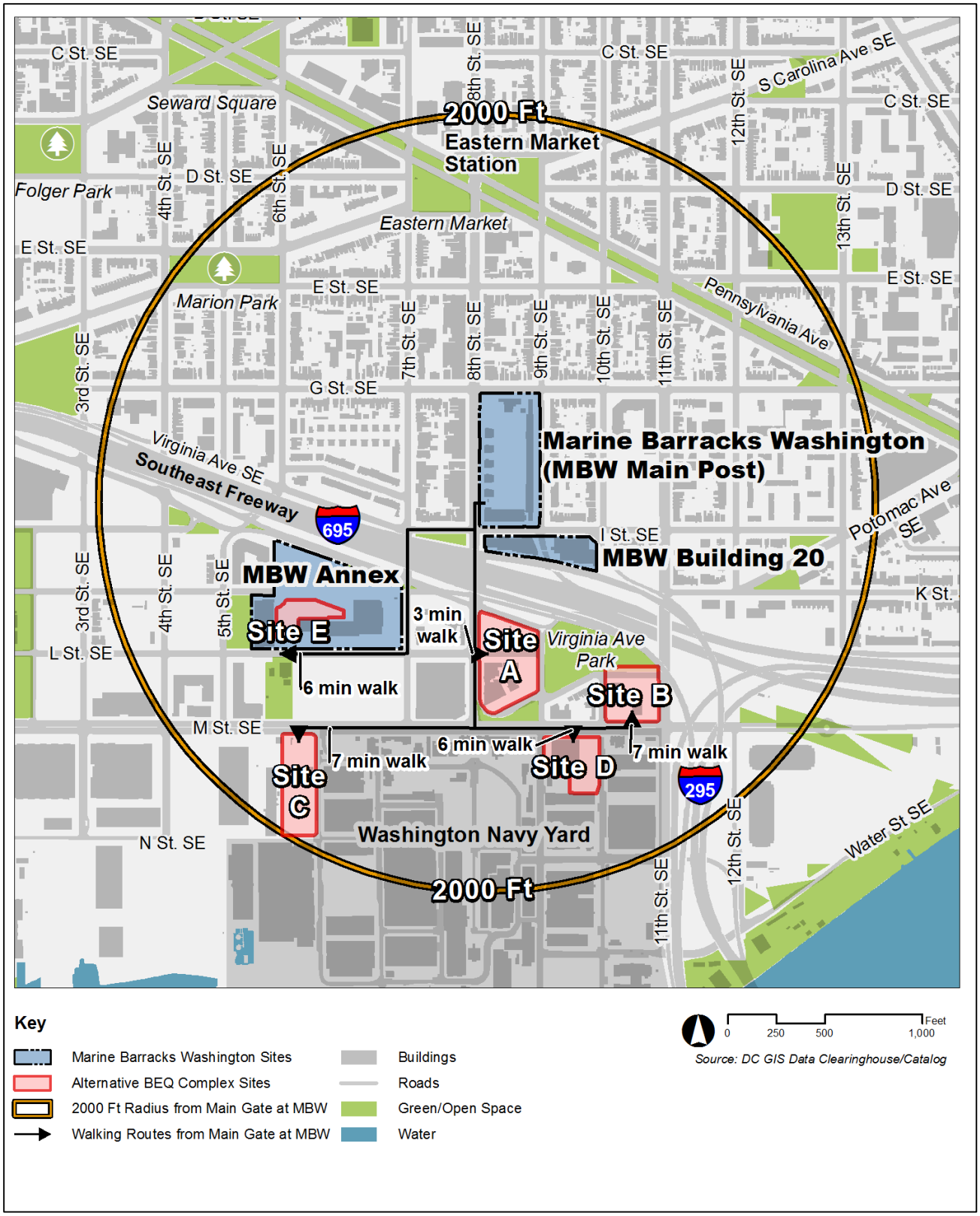


Figure 2.3-1. Alternatives Carried Forward for Detailed Analysis

Table 2.4-1 Privately Owned Land that would be Acquired Under Alternative 1

SF	Parcel Address	Land Use Type	Current Use
Square 929			
439	810 L Street SE	Residential-Single Family	Capitol Tax Group
419	808 L Street SE	Residential-Single Family	International Action
396	811 Virginia Avenue SE	Commercial	Sealander Brokerage Offices
435	809 Virginia Avenue SE	Commercial	Sealander Brokerage Offices
6,059	821 Virginia Avenue SE	Commercial	Dog-Ma Daycare
Square 930			
7,648	801 Virginia Avenue SE	Garage/Unimproved Land	Vacant - "Admiral at Barracks Row" Concept Development
2,900	1100 8th Street SE	Commercial	Chicken Tortilla
1,245	Potomac Avenue SE	Garage/Unimproved Land	Vacant
1,711	815 L Street SE	Commercial	Residential
73	813 L Street SE	Garage/Unimproved Land	Residential
1,043	817 L Street SE	Residential-Single Family	For Sale
25	L Street SE	Garage/Unimproved Land	For Sale
1,245	Potomac Avenue SE	Commercial	Vacant
1,687	819 L Street SE	Residential-Single Family	International Action
630	1103 9th Street SE	Commercial	Vacant
91	819 R L Street SE	Garage/Unimproved Land	Vacant
1,991	Potomac Avenue SE	Commercial	Vacant
1,550	811 L Street SE	Commercial	Fuller's Barber Shop
6,396	816 Potomac Avenue SE	Residential-Multi Family	Residential
630	1105 9th Street SE	Commercial	Vacant
964	823-825 L Street SE	Commercial	Vacant
2,274	9th Street SE	Commercial	Vacant
8,598	810-1120 Potomac Avenue SE	Commercial	Family Preservation Services
6,306	1102-1104 8th Street SE	Commercial	Levis Port Café; The Bachelors Mill/Backdoor Pub

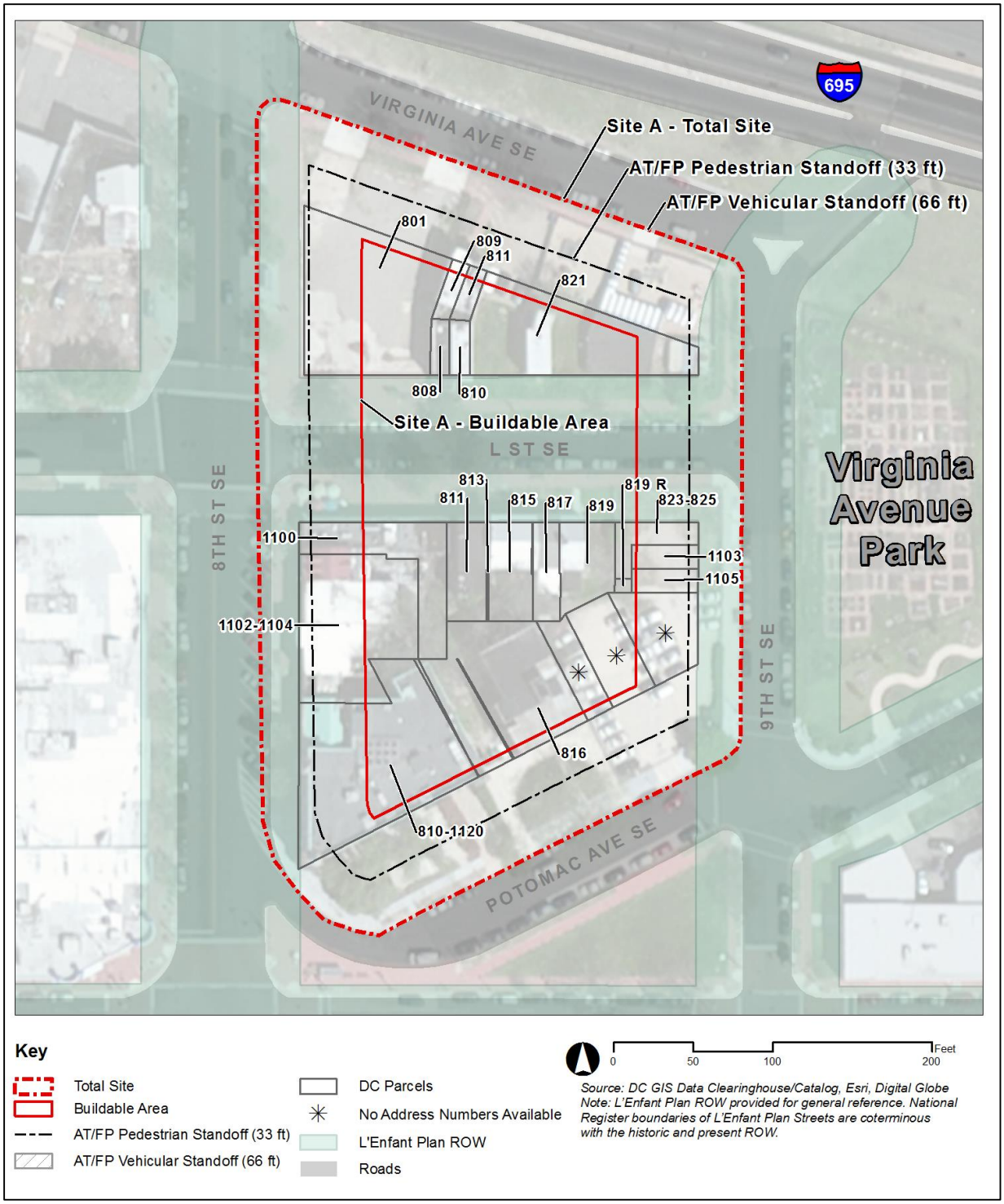


Figure 2.4-1. MBW EIS Alternative 1 - Site A

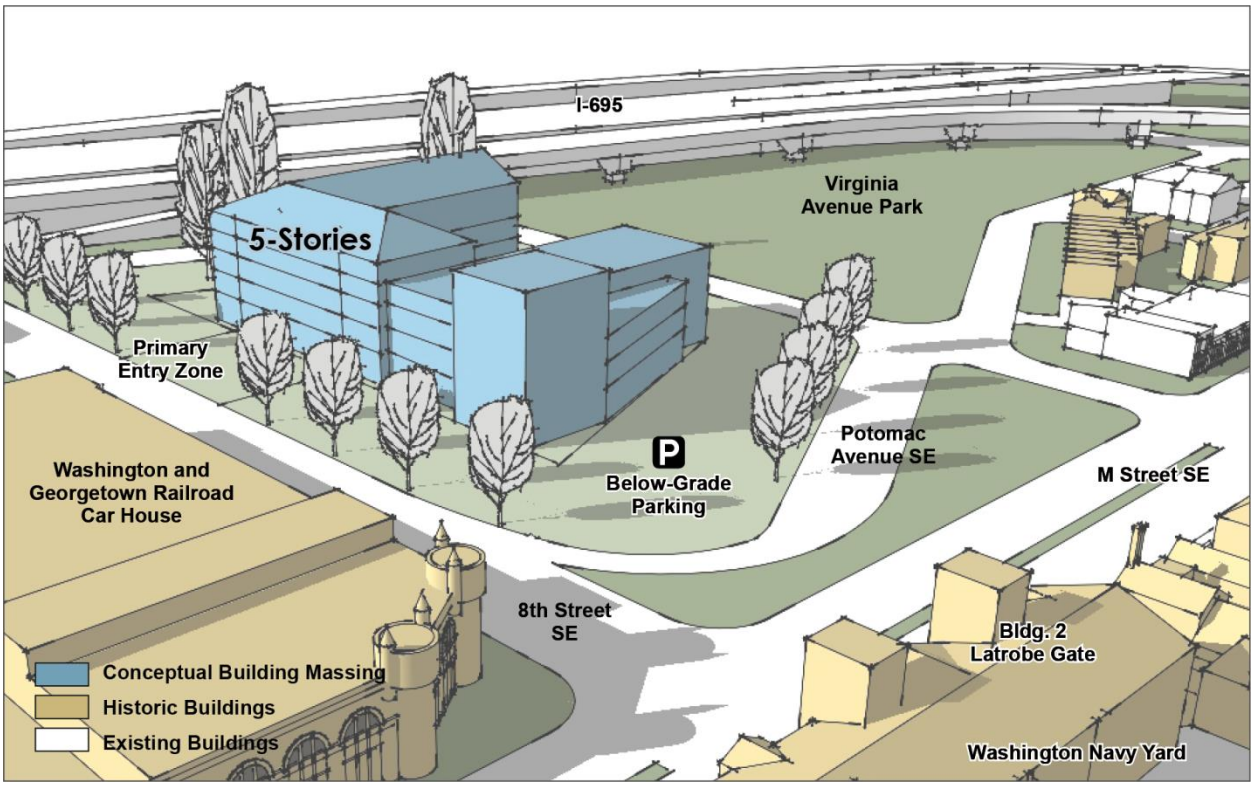


Figure 2.4-2. Notional Massing at Site A

2.4.2 Alternative 2 – Site B

Under Alternative 2, the Marine Corps would acquire privately owned land and a government-owned ROW for the proposed BEQ Complex. The Alternative 2 replacement BEQ Complex, Site B, consists of 1.8 acres composed of privately owned land at Square 976 and an approximate 315-foot segment of the L Street ROW between 10th and 11th Streets SE (Figure 2.4-3). Unlike Alternative 1, there would be no construction within the L Street ROW. This segment of L Street would be closed to vehicular traffic and on-street parking, but it would remain open for pedestrians. The adjacent Virginia Avenue Park would also remain open to pedestrian use. The segment of the ROW and the adjacent portion of Virginia Avenue Park are included within this site as a means of satisfying the AT/FP vehicular standoff distance while also allowing public use to continue. Public use of the park would not be changed, and pedestrian use of the ROW would be the same as all other public streets in the District.

Existing parcel and land use data for privately owned land to be acquired under this alternative are detailed in Table 2.4-2. Square 976 is adjacent to, rather than within, the Capitol Hill Historic District boundaries. The structures within the site boundaries that would potentially be directly affected are not historic structures. Site B also has a former leaking underground storage tank (UST) that has been closed by the DDOE, with a determination of No Further Action. This determination was based on the assessment that the site does not pose a threat to human health and/or the environment. However, if this alternative were chosen for implementation, consultation with DDOE would be required prior to any ground-disturbing activities (DDOE 2009). Businesses located on Site B parcels that would be displaced include a tailor, a spay/neuter clinic, and a parking lot. Based on the 1910 Height of Buildings

Act, the maximum building height for Site B would be 110 feet (based on the width of M Street). The notional massing provided in Figure 2.4-4 provides a general reference to what a 9-story BEQ configuration may look like at Site B.

Table 2.4-2 Privately Owned Land that would be Acquired under Alternative 2

SF	Parcel Address	Land Use Type	Current Use
1,998	1001–1003 L Street SE	Flats/Conversions	Humane Society Spay and Neuter Clinic
1,151	1104 10th Street SE	Residential-Single Family	Kim's Custom Tailor
1,109	1102 10th Street SE	Residential-Single Family	Residence
36,560	1022–1109 M Street SE	Commercial	Vacant; Parking Lot
2,491	1106–1108 10th Street	Residential-Single Family	Residence

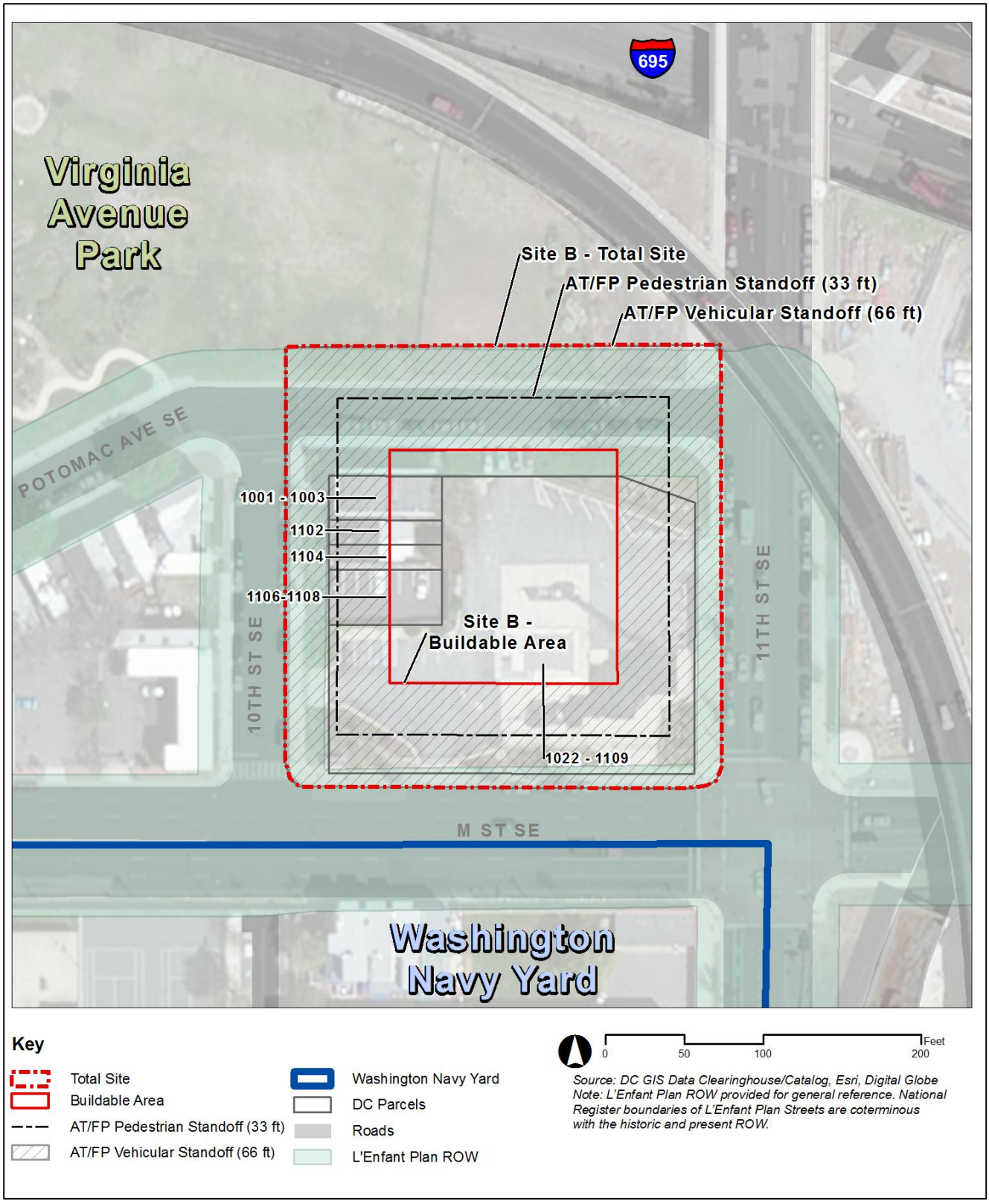


Figure 2.4-3. MBW EIS Alternative 2 - Site B

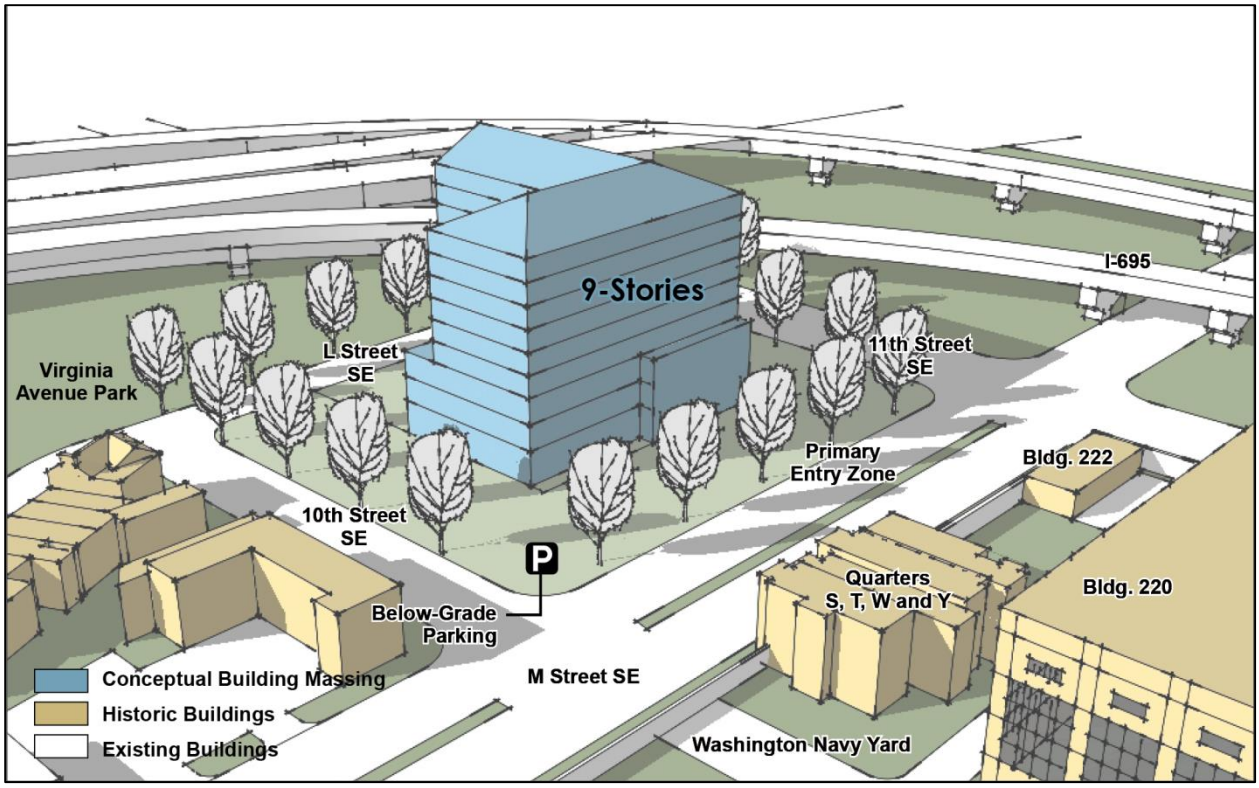


Figure 2.4-4. Notional Massing at Site B

2.4.3 Alternative 3 – Site C

Under Alternative 3, the Marine Corps would obtain appropriate real estate interest in a portion of the federally owned land that is part of the GSA-owned SEFC and associated SEFC "The Yards" Master Redevelopment Plan for the proposed replacement BEQ Complex and a 3-story above ground parking structure. Alternative 3, Site C, is a 2.1 acre site composed of a portion of Square 853, bounded by M Street SE to the north and Tingey Street SE to the south (Figure 2.4-5).

Formerly part of the WNY Annex, Site C was included in a 1963 land transfer of 55 acres from the DON to the GSA for use as the SEFC. The GSA has an agreement in place with Forest City regarding redevelopment of 42 of the 55-acre SEFC site based on Forest City's mixed-use development plan, which was developed to enhance the value of the SEFC to the U.S. Of the remaining 13 acres, 10 acres were developed separately as the Department of Transportation headquarters building and 3 acres are riparian rights located in the Anacostia River.

Under an agreement with GSA that was authorized by special legislation (SEFC Public-Private Development Act of 2000, Public Law 106-407), Forest City legally controls the future development of Site C. During initial scoping, Forest City indicated its formal opposition to relocating the BEQ Complex to Site C. A future agreement with Forest City and GSA that would provide for the transfer of Site C to the Marine Corps/DON for the purpose of future development would be required in order for Site C to be selected. Alternative 3, Site C, is being carried forward in this Draft EIS for further analysis in the event that the Marine Corps/DON is able to reach an agreement with Forest City for the use of the subject site.

The proposed replacement BEQ Complex would be constructed on three parcel areas within these 42 acres, thus requiring a change in the redevelopment plan and development of bilateral agreements between Forest City and the Marine Corps/DON. The SEFC EIS analyzed the development of the 42 acres. The EIS was completed 28 May 2004, and the ROD was signed 17 May 2005. Construction of the project, now known as "The Yards," began on 3 October 2007. Build-out is to be carried out in phases over the course of 20 years. Upon completion, "The Yards" will comprise 5.5 million SF of new development and redevelopment, including rented and owned residential units, office space, retail/dining, and a riverfront park along the banks of the Anacostia River (GSA 2010). As redevelopment of parcels within the 42-acre area progresses, Forest City has the right to purchase the development rights from GSA on a parcel-by-parcel basis.

Under the SEFC Public-Private Development Act of 2000, Public Law 106-407, GSA is authorized to adopt innovative and flexible approaches for working with the private sector to develop the SEFC. The GSA's Plan targets development of 1.8 million SF of office space; 3.6 million SF of residential space; 500,000 SF of retail space; and 100,000 SF of space for cultural activities. The GSA has Memoranda of Understanding (MOUs) with NCPC and the Commission on Fine Arts defining these agencies' roles in advising GSA on design submittals. Forest City developed the SEFC "The Yards" Master Redevelopment Plan. The Plan has been revised periodically on an as-needed basis consistent with the Programmatic Agreement (PA). The PA transfers parcels by sale or ground lease over a period defined in that agreement (GSA, ACHP, and DC HPO 2007).

The "Yard" Redevelopment Master Plan for the 42 acres includes 218 residential units with transportation circulation in Parcel E3 (Site C is proposed in the eastern half of this parcel), 8 units in Parcel E6, 9 units in Parcel E7, and 255 units in Parcel E4 (Figure 2.4-6). A pump house (Building 199), a Potomac Electric Power Company (Pepco) substation, and a parking lot to the east of Building 74 currently exist on Site C. The planned Forest City redevelopment of the parcel within Site C is scheduled to occur in Phase II, which also includes redevelopment of the Q 1 and 2 and L Parcels. Phase II includes two additional residential projects: Arris at Parcel N and Factory 202 at Parcel E1. Construction at Parcel N began in early 2014 with completion targeted for late 2015/early 2016. The Factory 202 project is scheduled for 2017 or beyond (Capitol Riverfront BID 2013). Already constructed under Phase I are The Boilermaker Shops (retail), The Yards Park (recreation), The Foundry Loft (residential), The Lumber Shed (restaurant pavilion), and Twelve 12 (residential).

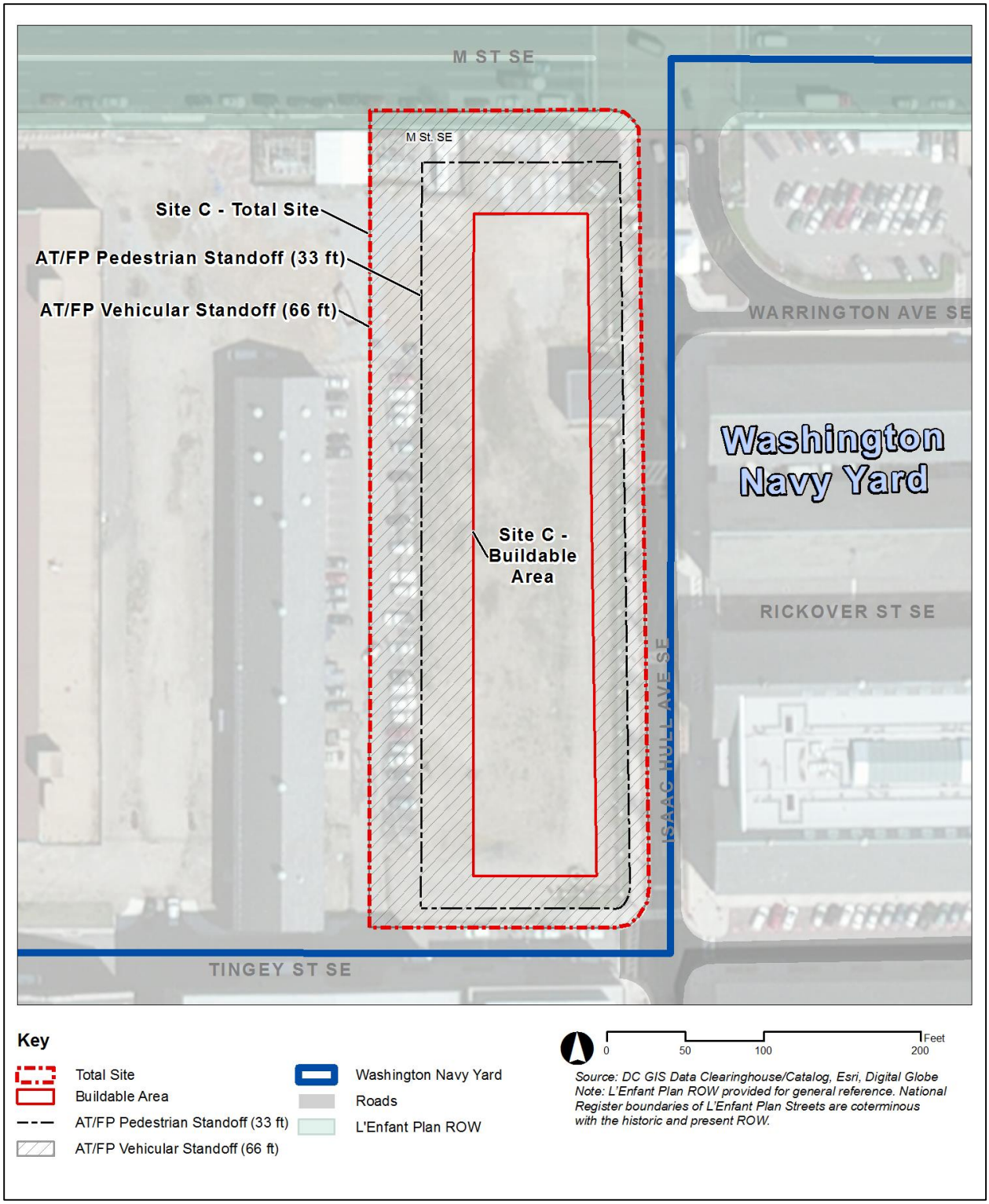


Figure 2.4-5. MBW EIS Alternative 3 - Site C

Figure 2.4-6. SEFC "The Yards" Master Redevelopment Plan

Site C is within the WNY Annex Historic District and the Historic Zone as designated by the GSA "The Yards" Master Redevelopment Plan for The Yards. Forest City and GSA have committed to rehabilitating historic buildings within the Historic Zone and ensuring new construction is compatible with the Historic Zone's historic context. The structures on the site are not contributing resources to the Historic District, but Building 74, located just west of the Site C, is a contributing resource (GSA, ACHP, and DC HPO 2007).

Based on the 1910 Height of Buildings Act, the maximum building height for Site C is 110 feet (based on the width of M Street). The notional massing presented in Figure 2.4-7 provides a general reference to what an 8-story BEQ configuration may look like at Site C.

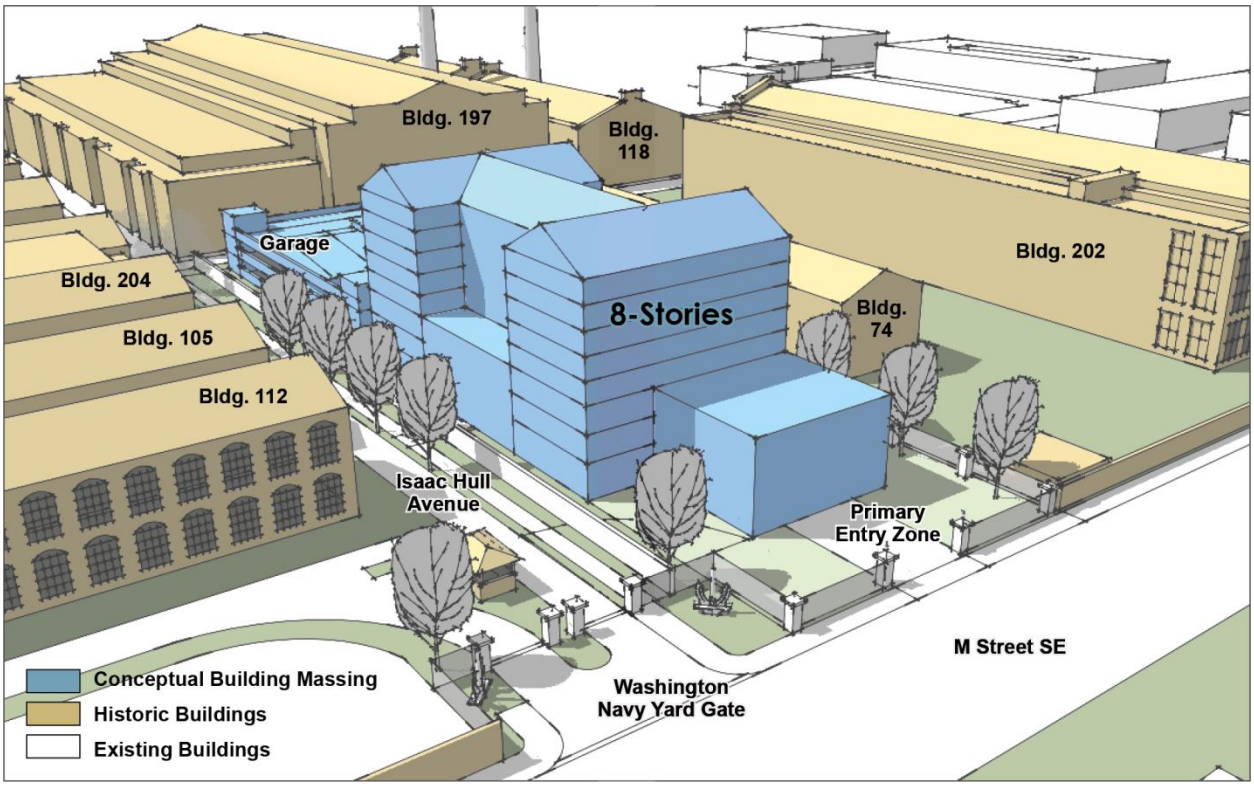


Figure 2.4-7. Notional Massing at Site C

2.4.4 Alternative 4 – Site D

Under Alternative 4, the replacement BEQ Complex (including support facilities) would be constructed at the WNY, and the associated parking requirement would be met nearby at the existing below-grade parking at the Building 20 site. While not as ideal as constructing a cohesive replacement BEQ Complex at a single site, this alternative would allow the replacement BEQ Complex requirements to be met entirely on DOD-owned land, with no displacement of other organizations or activities. No land acquisition would be required under this alternative.

A 5/6-story complex containing the replacement BEQ Complex (125 standard Marine Corps 2+0 berthing rooms, company administration space, classroom training space, and armory) and support facilities (Marine Drum and Bugle Corps music training facility, enlisted dining facility, and the fitness facility) would be constructed on a 1.67-acre site at the northern end of Square 953, within the boundary of the WNY (Figure 2.4-8). The existing land use includes an administrative building (Building 169), as well as tennis and basketball courts located east of this building; all of these areas have been identified for potential redevelopment in the WNY Master Plan (approved by NCPC on November 6, 2014). Also included is the parking lot south of Building 169 (16 spaces) and potentially a portion of Poor Street that connects Parsons Avenue and 10th Street SE. Building 169 is currently occupied by MBW as a tenant to WNY; however, the Marine Corps has determined that it does not have a long-term need for continued use of Building 169.

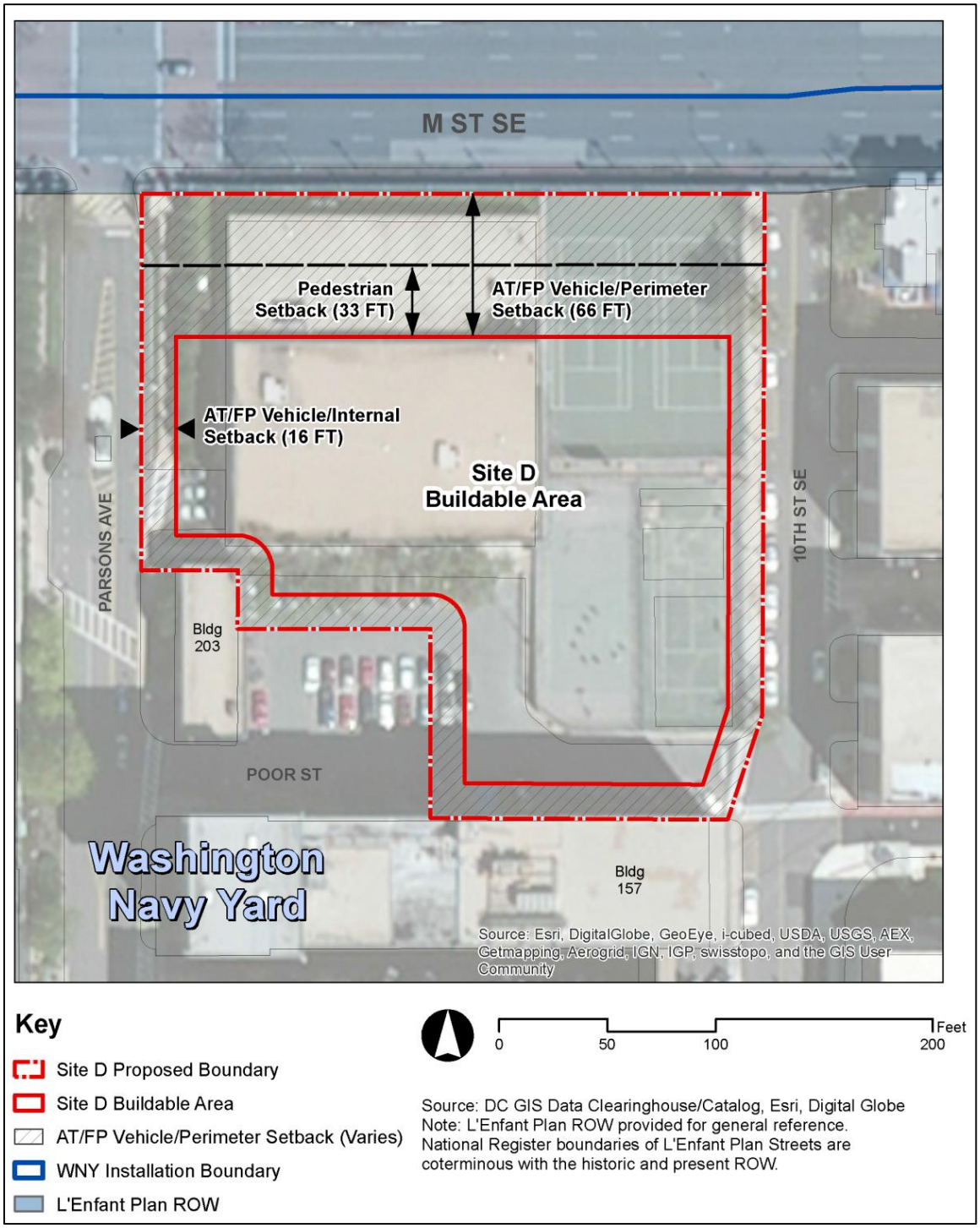


Figure 2.4-8. Alternative 4 – Site D

According to the 1910 Height of Buildings Act, the maximum building height for the BEQ at the WNY is 110 feet (based on the width of M Street). The notional massing presented in Figure 2.4-9 provides a general reference to what a 5/6-story BEQ configuration may look like at Site D.

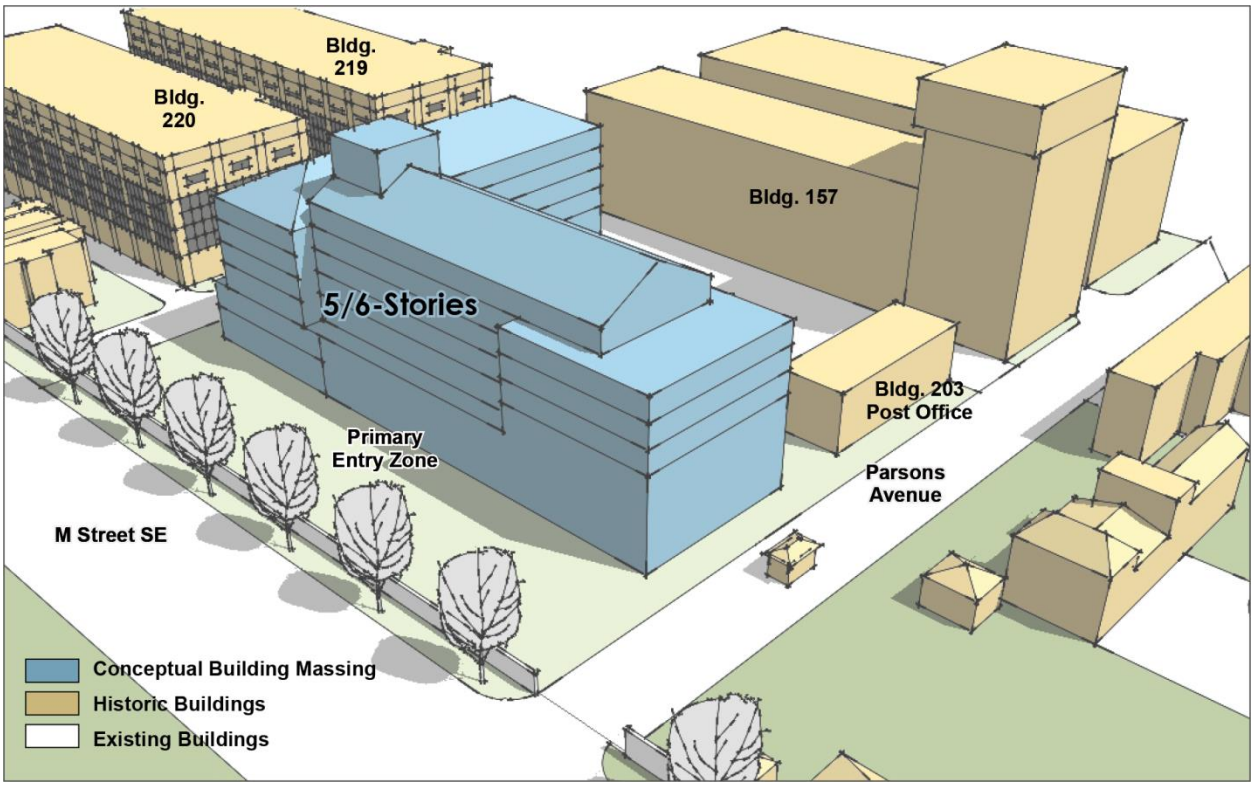
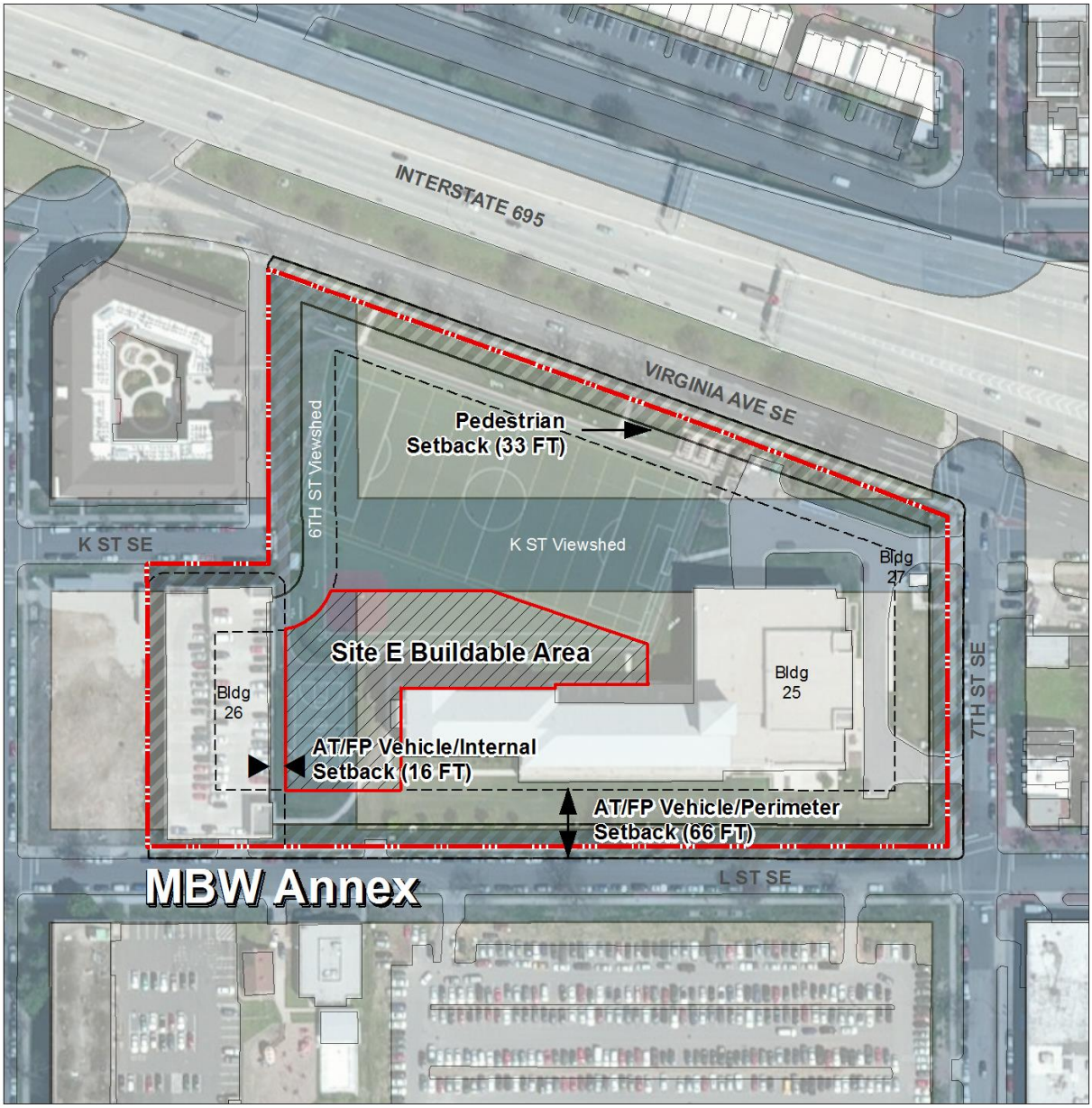


Figure 2.4-9. Notional Massing at Site D

2.4.5 Alternative 5 – Site E

Under Alternative 5, the replacement BEQ Complex (including support facilities) would be constructed at the MBW Annex, and the associated parking requirement would be met by using the existing below-grade parking at the Building 20 site. While not as ideal as constructing a cohesive BEQ Complex at a single site, this alternative would allow the replacement BEQ Complex requirements to be met entirely on DOD-owned land with no displacement of other organizations or activities. No land acquisition would be required under this alternative. For the purposes of this EIS, it is expected that the replacement BEQ Complex construction would occur within the 6th Street L'Enfant Plan viewshed between Building 25 and Building 26.

A 6/7-story complex containing the replacement BEQ Complex (i.e., 125 standard Marine Corps 2+0 berthing rooms, company administration space, classroom training space, and the armory) and support facilities (Marine Drum and Bugle Corps music training facility, enlisted dining facility, and the fitness facility) would be constructed on a 0.89-acre site between Buildings 25 (MBW Annex BEQ) and 26 (MBW Annex parking garage) and south of the multipurpose recreation field (Figure 2.4-10). The new facility would be sited as close to Building 25 as possible and would connect via a breezeway between the replacement BEQ Complex and the western end of Building 25. The site currently contains a basketball court that would be relocated to the north of Building 25. According to the 1910 Height of Buildings Act, the maximum building height for the BEQ at the MBW Annex is 90 feet (based on the width of L Street SE). The notional massing presented in Figure 2.4-11 provides a general reference to what a 6/7-story BEQ configuration may look like at Site E.



Key

- Alternative Site E - Buildable Area
- Installation Boundary
- AT/FP Vehicle/Perimeter Setback (Varies)
- L'Enfant Plan ROW
- Pedestrian Buffer

0 50 100 200 Feet

Source: DC GIS Data Clearinghouse/Catalog, Esri, Digital Globe
Note: L'Enfant Plan ROW provided for general reference.
National Register boundaries of L'Enfant Plan Streets are coterminous with the historic and present ROW.

Figure 2.4-10. Alternative 5 – Site E

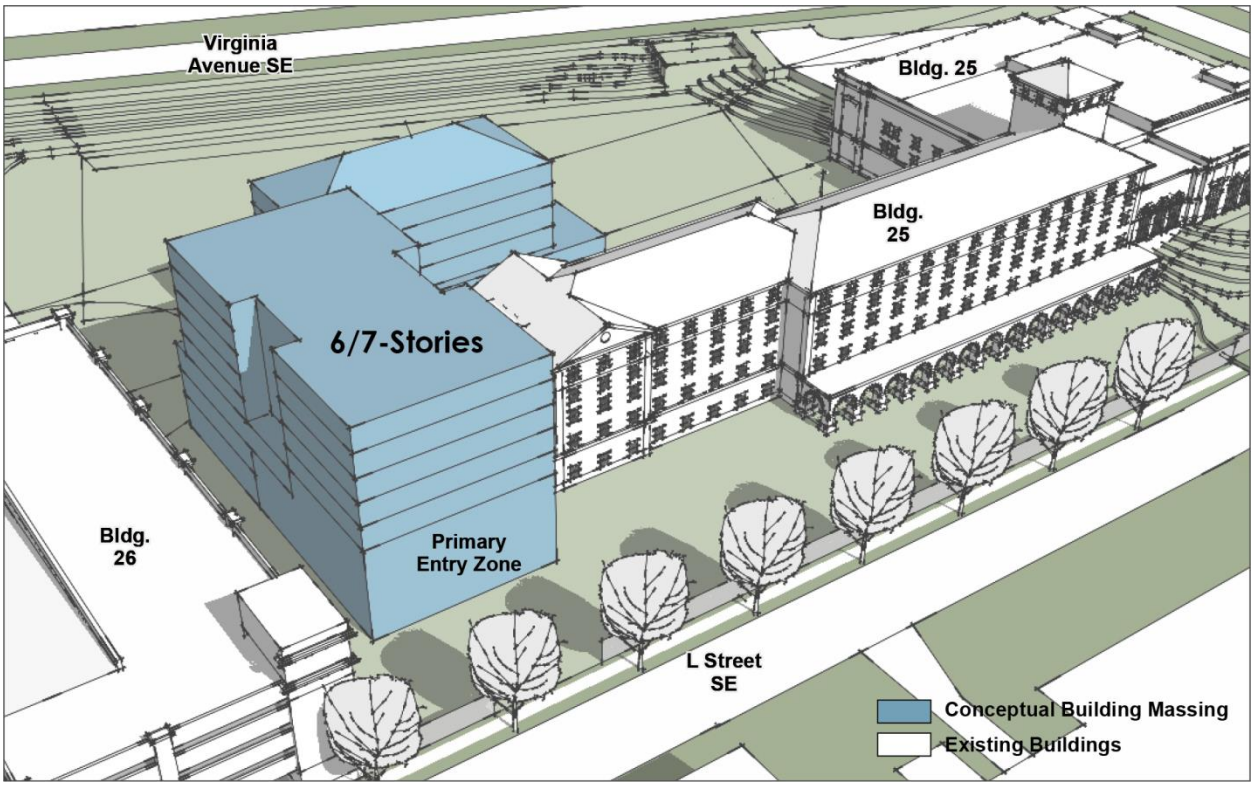


Figure 2.4-11. Notional Massing at Site E

2.4.6 No Action Alternative

The CEQ regulations that implement NEPA require that a no action alternative be included and analyzed in an EIS to provide a clear basis for choice among options by the decision maker and the public (40 CFR Section 1502.14[d]). The following would result from adopting the No Action Alternative:

- **No replacement BEQ Complex would be constructed.** Marines living in Building 20 would continue to contend with BEQ housing units that are smaller and lack the configuration and amenities of the current Marine Corps standard BEQ unit. When compared to Building 20 BEQ units, the current standard is 25 percent larger and includes larger bathrooms, laundry accommodations, kitchenettes, and private closets (U.S. Marine Corps 2006). Shortfalls in meeting the UFC, including IBC2012 standards, would continue to impact QOL and life safety. Attainment of sustainability goals related to EOs 13154 and 13423 would continue to be hindered, and operations and maintenance costs would be expected to increase as Building 20 ages. Non-compliance with AT/FP requirements and associated risks to personnel and property at Building 20 would persist. No private land would be acquired or other federally owned properties sought.
- **No interior renovations to Building 7 would occur.** Substandard conditions would persist and worsen. Violations of the various DOD, ABA, AT/FP, and other life-safety and fire UFCs, including IBC 2012 standards, would continue with the ongoing risk to personnel and property, along with a diminishing quality of workplace. Workspaces would not be optimized to support the mission.

- **No projects to better integrate MBW with the community would occur.** The MBW Annex gate at 7th and K Streets SE would not be improved and upgrades to building façades, fencing, and infrastructure would not occur. Facilities would not be improved, upgraded, or maintained to better integrate MBW with the surrounding neighborhood.
- **No Building 20 or Building 20 site reuse would occur.** Building 20 and the Building 20 site would remain dedicated to Marine Corps use as a BEQ Complex (including support facilities and parking) for the foreseeable future.

The purpose and need of the Proposed Action would not be met under the No Action Alternative.

2.5 PREFERRED ALTERNATIVE

The CEQ regulations on NEPA (40 CFR 1502.14(e)) direct agencies to identify the preferred alternative or alternatives in the Draft EIS if one or more exists. The Marine Corps does not have a preferred alternative at this time. Each of the action alternatives involve trade-offs among economic, technical, environmental, and Marine Corps statutory mission requirements. A preferred alternative will be identified in the Final EIS after regulatory consultations are complete and public comments on this Draft EIS are evaluated.

2.6 ALTERNATIVES CONSIDERED BUT ELIMINATED

Several alternatives were considered and dismissed as the NEPA process evolved. Through the CIMP and the EIS scoping processes, certain alternatives were dismissed because of input from the community and related follow-on analysis. These alternatives are not analyzed further in this Draft EIS but are depicted in Figure 2.7-1 and described following the figure.

- **Off-site construction of the BEQ Complex at JBAB, Fort McNair, or Joint Base Myer-Henderson Hall.** Siting the BEQ Complex at one of these DOD sites in the DC area was considered, analyzed, and determined not to be feasible. The BEQ Complex is required to be within a 10-minute walking distance of the MBW Main Post to ensure operational efficiency, access for MBW Marines to training and performance sites, unit cohesion, and safety, as well as to ensure that the MBW Commanding Officer can maintain adequate command and control of the Marines assigned to MBW. The mission OPTEMPO at MBW is high; events are tightly scheduled and the command must be prepared for short-notice requirements for Presidential support, special security, and ceremonial duties. Time wasted in transit would impact the ability to execute the mission efficiently. The alternative screening criteria require that any site chosen for consideration must be located within a 2,000-foot radius of the Main Post, and construction of a replacement BEQ Complex off-site at a location such as JBAB would fail to meet the screening criteria. In addition, there are no existing adequate facilities at Henderson Hall, Fort McNair, or JBAB, so new construction would be required. Locating the Marines attached to MBW to Henderson Hall, Fort McNair, or JBAB would also require duplication of some support facilities such as dining and fitness facilities, thus increasing the overall construction, operations, and maintenance costs. The supporting facilities that are included in the Proposed Action were sized to support all assigned Marines during working hours regardless of where they live.

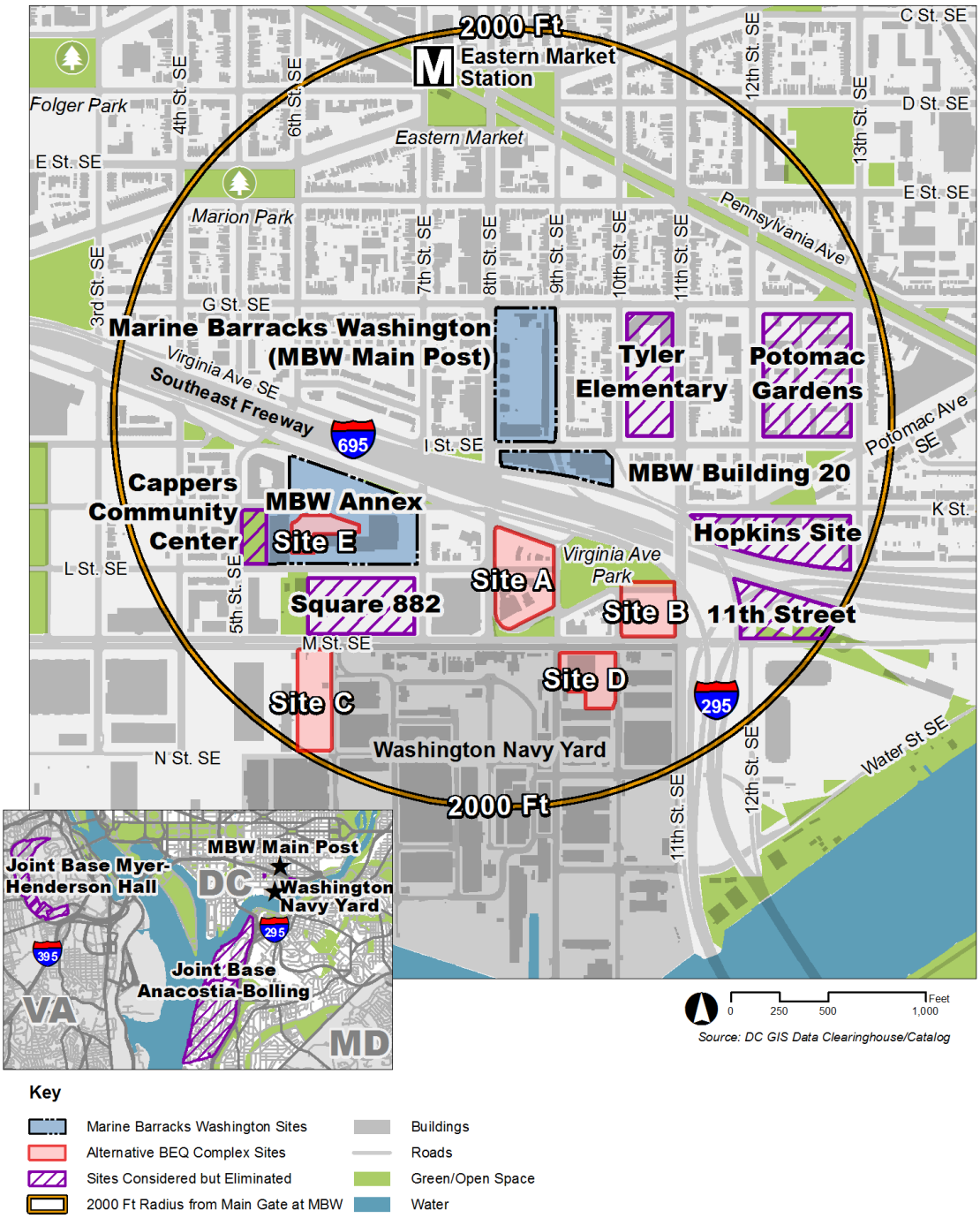


Figure 2.7-1. Sites Evaluated but Eliminated from Detailed Consideration

- **Constructing a BEQ Complex at the Potomac Gardens and Hopkins Apartments Public Housing Sites**. The Potomac Gardens public housing site was one of four sites that were identified as potential sites for a BEQ Complex based on initial siting criteria early in the CIMP process. The Hopkins Apartment site was identified as a potential site after the CIMP process, when DOD AT/FP setback criteria were revised in February 2012. As noted in the alternative screening criteria, any site chosen for consideration must not displace uses that are planned to provide substantial public services (such as schools and public housing) to DC residents over the long term. Currently, Potomac Gardens contains 352 residential units and Hopkins Apartments comprises 159 total units, and both apartment complexes are occupied.
- **Constructing a BEQ Complex at the Square 882 Vacant Lot Site.** Similar to the Potomac Gardens Public Housing Site, Square 882 was initially identified as a potential alternative early in the CIMP process due its size and location. Following coordination with the DC Housing Authority (DCHA) in May 2010, Square 882 was removed from consideration due to funding that was procured for DCHA to continue with a redevelopment project known as Cappers Carrollsburg Hope VI on the site. Once complete, the project will accommodate a 195-unit mixed-income residential building. The building will consist solely of rental units, 39 of which will be offered as affordable housing. In addition, the site would not be compatible with the screening criterion that requires that any site chosen for consideration must not displace public services to District residents, to include public housing, education, or public recreation services. A groundbreaking ceremony was held in March of 2014, and construction is expected to be completed by November 2015.
- **Constructing a BEQ Complex at John Tyler Elementary and Adjacent Ball Field**. This site was identified as a potential alternative internally early in the CIMP process, due mainly to its government ownership and proximity to the Main Post. The Marine Corps coordinated with the DC Department of Public Schools to solicit public input on this potential site through CIMP discussions. The DC Public Schools requested that this site be removed from consideration, as the long-term plans for John Tyler Elementary School include ongoing investment and growth, and the school closure was not contemplated in the DC Public Schools long-term plans. The community largely opposed further consideration of the John Tyler Elementary School site for development of a BEQ Complex, and the site was removed from further consideration under the CIMP Process prior to Workshop 3. The site does not meet the screening criterion that requires any site chosen for consideration must not displace public services to District residents, to include public housing, education, or public recreation services.
- **Constructing a BEQ Complex on a Site east of 11th Street SE and North of M Street SE.** During scoping, this site was identified for possible evaluation. CSX rail lines run through the entire site. In addition, the site is currently being used as a staging area for the 11th Street Bridge construction project and includes areas underlying the 11th Street Bridge off-ramps. Further to the east, there are vacant lands. The 11th Street Bridge project includes changes to ramps and conversion of lands that would become available following the completion of the 11th Street Bridges. Based on the long-term plans to retain off-ramps, surface streets, and the CSX railway,

this site does not have sufficient land available to meet minimum developable area requirements for the approximately 191,405-SF BEQ Complex when AT/FP setbacks are applied.

- **Constructing on Virginia Avenue Park L'Enfant Plan Reservation.** During the CIMP process, a proposal was brought forward by a Site A landowner that considered extending the proposed BEQ Complex onto a portion of Virginia Avenue Park, including where the community gardens are located. Some of the configurations proposed for Site B also considered construction on Virginia Avenue Park. This rendered the site incompatible with the screening criterion that requires that any site chosen for consideration must not relocate public services to District residents, to include public housing, education, or public recreation services. Both Sites A and B, as carried forward in this EIS, do not include construction on Virginia Avenue Park.
- **Expanding the MBW Annex Site to include Adjacent Cappers Community Center Site.** The possibility of utilizing the MBW Annex property in conjunction with the adjacent 0.8-acre federally owned lot to the east of the property was considered. The federally owned lot is bounded by K Street to the north, 5th Street to the west, and L Street to the south. The lot is part of the Cappers Carrollsburg Planned Unit Development (PUD), which is being administered by DCHA (see Section 3.1.3). The site was recently vacant, but is now under construction for development of a 5-story, 18,000 SF Cappers Community Center, which is slated to include a daycare facility for 66 children, recreation center, computer lab, gym, game room, and meeting/classrooms. This option is similar to the preceding options in that it is incompatible with the screening criterion that requires that any site chosen for consideration must not relocate public services to District residents, to include public housing, education, or public recreation services.

2.7 ENVIRONMENTAL CONSEQUENCES

A summary of environmental consequences for all alternatives analyzed in this Draft EIS is provided in Table 2.8-1. This analysis focuses on the projects that would occur within the 5-year planning horizon. Though potential impacts associated with longer-term projects were identified, particularly the reuse of Building 20 or the Building 20 site, detailed analysis of impacts are dependent on the alternative selected in the ROD and future design considerations, are not reasonably foreseeable at this time.

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Land Use	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Required change to zoning (from C-3-A to unzoned/federal lands) • Consistent with planned land use, but height of 5-story BEQ Complex inconsistent with 45 feet maximum allowed by the Southeast Overlay District • 340 feet of L Street ROW between 8th and 9th Street SE would be removed from vehicle and pedestrian transportation network	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Required change to zoning (from C-M-1 to unzoned/federal lands) • Consistent with planned land use and height of buildings west of Site B along M Street • 315 feet of L Street ROW between 10th and 11th Streets SE would be removed from vehicle transportation network	• Impacts to land use would not be considered significant and would be minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Generally consistent with current and planned land use at Site C and the Anacostia Waterfront Framework Plan, though there would be inconsistencies in federal residential use vice planned community residential use in the SEFC "The Yards" Master Redevelopment Plan, as well as density and neighborhood character • Would require an agreement with Forest City Washington and GSA for transfer	• Impacts to land use would not be considered significant • Consistent with current and planned land use, zoning (federal use), and the WNY Installation Master Plan	• Impacts to land use would be considered significant, but minimized as practicable and in consultation with NCPC, DCOP, DC HPO, and ACHP • Inconsistent with prior land use commitments for the 6th Street L'Enfant ROW on MBW Annex property (as aapproximately 74 feet of the L'Enfant Plan 6th Street Viewshed would be lost to construction of the replacement BEQ Complex) • Consistent with current and planned land use and zoning (federal use)	• No impact to planned land uses and zoning

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
			of land for Marine Corps development			
Transportation and Circulation	• Less than significant short-term traffic impacts associated with demolition, construction, and repair activities • Less than significant impacts caused by permanent closure along L Street SE between 8th and 9th Streets SE • Less than significant impacts due to 700-foot increase in civilian pedestrian trip due to diversion around replacement BEQ Complex and 300-foot increase in military pedestrian trips between BEQ Complex and Main Post • No impacts to area mass transit • A minor net loss of 11 parking spaces; however, this would be offset by a reduction in parking demand due to the demolition of existing occupied uses, and the impact would be less than significant	• Short-term construction-related traffic impacts same as Alternative 1 • Less than significant impacts due to 1,200-foot increase in military pedestrian trip between BEQ and Main Post • No impacts to area mass transit • A minor net loss of 9 parking spaces; however, this would be offset by a reduction in parking demand due to the demolition of existing occupied uses, and the impact would be less than significant	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to 1,700-foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to the 1,200-foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Short-term construction-related traffic impacts same as Alternative 1 • No impacts to civilian pedestrian or bicycle use and less than significant impacts due to the 1,200 foot increase in military pedestrian trip between the BEQ Complex and Main Post • No impacts to area mass transit • No impacts to parking	• Traffic increases as a result of nearby infrastructure and development projects in the surrounding area would increase the delay at most intersections in the area but the effect would not be significant • Minimal changes to pedestrian and bicycle accessibility and transit service • No changes to area mass transit • No changes to parking
Cultural Resources	• Adverse effects to the Capitol Hill Historic District by demolishing contributing resources and to the L'Enfant Plan by closing L Street SE • Visual impacts would result in adverse effects to the WNY NHL, the Main Gate, Quarters A, Quarters B, Washington and Georgetown Railroad Car	• Adverse effect to the Capitol Hill Historic District, L'Enfant Plan, WNY NHL, and WNY East Extension from visual impacts • Adverse effect to the Main Gate, Quarters A, and	• No adverse effect to the WNY NHL or NRHP-listed historic district, or the individually listed Main Gate, Quarters A, or Quarters B (consistent with	• Adverse effect to the NRHP-eligible WNY East Extension by demolition of a contributing resource • No adverse effect to the	• Adverse effect to L'Enfant Plan viewshed at 6th Street SE • No adverse effect to the WNY NHL or NRHP-listed historic district, the Capitol Hill	• No adverse effect to cultural resources; cultural resources at MBW would continue being managed in accordance with the MBW Integrated Cultural Resources

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	House, and Capitol Hill Historic District • No adverse effects to the U.S. Marine Corps Barracks, Commandant's House, or the Capitol Hill Historic District from the renovation projects and the projects to foster integration of MBW with the community • Potential to impact archaeological resources at replacement BEQ Complex, Main Post renovation projects, and projects to foster MBW integration with the community • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	the Washington and Georgetown Railroad Car House from visual impacts • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect for is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	Historic Preservation Design Guidelines for new construction at the SEFC) • Consistent with L'Enfant Plan • No adverse effect to the Washington and Georgetown Railroad Car House or the Capitol Hill Historic District • Marine Corps' overall finding of effect is "no historic properties adversely affected" • All other effects to historical resources are same as Alternative 1 • Potential to impact archaeological resources at Main Post renovation projects and projects to foster MBW integration with	WNY NHL, the Main Gate, Quarters A, and Quarters B (height and design would be compatible with surrounding context) • Consistent with L'Enfant Plan • No adverse effect to the Capitol Hill Historic District or the Washington and Georgetown Railroad Car House • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will	Historic District, or the Washington and Georgetown Railroad Car House (height and design compatible with surrounding context) • No effect to the WNY Main Gate, Quarters A, or Quarters B • All other effects to historical and archaeological resources are same as Alternative 1 • The Marine Corps' overall finding of effect is "historic properties adversely affected." A Section 106 agreement document will be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be	Management Plan (ICRMP) • No significant impacts to cultural resources

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
			the community • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	be developed to resolve adverse effects • Based on the stipulations adopted in the agreement document, there would be no significant impacts to NRHP-listed or eligible cultural resources	no significant impacts to NRHP-listed or eligible cultural resources	
Socioeconomics and Environmental Justice	• No impacts to short- or long-term population • Negligible regional economic impacts resulting from short-term increase in employment and expenditures associated with repair, renovation, and construction activities • Less than significant but long-term localized loss of employment and expenditures associated with displacement of current and potential future business and residents at site • No significant impacts to housing; displaced property owners would be relocated and compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 • Less than significant 1 percent impact on DC tax base from	• Same as Alternative 1	• Similar to Alternative 1, no impacts to population, population trends, employment, and income • Potential significant loss in the DC tax base due to removing the potential for a 218-unit residential development as noted in the SEFC "The Yards" Master Redevelopment Plan • No disproportionately high or adverse human	• Similar to Alternative 1, no impacts to population, population trends, employment, and income • Less than significant impacts to the DC tax base from the temporary relocation of 20-25 military personnel during construction • No disproportionately high or adverse human health or environmental	• No impacts to population, population trends, employment, income, housing, or the DC tax base • No disproportionately high or adverse human health or environmental effects on minority and low-income populations	• Existing socioeconomic conditions would continue, no impacts from the No Action Alternative

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	conversion of residential/ business properties to federal property; localized loss of future tax base • No disproportionately high or adverse human health or environmental effects on minority and low-income populations		health or environmental effects on minority and low-income populations	effects on minority and low-income populations		
Public Health and Safety	• Implementation of Occupational Health and Safety Act standards, as well as construction BMPs/SOPs avoid significant impacts to workers and others in vicinity of construction, demolition, and renovation activities • Implementing standard BMPs/SOPs avoids significant impacts from hazardous materials and hazardous waste • Less than significant impacts related to toxic substances due to surveys prior to demolition and proper removal and disposal of all toxic substances • No impacts to contaminated sites as none are within or near proposed project sites • No disproportionate environmental health and safety risks to children	• Similar to Alternative 1. Site B is residually contaminated due to a former leaking UST • Significant impacts avoided by coordinating with DDOE to ensure that proper precautions associated with earth moving activities are taken	• To avoid significant impacts, the Marine Corps would coordinate with the U.S. Environmental Protection Agency (USEPA) to ensure that proper precautions associated with earth moving activities are taken	• Similar to Alternative 1; however, a contaminated site is located inside Site D • While no further remedial action determination was concluded, to avoid significant impacts, the Marine Corps would coordinate with the USEPA to ensure that proper precautions associated with earth moving activities are taken	• Similar to Alternative 1; however, a UST is located within Site E footprint • Proper coordination for either avoidance, closure/removal , or relocation in accordance with applicable regulations during construction would avoid significant impacts	• Adverse impacts to public health and safety would remain due to existing deficiencies relating to AT/FP, minimum space requirements, QOL, and life safety • No impacts; existing programs for management of hazardous materials, hazardous waste, toxic substances, and contaminated sites would continue
Utilities and Infrastructure	• Construction and renovation projects would result in a net reduction (estimated 20 percent) in energy and water use/wastewater collection	• Same as Alternative 1	• Similar to Alternative 1 with two exceptions: • Existing Pepco	• Same as Alternative 1	• Same as Alternative 1	• No change to utilities and infrastructure would occur • Inefficiencies and

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	and treatment from replacing inefficient systems with sustainable technology • No impacts to electrical supply systems, telecommunications systems, water demand, stormwater collection, or natural gas • Temporary, but less than significant increase in solid waste disposal associated with construction, demolition, and renovation activities		electrical substation would have to be removed and relocated; however, impacts would be less than significant because Pepco already has plans to relocate it to address increased demand • Less than significant impacts would result because a pump house (Building 199) would either need to be relocated or incorporated into the design of the replacement BEQ Complex			high maintenance costs resulting from aging utilities and infrastructure would continue. A potential 20 percent reduction in energy and water use/wastewater collection and treatment would not be realized
Public Services	• Closure of a portion of L Street SE would eliminate public access to Virginia Avenue Park from this road segment; however, several other roads provide access so no significant impacts • No impact to emergency response or medical services • No impact to educational,	• Similar to Alternative 1; no impact to emergency response; medical, educational, and social services; or religious facilities • Impacts due to displacement of	• No impact to public services	• Same as Alternative 3	• Similar to Alternative 1; no impact to emergency response; medical, educational, and social services; or religious	• No change to public services would occur

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	social services, or religious facilities	the Humane Society Spay and Neuter Clinic would be less than significant because of real property compensation and relocation assistance			facilities • Temporary, but less than significant impacts to public use of MBW Annex multi-purpose recreation field	
Noise	• Short-term, direct impacts associated with construction, demolition, and repair activities would not be significant • A sensitive receptor, Richard Wright Public Charter School, exposed to elevated noise levels but implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, sensitive receptors are residents located adjacent to Site B, on the west side of 10th Street • Implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, sensitive receptors are Van Ness Elementary School and Joy Evans Before and After School Care • Implementation of management actions and mitigation measures avoids adverse impacts	• Similar to Alternative 1; however, no sensitive receptors and no significant impacts	• Similar to Alternative 1; however, sensitive receptors are Joy Evans Before and After School Care and the Arthur Cappers Senior Center • Implementation of management actions and mitigation measures avoids adverse impacts	• No change to existing noise conditions would occur
Natural Resources: *Geology and Soils*	• No impacts to geology • Implementing BMPs and SOPs would avoid significant impacts to sediments • 3.0 acres impacted	• Similar to Alternative 1, but 1.8 acres would be impacted	• Similar to Alternative 1, but 2.1 acres would be impacted	• Similar to Alternative 1, but 1.67 acres would be impacted	• Similar to Alternative 1, but 0.89 acre would be impacted	• No change to geology and soils would occur
Natural Resources: *Water Resources*	• Temporary, but less than significant impacts to groundwater levels during construction of below-grade parking at the replacement BEQ Complex • No significant impacts to	• Same as Alternative 1	• Similar to Alternative 1 with the exception of floodplains • 1.9 acres of Site C are within 100-	• Similar to Alternative 1, except no below-grade parking would be needed and thus lessen	• Same as Alternative 4	• No change to water resources would occur

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	hydrology, floodplains, wetlands, or water quality • BMPs and SOPs would avoid significant impacts to water quality		year floodplain; significant impacts would be mitigated to less than significant by following EO 11988	potential of groundwater inundation		
Natural Resources: *Biological Resources*	• No significant impacts to vegetation or wildlife • No impacts to ecologically critical habitat areas or threatened or endangered species • No violations of applicable laws or requirements • Replacement BEQ Complex may block sunlight from reaching the Virginia Avenue Park Community Garden during afternoon hours (depending on height and configuration of BEQ Complex) which may create less than ideal conditions for many common garden species	• No significant impacts to vegetation or wildlife • No impacts to ecologically critical habitat areas or threatened or endangered species • No violations of applicable laws or requirements • No impacts to the Virginia Avenue Park Community Garden and smaller area impacted	• Similar to Alternative 2; however, little vegetation exists at Site C	• Similar to Alternative 2; however little vegetation exists at Site D	• Similar to Alternative 2; however, little vegetation exists at Site E	• No change to natural resources would occur
Air Quality	• Estimated emissions generated by demolition and construction activities would be well below significance thresholds and comply with the General Conformity Rule • BMPs and SOPs would be employed to further reduce emissions • Long-term net emissions reductions from replacement	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Similar to or less than Alternative 1	• Minor negative impact to regional air quality would occur because aging stationary sources would not be replaced with newer more efficient equipment

Table 2.8-1. Summary of Impacts

Resource	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
	of existing stationary sources (boilers, generators) with energy-efficient systems					

3.0 AFFECTED ENVIRONMENT

This chapter describes the existing environmental conditions in the proposed project area or study area. Information in this chapter serves as baseline data to which the proposed alternatives are compared in Chapter 4 to identify and evaluate potential environmental impacts.

In compliance with NEPA CEQ regulations, and Navy and Marine Corps procedures for implementing NEPA, the level of analysis is commensurate with the anticipated level of impact. In addition, the description of the affected environment focuses only on those resources potentially subject to impacts. The discussion of the affected environment and associated environmental analysis presented herein focuses on: land use, transportation and circulation, cultural resources, socioeconomics and environmental justice, public health and safety, utilities and infrastructure, public services, noise, natural resources, and air quality.

3.1 LAND USE

3.1.1 Definition of Resource

Land use refers to the various ways in which land is developed and used, typically in terms of the types of activities allowed and the type and use of structures permitted. Land use management plans, policies, ordinances, and regulations determine the type and extent of allowable land use in specific areas to limit conflicting land uses and protect specially designated or environmentally sensitive areas. Land use classifications refer to the current type of land use or to the intended future use of land, more commonly referred to as zoning. The analysis of potential land use impacts associated with the Proposed Action focuses on two of the 39 neighborhood clusters currently used for community planning and related purposes in the District of Columbia: Cluster 27, which includes Arthur Capper, Carrollsburg, Near Southeast, and WNY and Cluster 26, which includes Capitol Hill, Capitol Hill East, and Lincoln Park. Both of these clusters are located in DC Ward 6, the largest of DC's eight wards. The Coastal Zone Management Act does not apply to this EIS because DC has no Coastal Zone Management Plan.

3.1.2 Land Use Plans and Policies

Comprehensive Plan for the National Capital

The *Comprehensive Plan for the National Capital*, prepared by NCPC and DCOP, provides a statement of principles, goals, objectives, and planning policies for the future growth and development of DC. The Comprehensive Plan has two parts: the Federal Elements, prepared by NCPC, which contain recommendations directed at federal lands and the federal interest in the NCR, and the District Elements, prepared by DCOP, which deal with non-federal lands in DC.

Federal Elements

The *Comprehensive Plan for the National Capital: Federal Elements* is prepared pursuant to Section 4(a) of the National Capital Planning Act of 1952, as amended. The plan contains recommendations directed at federal lands and the federal interest in the NCR. The Federal Elements section identifies and addresses the current and future needs of federal employees and visitors to the nation's capital;

provides policies for locating new federal facilities and maintaining existing ones; guides the placement and accommodation of foreign missions and international agencies; promotes the preservation and enhancement of the region's natural resources and environment; protects historic resources and urban design features that contribute to the image and functioning of the nation's capital; and, working with local, state, and national authorities, supports access into, out of, and around the nation's capital that is as efficient as possible for federal and non-federal workers.

The seven Federal Elements of the Comprehensive Plan are as follows:

- The Federal Workplace Element encourages an efficient distribution of federal work activities in the region, assuring federal workplaces that offer good work environments for the federal workforce, while providing services that attract and retain federal employees.
- The Foreign Missions and International Organizations Element provides a policy framework for the U.S. to fulfill its obligation to foreign governments in obtaining suitable locations for their diplomatic activities.
- The Transportation Element promotes a balanced, multi-pronged strategy that encourages the provision of improved public transit services and the creation of new transportation modes and new commuting alternatives.
- The Parks and Open Space Element establishes policies to protect, enhance, and expand the parks and open space system in the region.
- The Federal Environment Element promotes the federal government as an environmental steward and emphasizes and supplements the existing environmental regulatory framework.
- The Preservation and Historic Features Element preserves and enhances the image and identity of the nation's capital and region, and provides a framework for the federal government's treatment of historic properties.
- The Visitors Element provides a response to the growth in tourism and the continuing interest in creating new federal visitor attractions (NCPC 2013).

The Comprehensive Plan is a living document that benefits from periodic updates. The NCPC is currently reviewing policies in the plan to evaluate which should be revised. The latest Comprehensive Plan included draft policy updates to the Foreign Missions and International Organizations Element. These updates were submitted for public review May through July 2013 (NCPC 2013).

District Elements

The *Comprehensive Plan for the National Capital: District Elements* includes 13 Citywide Elements: Framework (setting the plan's guiding principles and vision); Land Use; Transportation; Housing; Economic Development; Parks, Recreation, and Open Space; Educational Facilities; Environmental Protection; Infrastructure; Urban Design; Historic Preservation; Community Services and Facilities; Arts and Culture; and Implementation. The District Elements also include ten Area Elements that focus on issues that are unique to particular parts of DC. Although many of the Area Element policies are "place-based," they are general in nature and do not prescribe specific uses or design details. Sections that are applicable under this Proposed Action are Chapter 15 that addresses Capitol Hill and Chapter 19 that addresses the Lower Anacostia Waterfront/Near Southeast area. The District Elements are adopted by

DC Council legislation and become part of the DC Municipal Regulations. Small Area Plans supplement the DC Elements by providing detailed direction for areas ranging in size from a few city blocks to entire neighborhoods or corridors. Small Area Plans are adopted by the DC Council by resolution.

The DCOP launched the first Amendment Cycle for the 2006 *Comprehensive Plan for the National Capital: District Elements* in April 2009, resulting in four sections of the Comprehensive Plan Amendments to be considered by the Council. The latest update to District Elements Comprehensive Plan came in December 2012, when the Future Land Use Map was updated. As with the Federal Elements, this is a living document and DCOP released a progress report in April 2013, *Moving Forward, Building an Inclusive Future* to track progress made on plan milestones (DCOP 2013).

Joint Height Master Plan for the DC

In November 2012, the DCOP and NCPC announced a joint Height Master Plan to evaluate the impact of strategic changes to the Height Act. The study explored potential strategic changes to the federal Height of Buildings Act of 1910 in those areas outside the L'Enfant City that support local economic development goals, while taking into account the impact on federal interests, national security concerns, compatibility to surrounding neighborhoods, local residents' input, and other related factors. The NCPC and DCOP were asked to determine the extent to which the Height Act continues to serve the interests of both federal and District governments. In November 2013, NCPC and the DCOP submitted the report containing the following final recommendations to Congress:

- To protect the integrity of the form and character of the nation's capital, the federal Height Act should remain in place and no changes should be made to the formula or approach for calculating allowable building height.
- There may be some opportunities for strategic change in the areas outside of the L'Enfant City where there is less concentration of federal interests. However, additional study is required to understand whether strategic changes to the Height Act would impact federal interests within this area.
- The city's most significant viewsheds, to include without limitation, those to and from the U.S. Capitol and the White House, should be further evaluated and federal and local protections established, which include policies in the Federal and District Elements of the Comprehensive Plan.
- Amend the Height Act to allow for human occupancy in existing and future penthouses, with the following restrictions:
    - Include specific protections related to sightlines for select federal buildings including, but not limited to, the U.S. Capitol and White House.
    - Support communal recreation space on rooftops by allowing human occupancy in roof structures, where use of those structures is currently restricted under the Height Act to mechanical equipment, so long as the façade of these structures continue to be set back from exterior building walls at a 1:1 ratio.
    - Impose an absolute 20 foot maximum height and a limitation of 1 story for penthouse structures above the level of the roof, which must contain within all mechanical

equipment and elevator, stair, and other enclosures, with no additional construction allowed above the penthouse roof for any purpose.

- Delete Sections 2-4 of the Height Act, as contained at 36 Stat 452, chap 263, sec 2-4 (1910), which solely relate to fireproof construction. These proposed deletions are antiquated fire and safety requirements that have been updated and incorporated into modern day codes by DC.

On 16 May 2014, a bill to amend the Height Act, which sets a maximum limit on Washington, DC's building heights, was signed into law. The bill amends the federal Height Act to allow human occupancy in rooftop penthouse structures, while maintaining the current 1:1 setback. The bill caps penthouse height at 1 story and a maximum of 20 feet. These minor amendments are consistent with NCPC's recommendations prepared as part of the Height Master Plan.

WNY Installation Master Plan

The Navy has recently updated the WNY Installation Master Plan, and it was approved by NCPC on 6 November 2014. The Master Plan provides an installation-specific framework, while enhancing and redefining a singular vision and program for WNY's mission and goals. The Master Plan presents an evaluation of the existing conditions, presents the plan to accommodate future growth and expansion, and presents strategies for achieving the long-range vision, while enhancing the installation and the QOL for those living and working at WNY (Naval District Washington 2014).

3.1.3 Existing Land Use

As an overview, the study area comprises the Capitol Hill and Near Southeast areas, which have differing area context as introduced in Section 1.2.2. Capitol Hill is united by history, architectural tradition, and relatively consistent urban form, including a system of grid and diagonal streets that has generally remained faithful to the 1791 L'Enfant Plan for Washington. Capitol Hill contains a wide range of mixed land uses, including retail, office, and commercial businesses; residential uses; industrial uses; and government properties and buildings. Capitol Hill is the largest historic district and one of the most densely populated residential neighborhoods in DC. The construction of the Southeast Freeway (I-695) bisected the community and now presents the dominant visual characteristic along Virginia Avenue. In general, the land uses on the north side of the Southeast Freeway have retained their historical characteristics. The land uses on the south side, the Near Southeast area, have been subject to large scale redevelopment that eliminated most of the original structures and buildings. Barracks Row Main Street is the oldest commercial corridor in the city, extending along 8th Street SE from Pennsylvania Avenue SE to the WNY along M Street SE (DC Council 2006). The portion of 8th Street SE, north of the Southeast Freeway, is densely packed with bars, restaurants, shops, and other similar commercial venues. South of the Southeast Freeway, the corridor is less consistent, but contains a large concentration of historic structures and a few small shops and eating establishments.

DC is divided into Wards, with the study area falling into Ward 6, the largest of the eight wards. Regional planning is coordinated via the ward system, with specific Ward 6 planning representatives. Along with the ward system, there are also ANCs that consider policies and programs affecting their neighborhoods, to include such issues as traffic, recreation, street improvements, economic development, and zoning. The ANCs act as the body of government with the closest official ties to the people in the neighborhood.

There are eight BIDs in DC; BIDs are non-profit organizations that collect a "self tax" from property owners to provide services and programs to the entire BID. The programs address cleanliness, maintenance, safety, promotion, economic development, and other collective business issues in their coverage areas (DC Business Resource Center 2014). As shown in Figure 3.1-1, the replacement BEQ Complex Alternative Sites A and B, the Main Post, and Building 20 are within the boundaries of ANC 6B and the Capitol Hill BID, and replacement BEQ Complex Sites C, D, and E and the MBW Annex are located within the boundaries of ANC 6D and the Capitol Riverfront BID.

Existing land uses within the study area generally align well with the current Planned Land Use Map produced by DCOP (Figure 3.1-2). The MBW Building 20 and Annex properties are all federal properties, but are depicted as partially low-density residential because they also provide residences for enlisted personnel. The mixed uses at and adjacent to replacement BEQ Complex Alternative Sites A and B are primarily commercial with some residential. The area proposed for BEQ Complex Alternative Site C is federally owned by GSA; however, there is an agreement in place between GSA and Forest City (SEFC Public-Private Deevlopment Act of 2000, Public Law 106-407) to sell the development rights and transfer ownership to Forest City on a parcel-by-parcel basis. Site C occupies an area that Forest City plans to redevelop into residential and retail space as part of SEFC “The Yards” Master Redevelopment Plan. However, no redevelopment activities have occurred. Existing land use at the BEQ Complex Alternative Site D includes the administrative Building 169, as well as tennis and basketball courts that are located adjacent to the east side of Building 169. Also included are parking areas and portions of Poor Street which provides access between Parsons Avenue and 10th Street SE within the WNY boundary. The BEQ Complex Alternative Site E lies on federally owned land within the MBW Annex boundary. The current use of Site E is recreational and includes a basketball court, pavilion, running track, and a portion of the baseball diamond configuration that utilizes part of the parade field.

Figure 3.1-1. ANCs and BIDs Within the Study Area

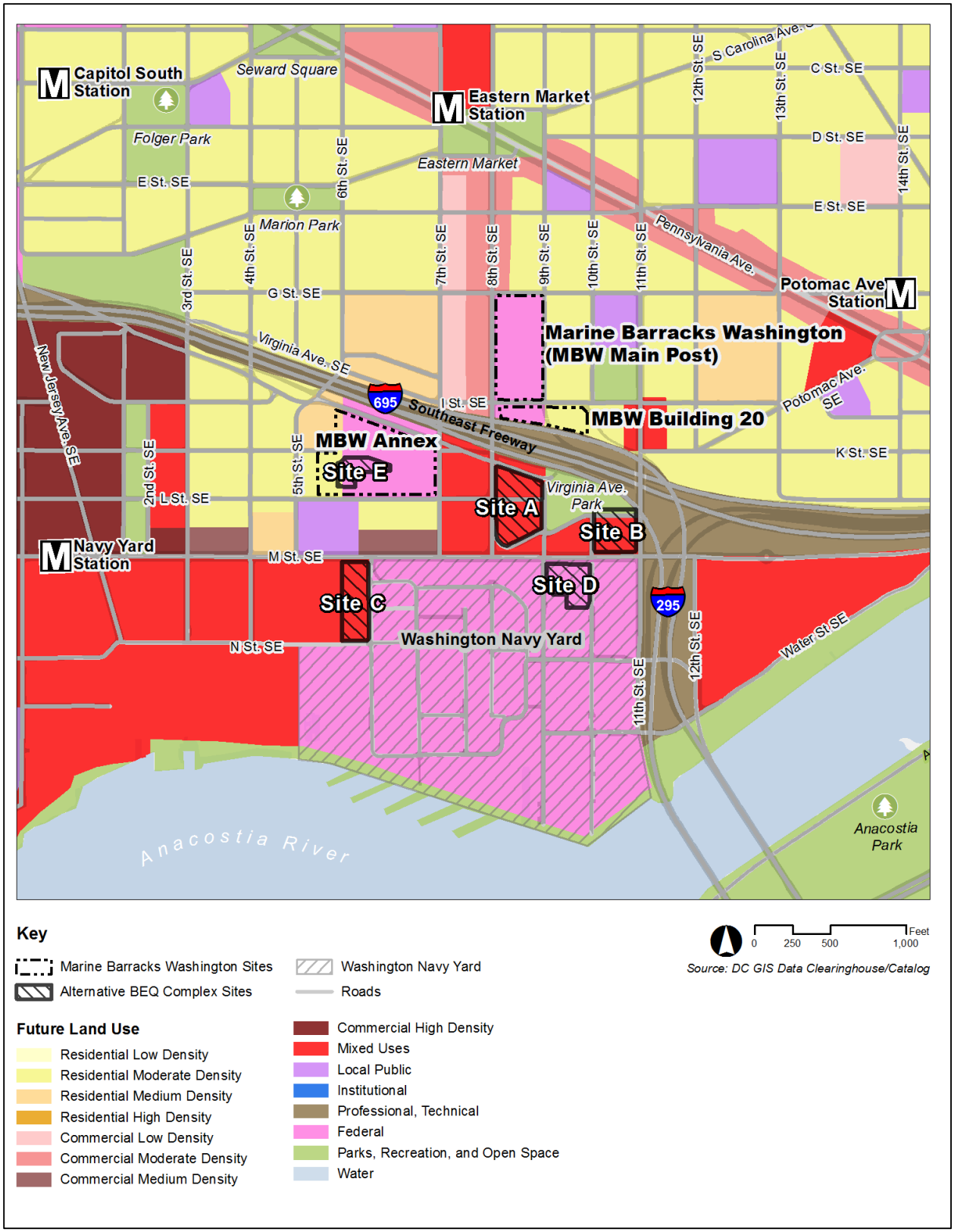


Figure 3.1-2. Planned Land Use

Much of the study area has remained generally consistent over time, particularly the area north of the Southeast Freeway. However, there are a number of "transitional" land use areas and they are noted below with additional detail provided in Chapter 5.

- **The SEFC "The Yards" Master Redevelopment Plan Area**. As noted in Section 2.4.3, this area, which includes proposed BEQ Complex Alternative Site C, is part of this large-scale mixed-use development with residences, offices, shops, a waterfront park, and cultural amenities to enhance the value of the SEFC to the U.S. (GSA 2004).
- **Arthur Capper-Carrollsburg Hope VI PUD**. Much of the area between BEQ Complex Alternative Site C and the MBW Annex/Site E and to the west of these areas is part of the Arthur Capper-Carrollsburg Hope VI PUD. This is a large-scale, ongoing effort led by the DCHA to redevelop the 33-acre Capper-Carrollsburg public housing site into a mixed income, mixed use development. The PUD is the first Hope VI project to guarantee 1:1 replacement of the outdated 707 publicly-assisted housing units within the same footprint as the original housing units. The project initially started with a $34.9 million Hope VI grant award from the U.S. Department of Housing and Urban Development and, with the addition of public and private investors, has grown to one of the country's largest urban redevelopment efforts with an approximate $750 million investment. Replacement of the public infrastructure at the site is being accomplished through a DCHA-DC funding agreement (DCHA 2013). Construction on Phase I (a townhouse development called "Capitol Quarter") was completed in the summer of 2010 and is located between 3rd and 5th Streets SE, Virginia Avenue SE, and L Street SE. Phase II, which is located in the blocks between 3rd and 4th Streets SE and I and L Streets SE, was completed in 2012. In total, both phases of Capitol Quarter contain about 320 residential units, most of which are single-family townhouses. The community also supports several three-unit apartment buildings as low-income rentals (JDLand 2012). The Arthur Capper Senior Apartments, also part of the Capper-Carrollsburg redevelopment, comprises two residential buildings, known locally as "Capper #1 and Capper #2". Capper #1 is 162 units of affordable senior housing development located just west of the MBW Annex and Site E at the corner of Virginia Avenue SE and 5th Street SE. It was completed in December 2006. Capper #2 is a second senior apartment building with 139 units on 400 M Street SE; this was completed in November 2007.
- **Maritime Plaza**. This office development, located in the mixed use area between 12th Street SE, M Street SE, and Water Street SE is currently about 50 percent built out of the planned development.
- **Van Ness Elementary School**. The school property, shown as the local public area located just north of BEQ Complex Alternative Site C (see Figure 3.1-2) is currently used for administrative purposes only, but is slated to reopen in the 2015/2016 school year.

There are numerous parks and pockets of open/green space throughout the study area. The most notable of these parks are listed below with additional detail provided in Section 3.7 and analysis in Section 4.7.

- Virginia Avenue Park, located adjacent to replacement BEQ Complex Sites A and B (see Figure 3.1-2). The NPS owns the Virginia Avenue Park real estate, but the park is maintained and operated by the DC DPR. The park contains the Virginia Avenue Community Garden, a fenced

dog area, grassy fields, park benches, and picnic tables. The community garden offers local residents opportunities to grow herbs, vegetables, and fruits.

- Bell Field adjacent to Tyler Elementary School, located northeast of MBW Building 20 (see Figure 3.1-2). This field is used by the school, but DC DPR is the land owner.
- Eastern Market Metro Park, which consists of two trapezoid-shaped public plazas, medians, and two smaller triangular plazas on Pennsylvania Avenue SE between 7th and 9th streets, and includes the Eastern Metro Market Metro Station.
- Marion Park, located between 4th Street SE and 6th Street SE just north of E Street SE, is an NPS owned and administered park that includes green space and a playground area.
- Canal Park, a recently revitalized green space/gathering place/event space, is located between 2nd Street and 1st Street SE and M Street and I Street SE.
- The MBW Annex Parade Field, a practice field that is used in training for the MBW ceremonial mission, as well as in meeting Marine Corps physical fitness training requirements, is also made available for public use by the surrounding community. The deed restrictions for the transfer of the land from the NPS to MBW (the Lincoln Park parcel) include a covenant that reads: "The realigned recreation field will remain dedicated to that purpose and shall be available for public use in perpetuity" (NAVFAC 2010). The MBW maintains this deed restriction commitment in coordination with the DC DPR program, which includes a permit program for fields use. The Annex field is available for scheduling for public use most evenings and often during the day, and is used regularly by organizations such as Sports on the Hill, a volunteer youth sports program (Sports on the Hill 2014).

3.1.3.1 DC Zoning

Zoning regulations in DC are established and enforced by the DC Office of Zoning (DCOZ), DC Zoning Commission, and Board of Zoning Adjustment. The DC Zoning Commission and Board of Zoning Adjustment are independent, quasi-judicial bodies created by the Zoning Acts of 1920 and 1938, respectively. The Zoning Commission's five members include three DC representatives appointed by the Mayor, with confirmation of the City Council and two federal members: the Architect of the Capitol and the NPS Director. The Board of Zoning Adjustment grants relief from zoning regulations, approves land use exceptions, and hears zoning appeals. The regulations control land use, density, height, and bulk characteristics of property in the District (DCOZ 2014).

Figure 3.1-3 illustrates the zoning in the immediate vicinity of the study area, and Table 3.1-1 describes the general zoning districts and three of the five overlay districts: Eighth Street Southeast Neighborhood Commercial (ES) Overlay District, Capitol Hill Commercial (CHC) Overlay District, and the SEFC Overlay District. Although the Capitol Interest and Capitol Gateway Overlay Districts also occur within the map window of Figure 3.1-3, these overlay districts would not be affected by the Proposed Action.

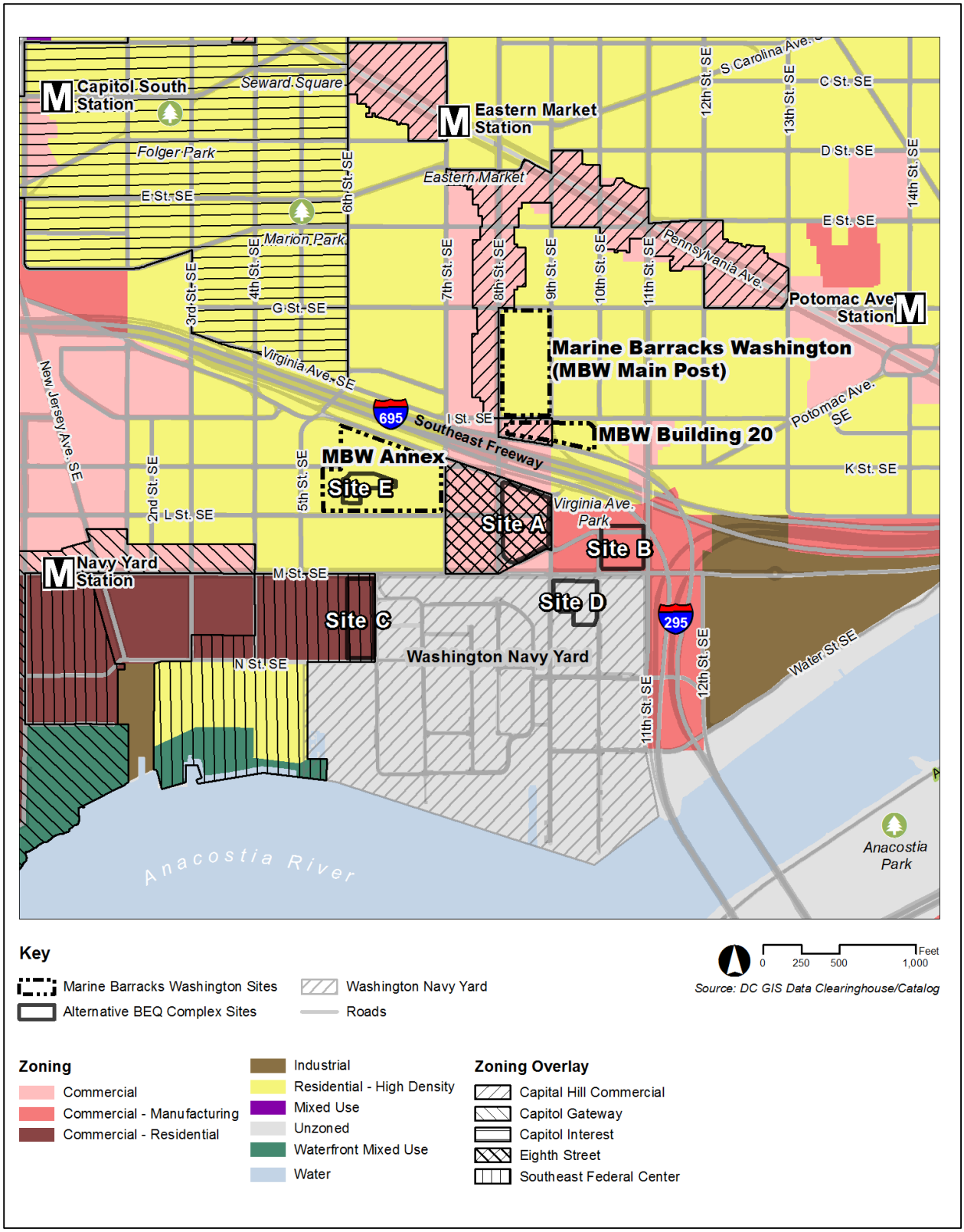


Figure 3.1-3. Zoning and Overlay Districts Within the Study Area

Table 3.1-1. DC Zoning Districts and Overlay Districts Within the Study Area

Zoning Districts	
Residential	
R-4	Permits matter-of-right development of single-family residential uses, churches, and public schools. Moderate density is set by minimum lot widths, minimum lot areas, and maximum lot occupancies that vary by development type. Maximum height is 3 stories/40 feet, except for churches and schools where 65-foot height is allowable and public recreation and community centers where 45-foot height is allowable.
R-5-B	Permits matter-of-right moderate development of general residential uses, including single-family dwellings, flats, and apartment buildings. Density is controlled by maximum lot occupancy and maximum floor area ratio (FAR) requirements. Maximum height is 50 feet.
R-5-D	Permits matter-of-right medium/high density development of general residential uses, including single-family dwellings, flats, and apartment buildings, to a maximum lot occupancy of 75% (20% for public recreation and community centers), a maximum FAR of 3.5, and a maximum height of 90 feet (45 feet for public recreation and community centers). Rear yard requirements are not less than 15 feet.
R-5-E	Permits matter-of-right high density development of general residential uses, including single-family dwellings, flats, and apartment buildings, to a maximum lot occupancy of 75% (20% for public recreation and community centers), a maximum FAR of 6.0 for apartment houses and hotels, and 5.0 for other structures, and a maximum height of 90 feet (45 feet for public recreation and community centers). Rear yard requirements are not less than 12 feet.
Commercial	
CR	Permits matter-of-right residential, commercial, recreational, and light industrial development to a maximum lot occupancy of 75% for residential use, 20% for public recreation and community center use (up to 40% with Board of Zoning Adjustment approval), and 100% for all other structures, a maximum FAR of 6.0 for all buildings and structures, of which not more than three may be used for other than residential purposes, a maximum height of 90 feet for all buildings and structures, and 45 feet for public recreation and community centers. An area equivalent to 10% of the total lot area shall be required at ground level for all new development, and rear yards shall be provided for each residential building or structure.
C-2-A	Permits matter-of-right low density development, including office employment centers, shopping centers, medium-bulk mixed-use centers, and housing. Density is controlled by maximum lot occupancy and FARs for various uses. The maximum height is 50 feet.
C-3-A	Permits matter-of-right medium density development, with a density incentive for residential development within a general pattern of mixed-use development. Density is controlled by maximum FAR and lot development percentage. The maximum height is 65 feet.
C-2-B	Permits matter-of-right medium density development, including office, retail, housing, and mixed uses to a maximum lot occupancy of 80% for residential use and 100% for all other uses, a maximum FAR of 3.5 for residential use and 1.5 FAR for other permitted uses, and a maximum height of 65 feet. Rear yard requirements are 15 feet; one family, detached dwellings and one family, semi-detached dwellings side yard requirements are 8 feet.
C-M-1	Permits development of low bulk commercial and light manufacturing uses. Density is controlled by maximum FARs. The maximum height is 3 stories/40 feet. New residential is prohibited.

Table 3.1-1. DC Zoning Districts and Overlay Districts Within the Study Area

Zoning Districts	
W-0	Permits open space, park, and low-density and low-height, waterfront-oriented retail and arts uses with a maximum height of 40 feet and a maximum FAR of 0.5 (0.75 for a lot that is used exclusively for recreational use, marina, yacht club, boathouse building, or structure), and a maximum lot occupancy of 25% (50% for a lot that is used exclusively for recreational use, marina, yacht club, boathouse building, or structure). Maximum height is 40 feet (25 feet for a structure located on, in, or over the water, including a floating home). There is also a 100-foot waterfront setback requirement.
Zoning Overlay Districts	
ES	The ES Overlay District was established to encourage and allow new business and office development in close proximity to WNY, with emphasis on firms that will conduct business with the Navy, as well as neighborhood-serving retail and service businesses; allow and encourage medium density commercial development, in the interest of securing economic development, while restricting building heights to a low level so as to respect the historic scale of buildings and the entrance to the adjacent Navy Yard; and provide for safe and efficient pedestrian movement, so as to improve access to retail and other businesses in the area. Restaurants, fast food establishments, and prepared food shops subject to limitations to control density, including that the maximum permitted height for any building or structure in the ES Overlay District shall be 45 feet.
CHC	The CHC Overlay District was established to implement the goals and policies of the District Elements of the Comprehensive Plan, particularly those land use objectives and policies related to improving the physical condition of Capitol Hill through the provision of functional, efficient, and attractive commercial areas; minimizing conflicts between various land uses; locating more intensive and active land uses in areas of Capitol Hill that can accommodate and support such uses; stabilizing and improving commercial areas in portions of Capitol Hill; ensuring the integrity of the Capitol Hill Historic District; and developing and establishing special land use categories to meet the unique characteristics of the commercial areas of Capitol Hill. The overlay also encourages adaptive reuse of buildings and to provide appropriate incentives for new infill that is compatible with the Capitol Hill Historic District. The maximum building height permitted in the CHC Overlay District shall be that of the underlying zone; however, if the property is located within both the CHC Overlay District and the Capitol Interest Overlay District, the maximum height shall be that permitted in the Capitol Interest Overlay District.
SEFC	The SEFC Overlay District was established to provide for the development of a vibrant, urban, mixed-use waterfront neighborhood, offering a combination of uses that attracts residents, office workers, and visitors from across the District and beyond. The objectives of the SEFC Overlay District are to: ensure a mix of residential and commercial uses with suitable height, bulk, and building design; encourage high-density residential development with a pedestrian-oriented streetscape; encourage support and visitor-related uses; reduce height and bulk of buildings along the Anacostia riverfront; require ground-floor retail and service uses near the Navy Yard Metrorail station; encourage development that is sensitive to historically significant buildings and the adjacent Navy Yard; and establish zoning incentives and restrictions to provide a publicly-accessible park for W-0 Zone District uses along the Anacostia River. The maximum height allowed under the SEFC Overlay District varies from 90-130 feet, depending on the underlying zone and location within the overlay. The maximum density also varies depending on the underlying zone and location within the overlay.

Note: FAR is a figure determined by dividing the gross floor area of a building(s) on a lot by the area size of that lot. The higher the FAR, the greater the density allowed on the lot.
Source: DCOZ 2013, 2010.

The majority of the area is currently zoned for commercial and residential uses. Land areas owned and managed by a federal entity as independent installations, such as the WNY, are typically un-zoned. The zoning shown for MBW properties is not enforceable, but does demonstrate the consistency of the existing use with the surrounding neighborhood. The DCOZ is currently in the process of updating the DC zoning regulations and putting them forth to the DC Zoning Commission for review, and eventual codification and approval by DCOP. Any updates to the zoning regulations that impact zoning within the project area will be addressed in the Final EIS. With respect to the replacement BEQ Complex alternative sites:

- Site A is currently zoned "C-3-A", which includes medium density mixed-use development and is within the ES Overlay District
- Site B is currently zoned "C-M-1", a low bulk commercial manufacturing zoning district.
- Site C is currently zoned "CR", a commercial-residential area within the SEFC Overlay District
- Site D, being federally owned within WNY, is currently un-zoned. The WNY Installation Master Plan identifies parcels within the site as prime locations for redevelopment/renovation. The "Framework Plan" for long-term land use in this area is to retain the existing administrative and recreation uses and road infrastructure of this area of WNY.
- Site E is currently zoned "R-5-B", which consists of moderate general residential development including single-family dwellings and apartment buildings. Given that Site E is within the MBW Annex boundary, the zoning is not enforceable.

3.1.3.2 The Height Act

While not typically analyzed, height restrictions are a unique element to be considered in this EIS analysis. Comments received during the official scoping period suggested potential height restrictions at the replacement BEQ Complex alternative sites would need to be considered when analyzing the potential impacts of the Proposed Action.

The 1910 Height of Buildings Act (The Height Act) is a federal law that imposes restrictions on the height of all buildings within DC's boundaries, resulting in the predominantly horizontal skyline that defines the urban character of DC. The Height Act and associated regulations in DC Code (6-601.05) relate maximum building height to street width. Generally, the maximum height of any building is equal to the width of the adjacent street plus 20 feet. Additionally:

- For Business Streets and Avenues: maximum height = 130 feet (12-13 stories) (with the exception of the north side of Pennsylvania Avenue between 1st St and 15th Street NW, where maximum height is 160 feet)
- For Residence Streets, Avenues, or highways: maximum height = 90 feet (8-9 stories) and:
    - For street width greater than 65 feet, maximum height = street width – 10 feet
    - For street width 60-65 feet, maximum height = 60 feet (5-6 stories)
    - For street width less than 60 feet, maximum height = street width
- Spires, towers, domes, penthouses over elevator shafts, and smokestacks are required to be set back from the exterior wall distances equal to their respective heights above the adjacent roof

- Where there are two or more streets, the maximum height is dictated by the street that furnishes the highest height

As a federal law, the Height Act can be amended only by Congress. It has been amended to provide for exemptions for specific buildings on four occasions (for the Georgetown University Hospital, Raleigh Hotel, National Press Building, and what is now the Washington Hilton on Connecticut Avenue).

The Height Act provides the DC Council the authority to further regulate height on blocks adjacent to public buildings. The Height Act clearly states that the city may not raise heights above the limits described in the Height Act and its amendments. Under the provisions of the Act, the DC Office of the Attorney General is responsible for enforcement of the terms Height Act. The District's zoning regulations cannot supersede the Height Act; they include provisions for maximum height of buildings consistent with the Height Act.

While the Height Act sets the maximum height, DC's Zoning Code sets the actual height limits for buildings. Many areas have lower height limits per the zoning regulations than what is allowed by the Height Act. Federal lands/buildings are exempt from DC's zoning controls; NCPC reviews and regulates federal land planning and buildings. However, existing zoning requirements are important when considering redevelopment of a site that the DON would acquire and redevelop to accommodate the replacement BEQ Complex. For example, when the MBW Annex facilities were constructed on a site acquired from DCHA, the site development plan emphasized consistency with the pre-existing community land use patterns and zoning.

Replacement BEQ Complex Alternative Site A is within the ES Overlay District, which restricts maximum height to 45 feet. The potential for increasing maximum height in the area has been considered in the CIMP process and in a visioning effort spearheaded by the Capitol Riverfront BID. The NCPC and DCOP were among stakeholders willing to explore the potential for a maximum height in excess of 45 feet in this area (Capitol Riverfront BID 2010). Given that buildings in mixed use or commercial areas can be as high as the width of the street plus 20 feet, but cannot exceed 130 feet, there is potential for a maximum height of approximately 90 feet at Site A (based on the width of Virginia Avenue) to still be compliant with the Height Act.

The current zoning at replacement BEQ Complex Alternative Site B allows a maximum height of 3 stories/40 feet. Increased height at this site was discussed during the CIMP process and there was consensus from participants, including NCPC and DCOP representatives, that greater height would be appropriate at this site. Given that M Street is a 90-foot ROW, under the provisions of the Height Act, a building 110 feet in height would be allowed at this site.

The maximum height at replacement BEQ Complex Alternative Site C is 90 feet; however, as with Site B, given that M Street is a 90-foot ROW, under the provisions of the Height Act, a building 110 feet in height would be allowed at this site.

Replacement BEQ Complex Alternative Site D is located on federally owned land at the northern end of Square 953 within the boundary of the WNY and borders M Street. Given that M Street is a 90-foot ROW, under the provisions of the Height Act, a building 110 feet in height would be allowed at this site.

Replacement BEQ Complex Alternative Site E is located on federally-owned land within the MBW Annex boundary and borders L Street. Given that 70-foot ROW, under the provisions of the Height Act, a building 90 feet in height would be allowed at this site.

3.2 TRANSPORTATION AND CIRCULATION

3.2.1 Definition of Resource

Transportation and circulation refers to the movement of people and goods throughout a transportation network. Analysis of the affect that a proposed action could have on transportation and circulation focuses on the key characteristics of the affected transportation network, especially the network's capacity to accommodate the additional demand, or other effects, associated with a proposed project. A transportation network may include many different types of facilities that serve a variety of transportation modes, such as non-motorized travel (e.g., pedestrians and bicycles), public transit, and vehicular traffic. Intersection delay and roadway segment volume-to-capacity ratios are commonly used metrics for traffic impact analysis. The study area is highly urbanized, contains a mixture of land use types, and accommodates a variety of travel modes. For the purposes of this analysis, the study area consists of those intersections expected to accommodate the greatest concentration of traffic associated with the Proposed Action. These intersections, which are described in more detail in Section 3.2.3, lie along likely routes between the alternative BEQ Complex sites and the Main Post, and would therefore accommodate the bulk of traffic from the Proposed Action.

The performance of streets, intersections, and other highway facilities is characterized in terms of level of service (LOS). Developed by the Transportation Research Board and documented in various editions of the Highway Capacity Manual (HCM) since 1965, LOS rates performance on a scale of A to F, with LOS A reflecting free-flowing conditions and LOS F representing heavily congested conditions (TRB 2010). Figure 3.2-1 depicts representative traffic levels for each LOS rating.

3.2.2 Regulatory Framework

Agencies with jurisdiction over transportation networks within DC include: DDOT, Washington Metropolitan Area Transit Authority (Metro), and the NCR Transportation Planning Board (TPB). Each agency is discussed in the paragraphs that follow.

Formerly a division of the District Department of Public Works, DDOT was created as a separate agency by the Department of Transportation Establishment Act of 2002; DDOT responsibilities include:

- managing arterial highways, local roadways, and other classes of streets in the District,
- oversight of certain Federal-Aid Highway projects in the District,
- planning, design, construction, and maintenance of roadways, alleys, sidewalks, bridges, traffic signals, and street lights within the District, and
- coordination of the District's mass transit services, including a reduced-fare program for students using Metrobus and Metrorail.

The Metro provides bus and rail transit services to a population of 5 million people within a 1,500-square mile area that includes DC and surrounding areas of Maryland and Virginia (Metro 2013). The

Metro is focused on promoting smart development around transit facilities, implementing capacity and service improvements to both Metrorail and Metrobus, and advancing transit expansion projects that are best aligned with Metro's vision and goals (Metro 2014).

The NCR TPB is the federally designated Metropolitan Planning Organization for the region that includes DC and surrounding jurisdictions in Maryland and Northern Virginia. As the regional forum for transportation planning, the TPB prepares plans and programs that the federal government must approve in order to obtain federal-aid transportation funds. The TPB is responsible for the preparation of a long-range transportation plan and a Transportation Improvement Program, a 6-year financial program that describes the schedule for obligating federal funds to state and local transportation projects (MWCOG 2013).

3.2.3 Existing Transportation and Circulation

The study area for the traffic-related analysis has been defined to include nine intersections in the immediate vicinity of MBW and the alternative replacement BEQ Complex sites, as shown in Figure 3.2-2. Eight of the intersections are controlled by traffic signals, and the remaining intersection (i.e., I Street SE/9th Street SE/I-695 off-ramp) provides stop sign control for southbound traffic on 9th Street SE only. Intersection LOS was determined using the methods described in applicable chapters of the HCM (i.e., Chapter 18 for signalized intersections and Chapter 19 for intersections having stop sign control on one or two intersection legs). The LOS thresholds are based on seconds of delay per vehicle, and vary based on the type of traffic control provided. Delay includes the time spent by motorists slowing down, sitting idle in a queue, moving forward in the queue, and finally accelerating through the intersection. Table 3.2-1 presents LOS delay thresholds for signalized and one-way stop-controlled intersections. Generally, LOS D or better is considered acceptable during the peak hours, which is the single hour having the highest concentration of traffic during the traditional peak commuting periods; for example, in the morning from 6 to 9 AM and in the afternoon from 3:30 to 6:30 PM (Appendix C).

Table 3.2-1. Intersection LOS Delay Thresholds

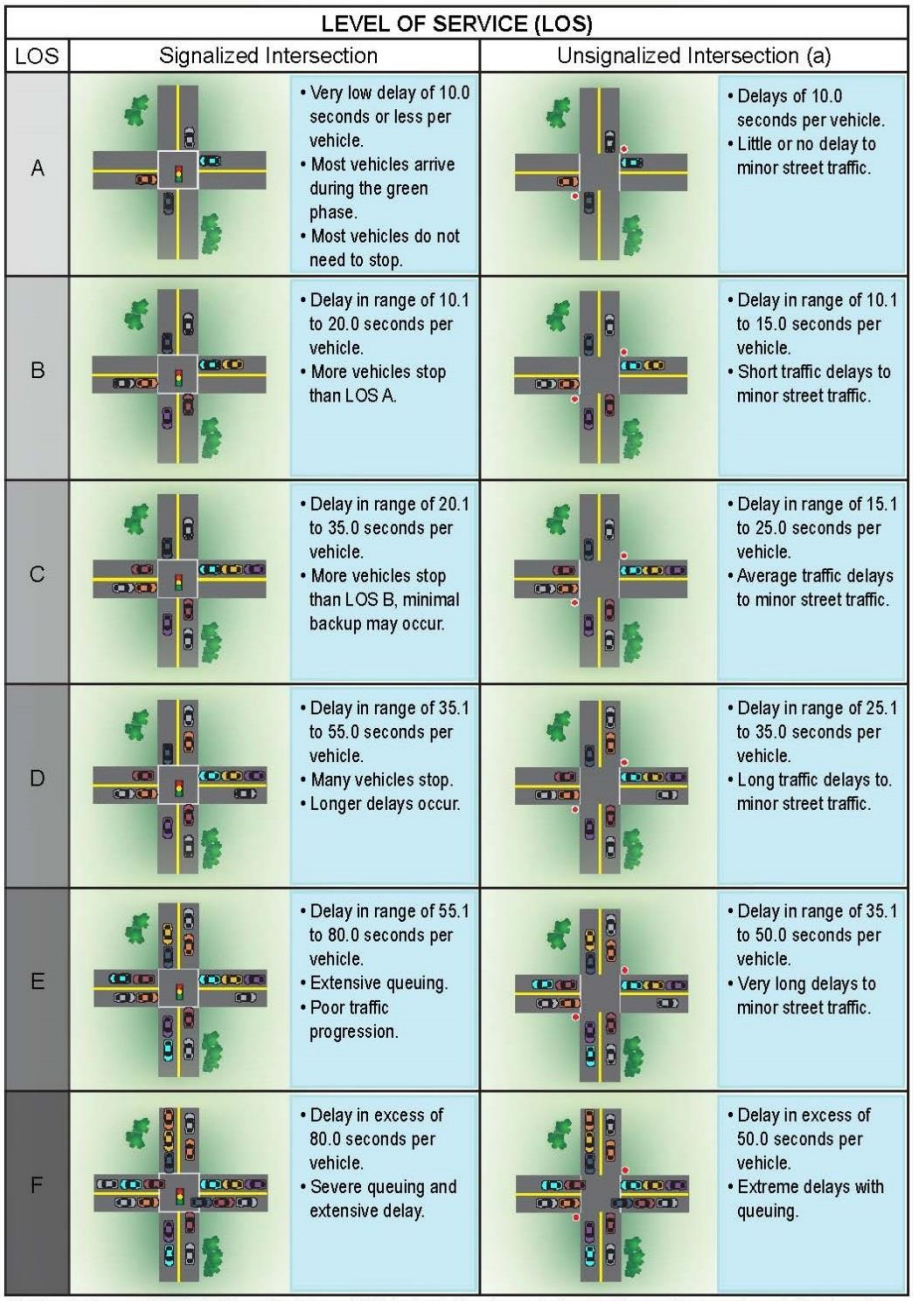
LOS Rating	Delay (seconds per vehicle)	
	Signalized Intersections	One-Way Stop-Controlled Intersections
A	≤10.0	≤10.0
B	>10.0 and ≤25.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	>80.0	>50.0

Source: TRB 2010.

3.2.3.1 Pedestrian and Bicycle Facilities

Sidewalks are provided along both sides of segments of I Street SE, Virginia Avenue SE, M Street SE, 7th Street SE, 8th Street SE, and 11th Street SE. Marked crosswalks and pedestrian countdown heads are provided for all pedestrian movements at each of the intersections in the study area. Although the traffic signals along 8th Street SE accommodate pedestrian movements, the signal timing favors vehicular traffic, and pedestrians have been observed to jaywalk instead of waiting for the pedestrian

signal. However, MBW personnel are required by their chain-of-command to use crosswalks and comply with pedestrian signals. Vehicle collisions with pedestrians have been documented at the 8th Street SE intersections with I Street SE and L Street SE. Under existing conditions, north/south pedestrian facilities along 7th Street SE, 8th Street SE, and 11th Street SE pass underneath I-695. Although street lights are provided along both 7th Street SE and 8th Street SE where these roadways pass beneath the freeway, the relative isolation of these areas could pose a possible safety and security concern for pedestrians, particularly if they cross these areas during darkness.



LEVEL OF SERVICE (LOS)				
LOS	Signalized Intersection		Unsignalized Intersection (a)	
A		• Very low delay of 10.0 seconds or less per vehicle. • Most vehicles arrive during the green phase. • Most vehicles do not need to stop.		• Delays of 10.0 seconds per vehicle. • Little or no delay to minor street traffic.
B		• Delay in range of 10.1 to 20.0 seconds per vehicle. • More vehicles stop than LOS A.		• Delay in range of 10.1 to 15.0 seconds per vehicle. • Short traffic delays to minor street traffic.
C		• Delay in range of 20.1 to 35.0 seconds per vehicle. • More vehicles stop than LOS B, minimal backup may occur.		• Delay in range of 15.1 to 25.0 seconds per vehicle. • Average traffic delays to minor street traffic.
D		• Delay in range of 35.1 to 55.0 seconds per vehicle. • Many vehicles stop. • Longer delays occur.		• Delay in range of 25.1 to 35.0 seconds per vehicle. • Long traffic delays to. minor street traffic.
E		• Delay in range of 55.1 to 80.0 seconds per vehicle. • Extensive queuing. • Poor traffic progression.		• Delay in range of 35.1 to 50.0 seconds per vehicle. • Very long delays to minor street traffic.
F		• Delay in excess of 80.0 seconds per vehicle. • Severe queuing and extensive delay.		• Delay in excess of 50.0 seconds per vehicle. • Extreme delays with queuing.

(a) Although a two-way stop controlled intersection is shown, LOS delay thresholds and congestion levels are the same for all-way stop controlled intersections.
Source: TRB 2010.

Figure 3.2-1. Representative Traffic Levels for Each LOS Rating

Key

- Traffic Study Intersection
- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites

ID #	Intersection
1.	I Street SE/8th Street SE
2.	I-695 on-ramp/8th Street SE
3.	Virginia Ave SE/8th Street SE
4.	M Street SE/8th Street SE
5.	M Street SE/9th Street SE
6.	M Street SE/11th Street SE
7.	I Street SE/9th Street SE/I-695 off-ramp
8.	I Street SE/11th Street SE
9.	M Street SE/Isaac Hull Avenue SE

0 125 250 500 Feet

Source: DC GIS Data Clearinghouse/Catalog

Figure 3.2-2. Intersections in the Study Area

Numerous existing and proposed bicycle routes and lanes are located in the study area (see Appendix C). There is a signed bike route with a striped bike lane along 11th Street SE. The Capital Bikeshare, a bicycle-renting program, provides a Bikeshare station at the southwest corner of 8th and I Streets SE, near the Main Post. Many roadways in the study area provide on-street vehicular parking and bike routes that are not delineated with pavement striping. In these circumstances, there is the potential for conflicts between passing bicyclists and parking vehicles, and motorists entering or exiting their vehicles.

3.2.3.2 Transit Facilities

Transit facilities include Metrorail (i.e., Green Line, Blue Line, Silver Line, and Orange Line); Washington, DC Circulator bus service; and Metrobus service. Two Metrorail stations are near the study area: Eastern Market Station (Blue, Silver, and Orange Line service) and Navy Yard-Ballpark Station (Green Line service). Numerous bus routes traverse 8th Street SE, between M Street SE and I Street SE. Metrobus stops are provided along 8th Street SE and M Street SE (see Appendix C).

3.2.3.3 Highway Facilities

Major regional roadways near the study area include Pennsylvania Avenue and I-695 (i.e., the Southeast Freeway). Multi-lane highways within the study area include I Street SE (three lanes westbound, to the east of 8th Street SE); M Street SE (two lanes in each direction, plus parking lanes, west of 10th Street SE); and 11th Street SE (a mix of through and turning lanes north of M Street SE).

3.2.3.4 Traffic Conditions

Existing (year 2012) traffic conditions at intersections 1-6 and intersection 9, in Table 3.2-2 below, were evaluated as part of the Virginia Avenue Tunnel Reconstruction EIS (FHWA 2013). As part of the Traffic Impact Analysis (Appendix C), separate analysis was also performed at intersections 7 and 8 based on data furnished by the 11th Street Bridge Project contractor (Facchina Construction Company 2014). As shown in Table 3.2-2, all intersections are characterized by acceptable LOS D or better conditions during both AM and PM peak hours (FHWA and DDOT 2014). It is noted that baseline traffic conditions in the study area are in transition, as the area is experiencing development and growth. This context is incorporated into the approach for the impacts analysis in Section 4.2.

Table 3.2-2. Traffic Intersections in the Study Area

Intersection		Traffic Control	Peak Hour	Existing (2012)	
				Delay[a]	LOS
1	I Street SE/8th Street SE	Signal	AM	18.9	B
			PM	19.2	B
2	I-695 on-ramp/8th Street SE	Signal	AM	12.4	B
			PM	12.7	B
3	Virginia Avenue SE/8th Street SE	Signal	AM	34.7	C
			PM	42.5	D
4	M Street SE/8th Street SE	Signal	AM	18.2	B
			PM	13.3	B
5	M Street SE/9th Street SE	Signal	AM	10.7	B
			PM	13.9	B

Table 3.2-2. Traffic Intersections in the Study Area

Intersection		Traffic Control	Peak Hour	Existing (2012)	
				Delay[a]	LOS
6	M Street SE/11th Street SE	Signal	AM	20.0	C
			PM	42.6	D
7	I Street SE/9th Street SE/I-695 off-ramp	One-Way Stop	AM	25.6	D
			PM	13.9	B
8	I Street SE/11th Street SE	Signal	AM	20.2	C
			PM	18.9	B
9	M Street SE/Isaac Hull Avenue SE	Signal	AM	4.1	A
			PM	23.2	C

Notes: [a]Delay is measured in seconds per vehicle.
Sources: FHWA and DDOT 2014; Facchina Construction Company 2014.

3.2.3.5 Parking

Vehicle parking at MBW is by permit only, and finding a space is accomplished largely on an *ad hoc* basis. Of the 534 off-street spaces provided at MBW, 212 are at Building 20, 288 at the MBW Annex, and 34 at the Main Post. Of this total, 150 are allocated to commuters, while the remaining 384 are set aside for official vehicles and residents.

The majority of public parking spaces in the study area restrict parking to a maximum of 2 hours, unless longer durations are allowed by residential permit. On-street parking is provided along various roadways throughout the study area. There is a metered surface lot located southwest of the 8th and I Street SE intersection, beneath the I-695 freeway overpass. These spaces would be temporarily lost during construction of the Virginia Avenue Tunnel project, but would be restored once the project is complete (estimated to be the year 2016) (NAVFAC 2012; FHWA and DDOT 2014). Other private pay lots located within the study area include “Lot W” for the Nationals Stadium parking and the parking lot at the former Exxon Station site. Lot W is located at the southwest corner of 7th and L Streets SE. This site is planned for construction as part of the Cappers Carrollsburg PUD. It is typically operated weekdays and during Nationals home games. The former Exxon Station lot is located at replacement BEQ Complex Site B (Alternative 2) and is operated intermittently.

At replacement BEQ Complex Site A (Alternative 1), there are 23 on-street parallel parking spaces along the portion of L Street SE that are included in the site. At replacement BEQ Complex Site B (Alternative 2), there are 9 on-street parallel parking spaces along the portion of L Street SE that are included in the site. At replacement BEQ Complex Site C (Alternative 3), no existing parking spaces are located within the building footprint or the AT/FP pedestrian standoff area. Overall parking supply within the WNY is not expected to change under Alternative 3. Neither Site D (Alternative 4) nor Site E (Alternative 5) contains any existing parking spaces.

3.3 CULTURAL RESOURCES

3.3.1 Definition of Resource

Cultural resources are prehistoric, historic, or traditional resources that are considered important to a culture, subculture, or community for scientific, traditional, religious, or other purposes. Federal regulations of the NHPA define historic properties to include prehistoric or historic sites, buildings, structures, objects, or districts listed in, or eligible for listing in, the NRHP, as well as artifacts, records, and remains that are related to such properties. The term historic property includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. Additionally, cultural resources are protected under the American Antiquities Act (16 USC 431–433), the Archaeological Resources Protection Act (ARPA) (16 USC 470aa–mm), and the Archaeological and Historic Preservation Act (16 USC 469–469c-2). Furthermore, federal agencies are responsible for preserving collections of prehistoric and historic material remains and associated records recovered under the authority of the American Antiquities Act, Section 110 of the NHPA, or ARPA, as set forth in 36 CFR 79, Curation of Federally Owned and Administered Archaeological Collections.

3.3.2 Regulatory Framework

Under Section 106 of the NHPA of 1966, as amended (54 USC 300101), and as implemented by 36 CFR Part 800, federal agencies are responsible for considering the effects of their actions (referred to as undertakings) on historic properties and affording the ACHP the opportunity to comment on an undertaking's appropriateness. A federal agency must identify historic properties within the proposed undertaking's APE, determine what potential effects the proposed undertaking may have on identified historic properties, and consult with the State HPO – in this case, the DC HPO, on its findings. For any consultation that involves an NHL, Section 106 also requires the federal agency to notify the Secretary of the Interior and invite the Secretary to participate in the consultation where there may be an adverse effect to the NHL (36 CFR 800.10). The Secretary of the Interior appointed the NPS to be its representative in the process.

The APE is defined as the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist (36 CFR 800.16[d]). The APE is influenced by the scale and nature of the undertaking. Generally, an area broader than the project footprint is considered. The APE includes consideration of potential direct and indirect effects to historic properties and historic viewsheds. Figure 3.3-1 shows the APE for the Proposed Action. The APE was defined by the Marine Corps in consultation with the DC HPO, consulting parties, and the public in accordance with the Section 106 consultation process (see Appendix B). In addition to federal laws and regulations, cultural resource management within DC is also guided by the Historic Preservation Review Board, which is part of the DCOP. The Historic Preservation Review Board reviews proposed federal and District projects that may have an effect on properties listed in the DC Inventory of Historic Sites, and advises the DC HPO of its conclusions. The DC Inventory of Historic Sites is a list of historic landmarks and districts in Washington, DC. The list includes properties that contribute to the cultural and aesthetic

heritage of DC. The Historic Preservation Review Board designates properties for inclusion in the DC Inventory of Historic Sites.

The management of cultural resources at MBW is guided by the Installation's ICRMP (MBW 2013). This plan provides guidance and establishes SOPs for the management of historic properties on the Installation in compliance with Sections 106 and 110 of the NHPA, other federal laws, EOs, and DOD and Marine Corps directives and orders on the management of cultural resources.

3.3.3 Existing Conditions

3.3.3.1 Architectural Resources

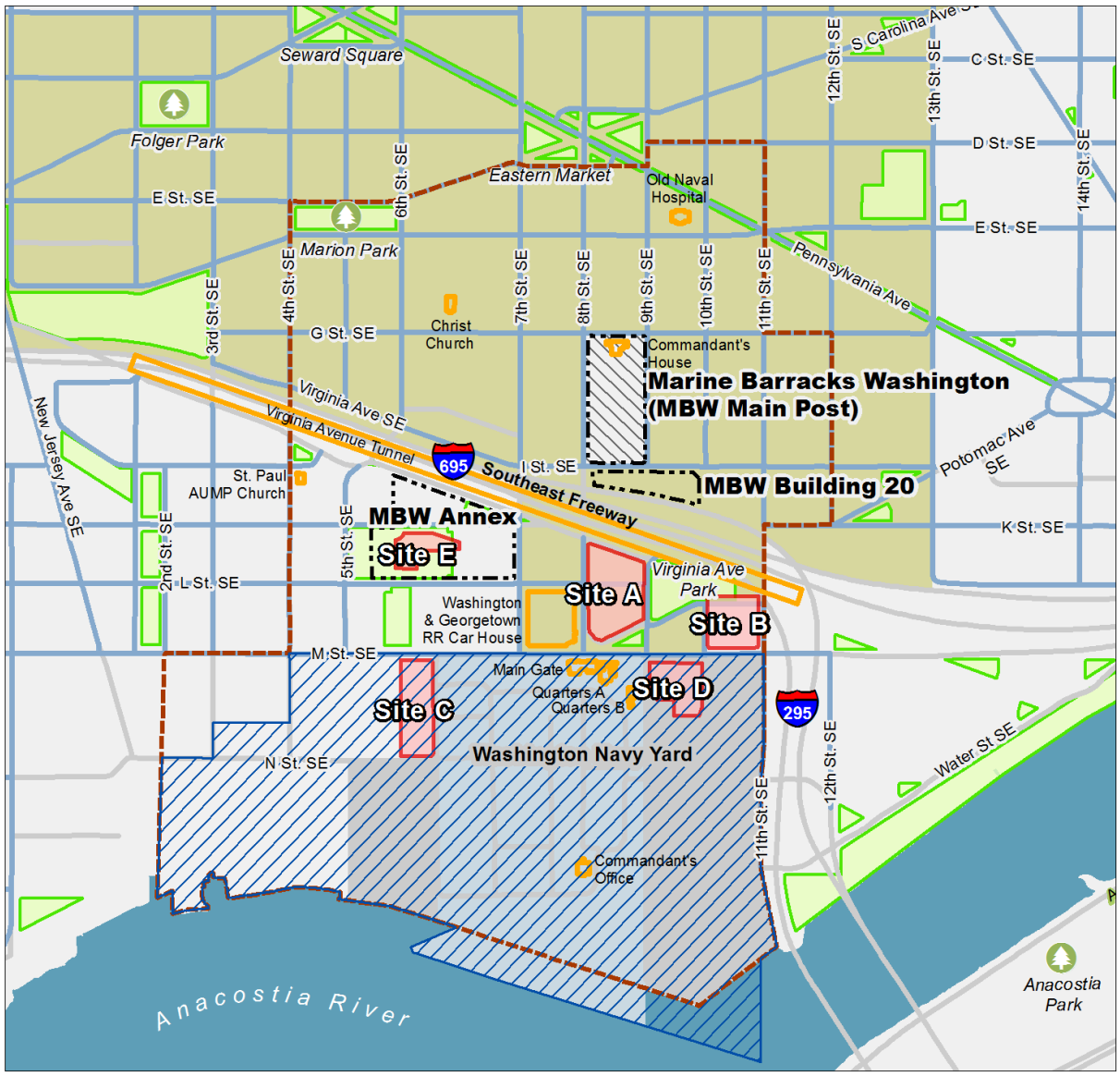
As depicted in Figure 3.3.2 and detailed in Table 3.3-1 (following the figure), the APE includes 14 historic properties, including all or part of four historic districts. Note that, given the scale of Figure 3.3.-2, not all historic properties adjacent to the potential BEQ replacement sites are shown. A detailed look at the historic properties present at each site can be found in Figures 3.3-4 through 3.3-8. The four historic districts in the APE include the U.S. Marine Corps Barracks and Commandant's House (MBW Main Post), the Capitol Hill Historic District, the WNY, and the L'Enfant Plan of the City of Washington, DC. Each of these districts is also designated as a historic district in the DC Inventory of Historic Sites. Some buildings or sites within these districts are listed individually in the NRHP, or have been determined eligible for NRHP listing, because of their individual significance.

Evening parade at Marine Corps Barracks

In addition to being listed in the NRHP, two of the historic districts in the APE are designated as NHLs (see Figure 3.3-2). They include the U.S. Marine Corps Barracks and Commandant's House (MBW Main Post) and the WNY. National Historic Landmarks are places of national significance, possessing exceptional qualities in illustrating or interpreting the nation's heritage. Section 106 of the NHPA requires federal agencies to request the participation of the ACHP in any consultation regarding the resolution of adverse effects of undertakings on NHLs. Furthermore, agencies are required to afford the Secretary of the Interior the option to comment on undertakings that may result in an adverse effect on NHLs.

Two historic properties outside of these historic districts are located in the APE: the Saint Paul African Union Methodist Protestant (AUMP) Church, which is listed in the NRHP, and the Virginia Avenue Tunnel, which has been determined eligible for NRHP listing.

Figure 3.3-1. Area of Potential Effects



Note: Given the scale of Figure 3.3.-2, not all historic properties adjacent to the potential BEQ replacement sites are shown. A detailed look at the historic properties present at each site can be found in Figures 3.3-4 through 3.3-8.

Figure 3.3-2. Historic Properties and Districts Present in the APE

Table 3.3-1. Aboveground Historic Properties in the APE

Property Name	Location	Description	Historic Status (Date Listed)
U.S. Marine Corps Barracks and Commandant's House	8th, 9th, G, and I Streets SE	Oldest continuously active Marine Corps installation in the nation. Home of the U.S. Marine Band and associated with John Philip Sousa. Quadrangle of early 19th and early 20th century buildings surrounding central parade ground.	NHL (5/11/76) NRHP (12/27/72) DC Inventory (11/8/64)
Marine Corps Commandant's House	801 G Street SE	Home of the Marine Corps Commandant since 1805. 2½-story brick, Federal-style house with mid- and late-19th century additions and alterations.	NRHP (12/27/72) DC Inventory (11/8/64)
Capitol Hill Historic District	F Street NE to Virginia Avenue and M Street SE and South Capitol Street and 2nd Street SE to 13th Street SE and 14th Street NE and SE	Largest residential district in the capital city, with buildings spanning from circa (ca.) 1791 to 1945. Primarily 2- and 3-story rowhouses in vernacular and 19th and 20th century styles. Also includes commercial, religious, institutional, and military buildings.	NRHP (8/27/76; boundary increase 7/3/03) DC Inventory (6/19/73; boundary increase 4/21/02)
L'Enfant Plan	Florida Avenue from Rock Creek NW to 15th Street NE, south to C Street, east to Anacostia River	Baroque city plan designed by Pierre L'Enfant in 1791. Beaux Arts modifications implemented through 1901–1902 McMilllan Plan.	NRHP (4/24/97) DC Inventory (1/19/71; boundary increase 1/23/97)
WNY	M Street SE to Anacostia River, and 2nd Street SE to Parsons Avenue	1801–1945 industrial buildings and officers' quarters associated with the development of the U.S. Navy. Individuals and operations at the WNY had significant role in naval ordnance development during World Wars I and II.	NHL (5/11/76) NRHP (6/19/73; boundary increase 1/3/08) DC Inventory (11/8/64; boundary increase 2/28/08; second boundary increase post-2008)
Main Gate, WNY	8th and M Street SE	1805–1806 Greek Revival building designed by Benjamin Latrobe. Incorporated into the ground story of an Italianate building in 1881.	NRHP (8/14/73) DC Inventory (11/8/64)
Quarters A, WNY	East of Main Gate and south of M Street SE	2½-story Flemish bond brick, late-Georgian style townhouse built in 1804 as the Commandant's House. Late-19th century additions and alterations. Also known as the Tingey House.	NRHP (8/14/73) DC Inventory (11/8/64)
Quarters B, WNY	Charles Morris Avenue	Original part of this 1801, 2½-story Federal-style brick house was the first permanent building erected at the WNY. Enlarged several times in the 19th and 20th centuries.	NRHP (8/14/73) DC Inventory (11/8/64)

Table 3.3-1. Aboveground Historic Properties in the APE

Property Name	Location	Description	Historic Status (Date Listed)
Commandant's Office, WNY	Montgomery Square and Dahlgren Avenue	Built 1837–1838 as administrative center of the WNY. It is a 2-story brick building surrounded by 2-story wood-frame porches. As major visual focal point at WNY, the building is an important part of WNY's original design.	NRHP (8/14/73) DC Inventory (11/8/64)
Christ Church, Washington Parish	620 G Street SE	2½-story Gothic Revival church with 4-story bell tower. 1806–1807 church has been altered or enlarged several different times. It was the first church for Washington's Episcopal parish. Design of original church attributed to Benjamin Latrobe.	NRHP (5/25/69) DC Inventory (11/8/64)
Old Naval Hospital	921 Pennsylvania Avenue SE	3-story rectangular brick building, constructed in 1865–1866 with Greek Revival and Italianate elements. Hospital for Navy officers and sailors based in the region. Between 1920 and 1963, served as a temporary shelter for veterans.	NRHP (5/3/74) DC Inventory (11/8/64)
Washington and Georgetown Railroad Car House (Navy Yard Car Barn)	770 M Street SE	2-story brick and stone Romanesque Revival building, featuring semicircular arches and castellated corner towers. Built in 1891 at the terminus of the city's first, and one of its most important, streetcar lines, running between Georgetown and the WNY.	NRHP (11/14/06) DC Inventory (3/23/06)
Saint Paul AUMP Church	401 I Street SE	1924 vernacular Gothic Revival church designed by African American architect R. C. Archer, Jr. Congregation evolved from oldest independent African denomination in the country.	NRHP (7/28/11) DC Inventory (not recorded)
Virginia Avenue Tunnel	South of Virginia Avenue SE, between 2nd and 11th Street SE	4,000-foot-long railroad tunnel with stone portals and retaining walls. Built in 1872 and extended in 1904. Provided important railroad access to the city.	NRHP-eligible (unknown)

Following are descriptions of the four historic districts and the two historic properties located outside of the historic districts. The historic district descriptions identify any resources within the historic district that are also individually listed, or determined eligible for individual listing, in the NRHP.

U.S. Marine Corps Barracks and Commandant's House

The U.S. Marine Corps Barracks and Commandant's House, together, were listed in the NRHP as a historic district in 1972, and designated an NHL in 1976. The Marine Barracks is also a local historic district, listed in the DC Inventory of Historic Sites in 1964. The Barracks complex is significant because it is the oldest continuously active Marine Corps installation in the U.S. and has been the residence of the Marine Corps Commandant since 1805. In addition, the Barracks is significant as the home of the U.S. Marine Band, the official White House musical unit, which has played for every president since John Adams, and for its association with John Philip Sousa, who wrote some of his most famous marches while serving as the leader of the U.S. Marine Band between 1880 and 1892. The historic district is bounded by 8th, 9th, G, and I Streets SE, and includes a range of former barracks, the Commandant's House, a row of five officer's quarters, the former band hall, and other structures as illustrated in Figure 3.3-3 and listed in Table 3.3-2.

Marine Corps Commandant's House

Table 3.3-2. Architectural Resources in the U.S. Marine Barracks and Commandant's House Historic District

Building Number	Name	Year Built	Status
1	Officer's Quarters	1903–1907	Contributing
2	Officer's Quarters	1903–1907	Contributing
3	Officer's Quarters	1903–1907	Contributing
4	Officer's Quarters	1903–1907	Contributing
5	Officer's Quarters and Officers' Mess	1903–1907	Contributing
6	Commandant's House	1801–1806	Contributing
7	Warehouse and Garage	ca. 1928–1939	Contributing
8	Battalion Headquarters	1903–1907	Contributing
9	Applied Instruction	1903–1907	Contributing
10	Gate House	1903–1907	Contributing
12	Multipurpose/Storage	ca. 1995	Non-Contributing
Non-Applicable (N/A)	Parade Ground	1801–1806	Contributing
N/A	Commandant's Garden	19th and 20th centuries	Contributing
N/A	Landscape Perimeter	19th and early 20th centuries	Contributing
N/A	Officer's Quarters Gardens	ca. 1972	Non-Contributing
N/A	Parking Lot	1950s	Non-Contributing

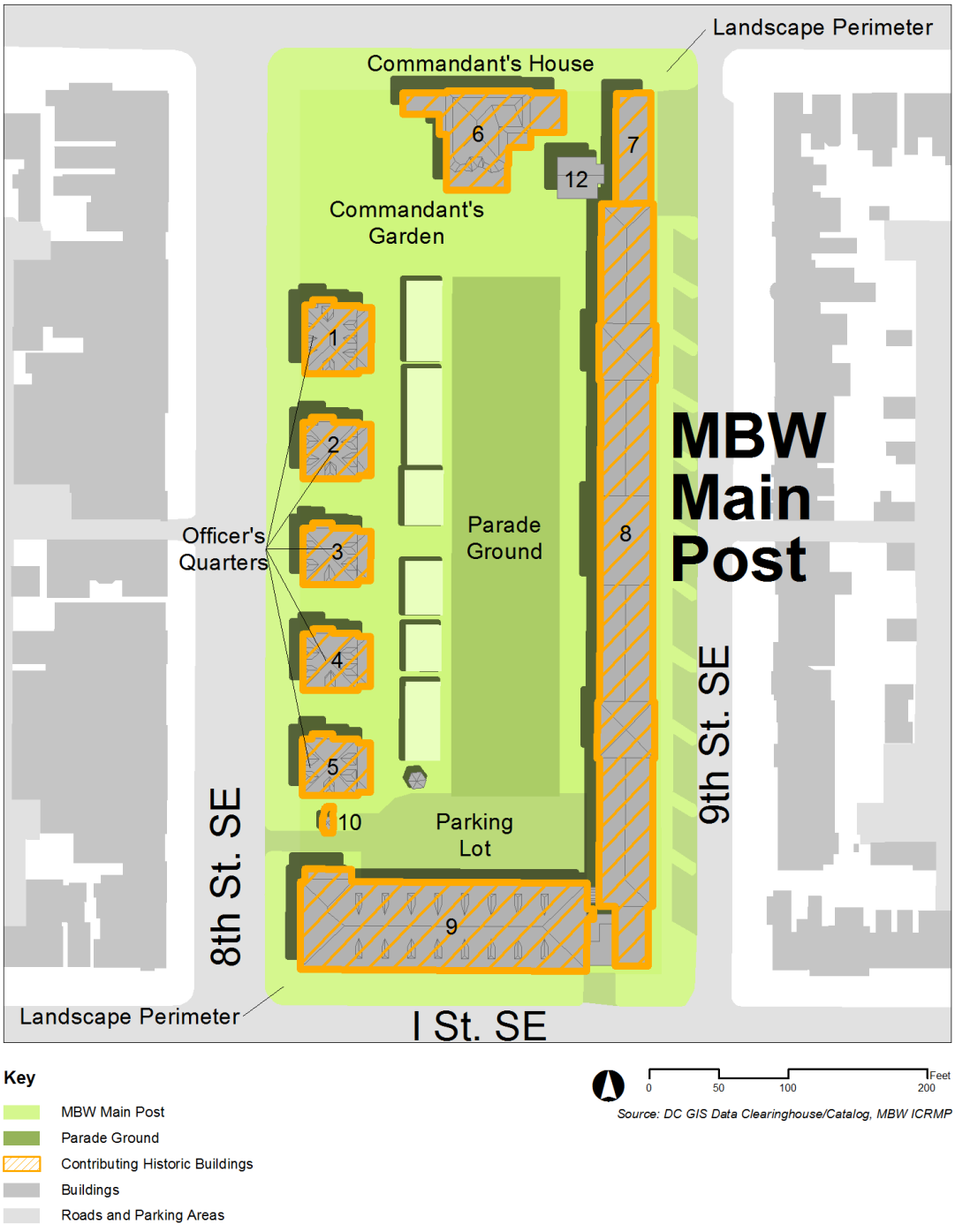


Figure 3.3-3. Historic Properties at MBW Main Post

Within the Marine Barracks historic district is the Commandant's House. The House is listed individually in the NRHP and designated a local historic landmark. Built between 1801 and 1806, and expanded and altered multiple times over the years, this 2½-story, Federal- and Second Empire-style, brick residence is the only remaining building from the original barracks complex. Its individual significance derives from its historical associations with the history of the Marine Corps and the Commandants who resided there. In addition, it is significant for its Federal-style design and its unique plan, which includes two contiguous 2-story projecting, round arch bays facing the Parade Ground.

The DC Inventory of Historic Sites individually lists the Marine Barracks and Band Hall (Buildings 8 and 9, respectively) as locally designated historic landmarks. The buildings were constructed in 1903–1907 to replace the original wooden barracks dating from 1801–1806, which had fallen into disrepair. Designed by architects Joseph Hornblower and James Marshall, both buildings feature an arcaded loggia on the ground floor of the façades facing the parade ground. The former band hall (Building 9) is a 2½-story, brick, rectangular-plan building on the south side of the Main Post.

Building 20 was constructed in 1975, and the buildings at the MBW Annex were constructed in 2004. The MBW ICRMP indicates that these resources should be evaluated for NRHP eligibility when each turns 50 years old (MBW 2013).

<u>Capitol Hill Historic District</u>

The Capitol Hill Historic District is a residential and commercial district significant for reflecting the economic growth, social diversity, and architecture of the early capital. The district developed to serve the politicians, military personnel, and workers of the nearby major employment centers, including the Capitol, WNY, and MBW. As the largest, and one of the oldest, residential districts in DC, the Capitol Hill Historic District encompasses approximately 8,000 contributing resources dating between ca. 1791 and 1945. The district is characterized by many uninterrupted rows of townhouses lining tree-lined broad avenues and narrower grid streets. Residential properties consist of 2- and 3-story federal townhouses, frame dwellings, and continuous blocks of brick rowhouses, with elements from popular styles of the mid- and late-19th century. These styles include Queen Anne, Romanesque Revival, and Italianate. Interspersed among the residences are commercial, religious, and educational facilities.

The boundaries of the historic district, which is listed in both the NRHP and the DC Inventory of Historic Sites, are roughly F Street NE on the north; 13th Street SE and 14th Street NE and SE on the east; Virginia Avenue SE on the south; and 2nd Street NE, South Capitol Street, and 2nd Street SE on the west. A boundary increase in 2003 extended the limits of the historic district south of the Southeast-Southwest Freeway to M Street between 7th and 11th Streets SE. The expanded area of the historic district was added to the NRHP and DC Inventory of Historic Sites because it is historically and physically linked to the rest of Capitol Hill. Additionally, the architecture in the expanded area shares the same features and characteristics as the rest of the Capitol Hill neighborhood. The boundary increase encompasses replacement BEQ Complex Site A (Alternative 1), but excludes Site B (Alternative 2) (see Figure 3.3-2). Within replacement BEQ Complex Site A, there are five contributing buildings and one non-contributing building of the historic district in Square 929 and nine contributing and two non-contributing buildings of the historic district in Square 930 (Figure 3.3-4; Table 3.3-3). The contributing buildings consist of early- to late-19th century dwellings primarily brick in construction and 2- or 3-

stories in height. The non-contributing buildings post-date the period of significance (1790–1945) of the district. There are no historic properties within replacement BEQ Complex Site B (Figure 3.3-5).

Several buildings, sites, and districts within the Capitol Hill Historic District are also individually listed in the NRHP. Of these, one historic district (the U.S. Marine Corps Barracks and Commandant's House) and three buildings are within the APE for the Proposed Action. The three individually listed buildings include Christ Church, Old Naval Hospital, and Washington and Georgetown Railroad Car House (see Table 3.3-1 for information on these resources).

Table 3.3-3. Architectural Resources Within Site A

Parcel Address	Description	Contributing to Capitol Hill Historic District?
Square 929		
808 L Street SE	1887 brick duplex	Yes
810 L Street SE	1887 brick duplex	Yes
809 Virginia Avenue SE	1887 brick duplex	Yes
811 Virginia Avenue SE	1887 brick duplex	Yes
821 Virginia Avenue SE	Late-19th century brick dwelling	Yes
Virginia Avenue SE	Mid- to late-20th century concrete block industrial building	No
Square 930		
811 L Street SE	Mid-19th century 2-story brick Greek Revival dwelling	Yes
813 L Street SE	Mid-19th century 3-story brick multifamily dwelling	Yes
817 L Street SE	Pre-1855 2-story brick side passage dwelling	Yes
819 L Street SE	Pre-1855 2-story brick side passage dwelling	Yes
1100 8th Street SE	Mid- to late-20th century 1-story brick commercial building	No
1102 8th Street SE	Pre-1824 2½-story brick Federal commercial building	Yes
1104 8th Street SE	Mid- to late-20th century 2-story brick commercial building	No
1106 8th Street SE	Mid-19th century 2-story brick Romanesque Revival commercial building with 1-story brick wing	Yes
1112–1114 8th Street SE	1833 2½-story brick Greek Revival commercial building	Yes
810–1120 Potomac Avenue SE	Late-19th century 3-story brick Queen Anne commercial building	Yes
816 Potomac Avenue SE	Early-20th century 4-story brick Georgian Revival multi-family dwelling	Yes

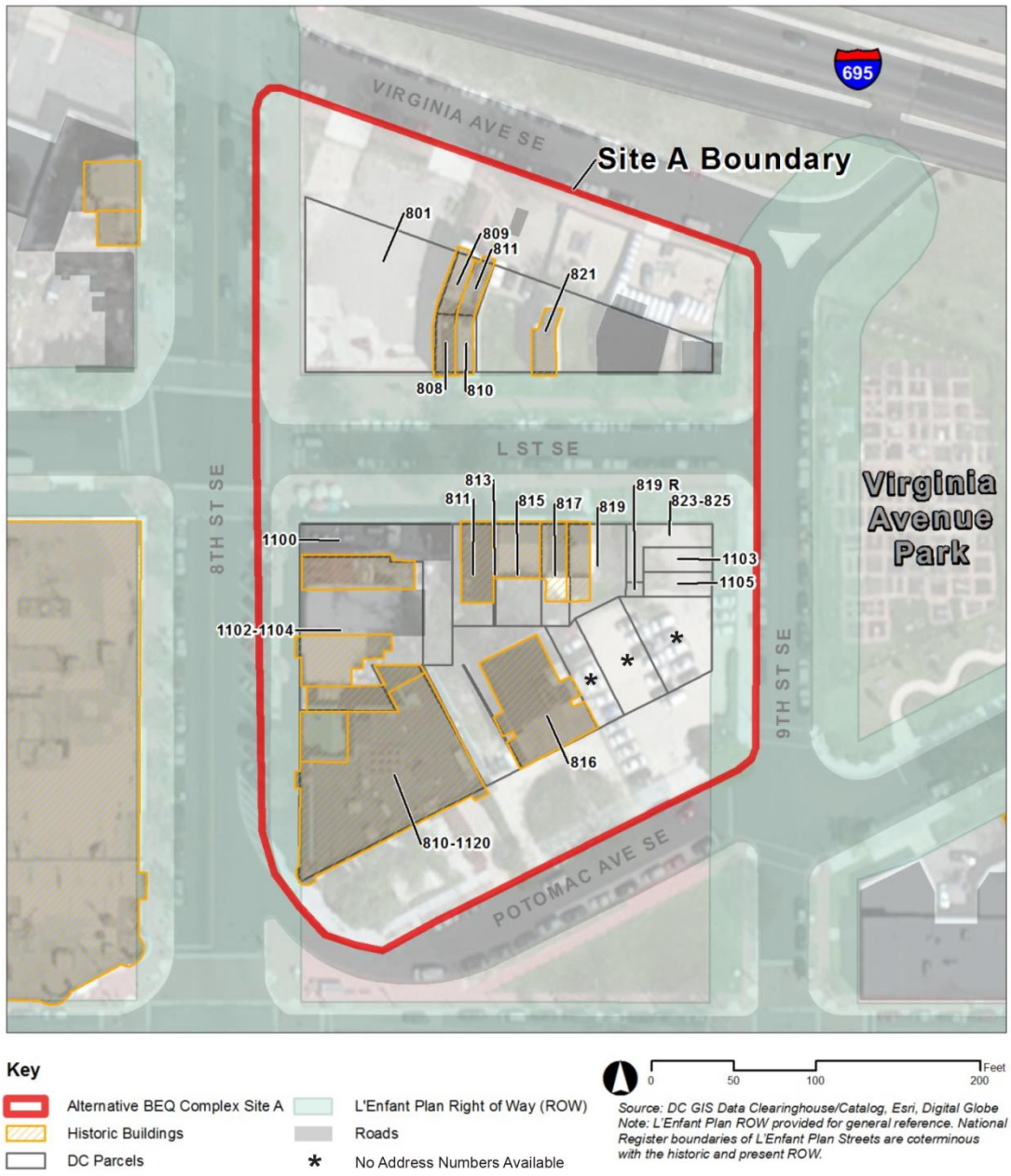


Figure 3.3-4. Historic Properties at BEQ Complex Alternative Site A

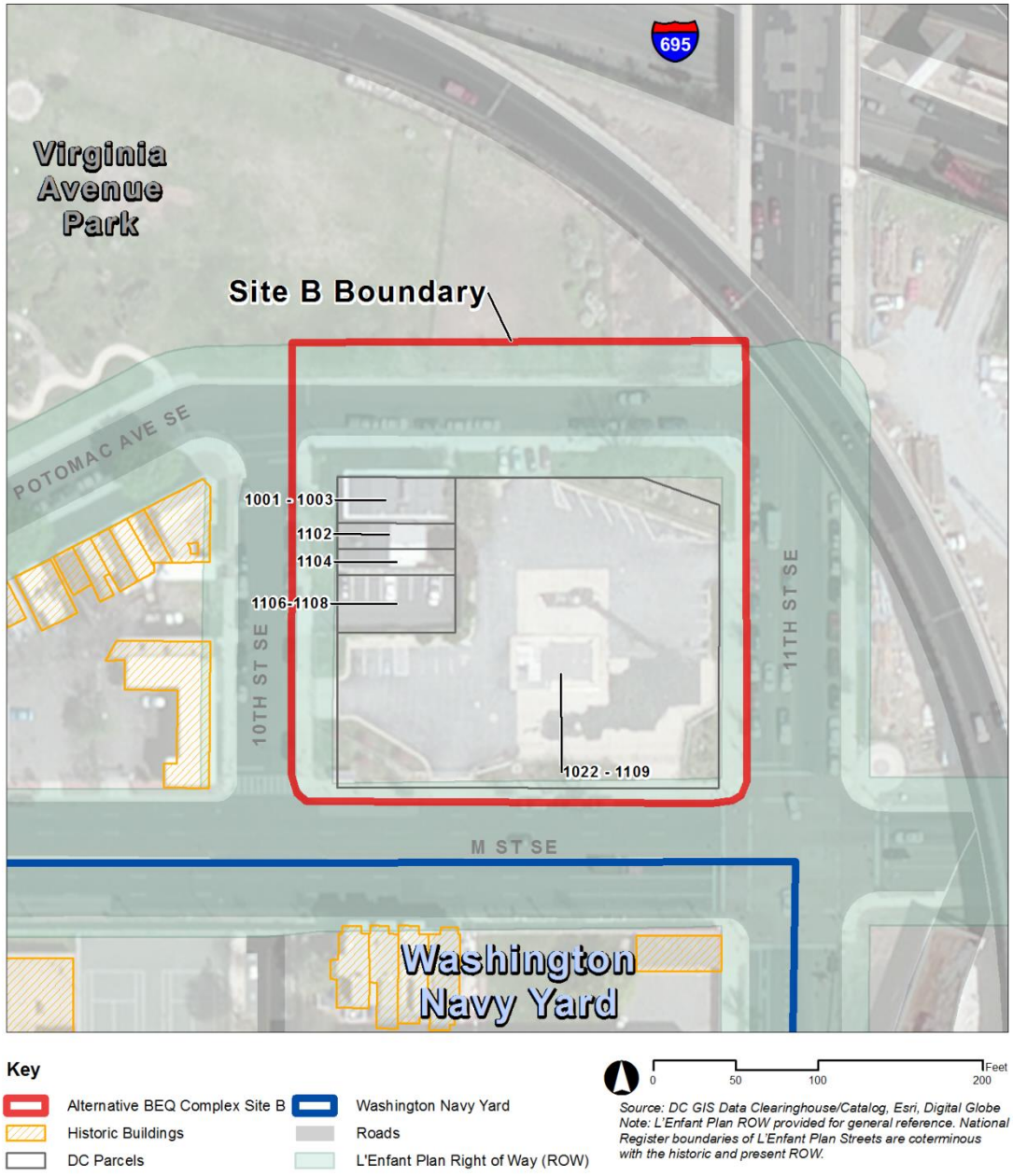


Figure 3.3-5. Historic Properties at BEQ Complex Alternative Site B

Washington Navy Yard

The WNY Historic District was listed in the NRHP in 1973, and designated an NHL in 1976. The Navy Yard was designated a local historic district in the DC Inventory of Historic Sites in 1964. Founded in 1799, the WNY became the Navy's largest shipbuilding and shipfitting facility during its early years, and later became an ordnance manufacturing center. It is significant as the U.S. Navy's first home port for naval operations in the 19th century, playing an important role in the development of the U.S. Navy and of American nationalism. In addition, the district is significant for the important innovations developed by noteworthy individuals at the WNY, and for its collection of well-preserved 19th to early-20th century industrial architecture. Four buildings in the WNY also are individually listed in the NRHP and DC Inventory. These include the Main Gate, Quarters A (Commandant's House), Quarters B (Second Officer's House), and the Commandant's Office. All are within the APE for the Proposed Action (see Figure 3.3-2 and Table 3.3-1).

The boundary of the NHL designation of the WNY is M Street SE, Parsons Avenue, Isaac Hull Avenue, and the Anacostia River. The boundary of the locally-designated and NRHP-registered WNY Historic District corresponded to the NHL district boundary until it was expanded west of Isaac Hull Avenue to roughly 2nd Street SE in 2008 to include the Navy Yard Annex, which had a significant role as the command center for naval ordnance production from the early- to mid-20th century. With the boundary increase, the WNY Historic District includes approximately 55 major contributing buildings plus numerous support buildings. The NRHP and local district boundary increase encompasses replacement BEQ Complex Site C (Alternative 3) and two small support buildings, a pump house (Building 199), and an electric substation (Figure 3.3-6). Both buildings are non-contributing resources to the district. Adjacent to Site C are several contributing resources, including the portion of the WNY brick perimeter wall along M Street SE from 4th Street to Isaac Hull Avenue.

The portion of WNY east of the historic district to 11th Street SE, which includes replacement BEQ Complex Site D (Alternative 4), was evaluated and determined to be eligible for inclusion in the NRHP as part of the historic district (DC HPO 2009). The WNY East Extension comprises buildings associated with the testing and development of naval ordnance in support of the WNY's critical mission of naval ordnance production during World Wars I and II. The east extension includes 18 contributing buildings dating from 1918 to 1944, including one building, Building 169, within replacement BEQ Complex Site D (Figure 3.3-7). Building 169 was constructed in 1918 and is currently an administrative building. Site D also includes tennis and basketball courts; these are non-contributing resources to the WNY East Extension.

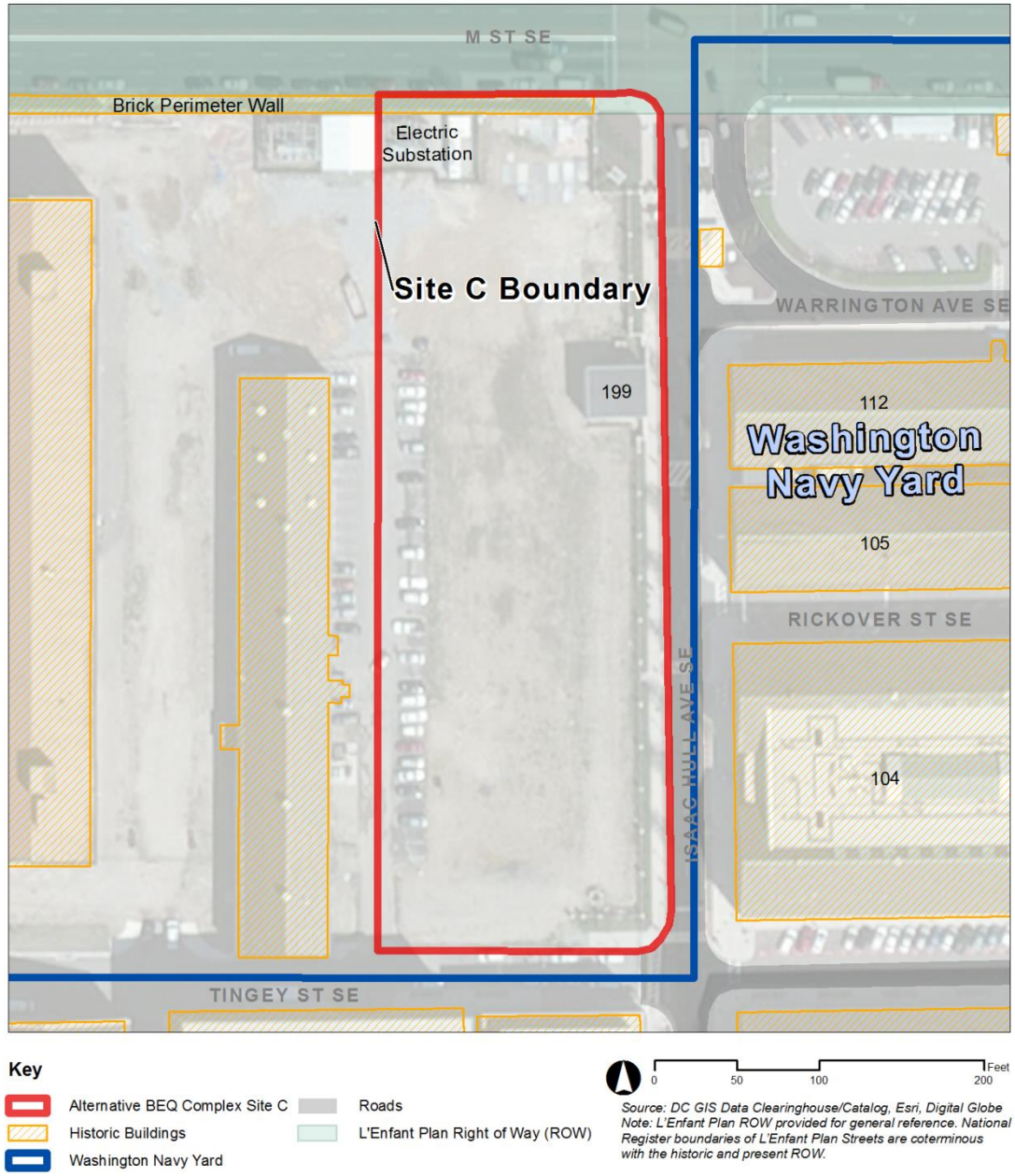


Figure 3.3-6. Historic Properties at BEQ Complex Alternative Site C

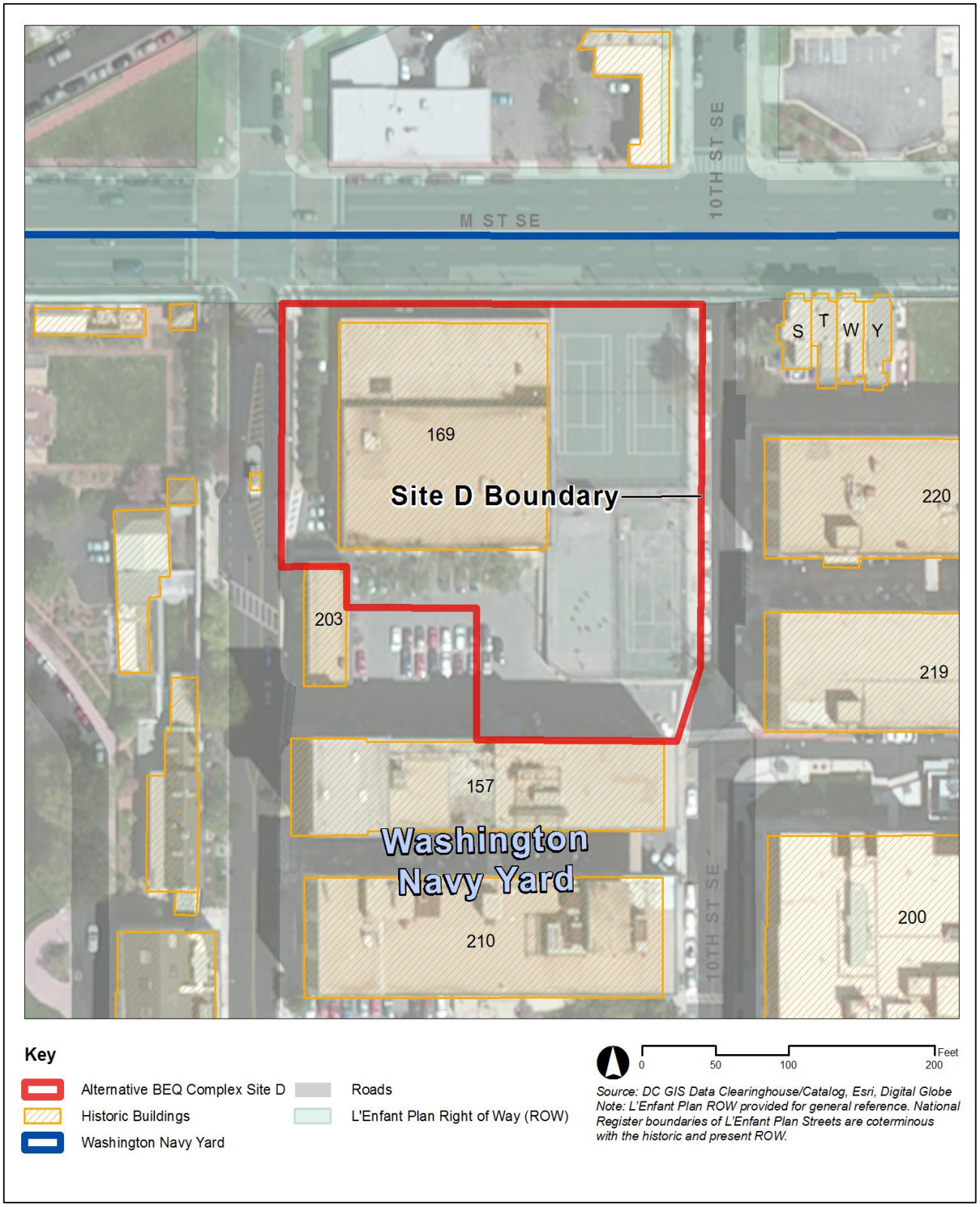


Figure 3.3-7. Historic Properties at BEQ Complex Alternative Site D

L'Enfant Plan of the City of Washington

Pierre L'Enfant designed the plan of the city of Washington in 1791. L'Enfant developed a baroque plan for the U.S. capital, which featured open ceremonial spaces, grand avenues, and vistas of monuments and sites over the federal land. L'Enfant's plan was realized gradually over nearly a century, until the Senate Park Commission's plan for the federal city in 1901–1902 (the McMillan Plan). This plan sought to preserve and restore many of the elements and principles of the L'Enfant Plan, while incorporating some urban improvements within the tenets of the City Beautiful movement. The recommendations of the McMillan Commission were implemented over the next 30 years and continued sporadically thereafter. The historic L'Enfant-McMillan plan remains largely unchanged.

The historic L'Enfant Plan of the City of Washington is significant for its relationship with the creation of the new United States of America and the creation of a capital city; because of its design by Pierre L'Enfant, and subsequent development and enhancement by numerous significant persons and groups responsible for the city's landscape architecture and regional planning; and as a well preserved, comprehensive, Baroque plan with Beaux Arts modifications. The L'Enfant Plan and subsequent McMillan Plan both had profound influences on American city planning. The historic city of Washington is the only example in America of a Baroque urban plan with a coordinated group of radiating avenues, parks, and vistas overlaid on an orthogonal system of streets. The commemorative and symbolic location of buildings, structures, and vistas collectively establish the historic Federal City as the singular American example of an urban core that, from inception, has physically expressed its political role as a designed national capital using Baroque design principles.

The L'Enfant Plan of the City of Washington was included in the DC Inventory of Historic Sites in January 1971, and its boundaries expanded in 1997, the same year the L'Enfant Plan was listed in the NRHP. The boundaries of the listed area, which encompasses approximately 3,565 acres, are roughly Florida Avenue from Rock Creek NW, to 15th Street NE, south to C Street NE, and east to the Anacostia River. Contributing elements of the L'Enfant Plan include orthogonal streets and diagonal avenues in the historic grid; bridges; planned landscapes; reservations; public parks and their statuary, fountains, and commemorative markers; buildings; monuments; and vistas. The boundaries are defined as the ROW width and length of the contributing streets and avenues. Vistas follow the course of the streets and avenues. The nominated area also includes the open space above the contributing elements up to the legal height limit in the city (Leach and Barthold 1994). Figure 3.3-2 (introduced earlier in this section) illustrates the contributing elements of the L'Enfant Plan within the APE.

Replacement BEQ Complex Site E (Alternative 5) is proposed within the MBW Annex, which has no buildings eligible for listing in the NRHP. Site E, however, includes the following contributing elements of the L'Enfant Plan: 6th Street viewshed, K Street viewshed, and an unnamed reservation (Figure 3.3-8).

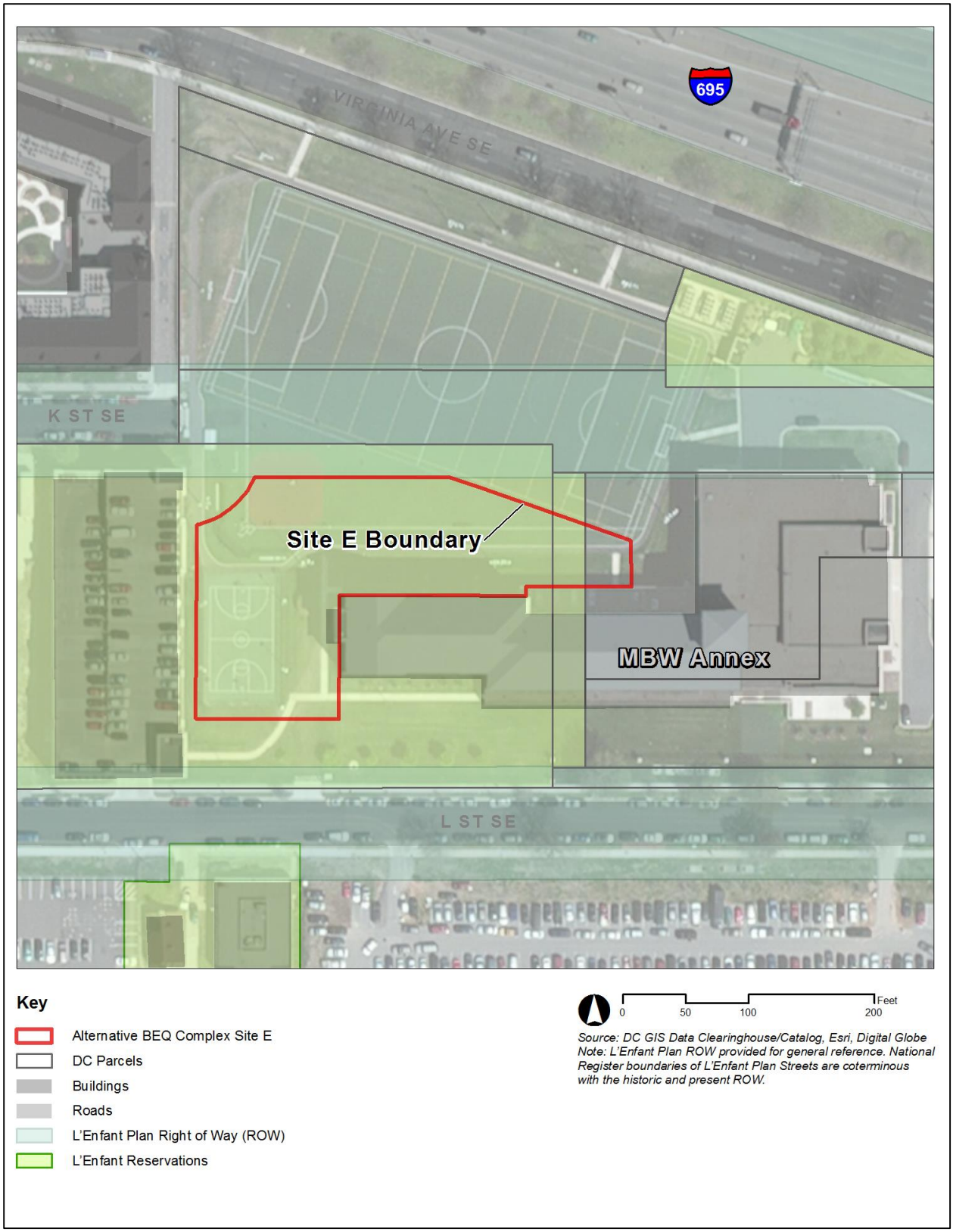


Figure 3.3-8. Historic Properties at BEQ Complex Alternative Site E

Saint Paul AUMP Church

The Saint Paul AUMP Church is located at the southeast corner of 4th and I Streets SE (see Figure 3.3-2). It is a brick, vernacular (i.e., architecture based on local needs and construction materials, and reflecting local traditions) based Gothic Revival religious building, featuring pointed-arch window openings, crenellated battlements, and a corner tower. The church was built in 1924 and designed by R. C. Archer, Jr., who was the second licensed African American architect in Washington, DC. The congregation is the only church in DC that evolved from the oldest incorporated, independent African denomination in the U.S. (FHWA and DDOT 2014). It is because of this historical connection and because it is a representative example of a vernacular Gothic Revival religious building designed by an African American architect that the Saint Paul AUMP Church is listed in the NRHP and the DC Inventory of Historic Sites.

Virginia Avenue Tunnel

The Virginia Avenue Tunnel is a single-track, 4,000-foot-long, railroad tunnel with stone portals and retaining walls. The Baltimore and Potomac Railroad built the tunnel in 1872; the tunnel was later extended in 1904. The Virginia Avenue Tunnel was determined eligible for inclusion in the NRHP for its historical significance in providing important railroad access to DC and for its engineering merit (FHWA and DDOT 2014). The historic property boundary of the tunnel extends between 2nd and 11th Streets SE (see Figure 3.3-2). It should be noted that while the section of the tunnel between 7th and 11th Streets SE is within the boundaries of the Capitol Hill Historic District, the NRHP nomination forms for the historic district and its subsequent boundary increase do not identify the Virginia Avenue Tunnel.

3.3.3.2 Archaeological Resources

For archaeological resources, potential effects would be limited to only those areas within the APE where ground disturbance would occur. These areas include the MBW properties (MBW Main Post, Annex, and Building 20) and the alternative BEQ Complex sites (Sites A – Alternative 1, B – Alternative 2, C – Alternative 3, D – Alternative 4, and E – Alternative 5).

Main Post

Much of the compound has low to no potential to contain intact archaeological resources due to previous disturbance by construction of the initial Main Post in the early-19th century and the subsequent redesign in the early-20th century. A Phase I archaeological survey conducted in 1999 in two relatively undisturbed portions of the Installation, the Parade Ground and the west yard of the Commandant's House, did not identify any archaeological resources (MBW 1999). However, two brick cisterns, probably from the early-20th century, were uncovered in February 2001 while excavating a trench in an area in front of Quarters 1 and 2. This area had not been tested during the 1999 Phase I survey of the Marine Barracks because it was next to a conduit box and a concrete sidewalk. The cisterns (no site number) were photographed and preserved in place (Thunderbird Archeological Associates 2001). The area in front of the other officer's quarters on base is considered to have moderate archaeological sensitivity.

One other historic period archaeological resource has been identified at the Main Post. The Fireplace Midden Deposit (51SE068) represents a minor midden deposit associated with the use of an earlier (pre-

1930) fireplace in the basement of the Commandant's House. The deposit was uncovered during renovation work at the house in 2011. Although the overall integrity of the deposit could not be determined, physical evidence clearly indicated that part of the deposit had been disturbed (MBW 2013).

Portions of both the Main Post and the Commandant's Garden have a moderate to low potential for containing intact archaeological resources. Along the eastern or southern sides of the Main Post, documentary evidence identified during the background research for the 1999 Phase I survey revealed the possible location of a 19th century cemetery, and the eastern and southern portions of the Commandant's Garden may retain features associated with the occupation of the house below fill (MBW 2013).

MBW Building 20

No professional archaeological surveys have been conducted on the Building 20 parcel. The parcel has low to no potential for archaeological resources due to the highly disturbed nature of the property by past construction activities on and adjacent to the parcel (MBW 2013).

Replacement BEQ Complex Site A (Alternative 1)

An assessment of the archaeological potential of Squares 929 and 930, which comprise replacement BEQ Complex Site A, was completed for cultural resource studies associated with the proposed improvements of the 11th Street Bridges across the Anacostia River. Through background research, review of historical maps, and a field review, the assessment concluded that Squares 929 and 930 have a high potential for intact archaeological deposits because the historic buildings and associated rear yards survive, and open space where buildings may have been removed but foundations may remain undisturbed by modern development is present (FHWA and DDOT 2007).

Replacement BEQ Complex Site B (Alternative 2)

No professional archaeological surveys have been conducted on replacement BEQ Complex Site B. Previous archaeological surveys of areas adjacent to the site indicate a high potential for archaeological resources that may be buried under fill deposits (Trocolli and Reid 2010). Historical maps show buildings have been present on the site since at least the mid-19th century. Similarly, the assessment of archaeological potential that was completed for the proposed 11th Street Bridges improvements concluded that Square 976, which corresponds to Site B, has a high archaeological potential because open space is present (FHWA and DDOT 2007). However, the southeast corner of the site has no archaeological potential due to modern disturbance associated with the Exxon gas station previously located here.

Replacement BEQ Complex Site C (Alternative 3)

The northern portion of replacement BEQ Complex Site C was included in the survey area of a 1980 Phase I archaeological investigation for the proposed construction of a new vehicle and pedestrian access gate to WNY at Isaac Hull Avenue and M Street SE. Soil borings and systematic shovel testing were conducted here. The borings identified 16 feet of historic fill resting upon a buried marsh. Shovel testing just to the east of Site C identified wall foundations of the ca. 1872 Building 8 (Site H25) and a

few artifacts. Consequently, construction plans were altered and the site covered with fill (Naval District Washington 2004). No archaeological resources were identified in the portion of the Phase I survey that covered the northern one-third of Site C.

A land reclamation map of the WNY indicates the eastern half of Site C is composed of historic period fill most likely deposited between 1800 and 1842, and the western half comprises fill deposited between 1858 and 1883 (Naval District Washington 2004). Because this land area did not exist prior to the 19th century, there is low potential for prehistoric resources or for historic resources associated with early historic periods.

A 1903 map shows the location of three buildings on Site C and a number of railroad tracks (Baist 1903). The northernmost building was located within the area tested during the 1980 survey and no resources were discovered. The second building is labeled Laboratory and was located across Isaac Hull Avenue from current Buildings 104, 105, and 112. The third was a small, square building located south of the Laboratory. Four sets of railroad tracks ran through Site C, connecting the main line to the buildings located on the east side of Isaac Hull Avenue. By 1913, the configuration of buildings and train tracks had been altered (Baist 1915). Warrington Avenue was extended west across the north end of Isaac Hull Avenue and on the south end, Tingey Street SE was also extended to the west. The Laboratory building and the small building south of it had been replaced by three buildings constructed perpendicular to Isaac Hull Avenue. The railroad tracks were still present, but had been rerouted on the west end to connect south into the main line as opposed to previously connecting to the north. A new rail line ran to the center of the three buildings.

A 1949 aerial photo of the area shows the presence of the three buildings on the west side of Isaac Hull Avenue; however, the center building appears to have been expanded (Google Inc. 2012). The rest of the lot appears to have been paved or disturbed. No railroad spurs are visible at this time. By 1988, the three buildings had been demolished and the current pump house (Building 199) had been erected. The rest of the site had been paved over for parking. Warrington Avenue through Site C was demolished and now terminated at the parking lot.

Because the ground surface at Site C did not exist until the 19th century, there is low potential for prehistoric or early historic resources there. Although the 1903 map shows buildings located on the site that were likely constructed in the 19th century, their subsequent demolition and the construction of new buildings over them likely destroyed any remains. Buildings shown on the 1915 map are visible on the 1949 aerial photo and were demolished sometime between then and 1988, after which the lot was paved for parking. Although there could be foundation remnants of these buildings, it is unlikely that archaeological survey of such foundation remnants would reveal any significant information on the construction or use of these buildings that could not be provided from documentary evidence.

<u>Replacement BEQ Complex Site D (Alternative 4)</u>

No professional archaeological surveys have been conducted on replacement BEQ Complex Site D. According to the land reclamation map of WNY, Site D is not in an area that was filled and, given that disturbance appears to have been restricted to the upper ground surface (currently parking lots and tennis/basketball courts), the degree of historic disturbance may not be extensive. Because Site D is

located within the area of purported original land surface, the possibility exists for the presence of prehistoric and early historic sites (Naval District Washington 2004).

Replacement BEQ Complex Site E (Alternative 5)

The MBW Annex site includes the structural remains of the original Eastern Market, a public market for the Federal City that was built in 1806 and operated into the early 1870s. The Original Eastern Market archaeological site (51SE043), which includes brick floors and granite foundations, was identified during archaeological surveys completed in 2000 (MBW 2000a, 2000b). The site is eligible for inclusion in the NRHP for its potential to contribute to our understanding of the early development of the market system in DC and the Mid-Atlantic Tidewater region (MBW 2000b). Thorough documentation and analysis of the site was conducted in 2001 and 2002 as part of the Phase III data recovery to mitigate unavoidable adverse effects to the NRHP-eligible site prior to construction of the MBW Annex (MBW 2004). Remains of the original Eastern Market extending well below the ground surface may still be present; however, following the data recovery, the DC HPO concurred with the Phase III report's conclusion that the site has no additional research potential (MBW 2013).

3.4 SOCIOECONOMICS, ENVIRONMENTAL JUSTICE, AND PROTECTION OF CHILDREN

3.4.1 Definition of Resource

Socioeconomics is an evaluation of the economic and social attributes and resources of the human environment; this section focusses particularly on the population and economic activity employment and income within the defined study area. Economic activity generally encompasses regional employment, personal income, and local government revenues and expenditures. The CEQ regulations implementing NEPA state that when economic or social effects and natural or physical environmental effects are interrelated, the EIS will discuss these effects on the human environment (40 CFR 1508.14). The CEQ regulations further state that the "human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment." Therefore, the socioeconomic analysis evaluates how elements of the human environment such as population, employment, housing, and public services might be affected by the Proposed Action.

The study area for socioeconomic impacts is two-fold. The regional study area includes Washington DC; Fairfax County, Virginia; Arlington County, Virginia; and Prince George's County, Maryland. The focused study area is where the Proposed Action would occur, and includes DC Ward 6, two neighborhood clusters, and the four U.S. Census Bureau (USCB) census tracts in the vicinity of the MBW properties and alternative replacement BEQ Complex sites (Figure 3.4-1).

The primary focus of the socioeconomic analysis in this EIS is on the economic effects of implementing the major renovation and construction projects. As noted in Section 1.1, the Proposed Action does not include any changes to the MBW mission or staffing levels. Therefore, long-term changes to population and demographic trends or long-term employment and income are not further evaluated.

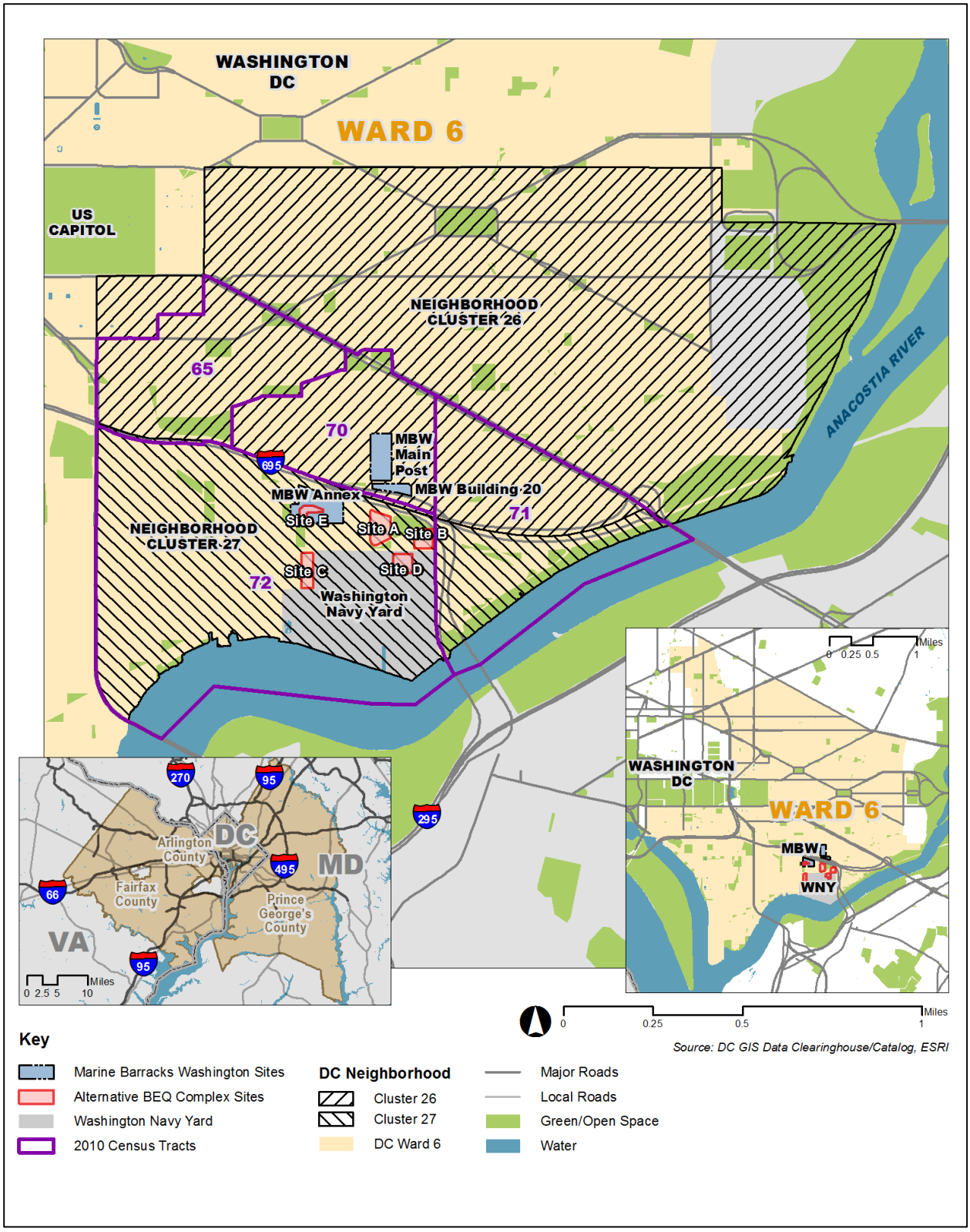


Figure 3.4-1. Regional and Focused Socioeconomic Study Areas

In 1994, EO 12898*, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority and low-income communities. In addition, EO 12898 aims to ensure that the environmental effects of federal actions do not fall disproportionately on low-income and minority populations. To support the evaluation of the potential for disproportionately high and adverse human health or environmental effects on minority populations and low-income populations in Section 4.4, this section includes data related to the existence of minority and low-income populations in the study area.

Lastly, this section provides an overview of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act), and as enacted through Public Law 91-646. This Act provides minimum standards of performance for all federally funded projects that require the acquisition of real property, including the relocation of persons displaced by such acquisition.

3.4.2 Regional Existing Conditions

3.4.2.1 Population and Population Trends

As shown in Table 3.4-1, between 2000 and 2010, DC experienced a smaller increase in population (5.2 percent) as compared to the neighboring counties. Prince George's County population grew 8.1% from 2000 to 2010, Arlington County population grew 9.6%, and Prince George's County grew at 11.5%. Slower population growth in DC could be indicative of high levels of development and population restricting quick population growth (USCB 2000, 2010a). In 2011, DC was ranked by USCB as the 25th most populous place of the 285 incorporated places in the U.S. (USCB 2012). The three counties, as well as DC, are projected to continue to have population growth from 2010 to 2020, with the largest population growth projected in Arlington County (36 percent).

Table 3.4-1. Regional Population Trends, 2000-2010 and 2010-2020

Geographic Area	2000[1]	2010[2]	Percent Change	2020 Projected Population[3]	Projected Percent Change (2010-2020)
DC	572,059	601,723	5.2%	681,967	13.3%
Fairfax County, Virginia	969,749	1,081,726	11.5%	1,261,940	16.7%
Arlington County, Virginia	189,453	207,627	9.6%	282,426	36.0%
Prince George's County, Maryland	33,047	35,725	8.1%	42,135	17.9%

Source: [1]USCB 2000; [2]USCB 2010a; [3]Proximity 2012

3.4.2.2 Employment and Income

Table 3.4-2 shows the unemployment rates for DC and the surrounding counties. In 2010, DC had an unemployment rate of 6.8 percent, which was higher than the rate in two counties surrounding DC – Arlington County (3.6 percent) and Fairfax County (1.9 percent). The unemployment rate in Prince George's County was slightly higher (9.2 percent) than DC. Employment in DC is dominated by the professional, scientific, management, administrative, and waste management services sector (18.8 percent); the educational, health, and social services sector (18.0 percent); and the public administration sector (15.0 percent). Those three sectors were also the largest in Fairfax County.

Employment in Arlington County has been dominated by the educational services, health, and social services sector (21.8 percent); public administration sector (15.2 percent); and professional, scientific, management, administrative, and waste management services (15.1 percent). Employment in Prince George's County has been dominated by the manufacturing sector (17.2 percent); the educational, health, and social services sector (16.7 percent); and the public administration sector (11.9 percent) (USCB 2010b). As shown in Table 3.4-2, the 2010 average family income for Arlington and Fairfax Counties was higher than DC, while income in Prince George's County was lower than DC (USCB 2010b).

Table 3.4-2. Regional Unemployment and Income, 2010

Geography	Unemployment Rate (percent)[1]	Average Family Income (2010 dollars)
DC	6.8	$118,384[2]
Arlington County, Virginia	3.6	$167,992[1]
Fairfax County, Virginia	1.9	$157,253[1]
Prince George's County, Maryland	9.2	$99,470[1]

Source: [1]USCB 2010b; [2]NeighborhoodInfo DC 2014

3.4.2.3 Regional Economic Impact of MBW

There are 1,286 personnel currently assigned to MBW. The vast majority, roughly 96 percent (1,230), is military personnel, of which nearly 90 percent (1,098) are junior enlisted. Approximately 10 percent (132) of the population hold officer positions. In addition to military personnel, MBW is served by a civilian force of approximately 56 full-time personnel. The duty station for approximately 140 of the personnel assigned to MBW is elsewhere within the NCR, including Camp David (known formally as the Naval Support Facility Thurmont) in Frederick County, Maryland and the U.S. Naval Academy in Annapolis, Maryland (MBW 2014).

A 2011 analysis of MBW concluded that its estimated total economic impact to this region (including DC; Fairfax County, Virginia; and Prince George's County, Maryland) was approximately $150 million in FY 2009. This total is based on payroll and other direct expenditures, as well as indirect economic effects estimated using a regional economic impact model. This model estimates and applies the "multiplier" effect stimulated by direct MBW expenditures based on inter-industry linkages within the region. The multiplier effect is the ripple effect that an initial purchase has on a local economy, when that income is re-spent on other local industries. Thus, for every dollar of input directly attributable to MBW spending, additional output is generated in the region of influence by the indirect and induced activity. This economic impact to the regional economy was further characterized as:

- $72 million in industrial output – $49.0 million from payroll, $6.1 million from operations (contracts and purchases), and $16.9 million from visitor spending (including for parade events hosted by MBW);
- $70.6 million in direct payroll expenditures – for military and civilian personnel;
- $7.4 million in state and local tax revenues – $5.2 million from payroll, $0.4 million from operations (contracts and purchases), and $1.8 million from transient personnel and visitor spending; and

- 1,709 jobs – including 1,209 military and civilian personnel directly employed and 500 additional jobs related to payroll, operations, and visitor spending (MBW 2011).

3.4.2.4 DC Tax Base

The District of Columbia is a single unit of government that provides many of the services typically provided by and shared between state and local levels of government in the 50 states. The General Fund is funded with 16 levied DC taxes, as well as a number of fees in support of revenue each year from sources such as the individual income tax, real property taxes, sales tax, and gross receipts taxes. The real property tax is the largest source of tax receipts, accounting for 26.8 percent of total local-source General Fund revenues in FY 2012 ($1.8 billion). The DC Office of the Chief Financial Officer projects that revenues from real property will continue to increase to approximately $2.2 billion by FY 2017. All real properties, other than residential owner-occupied and expressly exempted properties, are subject to taxation at 100 percent of estimated market value. Projections indicate that tax revenue is expected to increase due to factors such as lower unemployment and growing population and job growth. A growing and diversifying economy is expected to result in increased business tax revenue, and expanded retail opportunities are expected to result in additional sales tax revenue (DC Office of the Chief Financial Officer 2013a, 2013b). The federal government owns approximately 22 percent of the land in DC (Congressional Research Service 2012).

3.4.3 Focused Existing Conditions in the Study Area

Data for the detailed study area is presented using two main data sources:

- NeighborhoodInfo DC data for Ward 6 (2012 boundaries), Neighborhood Cluster 26 (Capitol Hill/Lincoln Park), and Neighborhood Cluster 27(Navy Yard/Near Southeast). NeighborhoodInfo DC uses USCB data, but has weighted and mapped the data to match ward and neighborhood cluster areas. These data are primarily based on the USCB 2010 decennial census, but also include data based on the USCB 2007-2011 5-year American Community Survey (NeighborhoodInfo DC 2014).
- USCB data for the four census tracts where the MBW properties and alternative BEQ Complex replacement sites are located. These data are estimates from the 2008-2012 American Community Survey 5-year estimates (USCB 2014). These data are primarily used for the study area analysis of minority and low-income populations and estimated population under age 18.

Regional DC data are also provided alongside these data for comparative purposes.

3.4.3.1 Population and Population Trends

Within the detailed study area, population change between 1980 and 2010 has generally followed the trends of DC, with declines between 1980 and 2000 followed by increases between 2000 and 2010. The population rise and fall in Cluster 27 is more dramatic than the other areas, and both Clusters 26 and 27 have higher rates of increase between 2000 and 2010 than the other areas.

Table 3.4-3. Detailed Study Area Population Trends, 1980-2010

Geography	1980	1990	2000	2010
DC	638,328	606,900	572,059	601,723
Ward 6	81,715	75,556	70,912	76,000
Neighborhood Cluster 26	21,117	19,849	18,489	20,909
Neighborhood Cluster 27	6,273	5,040	4,633	5,705

Source: NeighborhoodInfo DC 2014

3.4.3.2 Employment and Income

The employment and income data detailed in Table 3.4-4 reflect a disparity between the income and unemployment rates for the two neighborhood clusters in the detailed study area, in the year 2011. The average family income for Cluster 26 ($186,314) is more than double that of Cluster 27 ($77,952), and the unemployment rate for Cluster 27 (14 percent) is more than three times higher than the rate in Cluster 26 (4 percent). However, the two neighborhood clusters together are representative overall of the employment and income levels in Ward 6, which are generally higher than DC as a whole.

Table 3.4-4. Detailed Study Area Unemployment and Income, 2011

Geography	Unemployment Rate (percent)	Average Family Income (2010 dollars)
DC	10.0	$118,384
Ward 6	7.5	$129,674
Neighborhood Cluster 26	4.0	$186,314
Neighborhood Cluster 27	14.0	$77,952

Source: NeighborhoodInfo DC 2014

Some businesses are located on BEQ Complex replacement Site A (Alternative 1) (see Table 2.4-1) and Site B (Alternative 2) (see Table 2.4-2). These businesses are sources of employment and income for workers that may or may not reside within the study area. Although within the context of the focused study area these businesses are minor sources of employment and income, they are highly important to individuals that are employed there and to those who use their business services.

3.4.3.3 Housing

As indicated in Table 3.4-5, there are lower rental vacancy rates in the two neighborhood clusters than for DC as a whole. Homeownership rates are markedly higher in Neighborhood Cluster 26 (57 percent) and lower in Neighborhood Cluster 27 (34 percent) when compared to Ward 6 (46 percent) and DC (43 percent). Both neighborhood clusters and Ward 6 had higher median sales prices than DC.

Table 3.4-5. Detailed Study Area Select Housing Data

Geography	Rental Vacancy Rate (Percent), 2011	Homeownership Rate (Percent), 2011	Median Sales Price (2012)
DC	6.3	43	$474,000
Ward 6	4.2	46	$588,000
Neighborhood Cluster 26	4.5	57	$599,000
Neighborhood Cluster 27	4.2	34	$514,000

MBW provides housing for approximately 500 enlisted personnel at Building 20 and the Annex, along with four officers and the Commandant and their families who reside on the Main Post. Military personnel are typically assigned to MBW for two years, and the transition between incoming and outgoing personnel typically occurs in the fall months (MBW 2014).

Existing housing units are within the replacement BEQ Complex sites for Alternative 1 (Site A) and Alternative 2 (Site B). There are five housing units within Site A and three housing units within Site B.

3.4.3.4 DC Tax Base

Because the existing MBW properties are federally owned, DC does not levy real property tax for these units. However, MBW does generate local tax revenues in the form of taxes on payroll, contracts and purchase, and transient personnel and visitor spending. The annual taxes associated with MBW operations were recently estimated at approximately $7.4 million – $5.2 million from payroll, $0.4 million from operations (contracts and purchases), and $1.8 million from transient personnel and visitor spending (MBW 2011).

The real property tax data associated with privately owned parcels within replacement BEQ Complex Alternative 1 (Site A) and Alternative 2 (Site B) are detailed in Tables 3.4-6 and 3.4-7, respectively. The existing businesses at these sites also generate business taxes, sales tax, and gross receipts taxes.

Table 3.4-6. Assessed Real Property Values and Taxes for Properties Associated with Site A (Alternative 1)

Address	Current Use	2013 Value	Proposed 2014 Value	Estimated Tax Based on 2013 Value
810 L Street SE	Capitol Tax Group	$300,580	$310,540	$4,960
808 L Street SE	International Action	$244,620	$244,620	$4,036
811 Virginia Avenue SE	Sealander Brokerage Offices	$218,950	$224,540	$3,613
809 Virginia Avenue SE	Sealander Brokerage Offices	$229,480	$235,070	$3,786
821 Virginia Avenue SE	Dog-Ma Daycare	$1,669,140	$1,670,420	$27,541
801 Virginia Avenue	Vacant - "Admiral at Barracks Row" Concept Development	$2,064,960	$2,064,960	$103,248
1100 8th Street SE	Chicken Tortilla	$865,850	$870,020	$14,287
Potomac Avenue SE	Vacant	$337,150	$347,260	$16,858
815 L Street	Residential	$800,380	$817,150	$6,803
813 L Street SE	Residential	$16,060	$16,060	$137
817 L Street SE	For Sale	$420,530	$406,650	$3,575
L Street	For Sale	N/A	N/A	$10,918
Potomac Avenue SE	Vacant	N/A	N/A	$8,555
819 L Street SE	International Action	$661,720	$672,990	$26,929
1103 9th Street SE	Vacant	$171,100	$176,230	$10,170
819 R L Street SE	Vacant	N/A	N/A	$15,713
Potomac Avenue SE	Vacant	$538,570	$554,730	$8,555
811 L Street SE	Fuller's Barber Shop	$616,350	$627,270	$13,064
816 Potomac Avenue SE	Residential	$1,848,620	$1,854,310	$97,832
1105 9th Street SE	Vacant	$171,100	$176,230	$33,268
823-825 L Street SE	Vacant	$261,280	$269,120	$413,846
9th Street SE	Vacant	N/A	N/A	$4,960
810-1120 Potomac Avenue SE	Family Preservation Services	$5,612,540	$5,794,680	$4,036

Table 3.4-6. Assessed Real Property Values and Taxes for Properties Associated with Site A (Alternative 1)

Address	Current Use	2013 Value	Proposed 2014 Value	Estimated Tax Based on 2013 Value
1102-1104 8th Street SE	Levis Port Café; The Bachelors Mill/Backdoor Pub	$2,016,270	$2,031,760	$3,613
	Totals	**$19,065,250**	**$19,364,610**	**$413,843**

Notes: a. Assumed Residential Property
b. Assumed Commercial Property
c. N/A = not available in the DC Office of Tax and Revenues (OTR) database (DC OTR 2014b)
Sources: DC OTR 2014a, 2014b

Table 3.4-7. Assessed Real Property Values and Taxes for Properties Associated with Site B (Alternative 2)

Parcel Address	Current Use	2013 Value	Proposed 2014 Value	Estimated Tax Based on 2013 Value
1001–1003 L Street SE	Humane Society Spay and Neuter Clinic	$1,036,070	$1,046,510	$8,806.60
1104 10th Street SE	Kim's Custom Tailor	$507,780	$508,140	$4,316.13
1102 10th Street SE	Residence	$351,440	$354,450	$2,987.24
1022–1109 M Street SE	Vacant; Parking Lot	$6,580,900	$6,014,350	$115,747
1106–1108 10th Street	Residence	$523,110	$523,110	$4,446.44
	Totals	**$8,999,300**	**$8,446,560**	**$136,303.05**

Sources: DC OTR 2014a, 2014b

Replacement BEQ Complex Alternative 3 (Site C) is on federally-owned land, so no DC real property tax is levied for this property. However, DC and the SEFC developer, Forest City, have agreed to a Payment-in-Lieu-of-Taxes program that captures an equivalent to the property taxes the developer would otherwise pay. The revenues from this program are used to finance the cost of infrastructure (e.g., roads, sewers, streets lights) for the SEFC property (DC Office of Executive Mayor 2007). The primarily vacant site does not currently host any other tax-generating activity.

Finally, replacement BEQ Complex Alternative 4 (Site D) and Alternative 5 (Site E) are located within federally-owned WNY property and MBW Barracks, respectively. There are no property taxes associated with this property. Similar to MBW, WNY and MBW Annex economic impacts include local tax revenues generated from payroll taxes, expenditures, and in visitor spending.

3.4.3.5 Minority Populations

In accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, the analysis herein identifies minority populations that could be affected by the Proposed Action within the study area. The minority population is calculated as the percent of the population that is categorized in one of six racial categories and those of Hispanic or Latino origin (without double counting those who report two or more races/origins). A minority population is identified where either: 1) the minority population of the affected area exceeds 50 percent or 2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the appropriate community of comparison (CEQ 1997). The District of Columbia serves as the community of comparison because it is the next largest geographic area that encompasses the study area.

As indicated by the data presented in Table 3.4-8, because the minority populations exceeds 50 percent, Census Tracts 71 and 72 are considered minority population areas. However, Census Tracts 65 and 70 are not considered minority population areas.

Table 3.4-8. Detailed Study Area Minority Population, 2008-2013

Geography	Total Population	Total Minority Population	Percent Minority Population
DC (Community of Comparison)	605,759	396,576	65.5
Census Tract 65	2,591	450	17.4
Census Tract 70	2,566	623	24.3
Census Tract 71	3,267	2,395	73.3
Census Tract 72	2,817	1,255	55.4

Source: USCB 2014

Low-Income Populations

Also in accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, low-income populations are identified where a meaningfully greater portion of the population is living below the poverty level threshold as compared to the appropriate community of comparison (CEQ 1997). As with the minority population, DC serves as the community of comparison because it is the next largest geographic area that encompasses the study area. Based on the data presented in Table 3.4-9, Census Tract 71 (47.3 percent low-income) meets the definition of a low-income population area; however, the remaining census tracts within the study area are not considered low-income.

Table 3.4-9. Detailed Study Area Low-Income Population, 2008-2013

Geography	Population for whom Poverty Status is Determined	Total Low-Income Population	Percent Low-Income Population
DC (Community of Comparison)	572,108	105,606	18.5
Census Tract 65	2,585	100	3.9
Census Tract 70	2,193	134	6.1
Census Tract 71	3,267	1,544	47.3
Census Tract 72	2,701	324	12.0

Source: USCB 2014

3.4.3.6 The Uniform Act

The Uniform Act provides minimum standards of performance for all federally-funded projects that require the acquisition of real property, including the relocation of persons displaced by such acquisition including the following:

- Property Appraisal and Fair Market Value: By law, the federal government is required to offer property owners “just compensation” for their property, which is based upon “fair market value” of the property. Fair market value is determined through a federal real property valuation appraisal. The estimated fair market value is used as the basis for the acquiring agency’s estimate of just compensation. An estimate of just compensation must be established before any property negotiations begin.

- Once the property appraisal has been completed and reviewed, the approved appraisal amount is used to determine the amount of just compensation to be offered for the property. Just compensation will never be less than the fair market value established by the approved appraisal (National Highway Institute 2010).
- Written Offer and Negotiations: All property appraisal processes must be complete before negotiations begin. Once an estimate of just compensation has been established, the Uniform Act requires acquiring agencies to provide a written offer to the property owner for the full amount.
- It is at the point of this written offer that relocation eligibility for property owners and tenants is established (more information provided below).
- Negotiations sometimes result in additions to the estimate of just compensation for a property. A property owner can provide additional information and make reasonable counter offers and proposals for consideration. This information can be used as a basis for additions to offer amounts, which is called an administrative settlement. Administrative settlements may be approved if they are reasonable, prudent, and in the public interest.
- Partial Acquisitions: Sometimes acquiring agencies do not require the acquisition of entire properties. This is referred to as a partial acquisition. If a partial acquisition creates an "uneconomic remnant," the agency is required to offer to purchase those remnants. In addition, if partial acquisitions cause damages to remaining properties, offer amounts should include, as a separate line item, amounts offered as compensation to the damages to the remaining property.
- Payment: Once negotiations have been completed, a property owner is not required to surrender the property until the agreed purchase price is paid by the acquiring agency. Only exceptional cases warrant right-of-entry for the agency prior to making payment, and only upon approval of the owner.
- Relocation: In addition to paying fair market value, the Uniform Act prescribes certain benefits for eligible occupants impacted by federal property acquisitions, including: assistance in finding acceptable replacement housing or business location; the payment of moving and other incidental and miscellaneous expenses; and, as needed, certain supplemental payments for increased housing or rental costs at a replacement location.
- Condemnation: While the government is authorized to acquire property through its powers of eminent domain (condemnation), it has been the consistent peacetime policy of the DON to acquire real estate through negotiation with owners. However, use of the condemnation process may be necessary even with willing sellers in order to clear problems with title (National Highway Institute 2010).

3.5 PUBLIC HEALTH AND SAFETY

3.5.1 Definition of Resource

This EIS analyzes health and safety impacts related to: construction safety; hazardous materials, hazardous waste, toxic chemicals, and contaminated sites; and disproportionate health or environmental risks to children. Specifically, this EIS analyzes the potential for hazardous materials to be introduced to the environment during the course of site demolition and construction activities; for toxic and hazardous waste to be generated as a result of construction and demolition activities; and for encounters with contaminated media during the course of site preparation, construction/demolition activities, or future use of the site. Emergency response capacity is addressed in Section 3.7. Public health and safety, for the purposes of this EIS, addresses health and well-being of both military personnel and civilians at or in the vicinity of MBW and the alternative BEQ replacement sites that could be impacted through implementation of the Proposed Action.

3.5.2 Existing Conditions

3.5.2.1 Construction Safety

Safety at Marine Corps installations is dictated through a number of MCOs and federal regulations. The principle federal statute regulating the safety of workers and the public is the *Occupational Safety and Health Act* (28 CFR 1960). The Marine Corps provides additional guidance to protect personnel from occupational deaths, injuries, or illness through MCO 5100.8, *Marine Corps Occupational Safety and Health Policy,* and through the establishment of the *Marine Corps Safety Program*, MCO 5100.29B. The Marine Corps also practices Operational Risk Management (ORM) as outlined in MCO 3500.27B. The ORM documents outline a process to maintain readiness in peacetime and achieve success in combat, while safeguarding people and resources.

Construction and demolition activities that occur at MBW must be conducted in a manner that is consistent with all federal regulations, including all applicable Occupational Safety and Health Administration (OSHA) requirements. Prior to construction, all contractors are made aware of necessary regulations and are required to execute management practices that present a safe environment for both workers involved in the construction and any persons who may be near any construction activities. Generally, human health and safety issues associated with construction activities involve altered traffic patterns that increase the potential for accidents involving pedestrians and vehicles and the safety of bystanders on adjacent lands.

3.5.2.2 Hazardous Materials and Hazardous Wastes

A hazardous material is defined in 29 CFR Section 1910.120(a)(3) as any substance that is 1) listed in Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); 2) designated as a biologic agent and other disease causing agent which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any person, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction), or physical deformations in such persons or their

offspring; 3) listed by the U.S. Department of Transportation as hazardous materials under 49 CFR Section 172.101 and appendices; or 4) defined as a hazardous waste per 40 CFR Section 261.3 or 49 CFR Part 171. Hazardous materials are federally regulated by the USEPA in accordance with the Federal Water Pollution Control Act, CWA, Toxic Substance Control Act (TSCA), Resource Conservation and Recovery Act (RCRA), CERCLA, and CAA.

Hazardous wastes, as defined by RCRA (42 USC 6903[5]), are wastes or combination of wastes that, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause, or significantly contribute to an increase in mortality or an increase in serous irreversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed. To be classified as a hazardous waste, material must first qualify as a solid waste. A solid waste is any material that is disposed, incinerated, treated, or recycled except those exempted under 40 CFR Section 261.4.

Current operational and maintenance activities at MBW do not require the use of significant quantities of hazardous materials or generate significant quantities of hazardous waste. As such, MBW is considered a small quantity generator of hazardous waste and is authorized to accumulate and store hazardous waste for up to 180 days without a permit. The installation has been assigned a USEPA Hazardous Waste Identification No. DC3170023532. In addition, MBW is small quantity handler of universal waste. Common wastes generated include paints, aerosols, flammable liquids, adhesives, and universal wastes including fluorescent lamps and batteries. As a small quantity generator of hazardous waste, MBW is subject to federal and DC regulations pertaining to generator operations. A hazardous waste services contractor provides on-site support to MBW for the management of hazardous wastes, including identification, collection, packaging, labeling, and preparation of hazardous waste for transportation (DON 2008). Despite its small quantity generator and handler status, it is MBW policy to reduce the use of hazardous materials and hazardous wastes and substitute less or non-hazardous materials where possible (MBW 2014, 2011).

3.5.2.3 Toxic Substances

The enactment of TSCA (15 USC 2601 et seq.) and the promulgation of its implementing regulations (40 CFR Parts 700–766) represented an effort by the federal government to address those chemical substances and mixtures for which it was recognized that the manufacture, processing, distribution, use, or disposal may present unreasonable risk of personal injury or health of the environment, and to effectively regulate these substances and mixtures in interstate commerce. The TSCA Chemical Substances Inventory lists information on more than 62,000 chemicals and substances. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics, and pesticides. The Federal Insecticide, Fungicide, and Rodenticide Act (7 USC 136 et seq.) registers and regulates pesticide use (40 CFR Parts 150–189).

Toxic chemical substances regulated by USEPA under TSCA and typically associated with buildings and facilities include asbestos, lead (Pb), polychlorinated biphenyls (PCBs), and mercury. For the purposes of this EIS, existing buildings and structures are inspected for the presence of the most common forms of these chemicals. ACM includes materials that contain more than 1 percent asbestos and are categorized as either friable (brittle) or non-friable. ACM was once used in building construction as a fire and noise

retardant, but was linked to several diseases and has not been used in construction materials since 1987. Friable asbestos becomes hazardous when fibers become airborne and are inhaled. LBP includes paint with Pb levels equal to or exceeding 1 milligram per square centimeter of Pb on a surface or 0.5 percent by weight. Pb, which was used as an additive and pigment in paints for many years before 1978, has been associated with central nervous system disorders, particularly among children and other sensitive populations. Exposure to Pb via paint is usually through inhalation during renovation and demolition activities or through ingestion of paint chips or lead-contaminated drinking water. Fluorescent lighting fixture ballasts have the potential to contain PCBs. Additionally, PCB paints are those that have greater than 50 parts per million (ppm) PCB content, and they may be present upon or within building surfaces, as they were commonly used prior to 1978 as a plasticizer in paints, sealants, mastics, and caulk. Buildings may contain liquid mercury in thermostats and thermometers, and fluorescent lighting fixtures typically contain elemental mercury in the fluorescent light bulb; compact fluorescent lamps also contain mercury.

Due to the age of the MBW buildings and at the four of the five replacement BEQ Complex alternative sites (Sites A-D), the potential exists for some of the facilities that would be renovated or demolished under the Proposed Action to contain ACM, LBP and PCB paint, and mercury. Prior to demolition or renovation activities, buildings and suspect materials would be screened for toxic substances, especially if they are in buildings constructed before 1978 when the federal government banned consumer uses of Pb and PCBs in paint. With respect to PCB paints, both the surface and the building material below the surface would be tested to determine proper disposal requirements. Construction debris that contains PCB paints may be considered PCB bulk waste, and as such, materials may be disposed at a permitted municipal landfill (USEPA 2012a). Certified contractors would be used in all renovation or demolition projects; these contractors would be required to follow MBW, Marine Corps, and regulatory guidance for asbestos, LPB, PCBs/PCB paints, and mercury management.

3.5.2.4 Contaminated Sites and USTs

Contaminated Sites. The Defense Environmental Restoration Program (DERP) was developed by the DOD pursuant to legislation codified at 10 USC Section 2700 et seq., to identify, investigate, and remediate potentially hazardous material disposal sites on DOD property. As part of DERP, the DOD has created the Installation Restoration Program (IRP), which is designed to address the cleanup of hazardous substances on military installations.

There are no IRP sites at MBW Main Post or the MBW Annex. Replacement BEQ Complex Site D (Alternative 4) is directly adjacent to the boundary of IRP Site 9, located at Buildings 219 and 220 and extending outward approximately 10 to 50 linear feet into the immediately surrounding area. The IRP site is covered by buildings, pavement, and other impervious surfaces and is currently used as office space. Constituents detected in subsurface soils at Site 9 include metals, semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs), and PCBs. It was determined by DON and the USEPA in 2007 that no further remedial action was necessary at the site based on remedial investigations (including the baseline human health and ecological risk assessment) of soil at these sites (DON 2007). Exposure scenarios for a future adult resident, future industrial worker, and future adolescent recreational user indicate no unacceptable human health risk is present (DON 2007).

On non-DOD land, there are no known contaminated sites identified at the replacement BEQ Complex Site A (Alternative 1). As noted in Section 2.4.2, a former leaking UST at the replacement BEQ Complex Site B (Alternative 2) has been closed by DDOE, with a determination of No Further Action based on the assessment that, if left in place, the site does not pose a threat to human health and/or the environment. Due to the potential for residual soil contamination, consultation with DDOE would be required prior to the commencement of earth disturbing activities at Site B (DDOE 2009).

With regards to Site C, there are numerous contaminated sites at the SEFC complex (USEPA 2014). As the SEFC is being developed on a parcel-by-parcel basis, Final Remedies for the area are being determined on a parcel-by-parcel basis. Site C is located at the northeastern corner of the SEFC area at the SEFC parcel E. The SEFC parcel D is adjacent to Site C on its western boundary, and SEFC parcel K and the new Department of Transportation headquarters building are adjacent to parcel D on its western boundary. Although no information is currently available for parcel E, parcels D, K, and the Department of Transportation parcel are known areas of contaminated soil and groundwater. Contaminants in soil included petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), PCBs, and metals, such as Pb, arsenic, and chromium. The main contaminants in the groundwater are benzene, toluene, ethylbenzene, xylenes and naphthalene, and minor incidences of methyl tertiary-butyl ether. Most of the soil has been removed from the parcels D, K, and the Department of Transportation parcel. Groundwater remediation continues on the Department of Transportation parcel, but was not considered necessary at parcel D as long as restrictions on extraction for drinking water supply are implemented through land use controls. Unexploded ordnance (UXO) were also located and removed from Parcel D (USEPA 2012b).

Underground Storage Tanks. USTs are primarily used for the storage of regulated substances, such as petroleum products. They are typically found at service stations, connected to boilers/steam generators, or connected to emergency generators. USTs are regulated under 42 USC Chapter 82, Subchapter IX by the USEPA and delegated to DC (40 CFR Part 280, 40 CFR Part 281, and 40 CFR Parts 282.50-282.105). In general, UST design specifications include internal liners and integrity monitoring systems; spill and overflow prevention, including automatic shut off, alarm, release detection and notification, and secondary containment systems; routine protocol for inspection/testing, maintenance, repair, closure, and documentation/reporting; and specific underground corrosion protection.

MBW manages USTs at MBW properties in accordance with DOD, USEPA, and DC standards regulating UST. One UST is located within the Site E footprint. In addition, USTs were formerly located within the Site B footprint.

3.5.2.5 Disproportionate Health or Environmental Risks to Children

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued. This EO requires federal agencies to identify, assess, and address disproportionate environmental health and safety risks to children from federal actions. The EO defines “environmental health risks and safety risks” [to] “mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).”

This evaluation uses the same focused study area that was identified in Section 3.4 (Socioeconomics). The population estimates of children and school enrollment data are identified herein to support the analysis of potential disproportionate environmental health and safety risks to children in Section 4.5. Table 3.5-1 presents the estimated population under the age 18 within the focused study area consisting of the census tracts near MBW and the alternative replacement BEQ Complex sites. These data show that there is a relatively high percentage of population under 18 within Census Tract 71. The remainder of these census tracts has lower percentages of their population under age 18 as compared with DC as a whole.

Table 3.5-1. Population Under Age 18 in the Detailed Socioeconomic Study Area, 2008-2013

Geography	Total Population	Population under 18 Years Old	Percent Population under 18 Years Old
DC	605,759	103,986	17.2
Census Tract 65	2,591	254	9.8
Census Tract 70	2,566	180	7.0
Census Tract 71	3,267	877	26.8
Census Tract 72	2,817	195	6.9

Source: USCB 2014

Table 3.5-2 identifies schools and school enrollment data. The notable schools in proximity to the Proposed Action are Tyler Elementary School, which is located one block east of the Main Post, and Richard Wright Charter School, which is located west of BEQ Complex replacement Site A (just north of M Street). Enrollment at Tyler Elementary School for the 2012-2013 school year was 470 students (DC Public Schools 2014). As identified in the 2012-2013 Annual Report, the Richard Wright Public Charter School has an enrollment of 216 students in grades 8-10 for the 2012-2013 school year (Richard Wright Public Charter School 2013). In addition, there are plans to open Van Ness Elementary School, which is located north of BEQ Complex replacement Site C. As of 2012, there were approximately 350 children ages 0-9 years old within a half-mile of Van Ness, with that population expected to rise to 630 by 2020. A DC Public Schools Feasibility Study noted that by 2015, the population within a half-mile of Van Ness Elementary School is expected to grow by 58%, and by 80% in 2020 (DC Public Charter School Board 2012).

Table 3.5-2. Enrollment in Schools Near the Proposed Action, 2012

Geography	Number of Schools	Enrollment
DC	232	80,231
Ward 6	34	9,894
Neighborhood Cluster 26	7	2,129
Neighborhood Cluster 27	4	1,496

Source: NeighborhoodInfo DC 2014

3.6 UTILITIES AND INFRASTRUCTURE

3.6.1 Definition of Resource

Utilities and infrastructure refer to the system of public works that provides the underlying framework for a community or installation. Utilities and infrastructure components discussed in this EIS include

electrical distribution systems, potable water, stormwater and wastewater collection, wastewater treatment, natural gas, and solid waste disposal. Infrastructure related to transportation and circulation is found in Section 3.2. The study area for utilities and infrastructure includes all existing MBW properties, alternative BEQ Complex sites, and surrounding areas.

A preliminary survey of utilities was conducted for the majority of the study area in October 2013. The survey limits ranged from G Street SE to the north, to M Street SE to the south, 5th Street SE to the west, and to 13th Street SE to the east. Visible above ground utility infrastructure, as well as infrastructure that was identified in Geospatial Information System data provided by the DC Water and Sewer Authority (DC Water), was identified from this effort.

3.6.2 Existing Conditions

3.6.2.1 Electrical Distribution

Electrical services are supplied to DC by Pepco and the distribution system meets existing demands. The MBW properties and the alternative replacement BEQ Complex sites, with the exception of Site C, do not include notable electrical distribution infrastructure. At replacement BEQ Complex Site C (Alternative 3), an electrical substation is located in the northern portion of site. This substation was built in the 1960s as a “temporary” facility when it was within Navy property. Around 2007, the Navy turned over the property where the substation is located to Forest City, and there is an agreement between Forest City and Pepco that the substation be maintained in its present location. However, this substation is currently planned to be relocated as part of a separate planned Pepco project to accommodate additional load projections associated with proposed development in the area.

3.6.2.2 Telecommunications

Telecommunication services and equipment are provided and maintained by Verizon. Cable television services are provided by Comcast Cable.

3.6.2.3 Potable Water

Potable water for DC is provided by DC Water. The U.S. Army Corps of Engineers (USACE), Washington Aqueduct draws water from the Potomac River through the Great Falls and Little Falls intakes. An average of 180 million gallons of water per day is then treated at the Aqueduct owned and operated Dalecarlia or McMillan Water Treatment Plants (USACE 2013). Water from the Aqueduct is purchased and treated by DC Water and then distributed to DC residents and businesses via a network of 1,300 miles of pipe; DC Water also constantly monitors water quality throughout DC through a daily sampling program (DC Water 2013).

Potable water is supplied to MBW and the surrounding areas from the Dalecarlia, which has a normal treatment capacity of 164 million gallons per day and a maximum capacity of 264 million gallons per day. The treated water in this area is stored in the Brentwood Reservoir, which has a capacity of 25 million gallons. MBW and the alternative replacement BEQ Complex sites are located in the Low Service Area distribution section. Based on generally accepted usage estimating methods, the average potable water consumption for MBW administrative facilities is approximately 8,000 gallons per day and 25,000 gallons per day for the BEQs.

3.6.2.4 Stormwater/Wastewater Collection

The sanitary sewer system is operated and maintained by DC Water. The system is made up of over 1,800 miles of sanitary, combined, and storm sewers; 16 stormwater stations; 75,000 catch basins and manholes; 22 flow-metering stations; and 9 wastewater mumping stations. The sewers range from 8-inch pipelines to 27-foot arches and are constructed of PVC, ductile iron, and concrete (DC Water 2013).

While over 60 percent of the existing system contains separate collection systems for stormwater and wastewater, combined sewer systems serving both are prevalent in downtown DC and other older areas of the DC Water service area. In the event that the system capacity is unable to convey the mixture of wastewater and stormwater to the treatment plant (e.g., during a major storm event), combined collection systems may overflow into any of the 53 Combined Sewer Overflow (CSO) outfalls listed in the NPDES Permit issued by USEPA to DC Water (DC Water 2013). Over the last decade, DC Water has implemented a CSO Abatement Program in an effort to maximize in-line storage and minimize combined sewer overflows to receiving waters. The CSO Abatement Program consists of collection system optimization using inflatable dams, dynamically controlled weirs, outfall gates and other flow regulating devices, sewer separations, and the Northeast Boundary Swirl Facility, which provides preliminary treatment, including disinfection and some solids removal for combined sewage overflows prior to discharge (DC Water 2013).

The MBW properties and the alternative replacement BEQ Complex sites, with the exception of Site C, do not include notable stormwater or wastewater collection or conveyance infrastructure. However, Site C includes a pump house that serves as the main pumping station for WNY sanitary lines. In addition, the Capitol Hill Relief Sewer (a brick box sewer 18 feet wide by 13 feet tall) runs under the east side of the site. This sewer was originally designed to provide flood relief from the Capitol Hill Area, to function as a stormwater outlet to the Anacostia River, and to provide a location where separate stormwater pipelines could be connected.

3.6.2.5 Wastewater Treatment

Sanitary wastewater at MBW is treated at the Blue Plains Advanced Wastewater Treatment Plant (BPAWTP). The BPAWTP is operated by DC Water and is the largest wastewater treatment plant in the world. The plant serves over two million Washington Metro area customers a day, including those in Montgomery and Prince George counties in Maryland and Fairfax and Loudon counties in Virginia, and has a treatment capacity of 370 million gallons per day. The BPAWTP provides primary, secondary, and tertiary treatment that includes grit removal, trickling filters, clarifiers, nitrification/denitrification, chlorination, and dechlorination. The plant has undergone significant upgrades over the past several years to improve its wastewater processing services and protect the Potomac River and the Chesapeake Bay and their surrounding watersheds (DC Water 2013).

According to DC Water, the average daily flow of wastewater into the BPAWTP is 330 million gallons per day. That leaves approximately 40 million gallons per day of surplus capacity at current levels; however, based on 2005 projections by the Metropolitan Washington Council of Governments, it is expected that the current plant will reach its maximum daily treatment capacity by the year 2030 (DC Water 2013).

Based on generally accepted usage estimating methods, wastewater generation for MBW can conservatively be taken as equal to the average potable water demand of approximately 33,000 gallons per day.

3.6.2.6 Natural Gas

Natural Gas is supplied to DC by the Washington Gas and Light Company. The distribution network to MBW and the alternative BEQ Complex sites are from the curb line.

3.6.2.7 Solid Waste Disposal

Solid waste at MBW is currently temporarily stored in trash receptacles located behind Building 20 and in the northeast corner of the MBW Annex. Trash handling for all refuse generated on the Main Post is handled in a service area located in the southeast corner of the Main Post. Solid waste is collected from MBW properties by EMCOR, a private solid waste collection contractor. Recyclable materials are collected by Melwood Recycling. The DC Department of Public Works collects solid waste from residences.

3.7 PUBLIC SERVICES

3.7.1 Definition of Resources

Public services include police and fire protection; childcare, family, and educational services; health services; educational facilities; and parks and recreational resources that are available to the population within the study area. The NEPA analysis requirement for public services is similar to that of socioeconomics, as an element of the human environment (see Section 3.4). The level of analysis of public services for this EIS is less detailed than other analyses in this document for two key reasons. First, potential impacts to public services primarily relate to a change in demand or supply of public services and, as first noted in Section 1.1, MBW staffing levels would not change by implementing the Proposed Action. Second, as noted in Section 2.3.1, none of the replacement BEQ Complex alternative sites include public service facilities (e.g., no public housing, education, or public recreation services). See Section 3.8 for a discussion of noise impacts to park and recreational resources that are considered sensitive receptors to noise.

The study area is defined by the public service facilities that are located near and serve the existing MBW properties and alternative BEQ Complex sites depicted in Figure 3.7-1. Scoping comments related to public services primarily related to concern for potential impacts to Virginia Avenue Park.

3.7.2 Existing Conditions

3.7.2.1 Emergency Response and Medical Services

All MBW properties and the alternative BEQ Complex sites are located within the First District and 106th Service Area of the Metropolitan Police Department. The District 1 Substation, the closest police station to the study area (see Figure 3.7-1), is located at 500 E Street SE (Metropolitan Police Department 2014). The District Fire and Emergency Medical Services (DCFEMS) Department provides all fire and ambulance service for DC. The DCFEMS Engine Company 18 Station, located at 414 8th Street SE (see Figure 3.7-1),

is nearest to MBW properties and the alternative BEQ Complex sites (DCFEMS 2014). There are no hospitals within the study area. The closest major hospital is the Capitol Hill campus of The Specialty Hospital of Washington, located at 700 Constitution Avenue NE (Specialty Hospital of Washington 2014).

3.7.2.2 Educational, Social Service, and Religious Facilities

Several educational, social service, and religious facilities are located within the study area. Schools include Capitol Hill Day School, an independent school teaching students from pre-kindergarten through eighth grade, and the New Jersey Avenue campus of the Richard Wright Public Charter School, located at 1017 New Jersey Avenue SE (see Figure 3.7-1). Van Ness Elementary School (1150 5th Street SE, see Figure 3.7-1) is currently closed and operating as an administration space for the DC Public Schools, but is planned to be re-opened as early as 2015. Tyler Elementary School, located within the study area at 1001 G Street SE, serves children pre-kindergarten through fifth grade. The Joy Evans Before and After School Care Program is located just south of the MBW Annex at 555 L Street SE. The Richard Wright Public Charter School is a tenant within the "Blue Castle" property, located one block south of Virginia Avenue SE at 770 M Street SE (see Figure 3.7-1).

Located in the "Blue Castle" property, PSI Services, Inc., is a multi-state, family services agency that provides training and treatment to individuals and families dealing with mental illness, developmental disabilities, abuse, and neglect (PSI Services, Inc. 2014). Other social services facilities within the study area relate to housing for seniors and low-income residents. The Wheeler Creek Community Center, located at 1000 5th Street SE (see Figure 3.7-1), is an extension of the Wheeler Creek Community Development Corporation, a non-profit organization that provides public housing residents with support networks and various resources including an after school program, financial literacy information, healthy lifestyle programs, and housing opportunities (Wheeler Creek CDC 2014).

Religious institutions within the study area include Christ Church on Capitol Hill located at 620 G Street SE; Progress for Christ Baptist Church at 501 E Street SE; National Community Church at Barracks Row at 535 8th Street SE; Tried Stone Church of Christ at 417 9th Street SE; Holy Temple Church of Christ at 439 12th Street SE; New Hope Freewill Baptist Church at 754 11th Street SE; and Calvary Christian Church at 909 11th Street SE (see Figure 3.7-1).

3.7.2.3 Parks and Recreational Resources

Within the District, there are 9,300 acres of park and open space, which accounts for almost one quarter of the city's total land area. The city has one of the highest per capita park acreages in the U.S. The existing park system is composed of a wide variety of park types, sizes, and facilities, with shared jurisdiction between local and federal agencies. The NPS controls or owns the land underlying almost 74 percent of parkland in DC (over 6,800 acres), which includes the National Mall, Anacostia Park, the Fort Circle Parks, and smaller parks such as the Virginia Avenue Park (NCPC, NPS, and DC 2010). The DC DPR owns over 900 acres of parkland and is responsible for the management of four large parks or "conservation-oriented open spaces", 69 recreational centers, 31 swimming pools, and more than 200

neighborhood and triangle parks containing playgrounds, athletic fields, and tennis courts. Various federal and local agencies control the remaining 16 percent (1,500 acres) of open space, including the National Zoo, National Arboretum, public school playfields, and cemeteries (NCPC 2004).

Virginia Avenue Park is the only public park or recreational facility within the study area (see Figure 3.7-1). The NPS owns the real estate, but the park is maintained and operated by the DC DPR. The 2.63-acre park is designated as a L'Enfant Plan open space and is located between 9th Street SE and 11th Street SE and between the Southeast Freeway and Potomac Avenue SE, directly east of alternative Site A and just north/northwest of alternative Site B. It contains the Virginia Avenue Community Garden, a fenced dog area, and amenities that include park benches, picnic tables, and open grassy plots. The community garden provides residents with two plots and the opportunity to grow herbs, vegetables, and fruits.

The MBW Annex Recreational Field, located at the MBW Annex property (see Figure 3.7-1), is made available to the surrounding community for public use. Routine community use of the MBW Annex Field currently occurs with the Sports on the Hill volunteer youth sports organization and other visiting recreational teams and spectators with prior approval by MBW personnel.

Figure 3.7-1. Public Services Present in the Study Area

3.8 NOISE

3.8.1 Definition and Metrics

The perception and evaluation of sound involves three basic physical characteristics:

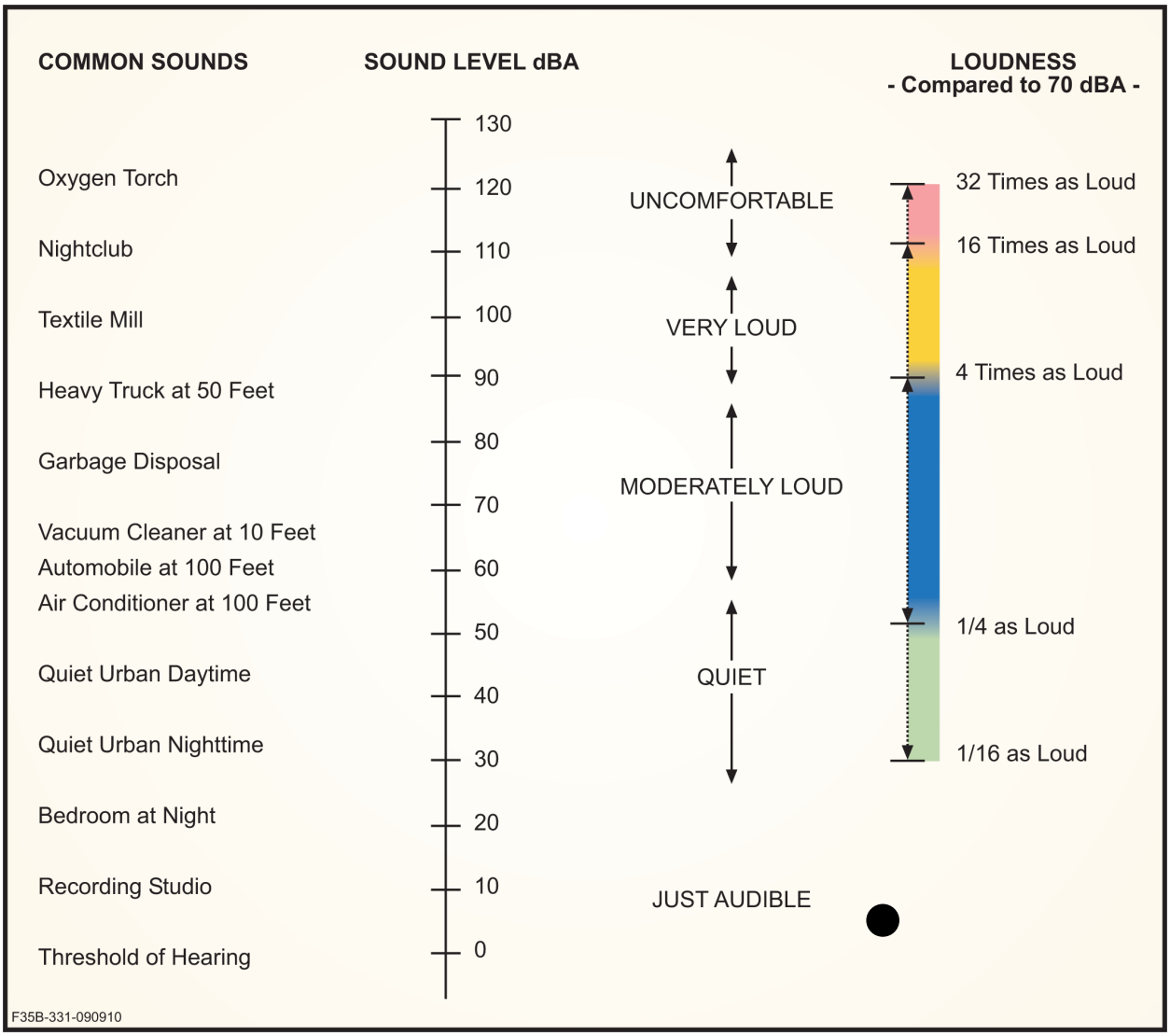
1. *Intensity, or loudness, expressed in decibels,*
2. *Frequency, or the number of cycles per second, in hertz, and*
3. *Duration or the length of time the sound can be detected.*

Noise is often defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, diminishes the quality of the environment, or is otherwise annoying. Noise may be intermittent or continuous, steady or impulsive, and may be generated by stationary or mobile sources. The individual response to similar noise events can vary widely and is influenced by the type and characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Sound, expressed in decibels (dBs), is created by vibrations travelling through a medium such as air. The loudest sounds that can be detected comfortably by the human ear have intensities that are a trillion times higher than those of sounds that can barely be detected. This vast range means that using a linear scale to represent sound intensity is not feasible. The dB is a logarithmic unit used to represent the intensity of a sound, also referred to as the sound level. When an object vibrates, it creates pressure waves in the air, water, or even solid objects. If these pressure waves are within a range (or frequency) that a human ear can detect and have enough intensity (or loudness), the ear "hears" it as sound. Most sounds are complex, composed of a wide range of frequencies. The normal human ear can detect sounds that range in frequency from about 20 to 15,000 cycles per second (Hertz [Hz]). All sounds in this wide range of frequencies, however, are not heard equally by the human ear, which is most sensitive to frequencies in the 1,000 to 4,000 Hz range. To best evaluate environmental noise, the noise is “weighted” by adjusting the very high and low frequencies to mimic the human ear’s lower sensitivities to those frequencies. This “A-weighting” is used to examine most environmental sounds. When dBs are A-weighted, they are generally referred to as “dBA.”

A sound level of 0 dBA is the approximate threshold of human hearing and is barely audible under extremely quiet conditions. By contrast, normal speech has a sound level of approximately 60 dBA. Sound levels above 100 dBA begin to be felt inside the human ear as discomfort. Sound levels between 110 and 130 dBA are felt as pain (Berglund and Lindvall 1995). The minimum change in the sound level of individual noise events that an average human ear can detect is about 3 dB. On average, a person perceives a doubling (or halving) of a sound’s loudness when there is a 10 dB change in sound level. Figure 3.8-1 provides a chart of A-weighted sound levels from common sounds with a comparison to human hearing and loudness as compared to 70 dBA, illustrating the logarithmic scale.

The Day-Night Average Sound Level (DNL) noise metric is the energy-averaged sound level measured over a 24-hour period, with a 10-dB penalty assigned to noise events occurring between 10 PM and 7 AM (or environmental nighttime hours/acoustic night). DNL values are averaged quantities, mathematically representing the continuous sound level that would be present if all of the sound variations that occur over a 24-hour period were averaged to have the same total sound energy; DNL quantifies the total sound energy received and is therefore a cumulative measure.



Source: Derived from the Handbook of Noise Control, Harris 1979, FICAN 1997.

Figure 3.8-1. A-weighted Sound Levels from Common Sources

3.8.2 Noise Thresholds

The Occupational Safety and Health Act of 1970 created OSHA, which strives to ensure safe and healthy working conditions by enforcing standards and by providing training, education, outreach, and assistance. Noise impacts to workers and thresholds for a safe work environment are regulated by OSHA. The OSHA standard (29 CFR Section 1910.95) provides noise exposure limits for employees in noisy environments or workplaces (Table 3.8-1). According to OSHA, an employee should not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day (29 CFR Section 1926.15(d)(1)). As the level increases, the allowed duration of noise decreases. The maximum limit is 115 dBA for duration of 15 minutes or less. OSHA standards are the best-documented requirements in regards to long-term human noise exposure. In addition, OSHA standards state that exposure to impulsive or impact noise (loud, short duration sounds) is not to exceed 140 dB peak sound pressure level (29 CFR Section 1926.52(e)).

Table 3.8-1. OSHA Permissible Noise Exposures

Duration per Day (hours)	Sound Level (dBA)
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.25	115

Source: OSHA 2012

In June 1980, an ad hoc Federal Interagency Committee on Urban Noise (FICUN) published guidelines relating DNL to compatible land uses. The FICUN was composed of representatives from DOD, Transportation, Housing and Urban Development, USEPA, and the Veterans Administration, and the policies and programs discussed in the 1980 FICUN all shared a common goal of protecting the public health and welfare with regard to noise. Since the issuance of the guidelines, federal agencies have generally adopted the guidelines for their noise analyses (FICUN 1980). The FICUN established DNL as the descriptor to be used for all noise sources. Based on research indicating that about 87 percent of the population is not highly annoyed by outdoor sound levels below 65 DNL, this threshold is commonly used for determining residential land use compatibility.

The Noise Control Act of 1972 was enacted to establish noise control standards and to regulate noise emissions from commercial products such as transportation and construction equipment. Initially, the USEPA was responsible for the administration of this Act, but in 1982 the responsibility was transferred to state and local governments (USEPA 2013). The DC Noise Control Act of 1977 addresses noise control standards for DC. This law, codified in Title 20 of the DC Code of Municipal Regulations, is not applicable to activities that occur within the MBW property line; however, while DC regulations do not apply to DOD property, they are nonetheless used in this EIS analysis.

The DC Noise Control Act establishes general maximum sound levels for operations, activities, or noise sources by day/night and according to the zoning of the location the noise originates from as specified in Table 3.8-2 (see Section 3.1 for a description of existing zoning in the study area). Some activities, including construction, are subject to more, specific limitations. For instance, construction and demolition activities (excluding pile drivers) are not permitted to exceed 80 dBA between 7 AM and 7 PM on any weekday (measured using proper monitoring equipment at 25 feet from the edge of the construction site) unless granted variance by the Mayor of the District of Columbia (DC Department of Consumer and Regulatory Affairs 1977).

Table 3.8-2. DC Noise Control Act General Maximum Sound Levels

DC Zoning Category	Maximum Sound Level (dBA)	
	Daytime (7 AM – 9 PM)	Nighttime (9 PM – 7 AM)
Commercial	65	60
Industrial	70	65
Residential, Waterfront, Special Use	60	55
Other Zone	60	60

Source: DC Department of Consumer and Regulatory Affairs 1977

With the exception of safety standards for construction workers, the Marine Corps does not have a formal policy for management of construction noise. With respect to construction, all activities would be conducted in accordance with OSHA standards (29 CFR Section 1910.95).

3.8.3 Existing Noise Environment

Ambient background noise in metropolitan, urbanized areas typically varies from 60 to 70 dB DNL, and can be as high as 80 dB DNL or greater (USEPA 1978). Based on population density data, ambient noise levels in DC are estimated between 60 and 65 DNL (DCOP 2013; USCB 2010; U.S. Department of Transportation 2006). The primary source of noise in the study area is vehicular traffic along I-695 and local roads. In May and June 2012, 24-hour noise monitoring measurements were taken along I-695, proximate to the Virginia Avenue Tunnel project, to evaluate the typical ambient noise environment. Measurements indicated that ambient noise levels ranged from 68 to 73 dB DNL (FHWA and DDOT 2014). Noise sensitive receptors are shown in Figure 3.8-2 and include the following locations:

- Residences (including those at the MBW Main Post, Annex, and Building 20 properties)
- Arthur Capper Senior Center at 900 5th Street SE
- National Community Church at 535 8th Street SE
- Richard Wright Public Charter School at 770 M Street SE
- Tyler Elementary School at 1001 G St SE
- Van Ness Elementary School at 5th and M Streets SE
- Joy Evans Before and After School Care Program at 555 L Street SE
- Calvary Christian Church at 909 11th Street SE
- New Hope Freewill Baptist Church at 754 11th Street SE

Though not typically considered a noise sensitive receptor, parks are also depicted in Figure 3.8-2 because some users have an expectation of a quieter, less urban atmosphere when visiting parks.

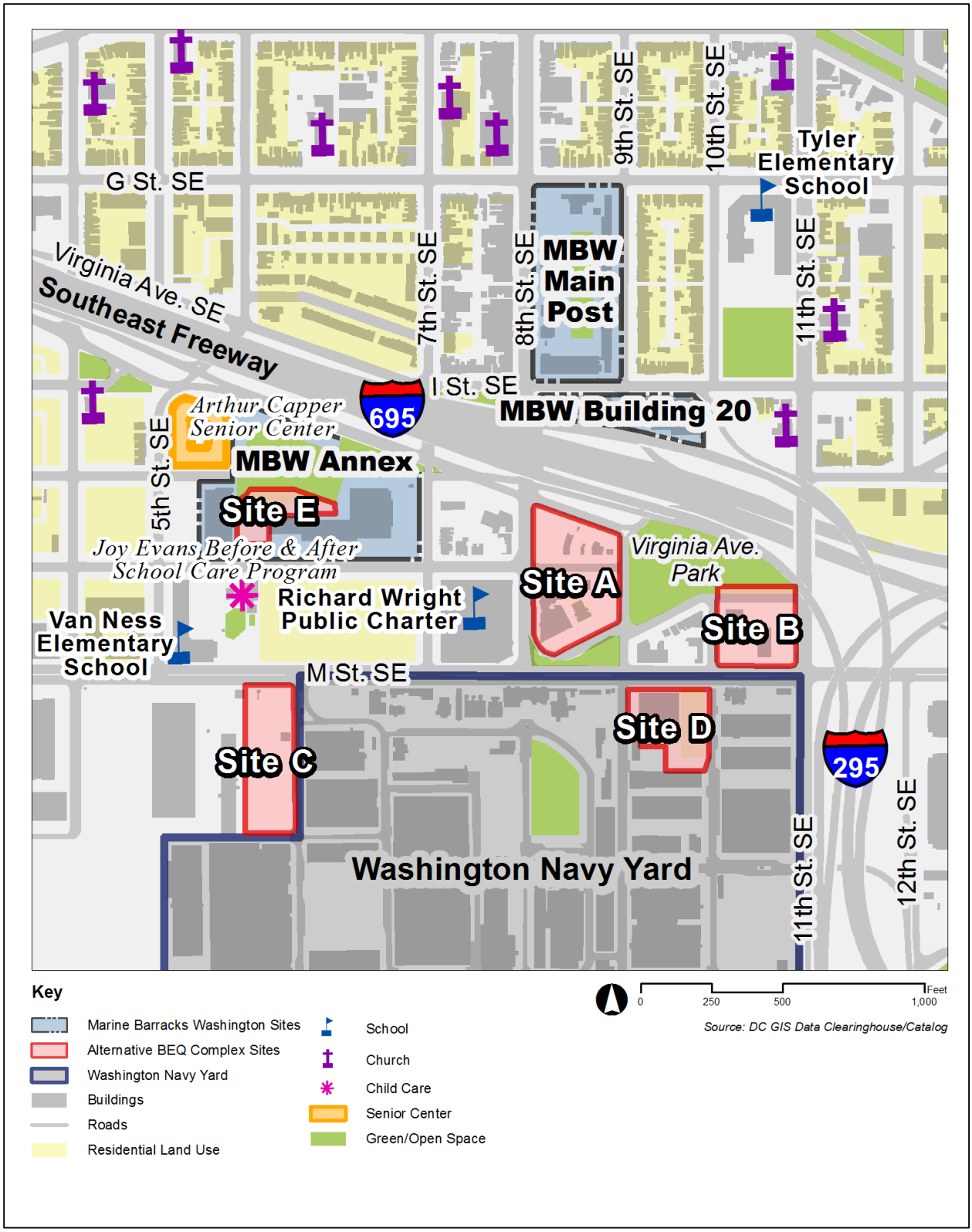


Figure 3.8-2. Noise Sensitive Receptors in the Study Area

3.9 NATURAL RESOURCES

3.9.1 Definition of Resource

The analysis of natural resources, for the purposes of this EIS, focuses on geology and soils; water resources, including floodplains; and biological resources, including vegetation, wildlife, and special status species. Although the study area is urbanized, its natural resource history is linked to the Anacostia River, located south of the MBW properties and alternative BEQ Complex sites. The Anacostia River watershed has been intensely developed since the 1800s. Portions of the study area, including replacement BEQ Complex Site C, were formerly within the river, but were filled to support the development of WNY and associated areas (GSA 2004). As also noted in Section 3.1, there is no designated Coastal Zone in DC; therefore, the federal Coastal Zone Management Act of 1972 does not apply.

3.9.2 Existing Conditions

3.9.2.1 Geology and Soils

Geology and soils include geologic formations, topography, soil properties (grain size, drainage characteristics), and fault lines/seismic zones. The following provides a summary of the geology and general soil characteristics in the study area. The analysis of geology and soils is conducted within the context of the regulatory requirements of the CWA and, specifically, the NPDES program associated with the CWA. The NPDES program addresses the restriction or elimination of further discharges of sediment, particularly contaminated sediment into water bodies (see Section 3.9.2 for more detail).

Geology and soil characteristics pertinent to this EIS include suitability of the proposed BEQ replacement sites to support proposed development. The study area is part of the Quaternary (Pleistocene) Age Wicomico Formation, within the Coastal Plain Physiographic Province, and contains gravel, sand, and silt (FHWA and DDOT 2014). The geology of the study area has been influenced by sculpting and deposition by the river and creek, as well as filling, excavation, dumping, construction, and demolition activities.

In general, the topography of the study area slopes gently downward in elevation towards the Anacostia River, with the highest elevations being located at the top of the study area, at approximately 82 feet above sea level, and the lowest elevations approximately 2 feet above sea level along the Anacostia River (USGS 2011).

The study area is located in an area of low seismic hazard risk; however, seismic activity has occurred in the vicinity in recent years (Peterson et al. 2008; USGS 2014). An earthquake measuring 5.8 on the Richter scale occurred in Mineral, Virginia approximately 80 miles southeast of DC. Moderately severe damage occurred near the epicenter of the earthquake, while light to moderate damage occurred in areas ranging from central Virginia to southern Maryland, including DC (USGS 2014). The earthquake occurred as reverse faulting on a north or northeast-striking plane within a previously recognized seismic zone, the Central Virginia Seismic Zone (USGS 2014).

The soils throughout the study area are predominantly characterized as urban, meaning that impervious surfaces, such as buildings and pavement, make up more than 80 percent of the area. Alternative BEQ Complex Site C soils are characterized as udorthents, which consist mainly of areas of previously

disturbed soils. Such soils do not pose a predictable risk for wind or water erosion in the way that other native/undisturbed soils do.

Soil samples collected and analyzed for the Virginia Avenue Reconstruction project to the northwest of the study site showed arsenic, chromium, and SVOCs at levels higher than residential action levels, but lower than industrial action levels (FHWA and DDOT 2014).

3.9.2.2 Water Resources

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Surface water includes all lakes, ponds, rivers, streams, impoundments, and wetlands. Groundwater (also referred to as subsurface water) is classified as any source of water beneath the ground surface (i.e., underground streams and aquifers) and is described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations. Floodplains are defined by the Federal Emergency Management Agency (FEMA) as relatively flat, low-lying areas adjoining inland and coastal waters that have a 1 percent or greater chance of flooding in any given year.

Clean Water Act

The CWA of 1972 is the primary federal law that protects the nation's waters, including lakes, rivers, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters. Waters of the U.S. are broadly defined to include navigable waters (including intermittent streams), impoundments, tributary streams, and wetlands. Areas meeting the waters of the U.S. definition are under the jurisdiction of USACE. Within DC, the DDOE is the administrative authority for water quality under the CWA.

Per Section 303(d) and 305(b) of the CWA, the DDOE establishes Districtwide policies and regulations for the implementation of water quality control programs mandated by federal and DC water quality statutes and regulations (DDOE 2014). This includes the determination of impaired waters and development of Total Maximum Daily Load (TMDL) limits. The Anacostia River is considered an impaired water body and TMDLs have been established for fecal coliform bacteria, organics, metals, biochemical oxygen demand, oil and grease, and total suspended solids.

Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification that any discharges will comply with the Act, including water quality standard requirements, from the applicable state. The DDOE issues 401 water quality certifications for USEPA general permits requiring compliance by DC.

Section 402 establishes NPDES, a permitting system for the discharges of any pollutant (except for dredge or fill material) into waters of the U.S. Section 402(p) requires permits for discharges of storm water from industrial, construction, and municipal separate storm sewer systems. The DDOE Water Quality Division provides water quality certification for individual NPDES permits on behalf of the USEPA, Region III, which is the permitting authority for the NPDES program in DC.

Section 404 establishes a permit program for the discharge of dredge or fill into waters of the U.S., which includes wetlands. Encroachment into waters of the U.S. requires a permit from the state and the

federal government. The DDOE certifies dredge and fill permits issued by the USACE under Section 404 of the CWA.

Water Pollution Control Act of 1984 (Washington, DC)

The DDOE Water Quality Division implements DC's Water Pollution Control Act of 1984, which protects aquatic animals and plants and preserves and restores aquatic life for aesthetic enjoyment, recreation, and for industry. Discharge of pollutants into DC waters is prohibited, with limited exceptions, specified under DC Code § 8-103.06. The "discharge of oil, gas, anti-freeze, acid, or other hazardous substance, pollutant, or nuisance material to any street, alley, sidewalk, or other public space" in hazardous or nuisance quantities is prohibited as stated in DC Code § 8-103.07. The Act also includes requirements for spill prevention and cleanup plans (Office of General Counsel, The Catholic University of America 2010).

EO 13508, *Chesapeake Bay Protection and Restoration*

EO 13508 sets goals for the protection and restoration of the Chesapeake Bay through reductions in nitrogen, phosphorus, sediment, and other pollutants. The District is a partner of the USEPA's Chesapeake Bay Program, which adopted the Chesapeake 2000 Agreement to control and reduce nutrient and sediment loading by limiting the District's contribution to meet overall water quality goals set for the Chesapeake Bay by 2010. However, these goals were not met, and the USEPA issued TMDLs for the Chesapeake Bay in 2010 (DiPasquale 2013).

EO 11988, *Floodplain Management*

EO 11988 instructs federal agencies to consider the risks, danger, and potential impacts from locating projects within floodplains. The EO states that in instances where alternatives are impractical, the agency must minimize harm to or within the floodplain and take appropriate steps to notify the public of the action or project.

<u>Surface Water</u>

The MBW properties are located within the Anacostia River watershed that encompasses approximately 176 square miles of total land area. The District makes up approximately 25 percent of that land area, while Prince George's and Montgomery Counties in Maryland account for the remaining 75 percent. The Anacostia River, the primary surface water body in the watershed, is tidally influenced throughout DC and non-tidal through Maryland. The river drains into the Potomac River at the southern tip of DC and ultimately flows into the Chesapeake Bay.

While small in size, the extremely densely populated watershed (4,900 people per square mile) plays a major role in the health of the Chesapeake Bay Watershed (MWCOG 2007). As an urban river, the Anacostia River has been subjected to industrial pollution and overflow from DC's combined sewer system (meaning sewage and stormwater are mixed) since the late 1800s, contributing to the serious decline of the ecological health of the river and the watershed as a whole. The Anacostia River is currently among the ten most contaminated rivers in the U.S., containing sewage, bacteria, metals, PAHs, and PCBs in addition to trash and other toxic contaminates. The primary source of PAHs in the Anacostia River is stormwater runoff, which has also led to high levels of petroleum-based hydrocarbons accumulating in the sediment (MacAvoy 2013).

The Anacostia River Watershed Agreement was signed in 1987 in order to combat the pollution and improve the health of the river and the watershed. The Agreement helped to establish the Anacostia Watershed Restoration Committee (AWRC), which consists of representatives from DC, Montgomery and Prince George's Counties in Maryland, the state of Maryland, USACE, USEPA, and NPS. The AWRC is designed to provide oversight for the restoration effort. Since its inception, the AWRC has identified over 700 restoration projects to correct problems and increase the health of the watershed. Approximately one-third of these projects have been completed or are in progress (MWCOG 2007).

The Anacostia River lies approximately 0.5 miles south of the Main Post Main Gate. There are no other surface water features within or adjacent to the fenceline of any of the existing MBW properties.

Wetlands are protected under Section 404 of the CWA; however, there are no wetlands in the vicinity of the affected environment and are, therefore, not discussed further.

Groundwater

The presence of groundwater at a given location is largely dictated by the geology of the area. Groundwater in the study area is contained in the surficial aquifer of the Coastal Plain physiographic province, which is present in areas east of the Fall Line. The Coastal Plain surficial aquifer is composed of (from youngest to oldest) alluvium, artificial fill, and river trace deposits (DC Water Resources Research Center 1993). The typical depth to water in the surficial aquifer ranges from 8 feet to 50 feet. Shallow layers of saturated soil located above the region's main water table, commonly known as perched aquifers, have also been identified in the downtown area and southeastern border of DC and are thought to be a result of urbanization dewatering (DC Water Resources Research Center 1995). The typical depth to water in perched aquifers in the region is less than 6 feet.

Floodplains

The study area is located in a relatively low lying area of DC that is composed partially of areas that were originally part of the Anacostia River, but have since been filled in order to further support development in Near Southeast. None of the existing MBW properties, including the Main Post, Building 20, and the Annex fall within the 100-year or the 500-year floodplain. Alternative Sites A, B, D, and E are also located outside the boundary of the 100-year or the 500-year floodplain. The majority of the land area included in Site C is located within the 100-year floodplain (approximately 1.9 acres) and the 500-year floodplain (approximately 0.19 acre). Only a small portion in the northeast corner of the site is not located within a floodplain (Figure 3.9-1). As part of the planning for SEFC redevelopment, Forest City, in conjunction with DDOE and FEMA, are proposing strategies to modify the 100-year line by implementing flood walls and filling certain areas.

3.9.2.3 Biological Resources

The analysis of biological resources focuses on species and vegetation communities crucial to the functions of biological systems, of special public importance, or that are protected under federal or DC law or statute. For the purposes of this document, terrestrial biological resources are divided into two categories: *vegetation* and *wildlife*. Vegetation includes terrestrial plant communities and constituent plant species. Wildlife includes all common animal species, i.e.; insects and other invertebrates, fish,

Figure 3.9-1. Flood Hazard Zones in the Vicinity of BEQ Complex Alternative Sites

amphibians, reptiles, mammals, and birds, including bird species protected under the Migratory Bird Treaty Act (MBTA). Further implementation of the MBTA is mandated for federal agencies by EO 13186, *Migratory Bird Conservation,* for federal activities that may result in the take of migratory birds.

There are no known threatened or endangered species protected by the ESA within the study area. Although two federally protected species occur within the Anacostia River watershed: the American bald eagle (*Haliaeetus leucocephalus*) and the shortnose sturgeon (*Acipenser brevirostrum*), these species do not occur within the study area and are, therefore, not assessed in this EIS.

Migratory Bird Treaty Act

The MBTA (16 USC 703-712) protects migratory birds and their nests, eggs, young, and parts from possession, sale, purchase, barter, transport, import, export, and take. The U.S. Fish and Wildlife Service (USFWS) is the federal agency responsible for the management of migratory birds as they spend time in habitats of the U.S. For purposes of the MBTA, "take" is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR § 10.12). The MBTA applies to migratory birds that are identified in 50 CFR § 10.13 (defined hereafter as "migratory birds"). The statute protects 1,006 migratory species within the U.S. (outside of introduced species, migratory, and non-migratory game birds). The MBTA prohibits activities that, in effect, result in direct taking or nest destruction, but does not extend to their habitat.

EO 13186, *Migratory Bird Conservation*

EO 13186 requires the development and implementation of a conservation-focused MOU with USFWS for any federal activities likely resulting in the take of migratory birds.

Vegetation

The study area is consistent with urban developed landscape, comprised predominantly of built areas with some isolated green space areas that are managed for human use. The green space includes Virginia Avenue Park (which includes a community garden), which contains the following trees: Siberian elm (*Ulmus pumila*), eastern red cedar (*Juniperus virginiana*), American holly (*Ilex opaca*), southern magnolia (*Magnolia grandiflora*), river birch (*Betula nigra*), mulberry (*Morus sp.*), red maple (*Acer rubrum),* Chinese elm (*Ulmus parvifolia),* Kwanzan cherry (*Prunus serrulata 'Kwanzan'*), and cherry (*Prunus sp*.) (FHWA and DDOT 2014). Additional green spaces within the study area are located at the parade field at the Main Post, the multipurpose field at the MBW Annex, the ball field adjacent to Tyler Elementary School, the DC DPR property located east of Van Ness Elementary School, and the triangular green spaces that occur at intersections of radial avenues and the grid-patterned streets.

Landscaping along sidewalks and property frontages in the study area provide urban habitat. The MBW landscaped areas are well groomed, and plantings are chosen based on a specific palette that does not include exotic or quarantined species.

Wildlife

Wildlife species present in the study area are limited by the available habitat, which is primarily urbanized. Species that have adapted to this urban environment include mammals such as opossum (*Didelphis virginiana*), gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), eastern

cottontail (*Sylvilagus floridanus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), woodchuck (*Marmota monax*), and eastern mole (*Scalopus aquaticus*).

Common bird species present in the study area include the domestic pigeon (*Columba livia)*, chimney swift (*Chaetura pelagica*), American robin (*Turdus migratorius*), Canada goose (*Branta canadensis*), American crow (*Corvus brachyrhynchos*), red-winged blackbird (A*gelaius phoeniceus*), gray catbird (*Dumetella carolinensis*), northern cardinal (*Cardinalis cardinalis*), northern mockingbird (*Mimus polyglottos*), mourning dove (*Zenaida macroura*), blue jay (*Cyanocitta cristata*), song sparrow *(Melospiza melodia),* house sparrow *(Passer domesticus)*, and European starling *(Sturnus vulgaris)* (DDOE 2006, 2014; FHWA and DDOT 2014).

3.10 AIR QUALITY

3.10.1 Definition of Resource

Air quality at a given location can be described by the concentrations of various pollutants in the atmosphere. The USEPA established the National Ambient Air Quality Standards (NAAQS) for the following pollutants, known as criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter with an aerodynamic diameter of 10 microns or less (PM_{10}), particulate matter with an aerodynamic diameter of 2.5 microns or less ($PM_{2.5}$) and Pb. The NAAQS represent maximum acceptable concentrations that may not be exceeded, in accordance with regulatory criteria and are shown in Table 3.10-1. In DC, the DDOE is responsible for enforcing air pollution standards and has adopted the NAAQS.

Table 3.10-1. National Ambient Air Quality Standards

Pollutant	Averaging Time	National Standards	
		Primary[a]	Secondary[b]
O_3	8-hours	0.075 ppm[c]	Same as primary
CO	8-hours (maximum)	9 ppm	—
	1-hour (maximum)	35 ppm	
NO_2	Annual (mean)	53 ppb	Same as primary
	1-hour (average)	100 ppb	—
SO_2	3-hours (maximum)	—	0.5 ppm
	1-hour (maximum)	75 ppb	—
PM_{10}	24-hours (maximum)	150 µg/m^3	Same as primary
$PM_{2.5}$	Annual (mean)	12 µg/m^3	15 µg/m^3
	24-hours (average)	35 µg/m^3	Same as primary
Pb	Rolling 3-month average	0.15 µg/m^3	Same as primary

Notes: [a]Primary Standards: provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.
[b]Secondary Standards: provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.
[c]Final rule signed March 12, 2008. The 1997 O_3 standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour O_3 standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour O_3 standard is attained when the

expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

Legend: ppb=parts per billion; µg/m^3 = micrograms per cubic meter

Source: USEPA 2012

In addition to the ambient air quality standards for criteria pollutants, national standards exist for Hazardous Air Pollutants (HAPs), which are regulated under Section 112(b) of the 1990 CAA Amendments. The National Emission Standards regulate HAP emissions from stationary sources (40 CFR 61 and 63).

Those HAPs emitted from mobile sources, such as highway vehicles and motorized equipment, are called Mobile Source Air Toxics (MSATs). MSATs are compounds that are known or suspected to cause cancer or other serious health and environmental effects. Unlike the criteria pollutants, there are no NAAQS for benzene and other HAPs. The primary control methodologies for these pollutants from mobile sources involves reducing their content in fuel and altering the engine operating characteristics to reduce the volume of pollutant generated during combustion. The primary HAPs emitted by sources during proposed construction and operations would be MSATs. The equipment used during construction would likely vary in age and have a range of pollution reduction effectiveness. Construction equipment, however, would be operated intermittently and for a short time, and therefore would produce negligible ambient MSATs within a localized area. For these reasons, MSATs are not further evaluated in this EIS.

3.10.2 Existing Conditions

3.10.2.1 National Ambient Air Quality Standards

The Proposed Action lies within the air quality district designated as the National Capital Interstate Air Quality Control Region (NCIAQCR) (40 CFR 81.12). This region consists of the territorial area encompassed by the boundaries of DC; Montgomery and Prince George counties in Maryland; and Arlington, Fairfax, Loudoun, and Prince William counties, as well as the cities of Alexandria, Fairfax, and Falls Church in the Commonwealth of Virginia. The air quality analysis for this EIS refers exclusively to regulatory requirements and air quality impacts in the NCIAQCR. It was assumed that all Proposed Action-related vehicles and equipment would remain within the NCIAQCR while performing project-related work.

The USEPA designates all areas of the U.S. as having air quality that is unclassified, meets the NAAQS (attainment), or does not meet the NAAQS (nonattainment). Former nonattainment areas that have attained the NAAQS are designated as maintenance areas. The NCIAQCR is currently designated by USEPA to be in moderate nonattainment for the 1997 8-hour O_3 standard and marginal nonattainment for the 2008 O_3 standard; nonattainment for the annual $PM_{2.5}$ standard; and maintenance for CO standard (USEPA 2013).

3.10.2.2 General Conformity Rule

The General Conformity Rule prohibits any federal action that does not conform to the applicable air quality attainment plan or state implementation plan (SIP) and applies to areas designated as nonattainment or maintenance for NAAQS. Therefore, the purpose of conformity is to ensure federal activities do not interfere with the emissions budgeted in the SIP.

Some emissions are excluded from conformity determination, such as those already subject to new source review (NSR); those covered by CERCLA (42 USC 9601 et seq.) or other environmental laws; emissions associated with actions that are not reasonably foreseeable; and those for which the agency has no continuing program responsibility. A project is exempt from the conformity rule if the total net project-related emissions (construction and operation) are less than the *de minimis* thresholds established by the conformity rule. *De mininis* thresholds are the minimum threshold for which a conformity determination must be performed. A project that produces emissions that exceed conformity thresholds is required to demonstrate conformity with the SIP through mitigation, application of offsets, or other accepted practices.

3.10.2.3 Greenhouse Gas Emissions

Green House Gases (GHGs) are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes and human activities. Scientific evidence indicates a trend of increasing global temperature over the past century due to an increase in GHG emissions from human activities. The climate change associated with this global warming is predicted to produce negative economic and social consequences across the globe.

The USEPA issued the *Final Mandatory Reporting of Greenhouse Gases Rule* on October 30, 2009 (USEPA 2009). In general, the Rule is referred to as 40 CFR Part 98 or "Part 98." Implementation of Part 98 is referred to as the Greenhouse Gas Reporting Program. GHGs covered under the Reporting Program are carbon dioxide (CO_2), methane (CH_4), nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a global warming potential (GWP). The GWP is the ability of a gas or aerosol to trap heat in the atmosphere. The GWP rating system is standardized to CO_2, which has a value of 1. For example, CH_4 has a GWP of 21, which means that it has a global warming effect 21 times greater than CO_2, on an equal-mass basis. The equivalent CO_2 (CO_2e) rate is calculated by multiplying the emission of each GHG by its GWP and adding the results together to produce a single, combined emission rate representing all GHGs.

On a national scale, federal agencies are addressing GHG emissions through reductions mandated in federal laws and EOs. Most recently, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management,* and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* were enacted to address GHGs, including GHG emissions inventory, reduction, and reporting. In addition, EO 13653, *Preparing the United States for the Impacts of Climate Change,* was enacted to address the policy changes, federal programs, advanced planning, and information networks necessary to prepare the U.S. for the impacts of climate change.

GHG emissions occur locally, but GHG impacts are both global in scale and cumulative over time. Therefore, GHG emissions for the baseline and the Proposed Action have been calculated and are presented and assessed in Chapter 5, *Cumulative Impacts*.

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4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental consequences to the resources described in Chapter 3, as they relate to implementation of each action alternative and the No Action Alternative. The CEQ regulations implementing NEPA state that the environmental consequences discussion shall include any direct and indirect effects and their significance.

Consistent with the discussion of the affected environment (Chapter 3), this chapter has been divided into ten resource areas to provide a comparative framework for evaluating the impacts of each action alternative and the No Action Alternative on individual resources. Each resource area identifies the potential impacts that could be expected under each alternative. A summary of the duration, type, and level of impact for each resource under all alternatives is provided in Section 4.11. Cumulative impacts of the Proposed Action alternatives with other past, present, and foreseeable future actions are presented in Chapter 5.

4.1 LAND USE

The impact analysis for land use focuses on those areas affected by the replacement BEQ Complex within the study area in southeast DC. Implementation of the other projects included in the Proposed Action would not impact land use. The Main Post and Annex properties would continue to serve their ongoing land use in support of the MBW mission. The study area for land use includes the existing properties of MBW and the areas immediately surrounding the five identified alternative BEQ Complex replacement sites. Factors considered in evaluating land use impacts include compatibility with land use in the surrounding area and consistency with the Comprehensive Plan for the National Capital, DCOZ Zoning Regulations, the WNY Installation Master Plan, and land use trends within the study area. The aforementioned plans, programs, and controls address land use matters such as height, density, functional compatibility, neighborhood character, and historic overlays. The emphasis of the analysis is on the potential direct impacts. Where there are potential indirect impacts, they are noted as such.

Future use of the above-ground portion of the Building 20 site has not yet been determined; however, compatibility of contemplated land use with the adjacent MBW Main Post and residential/commercial areas is a foremost consideration. A programmatic look at potential land use impacts associated with above-ground use of the Building 20 site is common to all action alternatives. Building 20 is a 5-story steel and brick building with two separate wings connected by a pedestrian bridge. A portion of the Building 20 site lies within the Capitol Hill Historic District, and two levels of below-grade parking, accommodating approximately 212 vehicles, are located under the building. The Marine Corps, in consideration of public input to date, has determined that, under all action alternatives, the following would be potential functions for Building 20: using the existing facility by another government group that does not need to comply with DOD AT/FP setback requirements; turning the existing facility over to a private entity that could serve a number of commercial and/or residential needs; or demolishing the existing facility in favor of new public or private development. Compatible future land use options for the site include: commercial along 8th Street, residential, public services, and open space. Additional

follow-on NEPA analysis will be conducted when the proposed future land use at this site is ripe for analysis.

4.1.1 Alternative 1

Under Alternative 1, a portion of L Street between 8th and 9th Street SE, a L'Enfant Plan ROW, would be closed to vehicular and pedestrian traffic, and result in a loss of 23 on-street parking spaces. Land use within this ROW would be dedicated to military use in support of the replacement BEQ Complex rather than part of the transportation network. Chapter 1400 of Title 24 of DC Municipal Regulations sets forth regulations related to the process of closing streets and alleys. Where title to the street to be closed can reasonably be determined to be held by the U.S. or DC, the DC Council may dispose of the property to the best advantage of the District and may assess the fair market value of the land and the value of the District's improvements (DC Department of Consumer and Regulatory Affairs 2014).

As noted in Section 3.1.2, Chapter 19 of the District Elements of Comprehensive Plan is applicable to the Proposed Action, and notes the Near Southeast area as an emerging mixed-use and residential development area. While a BEQ Complex at Site A would be consistent with planning goals such as increasing housing opportunities and maintaining the historic identity tied to WNY and the Main Post, goals such as restoration of the L'Enfant Plan and creating urban amenities would be not be compatible with a BEQ Complex at Site A.

The cooperating agencies for this EIS, DCOP and NCPC, have important roles with respect to the 340-foot segment of L Street SE that would be closed under Alternative 1. Impacts of concern and possible mitigation measures will be discussed with these agencies, as well as the DC HPO and ACHP, during the NHPA Section 106 process (see Section 4.3). With respect to land use, the Marine Corps has agreed to continue to work with these agencies during the BEQ Complex design and site layout development process to minimize land use impacts as practicable.

BEQ Complex Alternative Site A is currently zoned C-3-A (see Section 3.13); however, if Alternative 1 were implemented, Site A zoning would become public land and zoning would no longer apply or the land would be "unzoned." Any change in zoning would be contingent upon action to be taken by DCOZ, DC Zoning Commission, and Board of Zoning Adjustment. The Marine Corps would work with DCOP as a cooperating agency on this EIS and with the DC zoning agencies as needed. The land use directly to the east of BEQ Complex Alternative Site A is in transition, and numerous plans for redevelopment are currently in progress that are consistent with the current C-3-A mixed use zoning. The replacement BEQ Complex would generally be consistent with planned land use, but facility massing evaluations indicate that the height of the proposed BEQ Complex at this site would be in excess of the 45-feet currently allowed by the SE Overlay District (see Section 2.3.1 and Figures 3.1-2 and 3.1-3). It was noted during the CIMP process and in the Lower 8th Street SE Vision Process Summary Report that the community welcomed any drivers for development and reuse of vacant lots within the area that houses both BEQ Complex Alternative Sites A and B. This MBW BEQ Replacement proposal was cited in the Report as a potential impetus for redevelopment efforts (Capitol Riverfront BID 2010). Although rezoning in this area has been contemplated to allow for easing of height restrictions (see Section 3.1.4), there currently are no proposed rezoning efforts within the SE Overlay District. Potential changes in height restrictions beyond Site A would be a potential indirect impact of the Proposed Action.

The proposed BEQ Complex at Site A would be designed in a way that integrates with the character of the surrounding neighbnorhood and minimizes visual impacts, as directed in the MBW Installation Appearance Plan (IAP). An IAP is being prepared concurrently with the MBW Master Plan and is developed to be a complimentary document directed at enhancing the high quality installation appearance standards of MBW. The goal of the IAP is to provide specific guidelines for MBW's visual environment. These guidelines provide a framework for the enhancement of the visual setting of MBW through the siting, design, style, and color of building and landscape elements for all improvements to the physical environment in and around MBW. The IAP provides and recommends actions for building construction, landscaping, signage, lighting, and other design schemes, including color and material schemes specific to MBW and the surrounding neighbhorhood.

In summary, short- and long-term adverse impacts to land use would be considered significant under Alternative 1. However, as the EIS process continues, potential impacts to land use will be minimized through consultation and coordination with DCOP and NCPC, as cooperating agencies on this EIS, and DC HPO and ACHP, through the Section 106 and EIS processes, should this alternative be selected for implementation.

4.1.2 Alternative 2

As with Alternative 1, if BEQ Complex Alternative Site B were selected, the zoning could potentially change to unzoned/federal public lands. Under Alternative 2, the 315-foot segment of the L Street ROW between 10th and 11th Streets SE would be dedicated to military use rather than part of the transportation network. As with the road closure that is included in Alternative 1, appropriate real estate agreements would need to be made regarding future land administration for the subject ROW segment. Also, as with Alternative 1, the Marine Corps would work with the DCOP as a cooperating agency on this EIS, as well as DCOZ, DC Zoning Commission, and Board of Zoning Adjustment as needed to support DC rezoning efforts. The replacement BEQ Complex would generally be consistent with planned and adjacent land use, particularly the development along M Street to the west of this site (see Figures 3.1-2 and 3.1-3). The existing C-M-1 zoning is more reflective of the past use of this site as a gas station and the more industrial land uses that occurred east of the site. However, consistency with the District Elements of the Comprehensive Plan would be comparable to those described for Alternative 1. As with Alternative 1, the Marine Corps will work with NCPC and DCOP as cooperating agencies on this EIS on what would be required with the road closure process for the affected ROW segment. As further detailed in Section 3.4, the L'Enfant Plan ROW viewsheds would be maintained under this alternative and the Marine Corps would continue to work wih NCPC, DCOP, DC HPO, and ACHP during the design and site layout should this alternative be selected for implementation.

Site B is the smallest alternative site in land area, and a potential BEQ Complex on this site would be much taller than at other alternative sites. Although under the Height Act a building at this site could be as tall as 110 feet and still be consistent with the height of buildings west of Site B along M Street, that would not be consistent with the historic heights in the surrounding neighborhood. The adjacent ES Overlay District restricts building heights to a low level in order to respect the historic scale of buildings in the Overlay District and the WNY Latrobe Gate.

Implementation of a BEQ Complex at Site B would be designed in accordance with the MBW IAP in order to minimize impacts to visual resources and properly integrate with the character of the surrounding neighborhood.

In summary, short-and long-term adverse impacts to land use would be considered significant under Alternative 2. However, as the EIS process continues, potential impacts to land use will be minimized through consultation and coordination with DCOP and NCPC, as cooperating agencies on this EIS, and DC HPO and ACHP, through the Section 106 and EIS processes, should this alternative be selected for implementation.

4.1.3 Alternative 3

Implementing Alternative 3 would require construction on GSA federally owned land within the SEFC, just west of WNY. The replacement BEQ Complex would generally be consistent with planned land use (see Figure 3.1-2) in the Near Southeast Waterfront Area, and the existing CR zoning is generally consistent with a BEQ Complex. As with Alternatives 1 and 2, the Marine Corps would work with the DCOP and NCPC as a cooperating agency on this EIS, as well as DCOZ, DC Zoning Commission, and Board of Zoning Adjustment as needed to support DC rezoning efforts should Alternative 3 be selected for implementation.

Under this alternative, various redevelopment initiatives would have to be considered. The land comprising Site C is subject to 'The Yards" Master Redevelopment Plan and an agreement between GSA and Forest City (SEFC Public-Private Devlopment Act of 2000, Public Law 106-407) that was authorized by prior special legislation. A future agreement with Forest City and GSA to transfer Site C to the Marine Corps/DON would be required in order for Site C to be selected. The SEFC "The Yards" Master Redevelopment Plan calls for residential development with transportation circulation for 218 units in Parcel E3 (eastern half is within Alternative Site C), 8 units in Parcel E6, 9 units in Parcel E7, and 255 units in Parcel E4 (see Figure 2.4-6). The development of this northeastern section of the 42-acre parcel is part of Phase II Yards development, scheduled for construction with various opening dates ranging between 2014 and 2016 (The Yards 2014). The replacement BEQ Complex would be inconsisent with "The Yards" redevelopment as planned. Although the BEQ Compelx would be primarily residential, it would constitute a federal land use vice the community residential land use as proposed in the SEFC "The Yards" Master Redevelopment Plan and existing SEFC Overlay District overlay zoning. While the design of a BEQ Complex at Site C would be in accordance with the MBW IAP, there would be divergence from planned use in terms of neighborhood character, residential unit density, and security standoff distances for the BEQ Complex. In addition to the direct impact of the divergence from planned land use at Site C, there could be indirect impacts in the overall buildout of the Phase II Yards development as interrelated factors such as land use compatibiilty and transportation circulation are taken into consideration. Site C is also generally inconsistent with the Comprehensive Plan, which mirrors much of the "The Yards" Master Redevelopment Plan with respect to development at the SEFC.

Implementing Alternative 3 would generally be consistent with the Anacostia Waterfront Framework Plan, which includes targeted redevelopment in this area (DCOP 2003). The BEQ Complex would not be an impediment to access to the Anacostia River waterfront. Additional analysis on impacts to other planned land uses in this area are discussed in the cumulative effects analysis in Chapter 5.

Alternative 3 (Site C) is directly adjacent to the western WNY boundary. Implementing this alternative would require coordination with the Navy to implement proper AT/FP standoff requirements for both WNY and the replacement BEQ Complex. The adjacency would allow for a lesser standoff distance between the replacement BEQ Complex.

In summary, short- and long-term adverse impacts to land use would be considered less than significant, though there would be a localized impacts within Parcels E6, E7, and E4 of the SEFC "The Yards" Master Redevelopment Plan. In this area, there would be divergency in planned future land use (and potentially zoning), neighborhood character, and density of use due to the proposed development of the BEQ Complex at Site C under Alternative 3. Future land use compatibility would be addresed through the ongoing consultation and coordination with DCOP and NCPC, as cooperating agencies on this EIS, and DC HPO and ACHP, through the Section 106 and EIS processes.

4.1.4 Alternative 4

Implementation of Alternative 4 would require the closure of a portion of Poor Street, which connects Parsons Avenue and 10th Street SE within the northern WNY boundary. The demolition of Building 169 to make way for the construction of a replacement BEQ Complex at Site D would not impact land use. The site has been identified as an area for potential redevelopment in the WNY Installation Master Plan, and a replacement BEQ Complex at this site would be consistent with the Master Plan. Implementation of a BEQ Complex at Site D would be designed in accordance with the MBW IAP, as well as the WNY Installation Master Plan, in order to minimize impacts to visual resources.

Indirect impacts to MBW associated with operations, transportation, security, etc. would not be expected to result in land use scale impacts to other areas of the WNY. Zoning and planned land uses would not be affected by the replacement BEQ Complex, as the area is already zoned for federal use. A BEQ Complex within the WNY boundary would also be consistent with the DC Elements of the Comprehensive Plan.

Parking to meet the BEQ requirement would be accommodated at the Building 20 site in Squares 928 and 951. The existing below-grade parking at the Building 20 site would be maintained on both the eastern and western portions of the site. Continued use of the below-grade parking would be consistent with existing land use in the area.

In summary, short- and long-term adverse adverse impacts to land use under Alternative 4 would not be significant. Future land use compatibility would continue to be addressed through Navy-Marine Corps coordination on the WNY Master Plan.

4.1.5 Alternative 5

Alternative 5 would place the replacement BEQ Complex and support facilities (minus the parking requirement) at the MBW Annex. It would be an addition to Building 25 and be connected via a breezeway at the western end of Building 25. To accommodate space constraints, a portion of the replacement BEQ Complex would have a height of 90 feet, which is compliant with Height Act, though inconsistent with existing building heights and zoning at the site. Under DC Zoning regulations, the MBW Annex is zoned R-5-B which includes a maximum building height of 50 feet for most structures (90 feet

for schools and 45 feet for public recreation and community centers). While federal lands/buildings are exempt from DC's zoning controls, NCPC reviews and regulates federal land planning and buildings. Such review and considerations would be expected with the proposed increase in height of structures at the MBW Annex site. The Marine Corps is working with the DCOP and NCPC as a cooperating agency on this EIS to address proposed height changes at Site E.

The construction of the replacement BEQ Complex on the western side of Building 25 would result in impacts to the L'Enfant Plan 6th Street viewshed. Because of this, Site E would conflict with the Comprehensive Plan in that it would not preserve the L'Enfant Plan. The existing viewshed is 90 feet wide, but while the mass of the new facility would be sited as close to Building 25 as possible in order to minimize the impacts to the viewshed to the extent practicable, the viewshed would potentially be limited to approximately 16 feet if Alternative 5 were implemented.

Parking to meet the BEQ requirement would be accommodated at the Building 20 site in Squares 928 and 951. The existing below-grade parking at the Building 20 site would be maintained on both the eastern and western portions of the site. Continued use of the below-grade parking would be consistent with existing land use in the area.

Implementation of a BEQ Complex at Site E would be designed in accordance with the MBW IAP in order to provide consistency with existing visual character (i.e., line, color, shape, and form) of the surrounding neighborhood and existing MBW Annex.

In summary, short- and long-term adverse impacts to land use would be significant due to the inconsistency with prior land use commitments for the L'Enfant Plan 6th Street viewshed. There is the potential that these impacts can be minimized to less than significant through consultation and coordination with DCOP and NCPC, as cooperating agencies on this EIS, and DC HPO and ACHP, through the Section 106 and EIS processes.

4.1.6 No Action Alternative

Under the No Action Alternative, there would be no impact to planned land uses and zoning at MBW or any of the proposed replacement BEQ Complex sites within the study area. Impacts to land use would remain consistent with the pre-existing community land use patterns and zoning. Development of the replacement BEQ Complex; however, would not potentially serve as a driver for redevelopment in the area outside of WNY. Within WNY, there would be no impact to the WNY Installation Master Plan.

4.2 TRANSPORTATION AND CIRCULATION

Implementation of the Proposed Action would not add any new trips to the surrounding street system on a recurring basis, as there would be no additional personnel travelling to or from the site. The analysis of potential traffic effects was, therefore, focused on the potential direct impacts from the:

- redistribution of trips by military personnel and civilian employees due to the replacement of the BEQ Complex;
- the diversion of existing trips due to the proposed closure of public streets (i.e., Alternatives 1 and 2); and

- the removal of existing trips due to the demolition of existing occupied buildings (i.e., Alternatives 1, 2, and 4).

This analysis also considered the possibility that some pedestrian trips may shift to personal vehicles and/or other modes of travel as the result of the increased walking distance (relative to existing conditions) or under unusual circumstances (such as inclement weather). Refer to Appendix C for details.

Impacts are presented for both construction and operation of the Proposed Action. Construction impacts would be localized and limited to the period of construction. For this EIS, construction impacts would result primarily from the replacement BEQ Complex. However, construction traffic also would be associated with the Main Post renovation projects and the future projects to foster MBW integration with the community.

Operations impacts were evaluated based on transportation conditions assumed to be in place at the time the replacement BEQ Complex is occupied. The No Action Alternative assumes the implementation of near term infrastructure and development projects, plus additional traffic growth from development in the surrounding area (refer to Appendix C). Impacts were determined based on the incremental effect of each action alternative relative to the No Action Alternative. Consistent with NEPA determination of significance (40 CFR § 1508.27), this analysis considers the intensity of transportation impacts in this context. Indirect impacts are not assessed quantitatively herein, as they are not reasonably foreseeable.

The elements of the Proposed Action that are beyond the 5-year planning horizon are not ripe for detailed transportation and circulation analysis. However, the reuse of Building 20 or the Building 20 site considers the capability of the existing transportation network to accommodate a change in trip generation at this site.

Evaluation Criteria

The target LOS for intersections in the study area is LOS D (FHWA 2013). Accordingly, LOS A, B, C, and D are considered to be acceptable LOS, while LOS E and F are considered to be unacceptable. If an action is determined to have a significant impact on an intersection that does not meet the target LOS of D, mitigation measures are identified to minimize or avoid the project's effect on traffic.

Based on typical industry standards, an action is considered to have a significant impact on the operations of an intersection when one of the following occurs:

- The action (by itself) results in an LOS dropping from LOS D or better to LOS E or F; or
- If an intersection operates at LOS E or F under existing conditions and the action adds more than an additional 2 seconds of average vehicle delay.

Impacts to pedestrian and bicycle accessibility, transit service, and parking were assessed qualitatively. A significant impact on pedestrian accessibility may occur if a project were to increase walking distance beyond the "reasonable walking distance" defined by the NCPC. If a project were to remove or reroute bicycle facilities so as to substantially increase trip distances, then a significant impact to bicycle accessibility may result. Transit facilities may experience a significant impact if existing facilities and services are obstructed and/or rerouted or if a substantial increase in transit demand occurs due to a

project. A project my cause a significant impact to parking facilities is there is the net parking demand exceeds the available supply of spaces.

4.2.1 Alternative 1

4.2.1.1 Construction Impacts

Implementing Alternative 1 would involve temporary traffic impacts resulting from demolition and construction activities. The following types of additional trips are expected be added to the transportation network:

- Construction worker commuting trips;
- Trips involving the delivery and removal of construction equipment and materials; and
- Trips involving the removal of demolition debris and excess fill material.

As discussed in Section 2.2.2, various measures would be implemented by the Marine Corps to lessen potential short-term construction-related significant impacts to the neighborhood. One of these measures includes not scheduling deliveries of supplies or materials during peak commuting periods (i.e., 6 AM to 9 AM and 3 PM to 6 PM) to lessen impacts to traffic. Given this measure, considering the temporary nature of construction traffic, and accounting for adequate intersection LOS at most study area intersections, short-term construction related adverse impacts are not expected to be significant.

4.2.1.2 Operations Impacts

Pedestrian and Bicycle Accessibility

Alternative 1 would involve the permanent closure of existing sidewalks along L Street SE between 8th Street SE and 9th Street SE. Existing pedestrian and bicycle trips between Virginia Avenue Park and land uses to the west of Site A would have be diverted around the proposed BEQ Complex, resulting in additional travel time and distance (i.e., approximately 700 feet) for these trips. Pedestrian and bicycle trip distance between the replacement BEQ Complex and the Main Post would increase from approximately 500 feet to approximately 800 feet. However, the replacement BEQ Complex would be within “reasonable walking distance,” as defined by the NCPC; therefore, the additional walking and bicycling distance would not be a significant impact.

Military personnel (and some civilian employees) would pass beneath the I-695 overpass and adjacent to the existing surface lot along 8th Street SE. The following management measures would be implemented:

- Continued implementation of the Transportation Management Plan program for MBW to encourage trip reduction;
- Ongoing training of personnel in pedestrian safety and requirements for Marines to observe all pedestrian signals and rules; and
- Ensuring that design of the BEQ Complex considers the location of proposed driveways and assesses the likelihood and extent of queues that may form as vehicles are processed for access to BEQ Complex parking facilities and, to the extent feasible, avoid blockage of through lanes.

In conclusion, long-term adverse impacts to pedestrian and bicycle access from the implementation of Alternative 1 would be less than significant.

Transit Service

Alternative 1 would not involve obstruction or re-routing of exiting or planned transit service. The relatively minor increase in walking and biking distance could increase the propensity to use public transit under unusual circumstances. However, this possible increase would be negated by the removal of existing, occupied land uses within the Site A footprint. The Marine Corps would coordinate with Metro during the replacement BEQ site layout and design to ensure that the proposed design does not interfere with existing and planned transit service, including the location of transit stops and stations. In conclusion, the long-term adverse impact of implementing Alternative 1 to transit service would not be significant.

Traffic

When compared to the No Action Alternative (i.e., baseline conditions), the redistribution and assignment of traffic under Alternative 1 would not result in any significant traffic impacts (Table 4.2-1). Although the M Street SE/11th Street SE intersection would be characterized by LOS E conditions during the afternoon peak hour, this is a cumulative impact attributable to local and regional growth that would occur under all action alternatives. The Proposed Action would have no effect on intersection delay or LOS. Refer to Section 5.2.4.2 for cumulative impacts to traffic and circulation. As shown in Table 4.2-1, none of the action alternatives would affect intersection delay or LOS at this location, and therefore the Proposed Action would not cause a significant impact at this intersection. Alternative 1 would involve the removal of approximately 23 on-street parallel parking spaces along a portion of L Street SE. However, it is likely that these spaces are used, in part, by existing land uses that would be removed as part of the Proposed Action. In addition to the removal of on-street parking, Alternative 1 would eliminate 212 parking spaces provided at the Building 20 site. The loss of 235 on- and off-street parking spaces would be offset by the 212 new off-street parking spaces provided by the replacement BEQ Complex for MBW residents and employees. The result would be a relatively minor long-term net loss of 23 parking spaces; however, the net loss in parking would be offset by a reduction in parking demand due to the demolition of existing occupied land uses within Site A. Therefore, the long-term adverse impact would be relatively minor. Although nominal vehicular traffic would access the site during peak commuting hours, inbound vehicles may form queues at project access driveways during off-peak periods. With the application of management measures described above, the long-term adverse impact of implementation of Alternative 1 to traffic would not be significant.

4.2.2 Alternative 2

4.2.2.1 Construction Impacts

Construction related impacts resulting from Alternative 2 implementation would be similar to those of Alternative 1. Therefore, with the application of the management measures outlined for Alternative 1, and given the temporary nature of construction traffic and generally adequate intersection LOS, short-term construction related adverse impacts would not be significant under Alternative 2.

4.2.2.2 Operations Impacts

Pedestrian and Bicycle Accessibility

Although Alternative 2 would permanently close L Street SE between 10th Street SE and 11th Street SE to vehicular traffic, pedestrians and bicyclists would be able to continue to use this roadway. Therefore, the closure would not increase travel time or distance for pedestrian or bicycle trips. Walking and biking trip distance for military personnel from Site B to the Main Post would increase from approximately 500 feet to approximately 1,700 feet. This distance would be within the 2,000 foot "reasonable walking distance" defined by NCPC, and is therefore not a significant impact with respect to pedestrian or bicycle accessibility. Military personnel (and some civilian workers) approaching the Main Post via 8th Street SE would pass beneath the I-695 freeway. With the application of management measures outlined for Alternative 1, long-term adverse impacts to pedestrian and bicycle accessibility would not be significant under Alternative 2.

Transit Service

As with Alternative 1, Alternative 2 would not block or re-route any transit services. The increase in walking and biking distance could increase the use of public transit, particularly during inclement weather. However, increased transit demand would be offset by the removal of existing, occupied land uses to make way for the replacement BEQ Complex at Site B. With the application of the management measures identified for Alternative 1, there would not be a significant long-term adverse impact with implementation of Alternative 2.

Traffic

The implementation of Alternative 2 would not result in any significant traffic impact (see Table 4.2-1). The proposed closure of L Street SE between 10th Street SE and 11th Street SE would remove

Table 4.2-1. Summary of Estimated Intersection LOS and Effects under All Alternatives

Intersection		Peak Hour	Existing Condition (2012)		No Action Alternative			Alternative 1			Alternative 2			Alternative 3			Alternative 4			Alternative 5		
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ[c]	Delay[a]	LOS[b]	Δ[d]	Delay[a]	LOS[b]	Δ[d]	Delay[a]	LOS[b]	Δ[d]	Delay[a]	LOS[b]	Δ[d]	Delay[a]	LOS[b]	Δ[d]
1	I Street SE/8th Street SE	AM	18.9	B	21.8	C	2.9	21.8	C	0.0	21.8	C	0.0	21.8	C	0.0	21.8	C	0.0	21.8	C	0.0
		PM	19.2	B	20.1	C	0.9	20.3	C	0.2	20.3	C	0.2	20.3	C	0.2	20.1	C	0.0	20.1	C	0.0
2	I-695 on-ramp/8th Street SE	AM	12.4	B	4.0	A	-8.4	4.2	A	0.2	4.2	A	0.2	4.2	A	0.2	4.0	A	0.0	4.0	A	0.0
		PM	12.7	B	0.6	A	-12.1	0.6	A	0.0	0.6	A	0.0	0.6	A	0.0	0.6	A	0.0	0.6	A	0.0
3	Virginia Avenue SE/8th Street SE	AM	34.7	C	19.0	B	-15.7	19.2	B	0.2	19.1	B	0.1	19.2	B	0.2	19.0	B	0.0	19.0	B	0.0
		PM	42.5	D	22.3	C	-20.2	22.0	C	-0.3	22.2	C	-0.1	22.2	C	-0.1	22.3	C	0.0	22.3	C	0.0
4	M Street SE/8th Street SE	AM	18.2	B	26.2	C	8.0	26.2	C	0.0	26.2	C	0.0	26.5	C	0.3	26.2	C	0.0	26.2	C	0.0
		PM	13.3	B	13.4	B	0.1	14.2	B	0.8	14.7	B	1.3	14.4	B	1.0	13.4	B	0.0	13.4	B	0.0
5	M Street SE/9th Street SE	AM	10.7	B	12.3	B	1.6	12.3	B	0.0	12.4	B	0.1	12.3	B	0.0	12.3	B	0.0	12.3	B	0.0
		PM	13.9	B	16.9	B	3.0	16.9	B	0.0	17.0	B	0.1	16.9	B	0.0	16.5	B	-0.4	16.9	B	0.0
6	M Street SE/11th Street SE	AM	20.0	C	33.8	C	13.8	33.8	C	0.0	33.8	C	0.0	33.8	C	0.0	33.8	C	0.0	33.8	C	0.0
		PM	42.6	D	76.7	E[e]	34.1	76.7	E	0.0	76.7	E	0.0	76.7	E	0.0	76.7	E	0.0	76.7	E	0.0
7	I Street SE/9th Street SE/I-695 off-ramp	AM	25.6	D	19.8	C	-5.8	19.8	C	0.0	19.8	C	0.0	19.8	C	0.0	19.8	C	0.0	19.8	C	0.0
		PM	13.9	B	11.7	B	-2.2	11.7	B	0.0	11.7	B	0.0	11.7	B	0.0	11.7	B	0.0	11.7	B	0.0
8	I Street SE/11th Street SE	AM	20.2	C	20.6	C	0.4	20.6	C	0.0	20.6	C	0.0	20.6	C	0.0	20.6	C	0.0	20.6	C	0.0
		PM	18.9	B	19.1	B	0.2	19.1	B	0.0	19.1	B	0.0	19.1	B	0.0	19.1	B	0.0	19.1	B	0.0
9	M Street SE/Isaac Hull Avenue SE	AM	4.1	A	5.1	A	1.0	5.1	A	0.0	5.1	A	0.0	5.1	A	0.0	5.1	A	0.0	5.1	A	0.0
		PM	23.2	C	24.9	C	1.7	24.9	C	0.0	24.9	C	0.0	25.2	C	0.3	23.6	C	-1.3	24.9	C	0.0

Notes: [a]Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b]LOS calculations are based on the methodology in TRB (2010) and performed using Synchro.
[c]Change in delay due to projected near term traffic growth from development in the surrounding area, as compared to existing conditions.
[d]Change in delay due to traffic redistribution as a result of the Proposed Action.
[e]LOS E condition attributable to local and regional development assumed to occur under all alternatives, including the No Action Alternative. Refer to Section 5.2.4.2 for cumulative impacts to traffic and circulation.

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approximately nine on-street parallel parking spaces. Similar to Alternative 1, the permanent loss of 9 on-street parking spaces along L Street SE would be offset by a reduction in parking demand due to the demolition of existing occupied uses. Therefore, the net loss in parking would be relatively minor. Alternative 2 would provide the same amount of off-street parking that is currently available at the Building 20 site; therefore, the Proposed Action would not cause any net reduction in off-street parking supply. As with Alternative 1, inbound vehicles may form queues at project access driveways during off-peak periods. With the application of the same management measures outlined for Alternative 1, traffic impacts would not be significant under Alternative 2.

4.2.3 Alternative 3

4.2.3.1 Construction Impacts

Construction related impacts resulting from the implementation of Alternative 3 would be similar to those of Alternative 1. Accordingly, assuming implementation of construction avoidance measures, and given the temporary nature of impacts and generally adequate LOS in the study area, construction related impacts would not be significant.

4.2.3.2 Operations Impacts

<u>Pedestrian and Bicycle Accessibility</u>

Unlike Alternatives 1 and 2, Alternative 3 would not involve any street closure; therefore, Site C would not result in any changes to existing walking or biking trip patterns. The distance between the replacement BEQ Complex and the Main Post would increase from approximately 500 feet to approximately 2,000 feet, and pedestrians and bicyclists would have to pass beneath I-695 along 7th Street SE and/or 8th Street SE to access the Main Post. The walking and bicycling distance is equal to the "reasonable walking distance" defined by NCPC. Military personnel (and some civilian workers) approaching the Main Post via 8th Street SE would have to cross M Street SE and pass beneath the I-695 freeway. With the implementation of management measures outlined for Alternative 1, impacts on pedestrian and bicycle access and circulation would not be significant under Alternative 3.

<u>Transit Service</u>

As with the preceding alternatives, Alternative 3 would not obstruct or re-route any transit services. The increase in walking and biking distance may increase the propensity to use public transit, especially during inclement weather. Because no occupied land uses would be demolished, an increase in transit use would likely occur. Military personnel would likely use the Washington Metropolitan Area Transit Authority Union Station – Navy Yard Metro Circulator route, which provides local bus service along M Street SE and 8th Street SE. Bus stops are located adjacent to Site C and near the intersection of 8th Street SE and G Street SE, next to the Main Post. However, given the minimal number of military personnel travelling during peak hours and the availability of transit services in the area, this increase is expected to be relatively minor. With the implementation of management measures, impacts to transit service would not be significant under Alternative 3.

Traffic

Traffic impacts under Alternative 3 would not be significant (see Table 4.2-1). Proposed off-street parking supply would be identical to the number of spaces currently provided at the Building 20 site; therefore, no net increase in parking demand would occur. As with the preceding alternatives, inbound vehicles may form queues at construction access driveways during off-peak periods. However, by implementing management measures identified in Alternative 1, impacts to traffic would not be significant under Alternative 3.

4.2.4 Alternative 4

4.2.4.1 Construction Impacts

Construction related impacts resulting from Alternative 4 would be similar to those of Alternative 1. Therefore, with the application of construction avoidance measures, and given the temporary nature of construction traffic and generally adequate intersection LOS, construction related impacts would not be significant under Alternative 4.

4.2.4.2 Operations Impacts

Pedestrian and Bicycle Accessibility

Alternative 4 would not close any existing pedestrian or bicycle facilities; therefore, no changes in existing walking or biking routes. Trip distance for military personnel from Site D to the Main Post would increase from approximately 500 feet to approximately 1,700 feet, which remains within the "reasonable walking distance" defined by NCPC. Military personnel (and some civilian workers) approaching the Main Post via 8th Street SE would have to cross M Street SE and pass beneath the I-695 freeway. With the application of management measures outlined for Alternative 1, impacts to pedestrian and bicycle accessibility would not be significant under Alternative 4.

Transit Service

As with preceding alternatives, Alternative 4 would not block or re-route any transit services. The increase in walking and biking distance could increase transit demand, particularly during harsh weather conditions. However, given the number of military personnel travelling during the peak hour, and considering the availability of several transit routes in the area, this increase would be relatively minor. With the application of management measures, impact to transit services would not be significant under Alternative 4.

Traffic

Implementation of Alternative 4 would not result in any significant traffic impacts (see Table 4.2-1). The planned reconfiguration of the I-695 off-ramp to I Street SE would cause some existing employee trips to divert to the I Street SE/11th Street SE intersection. However, this additional traffic would not result in any change in delay at this intersection, when compared to the No Action Alternative. The removal of existing trips, due to the demolition of an existing building at Site D, would result in a minor beneficial traffic impact at the M Street SE intersections with Isaac Hull Avenue SE and 9th Street SE. Parking would continue to be provided at the Building 20 site, and therefore parking conditions would be the

same as under the No Action Alternative. With application of management measures described above for Alternative 1[1], the impact to traffic would not be significant under Alternative 4.

4.2.5 Alternative 5

4.2.5.1 Construction Impacts

Construction-related impacts associated with Alternative 5 would be similar to those of Alternative 1. Therefore, with the application of construction avoidance measures, and given the temporary nature of construction traffic and generally adequate intersection LOS, Alternative 5 would not result in any significant construction related transportation impacts.

4.2.5.2 Operations Impacts

Pedestrian and Bicycle Accessibility

Alternative 5 would not close or obstruct any existing pedestrian or bicycle facilities; therefore, there would be no change in walking or biking routes. The walking trip distance for military personnel from Site E to the Main Post would increase from approximately 500 feet to approximately 1,800 feet, which remains within the "reasonable walking distance" defined by NCPC. Military personnel approaching the Main Post via 7th Street SE and 8th Street SE would pass beneath the I-695 freeway. With the application of management measures, impacts to pedestrian and bicycle accessibility would not be significant under Alternative 5.

Transit Service

As with preceding alternatives, Alternative 5 would not block or re-route any transit facilities or services. The increase in walking and biking distance could increase the propensity to use public transit, particularly during harsh weather conditions. However, given the number of military personnel travelling during the peak hour, and considering the availability of several transit routes in the area, this increase would be comparatively minor. With the application of management measures, impacts to transit services under Alternative 5 would not be significant.

Traffic

Alternative 5 would not result in any significant intersection impact (see Table 4.2-1). As with Alternative 4, the planned reconfiguration of the I-695 off-ramp to I Street SE would cause some existing employee trips to divert to the I Street SE/11th Street SE intersection. However, this additional traffic would not result in any change in delay at this intersection, and intersection delay at all locations would be similar to that of the No Action Alternative. Parking under Alternative 5 would continue to be provided at the Building 20 site, and therefore parking conditions would be the same as under the No Action

[1]Because Alternative 4 would provide parking within the existing Building 20 parking structure, the management measure related to queuing and storage at garage access driveways is not applicable to this alternative.

Alternative. With the application of management measures described above for Alternative 1[2], impact to traffic would not be significant under Alternative 5.

4.2.6 No Action Alternative

The traffic impacts of the No Action Alternative are summarized above in Table 4.2-1. The No Action Alternative would involve minimal changes to pedestrian and bicycle accessibility and transit service, as complared to existing conditions. However, increases in traffic from planned or approved infrastructure, development, and proposed parking removal would result in an adverse effect to traffic. Although the planned improvements to 8th Street SE intersections with the I-695 on-ramp and Virginia Avenue SE would improve delay and LOS at both intersections, compared to existing conditions, the other intersections would experience an increase in delay.

4.3 CULTURAL RESOURCES

The methodology for identifying, evaluating, and mitigating impacts to cultural resources has been established through federal laws and regulations, including the NHPA and ARPA. Because there are no known properties of traditional, religious, or cultural significance to Native American tribes, no sacred sites, and no human remains that would be affected by the Proposed Action, the analysis of impacts will focus on historic properties.

The effects of the Proposed Action on historic properties located in the APE were evaluated by applying the criteria of adverse effect, which are codified in 36 CFR 800.5. These criteria specify that potential adverse effects from a proposed action can include demolition or physical damage to all or part of a property, alteration of a property that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68), changes to the character of the property's use or of physical features within its setting that contribute to its historic significance, or introduction of visual or audible elements that diminish the integrity of the property's significant features.

Effects were evaluated in terms of impacts on any one of seven aspects of integrity of a historic property: location, workmanship, design, materials, setting, feeling, and association. Effects to a historic property can vary depending upon the type of property (district, building, structure, site, or object), and the criteria for which the historic property is eligible (National Register Criteria for Evaluation, 36 CFR 60.4). Impacts that negatively affect the characteristics of a historic property that qualify it for inclusion in, or eligibility for, the NRHP are considered to have an adverse effect. Impacts that do not adversely affect the characteristics of a historic property that qualify it for the NRHP are considered to have no adverse effect. If the proposed project adversely affects an identified historic property, further consultation with the state HPO is required to avoid or minimize the adverse effect. The threshold for significant impacts for cultural resources includes any disturbance that cannot be mitigated and affects the integrity of a historic property. The emphasis of the analysis is on direct effects.

[2]Because Alternative 5 would provide parking within the existing Building 20 parking structure, the management measure related to queuing and storage at garage access driveways is not applicable to this alternative.

There would be no effect on architectural or archaeological resources from operations under the Proposed Action. This is because there would be no increases or decreases in staffing levels and no changes in training, and there would be a continuance of existing procedures and operations. The following impact analysis, therefore, focuses on construction impacts for each alternative.

4.3.1 Alternative 1

4.3.1.1 Architectural Resources

Replacement BEQ Complex. Alternative 1 implementation would involve demolishing 14 contributing buildings in the Capitol Hill Historic District. In addition, Alternative 1 would include the removal of street trees, which would diminish the district's historic integrity. Therefore, the demolition of contributing buildings and the changes to the streetscape would have an adverse effect to the Capitol Hill Historic District.

Under Alternative 1, direct impacts from the replacement BEQ Complex project would also have an adverse effect to the L'Enfant Plan. Both L Street SE and Virginia Avenue Park are contributing features of the L'Enfant Plan, as is the vista along L Street to Virginia Avenue Park. The closure of L Street between 8th and 9th Streets SE for the replacement BEQ Complex would permanently alter this portion of the city plan. The vista along L Street SE to and from Virginia Avenue Park would be blocked by the replacement BEQ Complex. In addition, the conversion of two squares of 2- to 4-story brick residential and commercial buildings to a 5-story building spanning both squares would negatively impact the setting of Virginia Avenue Park by changing the character of the physical features within its setting that contribute to its historic significance.

The historic integrity of six historic properties in the APE would be adversely affected due to visual impacts of the replacement BEQ Complex (see Figure 2.4-2). Site A is directly across from the north boundary (M Street SE) of the WNY NHL and the NRHP-listed historic district and the individually listed WNY Main Gate, Quarters A, and Quarters B. It is also directly across from the east boundary of the NRHP-listed Washington and Georgetown Railroad Car House at 8th Street SE. Several contributing buildings in the Capitol Hill Historic District also are adjacent to the west and southeast of Site A. The new 5-story replacement BEQ Complex would be highly visible from these properties, and would change historically-significant views to and from the properties along 8th Street SE. The integrity of setting of these historic properties would be diminished, as the physical features and visual character would be altered by erecting a 5-story building in place of rows of 2- and 3-story brick residential and commercial buildings. Therefore, implementing Alternative 1 would have an adverse effect to the WNY, WNY Main Gate, Quarters A, Quarters B, Washington and Georgetown Railroad Car House, and Capitol Hill Historic District.

The Virginia Avenue Tunnel is adjacent to the north side of Site A. Only its east and west portals at 11th Street SE and 2nd Street SE, respectively, are visible at street level. The property's integrity of setting does not contribute to its significance, so any changes to the visual character or physical features within its setting from constructing the replacement BEQ Complex at Site A would not diminish the tunnel's historic or architectural significance. Therefore, Alternative 1 would have no adverse effect to the Virginia Avenue Tunnel.

The south side of the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district is approximately 500 feet north of Site A. The Commandant's House, situated at the north end of the Main Post, is farther removed from Site A. The Main Post buildings enclose the district and are oriented to the interior of the post. In addition, views from the Main Post south to Site A would be obscured by Building 20 and the elevated Southeast Freeway, which are situated between the post and Site A. Implementation of Alternative 1, therefore, would have no adverse effect to the U.S. Marine Corps Barracks and Commandant's House, as there would be no substantial changes to the visual character or physical features within its current setting.

Under Alterative 1, the replacement BEQ Complex would have no effect to the other aboveground historic properties in the APE. The WNY Commandant's Office is more than 1,100 feet south of Site A and is surrounded by very large industrial buildings, which would obscure views from the property to the replacement BEQ Complex. The St. Paul AUMP Church, Christ Church, and Old Naval Hospital are 1,400 feet or more from Site A. At this distance, the replacement BEQ Complex is unlikely to be visible despite its taller height. Surrounding buildings and mature trees would also screen the project from view. The Southeast Freeway would further obscure views of the project from Christ Church and the Old Naval Hospital.

MBW Main Post Renovation Projects. The Main Post renovation projects include interior renovation of Building 7. Building 7 is a contributing resource to the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district. The MBW ICRMP indicates Building 7 has been altered over time and serves as a support building (MBW 2013). Existing non-load bearing interior partitions are not original to Building 7 and as such, any changes to them would not affect the integrity of design, materials, or workmanship of the building. Windows and doors being replaced for AT/FP requirements would approximate the size and appearance of the historic originals in accordance with the Secretary of the Interior's Standards for Rehabilitation (codified at 36 CFR 67). No existing interior finishes or light fixtures are original to Building 7, so their replacement does not affect its historic integrity. Likewise, none of the existing building infrastructure systems are original or early to Building 7. Installing fire detection and suppression systems and plumbing would be designed so as not to damage or obscure historic features. The Marine Corps would follow to the maximum extent practicable the Secretary of the Interior's Standards for Rehabilitation for the design and construction of an at-grade, ABA compliant access. The interior renovations in Building 7, therefore, would not diminish the building's integrity or that of the Main Post. Therefore, there would be no adverse effects to these historic properties resulting from Building 7 interior renovations.

The contributing buildings and features of the MBW Main Post are also contributing resources to the Capitol Hill Historic District. All actions under the Main Post renovation projects involve interior components and spaces in Building 7 or otherwise face the interior of the Main Post (i.e., construction of an at-grade, ABA compliant access to Building 7). Therefore, the Main Post renovation projects would have no adverse effect to the Capitol Hill Historic District. No other historic properties in the APE would be adversely affected by the Main Post renovation projects.

Projects to Foster MBW Integration with the Community. The improvements to the MBW Annex gate would have no adverse effect on historic properties. The gate improvements would be scaled to the

neighborhood character, enhancing the exterior aesthetics of the MBW Annex perimeter within the viewsheds of 7th Street SE, a contributing element of the L'Enfant Plan, the Capitol Hill Historic District, and the Washington and Georgetown Railroad Car House. Improvements to exterior aesthetics of the portion of Building 7 facing 9th Street SE would be designed to be consistent with the historic characteristics of the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district. The changes would be subtle, and would improve the otherwise utilitarian appearance to the historic residences in the Capitol Hill Historic District that face the east façade of the building. Therefore, the projects to foster MBW integration with the community would have no adverse effect to historic properties.

Other Longer-Term Projects Analyzed Programmatically. As outlined in the MBW ICRMP, the proposed reuse or redevelopment of Building 20 or the Building 20 site would require Section 106 review. Specifically, once a potential use for Building 20 or the Building 20 site has been determined, a survey and evaluation of Building 20 would be necessary to determine if it is eligible for listing in the NRHP. If the survey were to be completed prior to 2025, which is when Building 20 turns 50 years old, then the evaluation would need to analyze whether Building 20 achieves "exceptional significance" under the NRHP criteria consideration for properties less than 50 years in age. Because the MBW Main Post is listed in the NRHP and designated an NHL, the Building 20 site is within the Capitol Hill Historic District, and the Main Post and Building 20 site are situated within the L'Enfant Plan, the Marine Corps would assess the potential effects of the reuse or redevelopment of Building 20 or the Building 20 site to historic properties. The Marine Corps would consult with the DC HPO on its efforts to identify historic properties and its finding of effect. If any historic properties would be adversely affected by the reuse, suitable forms of mitigation will be developed in consultation with the DC HPO and other external stakeholders (MBW 2013).

A Section 106 review of potential future interior renovations of Building 9 would also be required. According to the MBW ICRMP, significant character-defining interior features in Building 9 include the concert hall and its lobby and staircase, and the staircase east of the concert hall and surroundings (MBW 2013). Once specific design plans for the renovations are developed, the Marine Corps would follow the procedures of the MBW ICRMP and consult with the DC HPO and the public on the potential effects of the proposed renovations. Initial consultation would include providing the DC HPO and the public a detailed work plan that fully describes the proposed renovations, identifies the historic architectural resources that may be affected, identifies the potential effects, and discusses the decision-making process that led to the proposed course of action. If any historic properties would be adversely affected by the proposed renovations, suitable forms of mitigation would be developed in consultation with the DC HPO and other external stakeholders (MBW 2013).

Summary of Impacts

In summary, Alternative 1 would have adverse effects to the Capitol Hill Historic District by demolishing contributing buildings and removing street trees, and to the L'Enfant Plan by closing L Street SE. Visual impacts from the replacement BEQ Complex also would result in adverse effects to several other historic properties in the APE. Both the Main Post renovation projects and the projects to foster MBW integration with the community would have no adverse effect to the U.S. Marine Corps Barracks and

Commandant's House or the Capitol Hill Historic District. Table 4.3-1 summarizes the effect of Alternative 1 to each of the aboveground historic properties in the APE. Because Alternative 1 would have an adverse effect to historic properties in the APE, the Marine Corps' overall finding of effect for Alternative 1 is "historic properties adversely affected."

In accordance with Section 106 of the NHPA and its own SOPs in the MBW ICRMP, the Marine Corps is consulting with the DC HPO, consulting parties, and the public concerning the effects to historic properties from each of the major actions proposed under Alternative 1. If Alternative 1 is selected as the preferred alternative, a Section 106 agreement document (Memorandum of Agreement or PA) will be developed between the Marine Corps, the DC HPO, the ACHP, and other consulting parties to resolve adverse effects from implementation of that alternative on historic properties. While there would be an adverse effect to historic properties under NHPA, there would be no significant impacts under NEPA because the agreement document will include stipulations to resolve adverse effects.

4.3.1.2 Archaeological Resources

Replacement BEQ Complex. An assessment of the archaeological potential of Site A was conducted in association with proposed 11th Street Bridges improvements, and concluded that this area has a high potential for intact historic archaeological deposits. The presence of extant historic buildings with rear yards and open spaces where buildings were formerly located indicates the potential for foundations and features related to historic buildings and activities. Should Alternative 1 be selected for the replacement BEQ Complex, the agreement document will include a stipulation to conduct archaeological monitoring of Site A during construction in compliance with Section 106 of the NHPA. Should archaeological deposits be identified, the Marine Corps would follow the SOP for inadvertent discovery included in the agreement document for this undertaking.

Main Post Renovation Projects. Proposed interior renovations of Building 7 would involve ground disturbance during the construction of an at-grade ABA compliant access. The majority of the area surrounding Building 7 is considered to have low to no potential for archaeological resources; however, small areas of moderate potential exist near the building. Should it be determined that the ABA compliant access site is located in an area of moderate sensitivity, archaeological monitoring would be conducted to determine the presence of archaeological sites in compliance with Section 106. If they are determined to be located in areas of low to no potential, no additional work would be recommended, and improvements would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Projects to Foster MBW Integration with the Community. The MBW Annex parcel had been entirely surveyed for archaeological resources prior to the construction of the MBW Annex, resulting in the discovery of the original Eastern Market site. The site was mitigated and determined to have no additional research potential. No potential for additional archaeological resources exists, and no additional work is recommended for the MBW Annex. Therefore, the minor improvements to the MBW

Table 4.3-1. Summary of Potential Effects to Historic Properties by Alternative

Property Name	Historic Status (Date Listed)	Effect				
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
U.S. Marine Corps Barracks and Commandant's House	NHL (5/11/76) NRHP (12/27/72) DC Inventory (11/8/64)	No adverse effect	No adverse effect	No effect	No effect	No adverse effect
Marine Corps Commandant's House	NRHP (12/27/72) DC Inventory (11/8/64)	No adverse effect	No adverse effect	No effect	No effect	No adverse effect
Capitol Hill Historic District	NRHP (8/27/76); boundary increase 7/3/03 DC Inventory (6/19/73); boundary increase 4/21/02	Adverse effect	Adverse effect	No adverse effect	No adverse effect	No adverse effect
L'Enfant Plan	NRHP (4/24/97) DC Inventory (1/19/71); boundary increase 1/23/97	Adverse effect	Adverse effect	No adverse effect	No adverse effect	Adverse effect
WNY	NHL (5/11/76) NRHP (6/19/73); boundary increase 1/3/08 DC Inventory (11/8/64); 1st boundary increase 2/28/08; 2nd boundary increase post-2008	Adverse effect	Adverse effect	No adverse effect	Adverse effect (WNY East Extension)	No adverse effect
Main Gate, WNY	NRHP (8/14/73) DC Inventory (11/8/64)	Adverse effect	Adverse effect	No adverse effect	No adverse effect	No effect
Quarters A, WNY	NRHP (8/14/73) DC Inventory (11/8/64)	Adverse effect	Adverse effect	No adverse effect	No adverse effect	No effect
Quarters B, WNY	NRHP (8/14/73) DC Inventory (11/8/64)	Adverse effect	No adverse effect	No adverse effect	No adverse effect	No effect
Commandant's Office, WNY	NRHP (8/14/73) DC Inventory (11/8/64)	No effect	No effect	No effect	No effect	No effect
Christ Church, Washington Parish	NRHP (5/25/69) DC Inventory (11/8/64)	No effect	No effect	No effect	No effect	No effect
Old Naval Hospital	NRHP (5/3/74) DC Inventory (11/8/64)	No effect	No effect	No effect	No effect	No effect
Washington and Georgetown Railroad Car House (Navy Yard Car Barn)	NRHP (11/14/06) DC Inventory (3/23/06)	Adverse effect	Adverse effect	No adverse effect	No adverse effect	No adverse effect

Table 4.3-1. Summary of Potential Effects to Historic Properties by Alternative

Property Name	Historic Status (Date Listed)	Effect				
		Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Saint Paul AUMP Church	NRHP (7/28/11) DC Inventory (not recorded)	No effect	No effect	No effect	No effect	No effect
Virginia Avenue Tunnel	NRHP-eligible (unknown)	No adverse effect	No adverse effect	No effect	No effect	No adverse effect
Overall Section 106 Finding of Effect		Historic properties adversely affected	Historic properties adversely affected	No historic properties adversely affected	Historic properties adversely affected	Historic properties adversely affected
NEPA Finding of Impact		No significant impacts	No significant impacts	No significant impacts	No significant impacts	No significant impacts

Annex site would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

New landscaping and paved sidewalks may be planned in areas of the Main Post with moderate archaeological potential. Archaeological monitoring would be conducted in these areas, as ground disturbance associated with new landscape installation and new sidewalk construction has the potential to affect archaeological resources. All other proposed improvements to pedestrian amenities and other streetscape elements would not affect NRHP-eligible archaeological sites.

Other Longer-Term Projects Analyzed Programmatically. No professional archaeological surveys have been conducted on the Building 20 site. The site has low to no potential for archaeological resources due to the highly disturbed nature of the property by past construction activities, and no additional work is recommended for the Building 20 site. Therefore, future projects proposed for the Building 20 site are not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the effects determination once plans for each of these projects have been determined.

Summary of Impacts

In summary, implementation of Alternative 1 has the potential to impact archaeological resources at the replacement BEQ Complex and the Main Post. Under the stipulations of the agreement document covering construction monitoring and inadvertent discovery, there would be no significant impacts to NRHP-listed or eligible archaeological resources under Alternative 1.

4.3.2 Alternative 2

4.3.2.1 Architectural Resources

Replacement BEQ Complex. Information available from the DC Inventory of Historic Sites indicates that none of the buildings at Site B have been evaluated for their individual eligibility for listing in the NRHP. If Alternative 2 is selected as the preferred alternative, a stipulation for the survey and evaluation of the buildings at Site B would be included in a Section 106 agreement document. The closure of L Street between 10th and 11th Streets SE to vehicular traffic under Alternative 2 would not adversely affect the L'Enfant Plan, as the ROW itself would remain the same and the open space above the street, which is included in the nominated area of the property, would be maintained.

The integrity of setting of several historic properties that surround Site B would be adversely affected by visual impacts of constructing the replacement BEQ Complex (see Figure 2.4-4). The Capitol Hill Historic District is directly west and north of Site B. Virginia Avenue Park, a contributing resource to the L'Enfant Plan, is north and northwest of the site. Directly south is the NRHP-eligible WNY East Extension, and to the southwest of Site B is the WNY NHL. The setting of these properties in the APE is characterized by dense, low-scale development on tree-lined grid streets, along with elevated portions of the Southeast Freeway (I-695). Although portions of the freeway are part of the setting of the historic properties, a 9-story replacement BEQ Complex at Site B would dominate the visual and physical context of this area. Although the historic character of the surrounding buildings would influence the BEQ Complex design, the size and scale of a 9-story building at the site would significantly alter the existing character of the

physical features in the immediate area. Viewsheds also would be negatively affected by the removal of street trees. Collectively, these changes would diminish the historic integrity of the historic properties. Implementing Alternative 2, therefore, would have an adverse effect to the visual integrity of the Capitol Hill Historic District, L'Enfant Plan, WNY NHL, and WNY East Extension.

Visual impacts from a 9-story BEQ Complex at Site B would also adversely affect the integrity of setting of three additional historic properties in the APE: WNY Main Gate, Quarters A, and the Washington and Georgetown Railroad Car House. These properties are located west of Site B, on M Street SE. The Main Gate and Quarters A are on the south side of M Street, approximately 610 feet and 550 feet, respectively, from Site B, and the Washington and Georgetown Railroad Car House is on the north side of M Street SE, approximately 730 feet from Site B. The Main Gate and Car House are oriented toward 8th and M Streets SE, but Quarters A is oriented south to the interior of the WNY. Nonetheless, Quarters A is a visually prominent feature along M Street SE and its setting extends beyond the perimeter wall of the WNY. The view east on M Street SE from these three properties includes the open space of a small L'Enfant Plan reservation at 9th and M Streets SE, low-scale (2-story) brick buildings, and a 4-story brick industrial building rising above the brick wall enclosing the WNY opposite of Site B. A 9-story replacement BEQ Complex at Site B would be highly visible from these properties, and would change historically-significant views to and from the properties along M Street SE. Although the historic properties are more than 500 feet from Site B, the elevation gradually rises to the east, which may visually accentuate the height of the BEQ. The addition of a 9-story building in an area dominated by 2- to 4-story buildings would diminish the integrity of setting of these historic properties. Therefore, Alternative 2 would have an adverse effect to the Main Gate, Quarters A, and the Washington and Georgetown Railroad Car House.

Quarters B is set back approximately 175 feet from M Street SE and is oriented west to the interior of the WNY. Historically significant views from the property are thus to the west, and not northeast towards Site B. Nonetheless, the setback distance of Quarters B from M Street SE, combined with surrounding WNY buildings and structures, would effectively obscure views from the building to Site B. Implementing Alternative 2, therefore, would have no adverse effect to Quarters B, as there would be no substantial changes to the visual character or physical features within its current setting.

The Virginia Avenue Tunnel is approximately 150 feet north of Site B. Only its east and west portals at 11th Street SE and 2nd Street SE, respectively, are visible at street level. The property's integrity of setting does not contribute to its significance, so any changes to the visual character or physical features within its setting from the replacement BEQ Complex at Site B would not diminish its historic or architectural significance. Therefore, Alternative 2 would have no adverse effect to the Virginia Avenue Tunnel.

The south side of the U.S. Marine Corps Barracks and Commandant's House historic district is approximately 1,000 feet northwest of Site B. The Commandant's House, situated at the north end of the Main Post, is farther removed from Site B. The Main Post buildings enclose the district and are oriented to the interior of the post. In addition, views from the Main Post south to Site B would be obscured by Building 20 and the Southeast Freeway, which are situated between the post and Site B. Implementing Alternative 2, therefore, would have no adverse effect to the U.S. Marine Corps Barracks

and Commandant's House, as there would be no substantial changes to the visual character or physical features within its current setting.

Under Alternative 2, the replacement BEQ Complex would have no effect to the other aboveground historic properties in the APE. The WNY Commandant's Office is more than 1,300 feet southwest of Site B and is surrounded by very large industrial buildings, which would obscure views from the property to the replacement BEQ Complex. The St. Paul AUMP Church, Christ Church, and Old Naval Hospital are 2,100 feet or more from Site B. At this distance, the replacement BEQ Complex is unlikely to be visible despite its taller height. Surrounding buildings and mature trees would also screen the project from view. The Southeast Freeway would further obscure views of the project from Christ Church and the Old Naval Hospital.

Main Post Renovation Projects. For Alternative 2, the effects to historic properties from interior renovations of Building 7 at the Main Post would be the same as those described under Alternative 1. There would be no adverse effect to the Capitol Hill Historic District. No other historic properties in the APE would be adversely affected by the Main Post renovation projects.

Projects to Foster MBW Integration with the Community. Effects to historic properties from projects to foster MBW integration with the community under Alternative 2 would be the same as those described for Alternative 1. There would be no adverse effect to the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district or the Capitol Hill Historic District.

Other Longer-Term Projects Analyzed Programmatically. Potential effects to historic properties from the proposed reuse or redevelopment of Building 20 or the Building 20 site and interior renovations of Building 9 would be the same as those described under Alternative 1.

Summary of Impacts

In summary, Alternative 2 visual impacts from the replacement BEQ Complex at Site B would have an adverse effect to several historic properties in the APE. Both the Main Post renovation projects and the projects to foster MBW integration with the community would have no adverse effect on historic properties. The effect of Alternative 2 to each of the aboveground historic properties in the APE is summarized in Table 4.3-1. Because Alternative 2 would have an adverse effect to historic properties in the APE, the Marine Corps' overall finding of effect for Alternative 2 is "historic properties adversely affected."

In accordance with Section 106 of the NHPA and its own SOPs in the MBW ICRMP, the Marine Corps is consulting with the DC HPO, consulting parties, and the public concerning the effects to historic properties from each of the major actions proposed under Alternative 2. If Alternative 2 is selected as the preferred alternative, a Section 106 agreement document (Memorandum of Agreement or PA) will be developed between the Marine Corps, the DC HPO, the ACHP, and other consulting parties to resolve adverse effects from implementation of that alternative on historic properties. While there would be an adverse effect to historic properties under NHPA, there would be no significant impacts under NEPA because the agreement document will include stipulations to resolve adverse effects.

4.3.2.2 Archaeological Resources

Replacement BEQ Complex. No previous archaeological surveys have been completed at Site B; however, studies conducted on adjacent properties indicate a high potential for historic archaeological deposits in the northern and southwestern portions of the site. The southeastern corner has no potential due to disturbances associated with a former gas station that was located there. Should Alternative 2 be chosen, the agreement document will include a stipulation to conduct archaeological monitoring of Site B during construction in compliance with Section 106. Should archaeological deposits be identified, the Marine Corps would follow the SOP for inadvertent discovery included in the agreement document for this undertaking.

Main Post Renovation Projects. Should it be determined that the ABA compliant access site is located in an area of moderate archaeological sensitivity, archaeological monitoring would be conducted as stipulated in the agreement document. Otherwise, the Main Post renovation projects would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Projects to Foster MBW Integration with the Community. Impacts to archaeological resources from projects to foster MBW integration with the community under Alternative 2 would be the same as those described under Alternative 1. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Other Longer-Term Projects Analyzed Programmatically. Impacts to archaeological resources from the proposed reuse or redevelopment of Building 20 or the Building 20 site would be the same as described under Alternative 1. Future projects proposed for the Building 20 site are not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the effects determination once plans for each of these projects have been determined.

Summary of Impacts

In summary, implementation of Alternative 2 has the potential to impact archaeological resources at the replacement BEQ Complex and the Main Post. Under the stipulations of the agreement document covering construction monitoring and inadvertent discovery, there would be no significant impacts to NRHP-listed or eligible archaeological resources under Alternative 2.

4.3.3 Alternative 3

4.3.3.1 Architectural Resources

Replacement BEQ Complex. Alternative 3 is located within the boundary of the NRHP-listed WNY historic district, adjacent to the WNY NHL, and in proximity to the WNY Main Gate, Quarters A, and Quarters B. Implementing Alternative 3 would involve demolishing a pump house, substation, and parking lot, all of which are non-contributing elements to the WNY. Removal of these small, minor support facilities would not adversely affect the integrity of the WNY historic district.

As stated previously in Section 2.4.2, GSA has an agreement in place to sell the development rights of up to 42 of the 55-acre SEFC site to Forest City for mixed-use development. The GSA's primary goal of the transfer was to enhance the value of the SEFC to the U.S. while preserving the qualities that make the

portion of the WNY historic district that falls within the SEFC eligible for inclusion in the NRHP. Accordingly, in 2007, the GSA, ACHP, and DC HPO executed a PA to govern the transfer by sale and/or ground lease of 42 acres of the SEFC out of federal ownership to Forest City. Site C is within the 42 acres covered by the terms of the PA. The transferred land included a Historic Covenant, and the PA includes stipulations requiring the development to be carried out in accordance with Historic Preservation Design Guidelines and undertaken in consultation with the DC HPO, ACHP, and consulting parties to the PA. The Historic Preservation Design Guidelines were developed specific to the SEFC site, and are consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68). The guidelines stipulate that new construction "respond to contemporary residential and commercial needs and building codes, and…be compatible with an aesthetic associated with both late 19th- and 20th-century industrial [heritage]" of the site.

Developing a replacement BEQ Complex under Alternative 3 would require the Marine Corps to adhere to the terms of the Historic Covenant (for the transfer of 2.1 acres of land) and the stipulations of the PA. A replacement BEQ Complex at Site C, therefore, would have to follow the Historic Preservation Design Guidelines for new construction at the SEFC. In addition, the PA stipulates two design submissions would be reviewed by the DC HPO, ACHP, and consulting parties to ensure the exterior design intent of individual development projects conform with the Historic Preservation Design Guidelines (and other relevant documents to the PA). With these measures in place, implementing Alternative 3 would have no adverse effect to the WNY NHL or NRHP-listed historic district, or the individually listed Main Gate, Quarters A, and Quarters B.

Under Alternative 3, the replacement BEQ Complex would have no adverse effect to the L'Enfant Plan. A replacement BEQ Complex at Site C would not alter the ROW of M Street SE, and the open space above the street, which is included in the nominated area of the property, would be maintained.

Alternative 3 has the potential to visually impact the Washington and Georgetown Railroad Car House and the Capitol Hill Historic District (see Figure 2.4-7). The Car House, at the southwest corner of the Capitol Hill Historic District, is more than 550 feet east of Site C. The building occupies the block on the north side of M Street between 7th and 8th Streets SE; its primary façades face 8th Street and M Street. The view from the Car House and other properties within the southern extent of the Capitol Hill Historic District to Site C includes several 2- and 3-story brick buildings within the WNY, on the south side of M Street. The elevation of M Street gradually decreases from 7th Street to the west. With the downhill slope of the street combined with the more than 550-foot distance of the car house and Capitol Hill Historic District from Site C, the height of an 8-story BEQ Complex would appear on the streetscape to be shorter than it actually is. In addition, the design of the replacement BEQ Complex at Site C would follow the Historic Preservation Design Guidelines, so the exterior would be compatible with the existing architectural context of the WNY. Therefore, no adverse effect to the Washington and Georgetown Railroad Car House or the Capitol Hill Historic District is anticipated from implementing Alternative 3, as there would be no substantial changes to historically significant views or physical features within their current setting.

Under Alterative 3, the replacement BEQ Complex would have no effect to the other aboveground historic properties in the APE. The WNY Commandant's Office is more than 1,000 feet southeast of Site

C and is surrounded by very large industrial buildings, which would obscure views from the property to the replacement BEQ Complex. Located beneath Virginia Avenue, the Virginia Avenue Tunnel is approximately 900 feet north of Site C. As described previously, changes to the visual character or physical features within its setting would not diminish its historic or architectural significance. St. Paul AUMP Church is approximately 1,100 feet northwest of Site C and surrounded by buildings. The distance and surrounding development would effectively screen the replacement BEQ Complex from view despite its taller height. The U.S. Marine Corps Barracks and Commandant's House, Christ Church, and Old Naval Hospital are 1,400 feet or more from Site C. At this distance, the replacement BEQ Complex is unlikely to be visible despite its taller height. Surrounding buildings, mature trees, and the Southeast Freeway would also screen the project from view.

Main Post Renovation Projects. Under Alternative 3, the effects to historic properties from the interior renovations of Building 7 at the Main Post would be the same as those described under Alternative 1. There would be no adverse effect to the Capitol Hill Historic District.

Projects to Foster MBW Integration with the Community. Effects to historic properties from projects to foster MBW integration with the community under Alternative 3 would be the same as those described under Alternative 1. There would be no adverse effect to the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district or the Capitol Hill Historic District.

Other Longer-Term Projects Analyzed Programmatically. Potential effects to historic properties from the proposed reuse or redevelopment of Building 20 or the Building 20 site and interior renovations of Building 9 would be the same as described under Alternative 1. The Marine Corps would consult with the DC HPO on its efforts to identify historic properties and its finding of effect. If any historic properties would be adversely affected by the reuse, suitable forms of mitigation will be developed in consultation with the DC HPO and other external stakeholders.

Summary of Impacts

In summary, under Alternative 3, the design for the replacement BEQ Complex would follow the Historic Preservation Design Guidelines contained in the PA for the transfer and mixed-used development of the SEFC. The Design Guidelines provide the means for avoiding, minimizing, or mitigating any adverse effects to historic properties caused by planned development by ensuring its compatibility with the SEFC's historic and architectural context. Both the Main Post renovation projects and the projects to foster MBW integration with the community would have no adverse effect to the U.S. Marine Corps Barracks and Commandant's House or the Capitol Hill Historic District. The effect of Alternative 3 to each of the aboveground historic properties in the APE is summarized in Table 4.3-1. The Marine Corps' overall finding of effect for Alternative 3 is "no historic properties adversely affected." Therefore, there would be no significant impacts to NRHP-listed or eligible architectural resources under Alternative 3.

In accordance with Section 106 of the NHPA and its own SOPs in the MBW ICRMP, the Marine Corps is consulting with the DC HPO, consulting parties, and the public concerning the effects to historic properties from each of the major actions proposed under Alternative 3.

4.3.3.2 Archaeological Resources

Replacement BEQ Complex. The northern third of Site C was previously included in an archaeological survey and no resources were identified. The remaining two-thirds have not been surveyed; however, they are likely highly disturbed by construction and demolition projects. This site was formed by fill deposited over a marsh between 1800 and 1883 to support buildings, and thus would not contain any resources prior to that time. Potential for the discovery of intact 19th century archaeological resources is low due to the demolition of the earlier structures and construction of new buildings between 1903 and 1913. Subsequent demolition of these buildings occurred between 1949 and 1988, and the entire site has been paved for a parking lot. Because the buildings erected after 1903 remained on the site through the mid- to late-20th century, adequate information on the uses of these buildings should exist in the archival record. Should Alternative 3 be selected for the replacement BEQ Complex, no additional archaeological survey is likely to be necessary due to the disturbed nature of the area; therefore, the replacement BEQ Complex is not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Main Post Renovation Projects. Should it be determined that the ABA compliant access site is located in an area of moderate archaeological sensitivity, archaeological monitoring would be conducted as stipulated in the 106 agreement document. Otherwise, the Main Post renovation projects would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Projects to Foster MBW Integration with the Community. Impacts to archaeological resources from projects to foster MBW integration with the community under Alternative 3 would be the same as those described under Alternative 1. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Other Longer-Term Projects Analyzed Programmatically. Alternative 3 impacts to archaeological resources from the proposed reuse or redevelopment of Building 20 or the Building 20 site would be the same as described under Alternative 1. Future projects proposed for the Building 20 site are not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the effects determination once plans for each of these projects have been determined.

Summary of Impacts

In summary, implementation of Alternative 3 has the potential to impact archaeological resources at the Main Post. Under the stipulations of the agreement document, there would be no significant impacts to NRHP-listed or eligible archaeological resources under Alternative 3.

4.3.4 Alternative 4

4.3.4.1 Architectural Resources

Replacement BEQ Complex. Implementing Alternative 4 would involve demolishing one contributing resource to the NRHP-eligible WNY East Extension, Building 169, and thus, would have an adverse effect to the WNY East Extension.

Alternative 4 has the potential to visually impact the WNY NHL and three of its individually-listed NRHP properties: Main Gate, Quarters A, and Quarters B. Site D is adjacent to Quarters B and the east side of the WNY NHL, and within the viewshed of the Main Gate and Quarters A. The replacement BEQ Complex would replace the existing 2-story, Building 169 on Site D; therefore, a 5/6-story replacement BEQ Complex at Site D would be highly visible from these properties. The present setting of these properties includes a mix of small-scale, 2- to 3-story officer's quarters and administration buildings and large-scale, 2- to 4-story industrial buildings at the WNY. In comparison, a 5/6-story building for unaccompanied personnel housing could be conspicuous in terms of both size and architectural vocabulary. Alternative 4's replacement BEQ Complex, however, would be similar in height to the industrial buildings directly to the east and south of Site D, and its architectural design would be influenced by the historic character of the surrounding buildings. To address the requirement of UFC 3-101-01, *Architecture* (DOD 2011), for new construction near historic facilities, the Marine Corps would follow the Secretary of the Interior's Standards for Rehabilitation and the Guidelines for Rehabilitating Historic Buildings (NPS 1992). In addition, the Marine Corps would consult with the DC HPO and other consulting parties as necessary to ensure the exterior of the BEQ Complex would be compatible with the architectural context of the WNY. Therefore, although the character of physical features within the setting of the WNY NHL, the Main Gate, Quarters A, and Quarters B would change under Alternative 4, it is anticipated that these changes would not diminish the integrity of setting of these properties. No adverse effect to these historic properties is anticipated from implementing Alternative 4.

Potential visual impacts to the integrity of setting of the Capitol Hill Historic District, Washington and Georgetown Railroad Car House, and the L'Enfant Plan from a 5/6-story BEQ Complex at Site D were also analyzed (see Figure 2.4-9). The southern extent of the Capitol Hill Historic District encompasses the north side of M Street between 7th and 11th Streets SE, across from Site D. Within this portion of the historic district is the Washington and Georgetown Railroad Car House and two L'Enfant Plan reservations. The Car House is at 8th and M Streets SE, approximately 525 feet northwest of Site D. The view east on M Street SE from this property includes the open space of a small L'Enfant Plan reservation at 9th and M Streets SE, low-scale (2-story) brick buildings, and WNY Buildings 219 and 220, which are directly east of Site D. The upper 3 stories of the latter 4-story brick industrial buildings rise above the brick wall that encloses the WNY. Located approximately 420 feet north of Site D is Virginia Avenue Park, a contributing element of the L'Enfant Plan. Although L Street SE is the primary vista to and from the park (and is a contributing feature of the L'Enfant Plan), 10th Street SE and Virginia Avenue are secondary vistas to and from the park. The view south from the park towards Site D is of 2- and 2½-story brick dwellings, the upper 3 stories of Building 220, and the upper stories of Building 157, a 4-story brick industrial building within the WNY that includes a 6-story corner tower. Under Alternative 4, the BEQ Complex would be an additional visual element within the views east on M Street SE and views south from the Capitol Hill Historic District. The replacement BEQ Complex would be similar in height to adjacent WNY Buildings 157, 219, and 220, and would be designed to be visually compatible with the historic character of the surrounding buildings. As such, the addition of a 5/6-story building would not be expected to diminish the integrity of significant historic features within the setting of the historic properties. Therefore, the replacement BEQ Complex is anticipated to have no adverse effect to the

Capitol Hill Historic District, the Washington and Georgetown Railroad Car House, and the L'Enfant Plan under Alternative 4.

Implementing this alternative would have no effect to the other aboveground historic properties in the APE. The Commandant's Office is more than 900 feet southwest of Site D and is surrounded by very large industrial buildings, which would obscure views from the property to the replacement BEQ Complex. Located beneath Virginia Avenue, the Virginia Avenue Tunnel is approximately 500 feet north of Site D. As described previously, changes to the visual character or physical features within its setting would not diminish its historic or architectural significance. St. Paul AUMP Church is approximately 2,200 feet northwest of Site D and surrounded by buildings. The distance and surrounding development would effectively obscure the replacement BEQ Complex from view despite its taller height. The U.S. Marine Corps Barracks and Commandant's House, Christ Church, and Old Naval Hospital are 1,100 feet or more from Site D. At this distance, the replacement BEQ Complex is unlikely to be visible despite its taller height. Surrounding buildings, mature trees, and the Southeast Freeway would also screen the replacement BEQ Complex from view.

Main Post Renovation Projects. Under Alternative 4, the effects to historic properties from the interior renovations of Building 7 at the Main Post would be the same as those described under Alternative 1. There would be no adverse effect to the Capitol Hill Historic District.

Projects to Foster MBW Integration with the Community. Effects to historic properties from projects to foster MBW integration with the community under Alternative 4 would be the same as those described under Alternative 1. There would be no adverse effect to the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district or the Capitol Hill Historic District.

Other Longer-Term Projects Analyzed Programmatically. Potential effects to historic properties from the proposed reuse or redevelopment of Building 20 or the Building 20 site and interior renovations of Building 9 would be the same as described under Alternative 1. The Marine Corps would consult with the DC HPO on its efforts to identify historic properties and its finding of effect. If any historic properties would be adversely affected by the reuse, suitable forms of mitigation will be developed in consultation with the DC HPO and other external stakeholders.

Summary of Impacts

In summary, the replacement BEQ Complex Site D would have an adverse effect to the WNY East Extension for the demolition of a contributing resource under Alternative 4. However, Alternative 4 would have no adverse effects to other historic properties in the APE because the visual compatibility of the replacement BEQ Complex with the site's surrounding architectural context would be considered in its design. Both the Main Post renovation projects and the projects to foster MBW integration with the community would have no adverse effect to the U.S. Marine Corps Barracks and Commandant's House or the Capitol Hill Historic District. The effect of Alternative 4 to each of the aboveground historic properties in the APE is summarized in Table 4.3-1. Because Alternative 4 would have an adverse effect to historic properties in the APE, the Marine Corps' overall finding of effect for Alternative 4 is "historic properties adversely affected."

In accordance with Section 106 of the NHPA and its own SOPs in the MBW ICRMP, the Marine Corps is consulting with the DC HPO, consulting parties, and the public concerning the effects to historic properties from each of the major actions proposed under Alternative 4. If Alternative 4 is selected as the preferred alternative, a Section 106 agreement document (Memorandum of Agreement or PA) will be developed between the Marine Corps, the DC HPO, the ACHP, and other consulting parties to resolve adverse effects from implementation of that alternative on historic properties. While there would be an adverse effect to historic properties under NHPA, there would be no significant impacts under NEPA because the agreement document will include stipulations to resolve adverse effects.

4.3.4.2 Archaeological Resources

Replacement BEQ Complex. No previous archaeological surveys have been completed at Site D; however, this area is located on original land surface, which indicates a high potential for both prehistoric and historic archaeological deposits. The portions of Site D with tennis and basketball courts and a parking lot have the potential for intact archaeological remains. Should Alternative 4 be chosen, the agreement document will include a stipulation to conduct archaeological monitoring of Site D during construction in compliance with Section 106. Should archaeological deposits be identified, the Marine Corps would follow the SOP for inadvertent discovery included in the agreement document for this undertaking.

Main Post Renovation Projects. Should it be determined that the ABA compliant access site is located in an area of moderate archaeological sensitivity, archaeological monitoring would be conducted as stipulated in the agreement document. Otherwise, the Main Post renovation projects would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Projects to Foster MBW Integration with the Community. Impacts to archaeological resources from projects to foster MBW integration with the community under Alternative 4 would be the same as those described under Alternative 1. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Other Longer-Term Projects Analyzed Programmatically. Impacts to archaeological resources from the proposed reuse or redevelopment of Building 20 or the Building 20 site would be the same as described under Alternative 1. Future projects proposed for the Building 20 site are not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the effects determination once plans for each of these projects have been determined.

Summary of Impacts

In summary, implementation of Alternative 4 has the potential to impact archaeological resources at the replacement BEQ Complex and the Main Post. Under the stipulations of the agreement document covering construction monitoring and inadvertent discover, there would be no significant impacts to NRHP-listed or eligible archaeological resources under Alternative 4.

4.3.5 Alternative 5

4.3.5.1 Architectural Resources

Replacement BEQ Complex. No aboveground historic properties within the APE would be demolished by the replacement BEQ Complex under Alternative 5, as no architectural resources at the MBW Annex are eligible for listing in the NRHP.

Implementing Alternative 5 would have an adverse effect to the L'Enfant Plan. Site E is within the boundary of the L'Enfant Plan. The replacement BEQ Complex would extend into the open space above 6th Street SE; however, it would not extend into the open space of K Street SE. A 2001 Memorandum of Agreement between the Marine Corps, the NPS, and the DC HPO for construction of the MBW Annex stipulated that design and construction of new facilities at this site will not obstruct or interfere with the view corridors for 6th and K Streets SE. Although the design of the replacement BEQ Complex would be influenced by that of Building 25 to ensure its exterior is compatible with the existing architectural context, it would partially obstruct the 6th Street view corridor and thus be considered an adverse effect to the L'Enfant Plan.

Site E is one block west of the Washington and Georgetown Railroad Car House and the Capitol Hill Historic District, and one block north of both the NRHP-listed WNY historic district and the WNY NHL (see Figure 2.4-11). Alternative 5, however, would not result in adverse visual impacts to any of these historic properties. Although the replacement BEQ Complex would be approximately 1-story taller than Building 25, its placement between Buildings 25 and 26, with the narrow end of the L-shaped footprint facing L Street, would effectively screen the majority of the facility from view. Further, the visual character within the setting of the historic properties would not be substantially altered, as the architectural design of the replacement BEQ Complex would be compatible with the existing architectural context. No adverse effect to the Washington and Georgetown Railroad Car House, Capitol Hill Historic District, NRHP-listed WNY historic district, or the WNY NHL is anticipated from implementing Alternative 5, as there would be no substantial changes to historically significant views or physical features within their current setting.

The Virginia Avenue Tunnel is approximately 350 feet north of Site E. Only its east and west portals at 11th Street SE and 2nd Street SE, respectively, are visible at street level. The property's integrity of setting does not contribute to its significance, so any changes to the visual character or physical features within its setting from the replacement BEQ Complex would not diminish its historic or architectural significance. Therefore, Alternative 5 would have no adverse effect to the Virginia Avenue Tunnel.

The south side of the U.S. Marine Corps Barracks and Commandant's House historic district is approximately 900 feet northeast of Site E. The Commandant's House, situated at the north end of the Main Post, is farther removed from Site E. The Main Post buildings enclose the district and are oriented to the interior of the post. In addition, views from the Main Post southwest to Site E would be obscured by the Southeast Freeway, which is situated between the post and Site E. Therefore, no adverse effect to the U.S. Marine Corps Barracks and Commandant's House is anticipated under Alternative 5, as there would be no substantial changes to the visual character or physical features within its current setting.

Construction of the replacement BEQ Complex under Alternative 5 would have no effect to the other aboveground historic properties in the APE. The WNY Main Gate, Quarters A, and Quarters B are 1,000 feet or more southeast of Site E. Surrounding buildings of the WNY and Capitol Hill Historic District (namely the Washington and Georgetown Railroad Car House) would screen views northwest from these properties towards the replacement BEQ Complex. From the WNY Commandant's Office, the replacement BEQ Complex would not be visible because it is more than 1,800 feet southeast of Site E and is surrounded by very large industrial buildings. The St. Paul AUMP Church is located approximately 550 feet northwest of Site E. However, surrounding development, particularly a 4-story multifamily residential building occupying the entire block of 5th Street between K Street and Virginia Avenue, would effectively screen Alternative 5's replacement BEQ Complex from view. Christ Church and Old Naval Hospital are 1,200 feet and 2,200 feet, respectively, from Site E. At these respective distances, combined with the surrounding dense development, the project would not be visible from either historic property.

Main Post Renovation Projects. Under Alternative 5, the effects to historic properties from the interior renovations of Building 7 at the Main Post would be the same as those described under Alternative 1. There would be no adverse effect to the Capitol Hill Historic District.

Projects to Foster MBW Integration with the Community. Effects to historic properties from projects to foster MBW integration with the community under Alternative 5 would be the same as those described under Alternative 1. There would be no adverse effect to the U.S. Marine Corps Barracks and Commandant's House NHL and NRHP historic district or the Capitol Hill Historic District.

Other Longer-Term Projects Analyzed Programmatically. Potential effects to historic properties from the proposed reuse or redevelopment of Building 20 or the Building 20 site and interior renovations of Building 9 would be the same as described under Alternative 1. The Marine Corps would consult with the DC HPO on its efforts to identify historic properties and its finding of effect. If any historic properties would be adversely affected by the reuse, suitable forms of mitigation will be developed in consultation with the DC HPO and other external stakeholders.

Summary of Impacts

In summary, the replacement BEQ Complex under Alternative 5 would have an adverse effect to the L'Enfant Plan because of direct impacts to the vista of 6th Street SE and require changes in prior commitments to preserve this viewshed in the existing Section 106 agreement document (MOU). It is anticipated the replacement BEQ Complex would have no adverse effect to the other historic properties in the APE because the visual compatibility of the BEQ Complex with the site's surrounding architectural context would be considered in its design. Both the Main Post renovation projects and the projects to foster MBW integration with the community would have no adverse effect to the U.S. Marine Corps Barracks and Commandant's House or the Capitol Hill Historic District. The effect of Alternative 5 to each of the aboveground historic properties in the APE is summarized in Table 4.3-1. The Marine Corps' overall finding of effect for Alternative 5 is "historic properties adversely affected."

In accordance with Section 106 of the NHPA and its own SOPs in the MBW ICRMP, the Marine Corps is consulting with the DC HPO, consulting parties, and the public concerning the effects to historic

properties from each of the major actions proposed under Alternative 5. If Alternative 5 is selected as the preferred alternative, a Section 106 agreement document (Memorandum of Agreement or PA) will be developed between the Marine Corps, the DC HPO, the ACHP, and other consulting parties to resolve adverse effects from implementation of that alternative on historic properties. While there would be an adverse effect to historic properties under NHPA, there would be no significant impacts under NEPA because the agreement document will include stipulations to resolve adverse effects.

4.3.5.2 Archaeological Resources

Replacement BEQ Complex. Site E was included in a Phase I archaeological survey of the MBW Annex in 2000. The survey identified the structural remains of the original Eastern Market (Site 51SE043), and a subsequent Phase II investigation determined the site to be eligible for inclusion in the NRHP. Unavoidable adverse effects to the NRHP-eligible site prior to construction of the MBW Annex were mitigated through a data recovery effort. Following the data recovery, the DC HPO concurred with the excavation's finding that the site has no additional research potential. Construction of the MBW Annex subsequently destroyed the majority of the site. Consequently, should Alternative 5 be selected for the replacement BEQ Complex, no additional archaeological survey of Site E would be necessary. The replacement BEQ Complex at Site E is not likely to affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no adverse effect finding.

Main Post Renovation Projects. Should it be determined that the ABA compliant access site is located in an area of moderate archaeological sensitivity, archaeological monitoring would be conducted as stipulated in the agreement document. Otherwise, the Main Post renovation projects would not affect any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Projects to Foster MBW Integration with the Community. Impacts to archaeological resources from projects to foster MBW integration with the community under Alternative 5 would be the same as those described under Alternative 1. The Marine Corps would consult with the DC HPO to gain concurrence with the no effect finding.

Other Longer-Term Projects Analyzed Programmatically. Impacts to archaeological resources from the proposed reuse or redevelopment of Building 20 or the Building 20 site would be the same as described under Alternative 1. Future projects proposed for the Building 20 site are not likely to impact any NRHP-eligible archaeological sites. The Marine Corps would consult with the DC HPO to gain concurrence with the effects determination once plans for each of these projects have been determined.

Summary of Impacts

In summary, implementation of Alternative 5 has the potential to impact archaeological resources at the Main Post. Under the stipulations in the agreement document covering construction monitoring and inadvertent discovery, there would be no significant impacts to NRHP-listed or eligible archaeological resources under Alternative 5.

4.3.6 No Action Alternative

Under the No Action Alternative, Building 20 would continue to be used and no land would be used to construct a replacement BEQ Complex. No renovations to buildings at the Main Post or improvements to exterior aesthetics at the MBW Main Post or MBW Annex would occur. Cultural resources at the MBW would continue to be managed in accordance with the MBW ICRMP. Therefore, there would be no significant impacts to cultural resources under the No Action Alternative.

4.4 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

This section addresses potential impacts to socioeconomics from implementing the proposed alternatives, as well as compliance with EO 12898 regarding environmental justice. With the exception of impacts from land acquisition for the replacement BEQ Complex, there would be little difference in socioeconomic impacts among the five action alternatives. Determination of significance varies because some socioeconomic impacts might be "beneficial" (or good) to one entity, could be "mixed" to another, and "adverse" (or bad) to yet another. Related socioeconomic topics often are like two sides of the same coin, one "beneficial" (such as increased job opportunities) and the other mixed or "adverse" (such as social stress from traffic associated with construction).

The CEQ regulations implementing NEPA provide ten broad guidelines about determining whether the intensity of an impact is "significant." None of the ten are specific to socioeconomic topics, but three of the guidelines refer to the "public" or the "human environment" rather than physical resources or places:

- "The degree to which the Proposed Action affects public health or safety." (CFR Title 40 Sec. 1508.27(b)(2))
- "The degree to which the effects on the quality of the human environment are likely to be highly controversial." (40 CFR 1508.27(b)(4))
- "The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks." (40 CFR 1508.27(b)(5))

While these are insufficient by themselves to generate criteria for significance of socioeconomic impacts, they help in the following formulations. Although there is no national legislation that establishes criteria for assessing socioeconomic impacts, there is DOD-specific legislation (Public Law 110-17, 10 USC 2391: *Military base reuse studies and community planning assistance*) and implementing DOD Directives (DOD 3030.01 and 5410.12) that address the issue of what is a significant impact on communities due to changes in DOD programs, such as a military base realignment or expansion. Collectively, these documents establish "thresholds" that allow the DOD's Office of Economic Adjustment to provide communities with technical and financial assistance for organizing and planning for DOD program impacts.

The Uniform Act provides for just compensation to individual landowners when the federal government acquires land under either negotiated purchase (as there is an agreed upon price) or eminent domain (as the payment for land is determined by a federal court). Furthermore, the Uniform Act prescribes full compensation for improvements to land and relocation costs for occupants of land. The 5th amendment

of the U.S. Constitution guarantees the provision of "just compensation" to landowners and occupants of land when the government takes land from private hands for public use. Economic impacts to the community would occur if land acquisition were to affect DC's economy and the government's ability to collect taxes and garner revenue from real property within DC. The significance of these impacts is determined through a consideration of the magnitude of the economic value relative to these same economic factors throughout DC.

At this time, the details are unknown about the potential reuse of Building 20 or the Building 20 site. Socioeconomic impacts could include new economic activity if commercial use is pursued in any part of the site; localized increased population and other demographic changes if private residential use is pursued; local expenditures associated with renovation, construction, and operation activities; and changes could occur to the tax base both from economic activity associated with the reuse, as well as the potential for real property taxes to apply if the site is transferred out of federal ownership (i.e., excessed). It is not reasonable, therefore, to identify the specific reuses of Building 20 or the Building 20 site, and the potential socioeconomic impacts of these projects are not analyzed further in detail.

Additionally, no socioeconomic or environmental justice impacts from operations would occur following the completion of the Proposed Action. This conclusion is justified because there would be no staffing changes to affect population, demographics, and economic inputs. The Marine Corps would operate in the same manner as done currently, and conditions would not be markedly different than what is found under the No Action Alternative.

4.4.1 Alternative 1

4.4.1.1 Population and Population Trends

Population levels and population trends would be unaffected if Alternative 1 were implemented. This is because MBW staffing levels would remain the same.

4.4.1.2 Employment and Income

The economic impact of spending from construction and renovation is presented in terms of direct impacts. Direct impacts are those that come from direct expenditures, or the first round of spending. These include expenditures related to the construction phase first, and then ongoing military expenditures during the operational phase. Though not quantified herein, it is recognized that there would also be indirect economic impacts. Indirect impacts are impacts that are stimulated by indirect expenditures, or subsequent rounds of spending (e.g., local eateries supplying construction workers with meals). These expenditures circulate through the economy, generating "spin-off" sales and potentially new businesses.

Estimations for expenditures are provided in Table 4.4-1. These expenditures were developed from project planning that continues to mature. There is greater fidelity in the estimations for the projects that would be implemented in the first years of project implementation than there is in later years. Although projects would be implemented over a span of several years, all cost estimates are provided in 2016 dollars and for the year in which expenditures would begin. As noted in Chapter 2, the timeframe for some projects are expected to take in excess of one year to implement; the economic impact would

be commensurate with the project implementation timeline. Direct and indirect impacts would be expected to be primarily local and regional, but some materials and contracting could be supplied through national contracts where the impact is not as evident locally. The construction workforce would be hired locally/regionally to the maximum extent practicable.

Table 4.4-1. Estimated Expenditures Associated with the Proposed MBW Construction Projects

Project Implementation Year	Project	Cost
Initiation	Land Acquisition for replacement BEQ Complex	Alternative A - $53.4M
		Alternative B – N/A
		Alternative C - N/A
		Alternatives D and E - None
Year 1	Replacement BEQ Complex Construction	$17.44M
	7th and K Street Improvements	N/A
	9th Street Façades and Landscaping	N/A
	Pedestrian Amenities	N/A
Year 2	Replacement BEQ Complex Construction	$17.44M
	Building 7 Renovations	N/A
Year 3	Replacement BEQ Complex Construction	$8.72M

Note: N/A = not available.

Both direct and indirect economic impacts associated with constructing the replacement BEQ Complex and other renovations would be temporary. The direct economic gains relate to the proposed expenditure of dollars on construction projects. The indirect economic gains include the construction contractor's expenditures in the local economy on items such as supplies, food, and various services. Once construction and renovations are completed and funds associated with these activities are no longer circulating through the regional economy, the economic gains would no longer be realized. Based on the short-term beneficial impact to the local and regional economy, Alternative 1 would not result in significant changes to the unemployment and income of the study area, as outlined in Table 3.4-4.

Under Alternative 1, a total of 24 privately owned residential and commercial properties would be acquired by the Marine Corps. Table 2.4-1 shows the current use of the properties affected. As described above, the property owners would be relocated and compensated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970; therefore, economic impacts to these property owners would neither be positive nor negative, and therefore, considered not to be significant. It is expected that the Virginia Avenue Garden will continue to provide social and economic (sustenance) benefits to the community, although the species mix may need to be adjusted based on any changes in sunlight/shading of the garden beds.

4.4.1.3 Housing

Real property values are dynamic and influenced by a combination of factors, including market conditions, neighborhood characteristics, and individual real property characteristics (e.g., the age of the property, its size, and amenities). The degree to which a particular factor may affect property values is

influenced by many other factors that fluctuate widely with time and market conditions. No definitive federal standards exist for quantifying impacts to property values, and given the dynamic nature of the real estate market and the varying degree to which any combination of factors may affect the value of a particular property, it is difficult to accurately quantify potential impacts to real property values.

To implement Alternative 1 and provide Marines with housing quarters that promotes their professional development, sustains Marine Corps core values, and supports QOL, private property would need to be acquired. Within Site A, the Marine Corps would purchase all privately owned properties in fee simple. The property owners would not have the opportunity to retain their property. Displaced persons would be relocated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (relocation assistance), as amended by the Uniform Relocation Act of 1987 (U.S. Department of Housing and Urban Development 2014). In summary, while there would be localized significant impacts to housing in the immediate vicinity of Site A, there would be no significant regional impacts to housing if Alternative 1 were implemented.

4.4.1.4 DC Tax Base

Impacts to the DC tax base were calculated based on Real Property Tax Rates listed on the DC OTR website (DC OTR 2014). Table 4.4-2 shows the tax rates for residential and commercial property. The DC tax base for 2012 was approximately $498.5 million. These tax rates were applied to the 2013 real property values listed in Tables 3.4-2 and 3.4-3 to obtain the estimated baseline taxes for these properties. Under Alternative 1, the conversion of private property to federal property would result in a long-term decrease in the DC tax base because the District does not levy taxes on federally owned properties. There would be a net loss of 24 privately owned residential and commercial properties that would result in a decrease of approximately $320,663 from the DC tax base (see Table 3.4-6). This decrease in taxes collected, however, represents less than 1 percent of the overall DC tax base and would not be considered a significant impact.

Table 4.4-2. Tax Rates for Residential and Commercial Properties

Property Type	Tax Rate Per $100
Residential	$0.85
Commercial and Industrial for the First $3 Million of Assessed Value	$1.65
Commercial and Industrial for Assessed Value more than $3 million	$1.85
Vacant	$5.00

4.4.1.5 Environmental Justice

This analysis also addresses potential disproportionately high and adverse impacts to minority and/or low income populations consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. According to USCB data, there is one census tract (71) that includes a predominance of minority and low-income populations in relation to the community of comparison, DC. None of the Alternative 1 proposed construction and renovation projects occurs in Census Tract 71. Therefore, no disproportionately high or adverse human health or environmental

effects would be incurred on minority and low-income populations when compared to the community of comparison.

4.4.2 Alternative 2

4.4.2.1 Population and Population Trends

Impacts under Alternative 2 would be the same as those described under Alternative 1; there would be no changes to population numbers or population trends.

4.4.2.2 Employment and Income

Impacts to employment and income from actions proposed under Alternative 2 would be the same as those described under Alternative 1. Based on the short-term beneficial impact to the local and regional economy, Alternative 2 would not result in significant changes to the unemployment and income of the study area, as outlined in Table 3.4-4.

4.4.2.3 Housing

Five privately owned commercial and residential properties would be acquired under this alternative to accommodate the replacement BEQ Complex at Site B. Table 2.4-2 shows the current use of the properties affected. As described above, the Marine Corps would purchase all privately owned properties in fee simple. Displaced persons would be relocated in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970 (relocation assistance), as amended by the Uniform Relocation Act of 1987 (U.S. Department of Housing and Urban Development 2014). In summary, while there would be localized significant impacts to housing in the immediate vicinity of Site B, there would be no significant regional impacts to housing if Alternative 2 were implemented.

4.4.2.4 DC Tax Base

The conversion of private property to federal property would result in a loss to the DC tax base. The DC tax base for 2012 was approximately $498.5 million. The loss of five privately owned residential and commercial properties would result in a loss of approximately $136,300 from the DC tax base (see Table 3.4-7). The loss to the DC tax base would be less than 1 percent of the overall DC tax base and would not be considered a significant impact to the local tax base.

In addition to the loss of the existing tax base, construction of the BEQ at this location would provide less economic opportunity than if other commercial uses were to occupy this area. However, the redevelopment as a BEQ would transform some currently vacant properties and could spur adjacent development along Lower 8th Street SE.

4.4.2.5 Environmental Justice

None of the Alternative 2 proposed construction and renovation projects occurs in Census Tract 71. Therefore, no disproportionately high or adverse human health or environmental effects would be incurred on minority and low-income populations when compared to the community of comparison.

4.4.3 Alternative 3

4.4.3.1 Population and Population Trends

Impacts under Alternative 3 would be the same as those described under Alternative 1; there would be no changes to population numbers or population trends.

4.4.3.2 Employment and Income

Impacts to employment and income from actions proposed under Alternative 3 would be the same as those described under Alternative 1. Based on the short-term beneficial impact to the local and regional economy, Alternative 3 would not result in significant changes to the unemployment and income of the study area, as outlined in Table 3.4-4.

4.4.3.3 Housing

A portion of Alternative 3 is slated for a 218-unit residential development (condominiums) for the SEFC "The Yards" Master Redevelopment Plan. If this alternative were implemented, these units would not be built. Impacts would not be considered significant because there is other housing in the region available.

4.4.3.4 DC Tax Base

Under Alternative 3, no privately owned commercial or residential properties would need to be acquired. Site C is on federally owned property; however, a portion of it is located in a mixed-use (residential and commercial) development area known as the SEFC "The Yards" Master Redevelopment Plan, a revitalization and redevelopment project to increase business in the SEFC area of DC. DC issued a 30-year, $48M bond to pay for infrastructure improvements at SEFC. Forest City pays real estate taxes on the parcels they own to DC and that money goes directly back to reimbursing the bond. Not constructing the proposed condominiums in the Forest City SEFC "The Yards" Master Redevelopment Plan would result in a loss of the anticipated beneficial economic impact expected from the generation of increased tax base and increased spending by the new residents at local area businesses. Under this alternative, enlisted personnel residing in this replacement BEQ Complex would spend money at "The Yards" area businesses; however, there would be no increase in the tax base.

4.4.3.5 Environmental Justice

No proposed construction and renovation projects under Alternative 3 would occur in Census Tract 71. Therefore, no disproportionately high or adverse human health or environmental effects would be incurred on minority and low-income populations when compared to the community of comparison.

4.4.4 Alternative 4

4.4.4.1 Population and Population Trends

Impacts under Alternative 4 would be the same as those described under Alternative 1; there would be no changes to population numbers or population trends.

4.4.4.2 Employment and Income

Impacts to employment and income from actions proposed under Alternative 4 would be the same as those described under Alternative 1. Based on the short-term beneficial impact to the local and regional economy, Alternative 4 would not result in significant changes to the unemployment and income of the study area, as outlined in Table 3.4-4.

4.4.4.3 Housing

Under Alternative 4, the Proposed Action would be implemented on federally owned property at the WNY; therefore, there would be no impacts to housing.

4.4.4.4 DC Tax Base

The proposed site under Alternative 4 is federally owned property and no taxes are collected by DC; therefore, there would be no change to the DC tax base with implementation of Alternative 4.

4.4.4.5 Environmental Justice

No proposed construction and renovation projects under Alternative 4 would occur in Census Tract 71. Therefore, no disproportionately high or adverse human health or environmental effects would be incurred on minority and low-income populations when compared to the community of comparison.

4.4.5 Alternative 5

4.4.5.1 Population andPopulation Trends

Impacts under Alternative 5 would be the same as those described under Alternative 1; there would be no changes to population numbers or population trends.

4.4.5.2 Employment and Income

Impacts to employment and income from actions proposed under Alternative 5 would be the same as those described under Alternative 1. Based on the short-term beneficial impact to the local and regional economy, Alternative 5 would not result in significant changes to the unemployment and income of the study area, as outlined in Table 3.4-4.

4.4.5.3 Housing

The proposed site under Alternative 5 is federally owned property and no taxes are collected by DC; therefore, there would be no change to the DC tax base with implementation of Alternative 4.

4.4.5.4 DC Tax Base

The proposed site under Alternative 5 is federally owned property and no taxes are collected by DC. If this alternative were implemented, there would be no change to the DC tax base.

4.4.5.5 Environmental Justice

No proposed construction and renovation projects under Alternative 5 would occur in Census Tract 71. Therefore, no disproportionately high or adverse human health or environmental effects would be incurred on minority and low-income populations when compared to the community of comparison.

4.4.6 No Action Alternative

Under the No Action Alternative, the BEQ Complex and other construction and renovation projects would not be constructed. Substandard conditions of the existing BEQ Complex would remain and continue to worsen over time. The No Action Alternative would not result in impacts to population and population trends, housing, DC tax base, and environmental justice.

4.5 PUBLIC HEALTH AND SAFETY

The nature and magnitude of potential impacts associated with hazardous materials, hazardous waste, and toxic substances depends on the toxicity, storage, use, transportation, and disposal of these substances. Impacts associated with contaminated sites could include disruption of existing cleanup activities (such as site characterization, containment, or remediation efforts) resulting in the potential for increased contamination exposure, transport, or danger to workers or the environment.

With respect to public health and safety, evaluation criteria relate to potential for renovation or construction activities to present a hazard to MBW military or civilian personnel or the general public. In accordance with EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, the analysis also assesses the potential for environmental health and safety risks associated with the Proposed Action to disproportionately affect children. Significance criteria that were applied when determining the magnitude of potential effects considered whether storage, use, handling, or disposal of these substances or disruption of contaminated areas:

- substantially increases the risk to human health due to exposure;
- substantially increases the risk of environmental contamination; or
- violates applicable federal, state, and local regulations.

Future projects that would be implemented under the Proposed Action would have similar impacts to public health and safety as noted herein, particularly with respect to Building 20 or Building 20 site reuse. However, no detailed analysis of potential impacts can be analyzed at this time because it is unknown how Building 20 or the Building 20 site would be reused.

Additionally, once the replacement BEQ Complex is constructed and the renovations and improvements are completed, no new or increased public health and safety risks would be introduced by MBW operations. This conclusion is justified because there would be no changes in how hazardous materials, hazardous wastes, and toxic substances are stored, used, handled, or disposed. Potential impacts from MBW operational activities under the Proposed Action are, therefore, not evaluated further.

4.5.1 Alternative 1

The majority of the projects identified under this alternative involve renovation of existing structures and/or construction of new buildings. If not properly planned and executed, construction activities can present many dangers to construction workers, military and civilian personnel, and the public. It is imperative that safety procedures are taken into consideration from the design phase through the completion of construction. During construction activities, project-specific Health and Safety Plans would be prepared, approved, and implemented for each project. Such plans would be based on

industry standards for accident prevention. At a minimum, the construction Health and Safety Plan would be required to comply with federal and local health and safety regulations. Elements of the safety plan would be required to include responsibilities of construction workers and subcontractors; job site rules and regulations; emergency response procedures; safety inspections and audits; location of medical services and first aid; safety meetings, employee training, and hazard communications; personal protective equipment; identification of hazardous materials and storage/handling procedures; and accident investigation and reporting. The Health and Safety Plan also would be required to identify SOPs for renovation and construction projects.

As all renovation and construction activities would be managed per the site-specific Health and Safety Plans and because the public would be excluded from construction areas, construction activities would have no increased safety risk to public health and safety. Therefore, no significant impact on public health and safety related to construction activities is anticipated under Alternative 1.

Hazardous Materials and Hazardous Wastes

Procedures for hazardous materials management established for MBW would continue to be followed during all construction/renovation and demolition activities. All petroleum-based fuels, oils, and lubricants and solvents required to maintain the construction equipment used to perform the Proposed Action would be stored in accordance with the contractor's site-specific Spill Plan or other applicable management plans. Any spill of such materials would be immediately reported to the MBW Fire Department, Department of Public Works, and Environmental Compliance Office to ensure response actions are appropriate and in accordance with MBW Hazardous Waste Management Plan. Therefore, there would be less than significant impacts from hazardous materials under Alternative 1.

Established hazardous waste procedures would continue to be followed during renovation, construction, and demolition activities, and MBW would continue to operate within its small quantity generator hazardous waste designation. All hazardous waste generated by construction equipment would be managed by the construction contractors in accordance with the terms of the work authorization, MBW Hazardous Waste Management Plan, and RCRA regulations. No significant quantities of hazardous waste would be generated with the proposed renovation, demolition, or construction activities. Therefore, there would be less than significant impacts from hazardous waste expected with the implementation of Alternative 1.

Toxic Substances

It can be assumed that Main Post buildings constructed prior to 1978 contain ACM in floor tiles and related materials; Pb in surface coatings, including paint and plaster; and mercury in some plumbing materials, as these materials have been previously identified (NAVFAC 2013). These materials may also be present in any buildings located in Squares 929 and 930 that were constructed prior to 1978.

All ACM would be identified prior to renovation or demolition activities, and subsequently removed and disposed of by USEPA-certified personnel in accordance with applicable laws and regulations (e.g. 40 CFR Sections 61.140 through 157). Prior to demolition or renovation of any structure, the potential presence of LBP or PCB paint would also be evaluated by a qualified inspector. Where LBP or PCB paint is determined to be present, required abatement and waste management planning and control

measures would be implemented in accordance with federal and DC law. All fluorescent light tubes/bulbs and high-intensity discharge lamps requiring removal would be considered a non-RCRA hazardous waste (i.e., universal waste) and would be removed and sent to an approved recycling facility; however, any broken or crushed fluorescent and high-intensity discharge lamps would be managed as hazardous waste. In addition, any mercury-containing thermostats would be sent to an approved recycling facility or disposed of as hazardous waste. The removal of toxic substances as part of demolition activities would be conducted in accordance with all applicable regulations. Therefore, less than significant impacts from toxic substances are anticipated from the removal of ACM, LBP, mercury, or PCBs/PCB paint from proposed demolition and renovation activities under Alternative 1.

Contaminated Sites and USTs

There are no IRP sites or USTs within or near to the replacement BEQ Complex Site A. No direct or indirect effects are expected to occur to or from IRP sites or USTs from any activity associated with Alternative 1.

Protection of Children

Data from USCB identified one census block (71) that included a high percentage of children under the age of 18. This census tract would not be impacted by the implementation of Alternative 1. The Richard Wright Public Charter School would be in proximity to the replacement BEQ Complex Site A and subject to short-term impacts associated with construction activities, such as work-related noise disturbance during school hours, dust emission, and minor increases to local traffic. However, intermittent construction noise, although a nuisance, is likely to be attenuated to a less than significant amount within school walls and is not likely to disrupt classroom activities (see Section 4.8 Noise). Dust control would be monitored and implemented as part of construction BMPs, and increased worker and equipment traffic would be managed so that it does not interfere with student or staff arrival or departure patterns. Impacts would not constitute disproportionate environmental health and safety risks to children. Therefore, implementing Alternative 1 would not result in significant impacts to the health and safety of children.

4.5.2 Alternative 2

Impacts to public health and safety from actions proposed under Alternative 2 would be the same as those described under Alternative 1. The only exceptions are noted below.

Toxic Substances

As compared to Alternative 1, fewer structures would be demolished to accommodate replacement BEQ Complex Site B; therefore, it is likely that a lesser amount of ACM, LBP, mercury, and/or PCBs/PCB paint would be identified under Alternative 2, posing less than significant impacts.

Contaminated Sites and USTs

USTs were formerly located within the Site B footprint, including a leaking UST, as noted in Section 2.4.2. The DDOE has reached a determination of No Further Action and closed the site of concern associated with this former leaking UST. However, consultation with DDOE would be needed prior to the commencement of earth disturbing activities due to the potential presence of residual contamination

(DDOE 2009). If this alternative were implemented, all procedures and regulations governing the identification, excavation, and safe disposal of contaminated soils would occur. Therefore, no significant direct or indirect effects are expected to from implementation of Alternative 2.

Protection of Children

Unlike Alternative 1, there are no schools adjacent to the replacement BEQ Complex Site B; therefore, there would be no impacts to children under Alternative 2.

4.5.3 Alternative 3

Impacts to public health and safety from actions proposed under Alternative 3 would be the same as those described under Alternative 1, with the following exceptions.

Toxic Substances

When compared to Alternative 1, Alternative 3 would demolish fewer structures to establish the replacement BEQ Complex on Site C. It is likely, therefore, that lesser amounts of ACM, LBP, mercury, and/or PCBs/PCB paint would be identified under Alternative 3, posing less than significant impacts.

Contaminated Sites and USTs

Although there is currently limited data for SEFC parcel E, due to its proximity to known contaminated/RCRA clean up areas (SEFC parcels D, K, and the Department of Transportation site), all procedures and regulations governing the identification, excavation, and safe disposal of contaminated soils, groundwater, and potential UXO would occur. If Alternative 3 becomes the preferred alternative, a vapor intrusion evaluation may be conducted as part of facility design to determine if any mitigation measures would be necessary. There are no USTs within or near replacement BEQ Complex Site C. No direct or indirect impacts to IRP sites or USTS are expected to occur from implementation of Alternative 3.

Protection of Children

Unlike Alternative 1, there are no schools adjacent to the replacement BEQ Complex Site C; therefore, there would be no impacts to children under Alternative 3.

4.5.4 Alternative 4

Impacts to public health and safety from actions proposed under Alternative 4 would be the same as those described under Alternative 1, with the following exceptions.

Toxic Substances

Similar to Alternative 1, there is potential for ACM, LBP, mercury, and/or PCBs/PCB paint to be present in structures what would be demolished under Alternative 4. By comparison, Site D has a higher density of structures that would be demolished. However, removal of toxic substances as part of demolition activities would be conducted in accordance with all applicable regulations, and less than significant impacts from toxic substances would be anticipated under Alternative 4.

Contaminated Sites and USTs

As first noted in Section 2.4.4, Site D is directly adjacent to the boundary of IRP Site 9, which consists of contaminated soils beneath Buildings 219 and 220 that extend approximately 10 to 50 linear feet beyond the buildings' footprints. While construction and demolition activities would not affect structures at IRP Site 9 (Buildings 219 and 220), and although DON and USEPA have determined that no further remedial action is necessary at this site, USEPA may require that soil testing be conducted during ground disturbing activities near the Site 9 boundary. There are no USTs within or near to the project area. Through coordination with the USEPA and adhering to any prescribed procedures, there would be no significant direct or indirect impacts to IRP sites or USTS expected from implementation of Alternative 4.

Protection of Children

Van Ness Elementary School is located north of M Street SE, near Site D. This school is scheduled to be open for elementary school students by the time the replacement BEQ Complex is constructed. Intermittent construction noise, although a nuisance, is likely to be attenuated to a less than significant amount within school walls and is not likely to disrupt classroom activities (see Section 4.8 Noise). Dust control would be monitored and implemented as part of construction BMPs, and increased worker and equipment traffic would be managed so that it does not interfere with student or staff arrival or departure patterns. Impacts would not constitute disproportionate environmental health and safety risks to children. Therefore, implementing Alternative 4 would not result in significant impacts to the health and safety of children.

4.5.5 Alternative 5

Impacts to public health and safety from actions proposed under Alternative 5 would be the same as those described under Alternative 1, with the following exceptions.

Toxic Substances

When compared to Alternative 1, there would be no toxic substances impacts. All structures on the MBW Annex are relatively new (constructed between 2004 and 2006); therefore, it is unlikely that ACM, LBP, mercury, and/or PCBs/PCB paint would be present in areas proposed for demolition under Alternative 5.

Contaminated Sites and USTs

There are no IRP sites within or near to the project area; however, there is one UST within the Site E footprint. Per final project design criteria, the UST would be avoided, closed/removed, or relocated in accordance with applicable closure regulations. If the UST is closed/removed or relocated, an evaluation would be needed to ensure no soil, groundwater, or vapor contamination exits (such as a Phase II Environmental Site Assessment). No significant direct or indirect impacts to IRP sites or USTS would be expected to occur from implementation of Alternative 5.

Protection of Children

There are two schools adjacent to Site E and south of L Street: Richard Wright Public Charter School to the southeast and Van Ness Elementary School to the southwest. The latter is scheduled to be open for elementary school students by the time the replacement BEQ Complex is constructed. Joy Evans Before and After School Care is also located across from Building 25, south of L Street. However, similar to Alternative 1, short-term impacts associated with construction activities would not constitute disproportionate environmental health and safety risks to children. Therefore, implementing Alternative 5 would not result in significant impacts to the health and safety of children.

4.5.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and existing conditions would continue. All regulations and plans that pertain to hazardous materials, hazardous waste, toxic substances, and contaminated sites would continue to be followed. Therefore, no adverse impacts to hazardous materials, hazardous waste, toxic substances, or contaminated sites would be expected from implementation of the No Action Alternative. Long-term adverse impacts to public health and safety would remain due to existing deficiencies relating to AT/FP, minimum space requirements, QOL, and life safety.

4.6 UTILITIES AND INFRASTRUCTURE

This section analyzes the magnitude of anticipated changes in the demand for utilities services or increases in the burden placed on the infrastructure systems that supply these services to the end user. The analysis takes into account historic demand levels, existing management practices, and storage capacity, and evaluates potential impacts to utilities and infrastructure associated with implementing the Proposed Action. The emphasis of the analysis is on direct impacts. No notable indirect impacts to utilities or infrastructure are reasonably foreseeable. Evaluation criteria include:

- magnitude of impact to remaining system capacity (with significant impacts occurring if capacity is exceeded and mitigating infrastructure is not incorporated into the Proposed Action); and
- impacts to systems or facilities that could disrupt the service of others.

Future projects that would be implemented under the Proposed Action would have similar impacts to utilities and infrastructure as noted herein, particularly with respect to Building 20 or Building 20 site reuse. However, no detailed analysis of potential impacts can be analyzed at this time because it is unknown how Building 20 or the Building 20 site would be reused.

Additionally, once the replacement BEQ Complex is constructed and the renovations and improvements are completed, no new or increased utility or infrastructure demands would be introduced by MBW operations. This conclusion is justified because there would be no changes in how MBW currently operates or in the number of personnel. Potential impacts from MBW operational activities under the Proposed Action are, therefore, not evaluated further.

4.6.1 Alternative 1

All construction and renovation projects under Alternative 1 would comply with EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, which set goals for federal agencies in areas such as energy efficiency, renewable energy, sustainable buildings, water consumption, and waste reduction.

4.6.1.1 Electrical Distribution

Alternative 1 would use the electrical supply systems currently in place. No capacity problems for these systems have been noted. There is no electrical distribution infrastructure at the site that services areas beyond Site A. Infrastructure in the surrounding area is well developed and would be able to accommodate the construction and renovation efforts included as part of the Proposed Action. There are no anticipated impacts to electrical distribution.

4.6.1.2 Telecommunications

Alternative 1 would use the telecommunications supply systems currently in place. No capacity problems for these systems have been noted. There is no telecommunications infrastructure at the site that services areas beyond Site A. Infrastructure in the surrounding area is well developed and would be able to accommodate the construction and renovation efforts included as part of this Alternative. There are no anticipated impacts to telecommunications.

4.6.1.3 Potable Water

Construction and renovation projects would increase the peak fire protection demand for potable water due to the addition of fire suppression systems to each building. Fire sprinkler demand is typically between 300 and 1,000 gallons per minute. This may require the relocation of current connection(s) to the DC Water potable water system. Demand for potable water from the new fire protection systems would not affect the average daily, peak daily, or annual domestic potable water demand. The DC Water potable water system is well developed in this area, and would be able to provide the additional demand for fire protection with no upgrades to the existing system.

The replacement BEQ Complex and supporting facilities, combined with the renovation of Buildings 7 and 9, would reduce the current potable water demand due to the use of water saving fixtures. Fixtures used in modern construction can reduce traditional potable water demand by 10 to 50 percent. A 20 percent reduction in potable water use is a reasonable assumption for typical construction projects. The current expected average potable water consumption for MBW facilities is approximately 33,000 gallons per day; however, the use of water saving fixtures could result in a reduction in potable water consumption by approximately 6,600 gallons per day. Therefore, Alternative 1 would result in no significant impacts to potable water.

4.6.1.4 Stormwater/Wastewater Collection

Stormwater at Site A is currently collected by the stormwater collection system operated and maintained by DC Water. There is no stormwater/wastewater collection infrastructure at the site that

services areas beyond Site A. Since the site is previously disturbed and consists primarily of impervious services, no increase in the demand for stormwater collection is expected. The demand for wastewater collection can be assumed to be equal to potable water consumption. Therefore, Alternative 1 would result in a reduction in the demand for wastewater collection by approximately 6,600 gallons per day.

4.6.1.5 Wastewater Treatment

The demand for wastewater treatment can be assumed to be equal to the potable water use. Therefore, Alternative 1 would result in an overall reduction in the demand for wastewater treatment by about 6,600 gallons per day. Under Alternative 1, there would be no impacts to wastewater treatment at MBW.

4.6.1.6 Natural Gas

Alternative 1 would use the existing natural gas supply systems. No capacity problems for these systems have been noted. There is no natural gas distribution infrastructure at the site that services areas beyond Site A. Infrastructure in the surrounding area is well developed and would be able to accommodate the construction and renovation efforts associated with Alternative 1. There are no impacts to natural gas supply systems.

4.6.1.7 Solid Waste Disposal

Construction and renovation activities proposed under Alternative 1 could result in a short-term increase in solid waste generation; however, there is capacity in the current waste facilities to absorb the short-term increase. Under Alternative 1, there would be less than significant impacts to solid waste disposal at MBW.

4.6.2 Alternative 2

There are no utilities services or infrastructure systems at the site that service areas beyond Site B (e.g., electrical distribution, telecommunications, potable water, stormwater/wastewater collection and treatment, natural gas, or solid waste disposal). Impacts to utilities and infrastructure under Alternative 2 would be the same as those described under Alternative 1.

4.6.3 Alternative 3

There are no telecommunications, potable water, wastewater treatment, natural gas, and solid waste disposal services and infrastructure at the site that service areas beyond Site C; therefore, impacts under Alternative 3 would be the same as those described under Alternative 1. However, if Site C were chosen for the replacement BEQ Complex, the Pepco owned electrical substation (Substation 33) would have to be relocated. The electrical supply lines would have to be rerouted to supply power to new and existing facilities. Pepco already has plans to move the substation, however, to address increased demand in the South Capitol Street area. The new substation would have to be constructed prior to demolition of the existing structure to ensure no impacts to electrical supply at WNY and surrounding areas. Close coordination would be required between Pepco, Forest City, and the Navy when choosing the location and supply line routing for the new substation.

The pump house (Building 199) located outside of the WNY fence line, on Isaac Hull Avenue, would either be relocated or incorporated into the design of the replacement BEQ Complex. If relocated, the new pump house would have to be constructed prior to demolition of the existing structure to ensure no impacts to wastewater collection at WNY. Close coordination with the DC Water, the Marine Corps, and the Navy would be required to ensure that Navy access to the facility and the associated utility lines would be maintained.

4.6.4 Alternative 4

There are no utilities services or infrastructure systems at the site that service areas beyond Site D (e.g., electrical distribution, telecommunications, potable water, stormwater/wastewater collection and treatment, natural gas, or solid waste disposal). Impacts to utilities and infrastructure under Alternative 4 would be the same as those described under Alternative 1.

4.6.5 Alternative 5

There are no utilities services or infrastructure systems at the site that service areas beyond Site E (e.g., electrical distribution, telecommunications, potable water, stormwater/wastewater collection and treatment, natural gas, or solid waste disposal). Impacts to utilities and infrastructure under Alternative 5 would be the same as those described under Alternative 1.

4.6.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and the demand for utilities and burden on current infrastructure would remain the same. Ongoing and as-needed maintenance to utility systems and infrastructure would continue. Inefficiencies and high maintenance costs resulting from aging utilities and infrastructure would continue. Therefore, no significant impacts to utilities and infrastructure would be expected from implementation of the No Action Alternative.

4.7 PUBLIC SERVICES

Evaluation criteria considered in the impact analysis to public services include the potential for the quality or availability of these services to the surrounding community to decrease. Examples of these impacts could be decreased police or fire department response times, unavailability of social services, overcrowded schools, and/or lack of public parks and recreational spaces. Impacts to public services are often indirect impacts. There are few indirect impacts to public services anticipated with implementation of the Proposed Action because there is no change in MBW staffing or mission.

Of the projects that would be implemented after the 5-year planning horizon, the only one that would be expected to potentially affect public services is Building 20 or Building 20 site reuse. If reuse includes residences, there would be an increase in the public service population and demand within the study area, and it is possible that site reuse could include park or recreational space. Because no definitive reuse scenarios are reasonably foreseeable, however, the potential impacts for the projects to be implemented after the 5-year planning horizon are not evaluated further herein.

Additionally, once the replacement BEQ Complex is constructed, and the renovations and improvements are completed, no new or different public service demands would be introduced by MBW operations.

This conclusion is justified because there would be no changes in how MBW currently operates or in the number of personnel it supports. Potential impacts from MBW operational activities under the Proposed Action are, therefore, not evaluated further.

4.7.1 Alternative 1

While no construction or direct effects to Virginia Avenue Park would occur under Alternative 1, viewsheds could potentially be altered, and a change in the park's character could occur. The closure of a portion of L Street SE to vehicular traffic would eliminate public access to the park from this road segment. However, existing vehicular and pedestrian access to the park via 9th Street SE, Potomac Avenue SE, and Virginia Avenue SE would not change. Therefore, the change in access would not be significant.

Emergency response and medical services would not be impacted by implementing Alternative 1. The District 1 Substation would continue to serve as the closest police station, and Engine Company 18 Station would continue to serve as the closest DCFEMS facility to the study area. The other parks/recreational spaces, educational, social service, and religious facilities would not be affected under Alternative 1.

4.7.2 Alternative 2

As with Alternative 1, there would be no construction or direct effects to Virginia Avenue Park under Alternative 2. However, viewsheds within the northwest corner of the park would be altered as a result of construction on Site B. Vehicular access on the segment of Potomac Avenue SE between 10th Street SE and 11th Street would be discontinued, including curbside parking on the south side of Potomac Avenue SE. Pedestrian access would not be impacted. As with Alternative 1, other parks/recreational spaces, emergency response and medical services, educational, social service, and religious facilities in the area would not be impacted by Alternative 2.

Although it does not fit the strict definition of a public service, it is notable that the Humane Society National Capital Area Spay and Neuter Clinic is located in the northwest portion of Site B and would be displaced if Alternative 2 were implemented. The National Capital Area Spay and Neuter Center is a non-profit, high-volume, high-quality veterinary clinic performing low cost spays/neuters and vaccines for cats, dogs, and rabbits. It is the only congressionally chartered animal welfare agency in the U.S. (Washington Humane Society 2014). Refer to Section 4.1, Land Use, for a description of real property compensation and relocation measures.

4.7.3 Alternative 3

The emergency response and medical services, parks and recreational resources, educational, social service, and religious facilities in the area would not be impacted under Alternative 3.

4.7.4 Alternative 4

If Alternative 4 were selected and implemented, impacts to public services would be the same as described under Alternative 3.

4.7.5 Alternative 5

Under Alternative 5, while the MBW Annex multi-purpose recreation field would be retained per the requirements of a 2005 MOU with DC DPR and the Marine Corps, there is the potential for short-term, direct impacts to the recreation field. Public access and use of the recreation field could be temporarily restricted or closed during construction of the replacement BEQ Complex. Impacts would not be significant because they would be temporary, and the recreation field would return to community use in coordination with DC DPR following construction. Emergency response and medical services, educational, social service, and religious facilities in the area would not be impacted under Alternative 5.

4.7.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. Therefore, no change to existing public services, as described in Section 3.7, would occur.

4.8 NOISE

Noise impacts result from perceptible changes in the overall noise environment that increase annoyance or affect human health. Annoyance is a subjective impression of noise wherein people apply both physical and emotional variables. To increase annoyance, the cumulative noise energy must measurably increase. Human hearing can perceive a change in noise levels of 3 dB and higher, and a 10-dB change is perceived as a doubling in noise. The following are the criteria used to determine whether noise impacts would be significant under any of the action alternatives:

- Subjecting a person to *continuous* noise levels exceeding the OSHA standards as presented in Table 3.8-1.
- Subjecting a person to *instantaneous* noise exceeding 140-peak sound pressure level (29 CFR Section 1926.52(e)).

Additional consideration is given to noise impacts to schools because studies suggest that loud and frequent background noise can affect the learning patterns of young children. For the most common size of classroom, a maximum 1-hour-average, A-weighted background noise level of 35 to 40 dB DNL is recommended in American National Standards Institute Standard 12.60-2002. With the noise reduction level associated with a windows-closed, indoor school environment, an average 35 to 40 dB DNL in the classroom is equivalent to 60 to 65 dB DNL outdoors (DOD Noise Working Group 2009).

Compliance with DDOT's Noise Policy, which provides the procedural guidelines for assessing noise impacts associated with the construction and operation of Federal highway improvements, was requested (DDOT 2011). The analysis herein is consistent with this policy; however, it applies to Federal highway projects, which the Proposed Action is not. The emphasis of the analysis is on direct impacts; no indirect noise impacts are reasonably foreseeable.

Issues and concerns in scoping comments focused on the potential noise impacts from the proposed Building 7, 8, and 9 projects on the Main Post. Since the scoping period, the Building 8 project was excluded from consideration. Additionally, scoping comments suggested that construction be conducted between 8 AM and 5 PM on workdays, advance notification to neighbors when the noisiest phases of

construction would occur, notification if construction is planned for weekends or holidays, and that equipment/material staging areas not be located at on-street parking areas along 9th Street, adjacent to the Main Post.

The methodology used for the Proposed Action noise impact analysis was based on the evaluation criteria identified above, on scoping comments received, and focused on areas that involved major demolition, construction, and renovation activities (i.e., the BEQ Complex site and Building 7 at the Main Post). The methodology also included evaluation of operational activities following construction that have the potential to affect adjacent sensitive noise receptors.

Other minor construction and improvement projects under the Proposed Action would be the MBW Annex gate at 7th and K Streets, exterior façade and frontage at Building 7 along 9th Street, and pedestrian amenities throughout the MBW properties. These types of projects are not evaluated further in the noise analysis. This is because they would be of short duration, not involve heavy equipment construction, and be limited in size so as not to generate perceptible noise levels to affect adjacent sensitive receptors. In terms of traffic noise, although there would be changes to traffic patterns on local streets, the associated long-term noise levels at sensitive receptors would not perceptibly change. This conclusion was based on the traffic flow volume analysis presented in Section 4.2., which indicated no significant changes in traffic volume under the Proposed Action. Therefore, no perceptible changes to the noise environment from traffic is anticipated under the Proposed Action and is not assessed further.

Another aspect of the noise analysis includes taking into account the shift of the resident Marines from Building 20 to the replacement BEQ Complex site. The BEQ Complex constitutes a new noise sensitive receptor within the affected environment. As such, the proposed BEQ Complex site is assessed as a sensitive receptor under each alternative.

Noise effects caused by future projects at Buildings 9 and 20 are analyzed programmatically in this EIS. It was assumed that potential impacts generated by these future projects would be similar to those evaluated herein for Building 7 renovations and proposed BEQ Complex construction. The only difference would be the adjacent properties and residences affected by noise generated by these future projects.

As part of the Proposed Action, it was assumed that all construction contractors would comply with OSHA noise safety standards. This would ensure that construction workers and employees would not be subjected to continuous noise exceeding 90 dBA for durations lasting more than 8 hours per day, as well as the other OSHA standards identified in Table 3.8-1. Therefore, potential noise-related effects to workers and employees involved with construction and renovation activities would not be significant, and this aspect of noise generated by renovations and construction is not evaluated further.

After implementation of the Proposed Action, the Marine Corps operations and activities that produce noise would not differ appreciably from those found under baseline conditions. Moreover, there would not be an appreciable change to the ambient noise environment within the affected environment (generally less than 65 dB DNL). Marine Corps operations and activities, which currently comply with existing DC Noise Control Act regulations, under the Proposed Action would not exceed DC Noise

Control Act maximum sound levels (Table 4.8-1). Therefore, long-term noise exposure impacts from Marine Corps operations are not evaluated further.

Table 4.8-1. DC Noise Control Act Maximum Noise Levels

Zone	Daytime	Nighttime
Commercial or light- manufacturing zone	65 dBA	60 dBA
Industrial zone	70 dBA	65 dBA
Residential, special purpose, or waterfront zone	60 dBA	55 dBA

Source: FHWA 2014

4.8.1 Alternative 1

Under Alternative 1, there would be short-term, moderate, and direct impacts to noise sensitive receptors during periods of renovation, demolition, and construction activities. Noise-generated impacts include those from operating demolition and construction equipment, as well as from construction or delivery vehicles traveling to and from the construction sites. Noise impacts, however, would vary widely, depending on the phase of demolition and/or construction, the specific task underway, and the distance from the receptor.

Construction noise is generated by the use of heavy equipment on job sites and is short-term in duration (i.e., during specific times in the day and certain phases of renovation, demolition, and/or construction). Commonly, heavy equipment operation occurs sporadically throughout daytime hours. Table 4.8-2 provides a list of representative construction equipment and associated noise levels, adjusted for the percent of time the equipment would typically be operated at full power at a construction site, from a distance of 50 feet. The distance is assumed because non-workers would be prohibited from entering the construction site.

Table 4.8-2. In-Air Construction-Related Noise Emissions

Equipment Description	Actual Measured Maximum Sound Level at 50 feet (dBA)
Flat Bed Truck	74
Welder/Torch	74
Man Lift	75
Dump Truck	76
Paver	77
Backhoe	78
Compressor (air)	78
Slurry Plant	78
Concrete Mixer Truck	79
Drill Rig Truck	79
Front End Loader	79
Rivet Buster/Chipping Gun	79
Ventilation Fan	79
Drum Mixer	80
Roller	80
Slurry Trenching Machine	80
Vibratory Concrete Mixer	80
Concrete Pump Truck	81

Table 4.8-2. In-Air Construction-Related Noise Emissions

Equipment Description	Actual Measured Maximum Sound Level at 50 feet (dBA)
Crane	81
Excavator	81
Generator	81
Pumps	81
Dozer	82
Horizontal Boring Hydraulic Jack	82
Vacuum Street Sweeper	82
Boring Jack Power Unit	83
Compactor (ground)	83
Gradall Hydraulic Excavator	83
Warning Horn	83
Auger Drill Rig	84
Chain Saw	84
Scraper	84
Pneumatic Tools	85
Vacuum Excavator	85
Vibrating Hopper	87
Jackhammer	89
Concrete Saw	90
Mounted Impact Hammer (hoe ram)	90
Sheers (on backhoe)	96
Impact Pile Driver	101
Vibratory Pile Driver	101

Source: FHWA 2006

Maximum levels of such construction-related noise emissions can range from 74 to 101 dBA when measured 50 feet from the respective piece of equipment. Construction noise varies greatly depending on the construction process, type and condition of equipment used, and layout of the construction site. Overall, construction noise levels are governed primarily by the noisiest pieces of equipment, which are typically impact devices (e.g., jackhammers, pile drivers). The dB level of a sound decreases (or attenuates) exponentially as the distance from the source increases. For a single point source, like a construction bulldozer, the sound level decreases by approximately 6 dBs for each doubling of distance from the source where no other features such as vegetation, topography, or walls absorb or deflect the sound. Depending upon their nature, the ability of such features to reduce noise levels may range from minimal to substantial.

Table 4.8-3 presents noise attenuation estimates based on the standard attenuation rate for hard site conditions (e.g., water, concrete, or hard-packed soil) of 6 dB per doubling of distance for point source noise (i.e., noise that remains in one place). As shown, construction noise levels associated with point source equipment likely to be used during construction, such as pile drivers measured at 101 dBA at 50 feet, would attenuate to 90 dBA within approximately 200 feet (0.04 miles), to 80 dBA within approximately 600 feet (1.14 miles), and to 65 dBA within 3,200 feet (0.61 miles). Note that noise from multiple sources at the same location results in louder levels than a single source alone; however,

generally the effect is 3 dBA or less, which is barely perceptible to the human ear (Washington State Department of Transportation 2011).

Table 4.8-3. Estimated Noise Attenuation with Distance from Pile Driver at Construction Site

Distance (feet [miles])	Equipment Noise Level on Hard Site (dBA)
50 (0.01)	101
100 (0.02)	95
200 (0.04)	89
400 (0.08)	83
800 (0.15)	77
1,600 (0.30)	71
3,200 (0.61)	65
6,400 (1.21)	59
12,800 (2.42)	53
25,600 (4.84)	47

Source: Washington State Department of Transportation 2011

Under the Proposed Action, all construction contractors would be required to comply with DC Noise Control Act regulations, whereby construction or demolition activities (excluding pile drivers) do not exceed 80 dBA between 7 AM and 7 PM on weekdays (Chapter 28 § 2802.1). At the Main Post, noise from the proposed Building 7 interior renovations would potentially be a nuisance to adjacent residents along 9th Street. The renovations are expected to occur over about six months and are currently scheduled to begin in FY 2018. Much of the noise generated by equipment used in the interior renovations of Building 7 would be intermittent and short-term, as well as being attenuated by the exterior brick walls of Building 7 and the distance of the receptors from the building. In general, receptors outside of Building 7 would perceive noise levels consistent with the ambient levels found in this urban area (68 to 73 dB DNL). Interior renovation and construction noise would be of short duration, take place during working hours generally between 7 AM and 5 PM, would not occur during weekends and holidays, would not exceed the OSHA thresholds presented in Table 3.8-1, and at no point would create noise of 140 peak sound pressure level. When indoors, noise sensitive receptors adjacent to Building 7 construction and renovations would not be adversely affected by noise generated from the Proposed Action. Building walls can attenuate noise levels by 35 to 50 dB and windows from 25 to 35 dB (FHWA 2014). Additionally, the Marine Corps is committed to being a good neighbor and would employ these management actions as part of the Proposed Action to avoid adverse noise effects:

- Provide advance notification to neighbors if construction activities had to be done outside the hours of 7 AM and 5 PM during weekdays, or anytime over the weekend or on holidays.
- Store and stage construction materials inside the MBW Main Post property line whenever possible.
- Place dumpsters on MBW property so parking availability on 9th Street is not impacted and garbage-removal noise is minimized.

At the replacement BEQ Complex site (Site A under Alternative 1), noise impacts would vary based on the construction phase and by the specific task being undertaken (USEPA 1971). For instance, demolition and construction activities typically involve bulldozers and jack hammers during demolition;

bulldozers, scrapers, backhoes, and trucks are used during excavation, land clearing, and grading; backhoes are involved in utility installation; and pile drivers, concrete mixers, pumps, saws, hammers, cranes, and forklifts are employed during building construction. Pile driving may also be needed to stabilize the soil beneath the construction site. The construction period for the BEQ Complex is estimated at 18 to 24 months and currently scheduled to begin in FY 2017.

The majority of construction activities would occur in the central portion of the BEQ Complex Site A, as the perimeter of the site would largely be an undeveloped 66-foot vehicular AT/FP standoff distance (see Figure 2.4-1). The nearest noise sensitive receptor is the Richard Wright Public Charter School, which is located approximately 130 feet to the west of the Site A buildable area. Given this distance, a pile driver (the noisiest piece of equipment) could generate noise levels between 89 and 95 dBA (see Table 4.8-3). At times, this intermittent, short-term noise generated by this type of equipment could temporarily interrupt children and teachers speaking while outdoors and could be a source of annoyance. However, no adverse health effects would occur. When indoors, building walls can attenuate noise levels by 35 to 50 dB and windows from 25 to 35 dB (FHWA 2014), thus reducing noise to less than significant levels that would not disrupt teaching or learning. Additionally, the Marine Corps would apply these mitigation measures to avoid adverse noise impacts to adjacent noise sensitive receptors.

- The MBW Public Affairs Office (PAO) would notify the school in advance of commencing the noisiest phases of the planned construction projects and endeavor to schedule the construction during the least disruptive times.
- Specific to Alternative 1, assuming that the Richard Wright Public Charter School occupies the current location when construction occurs at Site A, the Marine Corps would ensure that the noisiest phases of construction, such as pile driving activities, are coordinated with the school to occur during times when they would be least disruptive (ideally, during the summer break or vacation periods). Please note that this charter school temporarily uses this structure and that it is possible that the intended future use of the facility for retail mixed-use could occur concurrent or prior to the implementation of the Proposed Action (see Section 5.2.6). This would mean that the structure would no longer be considered a noise sensitive receptor.
- The Marine Corps would require construction contractors to properly maintain their motorized equipment to limit wear-induced noise (e.g., mufflers are in good working condition); use demolition equipment with crush/shear technology (instead of impact technology) where feasible; place stationary noise-generating equipment (e.g., diesel generators) as far from residences as reasonably practical and feasible; and when able combine operations or activities with high noise levels to occur in the same time period.
- Wherever sensitive receptors are located within 200 feet of the construction site, the Marine Corps will require the construction contractor to use perimeter noise barriers between construction equipment and sensitive receptors. Such barriers may be made of wood, plastic, Plexiglas, precast concrete or steel panels, or natural materials (such as dirt pile or earthen berms).

- The MBW PAO would remain in regular communication with the school throughout the construction period. Standard DOD protocols to log and respond to noise complaints would be followed to minimize noise effects to adjacent properties.

People visiting Virginia Avenue Park would also be exposed to noise generated at the BEQ Complex construction site. The park is west of Site A and about 130 feet away from the central area of construction. While intermittent and short-term noise could interrupt conversations and pose an annoyance to visitors, the noise would not be at levels to adversely impact health or hearing of those using the park.

Marines residing in the new BEQ Complex would be considered sensitive receptors, however, and be exposed to noise generated by traffic on I-695. However, with concrete walls and windows closed, noise would be substantially decreased. When that is considered with baseline noise levels measured in the I-695 area (ranging from 68 to 73 DNL), noise levels inside the BEQ would be well below the 65 dB DNL threshold identified by FICUN (1980).

With adherence to existing OSHA and DC noise regulations, employing the management actions noted above, and following the mitigation measures identified, noise impacts associated with implementing Alternative 1 would not be considered significant to noise sensitive receptors.

4.8.2 Alternative 2

Under Alternative 2, noise impacts would be similar to those presented for Alternative 1 (see Section 4.8.1); however, sensitive noise receptors would differ and include residents located adjacent to Site B, on the west side of 10th Street. To minimize impacts, the mitigation measures noted for Alternative 1 would also apply for Alternative 2. Additionally, a portion of Virginia Avenue Park would be used for AT/FP setback under Alternative 2. This construction would likely result in a higher proportion of park users to be annoyed when compared to Alternative 1. While Site B is currently zoned industrial, constructing the BEQ Complex at this location would expose Marines to noise generated by traffic on the I-695 and I-395 interchange. As with Alternative 1, however, attenuation provided by walls and windows in the new BEQ would reduce noise levels to less than significant.

With adherence to existing OSHA and DC noise regulations, employing the management actions noted above, and following the mitigation measures identified, noise impacts associated with implementing Alternative 2 would not be considered significant to noise sensitive receptors.

4.8.3 Alternative 3

Under Alternative 3, noise impacts would be similar to those described for Alternative 1 (see Section 4.8.1); however, noise sensitive receptors would differ. Van Ness Elementary School, which is scheduled for reopening by the time the BEQ Complex construction would occur (see Section 5.2.4), is located within approximately 100 feet, and Joy Evans Before and After School Care is found within approximately 300 feet of the Site C boundary. To avoid adverse impacts to these receptors, the mitigation measures noted for Alternative 1 would be implemented for Alternative 3. Although Site C is currently largely vacant, it is planned for residential use (see Section 2.4.3), and constructing the BEQ Complex would introduce sensitive receptors exposed to noise generated by traffic on M Street SE. As

with Alternative 1, noise attenuation would occur by virtue of the building materials and would not adversely affect Marines residing in the BEQ at Site C.

With adherence to existing OSHA and DC noise regulations, employing the management actions noted above, and following the mitigation measures identified, noise impacts associated with implementing Alternative 3 would not be considered significant to noise sensitive receptors.

4.8.4 Alternative 4

As with Alternatives 2 and 3, the noise impacts of implementing Alternative 4 would be the same as those described for Alternative 1 (see Section 4.8.1), with the exception of the location of the proposed BEQ Complex at Site D. Under Alternative 4, Site D is largely surrounded by buildings with no noise sensitive receptors within 200 feet of the proposed site. However, as with the other alternatives, constructing the BEQ Complex at this location would expose Marines residing in the BEQ to traffic-generated noise on I-295. As with Alternative 1, attenuation provided by walls and windows of the new BEQ would reduce noise levels so that there would not be any adverse effects to Marines residing in the BEQ at Site D. No significant noise impacts would occur by implementing Alternative 4.

4.8.5 Alternative 5

As with the other four alternatives, the noise impacts of implementing Alternative 5 would be the same as those described for Alternative 1 (see Section 4.8.1); however, noise sensitive receptors would differ. Joy Evans Before and After School Care and the Arthur Cappers Senior Center are both within approximately 100 feet of the Site E boundary. Van Ness Elementary School, which is scheduled for reopening by the time the BEQ Complex construction would occur (see Section 5.2.4), is located within approximately 200 feet of the Site E boundary. To avoid adverse impacts to these receptors, the mitigation measures noted for Alternative 1 would be implemented for Alternative 5. Constructing the BEQ Complex at this location would introduce noise sensitive receptors residing in the BEQ and exposure to traffic-generated noise on the Southeast Freeway. As with Alternative 1, noise attenuation would occur by virtue of the building materials and would not adversely affect Marines residing in the BEQ at Site E.

With adherence to existing OSHA and DC noise regulations, employing the management actions noted above, and following the mitigation measures identified, noise impacts associated with implementing Alternative 5 would not be considered significant to noise sensitive receptors.

In terms of future projects, regardless of the action alternative implemented, these would still occur. Noise effects caused by future projects at Buildings 9 and 20 would be similar to Building 7 renovations and proposed BEQ Complex construction. The only difference would be the adjacent properties and residences affected by noise generated by these future projects. As presented above, with adherence to existing OSHA and DC noise regulations, employing the management actions noted above, and following the mitigation measures identified, noise impacts associated with future projects would not be considered significant to noise sensitive receptors.

4.8.6 No Action Alternative

Under the No Action Alternative, there would be no change to the existing noise environment, and Marines would continue to be exposed to ambient noise levels of 68 to 73 DNL in the vicinity of I-695 and to lower noise levels in areas farther from the freeway.

4.9 NATURAL RESOURCES

The analysis of natural resources, for the purposes of this EIS, focuses on geology and soils; water resources, including floodplains; and biological resources, including vegetation, wildlife, and special status species. The focus of the analysis is on direct impacts.

Elements of the Proposed Action that are common to all of the alternatives are the projects that would be implemented after the 5-year planning horizon. Of these, the only ones that would potentially affect natural resources (geology and soils in particular) would be Building 7 renovations and MBW gate improvements. The proposed Building 7 interior renovations may result in minor impacts to geology and soils through debris removal and construction traffic. This would entail stockpiling and removal of soil beneath the existing structure. In addition, the proposed improvements to the MBW gate at 7th and K Streets may result in minor, highly localized earth disturbing activity. These activities would not significantly change the geological existing conditions, and with the implementation of BMPs identified by the SWPPP during construction activities, there would be no discharge of sediment into the surrounding water bodies. Because details regarding Building 20 or Building 20 site reuse are still emerging, there is not sufficient detail to analyze potential impacts to geology and soils at this time.

Additionally, once the replacement BEQ Complex is constructed, and the renovations and improvements are completed, no new or different natural resources impacts would be introduced by MBW operations. This conclusion is justified because there would be no changes in how MBW currently operates or in the number of personnel it supports. Potential impacts from MBW operational activities under the Proposed Action are, therefore, not evaluated further.

4.9.1 Geology and Soils

Evaluation criteria considered in the impact analysis to geology and soils include:

- geological stability and soils suitability of the proposed site and
- the degree to which the action may result in discharges of sediment (particularly contaminated sediment) into water bodies, in violation of the CWA.

Impacts would be considered significant if implementing the Proposed Action would result in a decrease in geological stability or sediment discharge resulting in a CWA violation.

4.9.1.1 Alternative 1

Under Alternative 1, demolition and construction activity associated with construction at Site A would result in earth disturbance during the demolition and site preparation activities for this approximately 3.0-acre site. Given the highly urbanized nature of the proposed site, the geological conditions would be able to support the proposed development and no significant impacts would result.

Standard BMPs, as identified by the construction SWPPP, would be implemented during construction to prevent sediment discharges into the surrounding water bodies. While the slope gradient and other design elements at Site A are unknown at this time, the replacement BEQ Complex would be designed and constructed in accordance with LEED Silver standards and using LID principles in accordance with DOD guidance documents. With these measures in place, there would be no significant impacts resulting from sediment discharges. Post-construction, stormwater runoff that is not retained on site at the replacement BEQ Complex would be conveyed to combined municipal stormwater sewer system similar to conditions for existing MBW properties.

4.9.1.2 Alternative 2

Under Alternative 2 (Site B), impacts to geology and soils would be similar to those presented for Alternative 1; however, a smaller area would be impacted (1.8 acres). There would be no significant impacts to geology and soils if Alternative 2 were implemented.

4.9.1.3 Alternative 3

Under Alternative 3 (Site C), earth resource impacts would be similar to those presented for Alternative 1, but only a 2.1-acre site would be impacted. There would be no significant impacts to geology and soils if Alternative 3 were implemented.

4.9.1.4 Alternative 4

Under Alternative 4 (Site D), earth resource impacts would be similar to those presented for Alternative 1; however, only a 1.67-acre site would be impacted. There would be no significant impacts to geology and soils if Alternative 4 were implemented.

4.9.1.5 Alternative 5

Under Alternative 5 (Site E), earth resource impacts would be similar to those presented for Alternative 1; however, however, only a 0.89-acre site would be impacted. There would be no significant impacts to geology and soils if Alternative 5 were implemented.

4.9.1.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and proposed construction and renovation projects would not occur. There would be no impacts to geology and soils.

4.9.2 Water Resources

Evaluation criteria applied to the impact analysis of water resources include the following:

- violation of federal and/or state water quality standards;
- substantial depletion of groundwater supplies or interference with groundwater recharge;
- alteration of existing drainage patterns;
- creation or modification of flood hazard conditions in a manner that endangers people or structures; and
- whether the action threatens a violation of federal, state, or local law or requirements imposed for water resources (CWA, Water Pollution Control Act of 1984, and EO 13508).

Impacts would be considered significant if implementing the Proposed Action would result in any of these criteria noted above.

4.9.2.1 Alternative 1

Surface Water

No significant short-term or long-term impacts to surface water are anticipated under Alternative 1. Stormwater would continue to be discharged into the combined sewer system. Federal and DC guidelines for construction permitting would be followed to ensure protection of surface water quality, and BMPs, as identified by the SWPPP, would be implemented during construction activities to prevent any discharge of sediment into the surrounding water bodies, particularly from stormwater runoff. While the design elements at Site A are unknown at this time, the proposed replacement BEQ Complex would be designed and constructed in accordance with LEED Silver standards and using LID principles in accordance with DOD guidance documents. This would ensure compliance with the CWA, Water Pollution Control Act of 1984, and EO 13508. No significant short-term or long-term impacts to surface water are anticipated under Alternative 1.

Groundwater

Minor short-term impacts to groundwater may take place during construction activities under Alternative 1. The construction of below-grade parking at the replacement BEQ Complex is likely to reach or extend beyond current groundwater levels, which would necessitate dewatering during construction activities, and could potentially require waterproofing of underground structures. Shoring may be necessary to retain the soils while the structure is being built and during dewatering activities. The design of the complex would account for additional lateral loads associated with the water table.

Dewatering activities may result in temporary lowering of groundwater levels; however, levels should return to normal once construction activities are complete. Water from dewatering activities could be discharged into the Anacostia River, the stormwater system, or the sanitary sewer system after securing appropriate permits from USEPA and DDOE. In order to determine the proper disposal method and minimize potential impacts of dewatering activities, water quality and sediment content would be analyzed prior to disposal. In the event that the dewatering effluent is found to contain contaminated groundwater, the effluent would be treated by a pre-approved method (e.g., carbon filtration) prior to discharge into the sanitary sewer system. No significant short-term or long-term impacts to groundwater are anticipated under Alternative 1.

Floodplains

According to the 2010 FEMA floodplain maps, none of the proposed construction projects presented under Alternative 1 are located within the 100-year floodplain (FEMA 2014). Therefore, no impacts to floodplains are anticipated.

4.9.2.2 Alternative 2

Impacts to water resources from implementation of Alternative 2 would be the same as those described under Alternative 1; there would be no significant impacts.

4.9.2.3 Alternative 3

Impacts to surface water under Alternative 3 would be the same as those described under Alternative 1. In terms of groundwater, inundation would be expected to be greater at Site C as compared to Sites A and B, but proper implementation of the procedures outlined in Alternative 1 would result in less than significant impacts to groundwater.

Alternative 3 differs from the first two alternatives because the majority of Site C lies within the floodplains. As noted in Section 3.9, approximately 90 percent of Site C lies within the 100-year floodplain of the FEMA Flood Insurance Rate Map (FIRM). Land areas within the 100-year floodplain are subject to inundation by a 1-percent-annual-chance flood event. A portion of the northeast corner of Site C (9 percent of the total site) is located within the 500-year floodplain of the FEMA FIRM, which refers to areas that are subject to inundation by a 0.2-percent-annual-chance flood event. A small portion of Site C (less than 0.02 acres) in the extreme northeast corner is not located within a floodplain (FEMA 2014).

Construction of the replacement BEQ Complex on Site C may result in minor long-term impacts to the 100-year floodplain (approximately 1.9 acres) and the 500-year floodplain (approximately 0.19 acres). Alternative 3 would result in a minor reduction in flood storage capacity, which could divert floodwaters to other locations in the event of a major flood event. In keeping with EO 11988, the Marine Corps would mitigate potential impacts resulting from construction in the floodplain. Mitigation could include using sewage and stormwater systems to eliminate backflow into floodwaters; making adequate site preparations prior to construction; implementing proper building design, including the use of floodproof construction materials, floodgates, and adequate building anchoring systems; and floodproofing mechanical spaces.

4.9.2.4 Alternative 4

Impacts to water resources from actions proposed under Alternative 4 would be the same as those described under Alternative 1. Groundwater inundation would be expected to be greater at Site D as compared to Sites A and B; however, impacts would be less than significant because no below-grade parking construction is proposed under this alternative.

4.9.2.5 Alternative 5

Impacts to water resources from actions proposed under Alternative 5 would be the same as those described for Alternative 1. Groundwater inundation would be greater at Site E when compared to Sites A and B; however, impacts would be less than significant because no below-grade parking construction is proposed under this alternative.

4.9.2.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and construction and renovation projects would not occur. There would be no impacts to water resources.

4.9.3 Biological Resources

Evaluation criteria considered in the impact analysis of biological resources include the potential for the Proposed Action to:

- impact unique characteristics of the study area, such as proximity to important habitats or ecologically critical areas;
- adversely affect an ESA-listed species or its critical habitat; and
- threaten a violation of federal, state, or local law or requirements imposed for biological resources (MBTA and EO 13186).

Impacts would be considered significant if implementing the Proposed Action would result in any of these criteria. The following focuses on potential impacts resulting from constructing the replacement BEQ Complex. The proposed interior renovations to Main Post facilities would not affect biological resources and are therefore not discussed further.

4.9.3.1 Alternative 1

Vegetation

Under Alternative 1, construction activities would remove existing vegetation at Site A. The urban habitat loss that would occur during the period of construction would be replaced and augmented with more proposed green/open space than currently exists, as AT/FP setbacks would be green/open space. In accordance with EO 13112, *Invasive Species*, the Marine Corps would ensure that plantings do not include nuisance or invasive species.

Following construction activities, the landscaping would be designed in accordance with DOD guidance for LID, AT/FP, and use of native species to reinstate the limited vegetative habitat potentially used by urban wildlife, described in Section 3.9.3.3, prior to construction.

Once constructed, the replacement BEQ Complex would be higher than the existing structures, and would reduce the amount of afternoon light reaching the community garden in Virginia Avenue Park adjacent to Site A. The amount by which sunlight exposure would be reduced at the garden would depend on the actual height and configuration of the replacement BEQ Complex. This may result in less than ideal conditions for growing certain plant species that require long hours of direct sunlight that are currently grown within the community garden.

In summary, impacts to vegetation resulting from Alternative 1 would be less than significant because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no anticipated violations of applicable laws or requirements.

Wildlife

The wildlife within Site A has adapted to the highly urbanized environment, making impacts beyond temporary, localized loss of limited vegetative habitat during construction activities unlikely. Noise during construction activities is generally expected to average approximately 80 dBA through the day, with maximums of 101 dBA (at a distance of 50 feet from the construction equipment). This would result in short-term avoidance of the construction site by urban wildlife. However, due to the acclimation of

wildlife to the urban environment, the low quality of the vegetative habitat present within the study area, and temporary nature of noise effects, such impacts would be less than significant.

The absence of mature forests, fields, or wetlands within the study area would continue to deter migratory birds from using the area for habitat, foraging, or nesting during construction, thereby making adverse impacts to migratory birds or violations of the MBTA or EO 13186 unlikely.

In summary, impacts to wildlife resulting from Alternative 1 would be less than significant since there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no anticipated violations of applicable laws or requirements.

4.9.3.2 Alternative 2

Vegetation

When compared to Alternative 1, less vegetation would be removed by constructing the replacement BEQ Complex. There would be no impacts to the light reaching the community garden in Virginia Avenue Park adjacent to the site. Impacts to vegetation resulting from Alternative 2 would be less than significant since there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

Wildlife

Impacts to wildlife under Alternative 2 would be similar to those presented for Alternative 1; however, there would be less area directly impacted. Impacts to wildlife would be less than significant under Alternative 2 because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

4.9.3.3 Alternative 3

Vegetation

When compared to Alternative 1, less vegetation would be removed by constructing the replacement BEQ Complex under Alternative 3. Impacts to vegetation resulting from Alternative 3 would be less than significant because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

Wildlife

Impacts to wildlife under Alternative 3 would be similar to those presented for Alternative 1; however, there would be less area directly impacted. Impacts to wildlife would be less than significant under Alternative 3 because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

4.9.3.4 Alternative 4

Vegetation

When compared to Alternative 1, considerably less vegetation would be removed by constructing the replacement BEQ Complex under Alternative 4. Impacts to vegetation resulting from Alternative 4 would

be less than significant because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

Wildlife

Impacts to wildlife under Alternative 4 would be similar to those presented for Alternative 1; however, there would be less area directly impacted. Impacts to wildlife would be less than significant under Alternative 4 because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

4.9.3.5 Alternative 5

Vegetation

When compared to Alternative 1, less vegetation would be removed by constructing the replacement BEQ Complex under Alternative 5. Impacts to vegetation resulting from Alternative 5 would be less than significant because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

Wildlife

Impacts to wildlife under Alternative 5 would be similar to those presented for Alternative 1; however, there would be less area directly impacted. Impacts to wildlife would be less than significant under Alternative 5 because there are no ecologically critical habitat areas or ESA-listed species in the study area, and there would be no violations of applicable laws or requirements.

4.9.3.6 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and construction and renovation projects would not occur. There would be no impacts to biological resources.

4.10 AIR QUALITY

As discussed in Chapter 2, the majority of the projects included in the Proposed Action are scheduled to occur within a 5-year planning horizon. There are also several projects that are proposed to occur beyond the year 2018; these are evaluated in limited qualitative form. Because all construction and renovation projects (i.e., renovation of Building 7 and construction of a BEQ Complex) are the same, replacement BEQ Complex Site A (Alternative 1) was chosen to calculate emissions. Site A involves the greatest amount of demolition and therefore represents the most conservative estimation of emissions generated by the Proposed Action. All other alternatives would generate the same or fewer emissions. Emission calculations are provided in Appendix D.

Potential air quality impacts were evaluated based on calculated direct and indirect emissions associated with the Proposed Action. Air quality impacts within the NCIAQCR were reviewed for significance in light of federal air pollution standards and regulations. Because the Proposed Action is in an area in nonattainment and/or maintenance for some criteria pollutants, the general conformity requirements apply. The specific pollutants include VOCs and nitrogen oxides (NO_x), precursors of O_3; CO; annual $PM_{2.5}$; and SO_2, which is considered a $PM_{2.5}$ precursor (40 CFR 81.309). In accordance with

the air conformity requirements of 40 CFR 93.153(b)(1), the applicable *de minimis* thresholds for these pollutants apply and are presented in Table 4.10-1.

Table 4.10-1. Applicable General Conformity Rule Thresholds in Tons per Year

Category	VOC	NO_x	CO	SO_2	$PM_{2.5}$
Applicable *de minimis* Thresholds	[1]50	100	100	100	100

Note: [1]Nonattainment area is in an O_3 transport region
Source: 40 CFR 93.153

Pb emissions are excluded from analysis because there are no known significant Pb emission sources in the region or associated with the Proposed Action. For PM_{10} emissions that are in attainment, 250 tons per year per pollutant was used as a comparative analysis threshold. This value is used by the USEPA in their NSR Standards as an indicator for impact analysis for listed new major stationary sources in attainment areas. No similar regulatory threshold is available for mobile source emissions, which are the primary emission sources for the Proposed Action. Lacking any mobile source emissions thresholds, the 250 tons per year major stationary source threshold was used to equitably assess and compare mobile source emissions for those pollutants for which the General Conformity Rule does not apply. In summary, air quality impacts would be significant if there were increases of ambient air pollutant emissions above *de minimis* levels for VOCs, NO_X, SO_2, or $PM_{2.5}$ resulting from the Proposed Action in any given year, or if net mobile source emissions increase in excess of 250 tons per year for PM_{10}.

Air quality impacts were assessed by evaluating both construction and operation emissions. The construction-related emissions include those that would result from the demolition of existing buildings and pavement, new construction of the replacement BEQ Complex, and internal renovations of Building 7. Construction activities would be expected to occur over a 32-month period ranging from implementation years 1-3. The specific sequence timing of demolition, construction, and renovation activities is not known at this time. Therefore, total emissions over the three years were calculated and then the total split at 40 percent for years 1 and 2 assuming that 80 percent of the Proposed Action activities would occur over these two years. In year 3, 20 percent of construction emissions were applied to account for the six months of activity in that year. It is expected that all activities would be completed within the 3-year planning horizon.

As part of the Proposed Action, there are a number of standard BMPs that can be implemented to minimize fugitive dust and motorized equipment emissions associated with demolition, renovation, and construction activities. To the extent practicable, the construction contractor would be strongly encouraged to:

- Set time limits on idling construction equipment;
- Use lower-emission (i.e., Tier 3) or newer equipment;
- Water unpaved areas;
- Establish speed restrictions on vehicles entering and exiting the construction areas;
- Replant, mulch, or use other stabilization of area surfaces, particularly around areas that could become a source of fugitive dust;
- Construct wind breaks; and
- Cover haul trucks to minimize loss of material to wind and spills.

4.10.1 Alternative 1

Demolition/Construction Impacts

Replacement BEQ Complex Site A (Alternative 1) would involve temporary construction emissions from demolition and construction activities. These emissions are presented in Table 4.10-2. Additional projects whose emissions were not specifically quantified include improvements to the MBW Annex gate at 7th and K Streets, the addition of pedestrian amenities and minor improvements to the façade of Building 7, and additional lighting and landscaping. Emissions generated from these minor improvement activities, when combined with the larger construction and demolition activities, would be well below any significance thresholds as required under the General Conformity Rule and the 250 tons per year standard applied to PM_{10}.

Table 4.10-2. Estimated Demolition/Construction Emissions for Alternative 1 (tons/year)

Implementation Year	VOCs	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
Year 1	0.3	1.8	3.5	0.1	17.1	1.9
Year 2	0.3	1.8	3.5	0.1	17.1	1.9
Year 3	0.1	0.9	1.8	0.0	8.6	1.0
Applicable Thresholds	*[1]50*	*[1]100*	*[1]100*	*[1]100*	*250*	*[1]100*
Exceedance?	**No**	**No**	**No**	**No**	**No**	**No**

Note: [1]de minimis thresholds under the General Conformity Rule, 40 CFR 93.153

Demolition and renovation activities could also generate emissions of asbestos and other regulated hazardous substances due to the age of the facilities. No significant impacts from these emissions would occur because the facilities would be surveyed prior to any demolition or construction activities and the materials removed and disposed following all regulatory and permit requirements.

In terms of future longer-term projects, beyond the 5-year planning horizon, the possible reuse of Building 20 or the Building 20 site would likely require renovation or replacement. As with the other projects, any demolition would require knowledge of potential HAPs and application of regulatory requirements to ensure the safe removal and disposal of the hazardous substances. It is also possible that Building 20 would be demolished, and the same safeguards would be required as for all other demolition activities analyzed in this EIS. The reuse of the site as a facility that houses residents and/or workers would result in a localized increase in residents and/or commuter population because the reuse would be additive to existing operations at MBW. At this time, the reuse scenarios are not reasonably foreseeable; therefore, air quality impacts associated with this long-term project are not analyzed further.

Operation Impacts

The replacement BEQ Complex would introduce new stationary sources, including but not limited to boilers and emergency generators. New stationary sources would require NSR construction permits from the DDOE. At this time, there is not enough information available to quantify emissions from these new stationary sources to assess estimated emissions. While the Proposed Action would result in the addition of new stationary sources, these would replace aging sources located in existing systems (Buildings 7 and 20). The replacement of these out-dated systems with energy efficient, state-of-the art

systems is expected to result in overall emissions reductions. Emissions from NSR stationary sources are exempt from General Conformity Rule requirements.

In summary, there would be no significant impacts to regional air quality by demolition/construction activities or when the replacement BEQ is operational. *De minimis* levels for applicable criteria pollutants would not be exceeded, and there is no requirement for further conformity analysis.

4.10.2 Alternative 2

Demolition/Construction Impacts

Air quality related impacts under Alternative 2 would be similar to or less than found under Alternative 1. However, the presence of subsurface contaminants is possible at this replacement BEQ site. Prior to any Proposed Action ground disturbance, these contaminants would need to be removed and disposed following all applicable regulatory and consultation requirements.

Operation Impacts

Operational impacts would be identical to those under Alternative 1, and likely result in fewer emissions when compared to existing operational conditions. This is because aging heating and air conditioning equipment would be replaced with newer equipment that is more efficient.

Under Alternative 2, no significant impacts to regional air quality by demolition/construction activities would occur, nor would the replacement BEQ, once it is operational, introduce new or increased emissions. *De minimis* levels for applicable criteria pollutants would not be exceeded, and there is no requirement for further conformity analysis.

4.10.3 Alternative 3

Demolition/Construction Impacts

Alternative 3 would have air quality related impacts similar to those of Alternative 1; there would be no significant impacts.

Operation Impacts

Operational impacts would be identical to those under Alternative 1, and likely result in fewer emissions when compared to existing operational conditions. This is because aging heating and air conditioning equipment would be replaced with newer equipment that is more efficient.

Under Alternative 3, no significant impacts to regional air quality by demolition/construction activities would occur, nor would the replacement BEQ, once it is operational, introduce new or increased emissions. *De minimis* levels for applicable criteria pollutants would not be exceeded, and there is no requirement for further conformity analysis.

4.10.4 Alternative 4

Demolition/Construction Impacts

Air quality related impacts under Alternative 4 would be similar to or less than found under Alternative 1. However, the presence of subsurface contaminants is possible at this replacement BEQ site. Prior to any Proposed Action ground disturbance, these contaminants would need to be removed and disposed following all applicable regulatory and consultation requirements.

Operation Impacts

Operational impacts would be identical to those under Alternative 1, and likely result in fewer emissions when compared to existing operational conditions. This is because aging heating and air conditioning equipment would be replaced with newer equipment that is more efficient.

Under Alternative 4, no significant impacts to regional air quality by demolition/construction activities would occur, nor would the replacement BEQ, once it is operational, introduce new or increased emissions. *De minimis* levels for applicable criteria pollutants would not be exceeded, and there is no requirement for further conformity analysis.

4.10.5 Alternative 5

Construction Impacts

Alternative 5 would have air quality related impacts similar to those of Alternative 1; there would be no significant impacts.

Operation Impacts

Operational impacts would be identical to those under Alternative 1, and likely result in fewer emissions when compared to existing operational conditions. This is because aging heating and air conditioning equipment would be replaced with newer equipment that is more efficient.

Under Alternative 5, no significant impacts to regional air quality by demolition/construction activities would occur, nor would the replacement BEQ, once it is operational, introduce new or increased emissions. *De minimis* levels for applicable criteria pollutants would not be exceeded, and there is no requirement for further conformity analysis.

4.10.6 No Action Alternative

Under the No Action Alternative, there would be no additional short-term air emissions resulting from demolition and construction, and operational air quality impacts would remain unchanged.

4.11 Summary of Impacts Determinations

Table 4.11-1 provides a summary of the duration, type, and level of impact for each resource under all action alternatives as well as the No Action alternative.

Table 4.11-1 Summary of Impacts Determinations

	Resource	Impact Duration, Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Land Use	**BEQ Complex Replacement**	*S, L, A*	***SI-M***	***SI-M***	*LSI*	*LSI*	***SI-M***	*NI*
	Main Post Renovation Projects	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Projects to Foster MBW Integration with the Community	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
Transportation and Circulation	**Demolition, Construction, and Repair Activities**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation							
	Pedestrian and Bicycle Accessibility	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Transit Service	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Traffic	*L, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Parking Spaces	*L, A*	*LSI*	*NI*	*NI*	*NI*	*NI*	*NI*
Cultural Resources	**BEQ Complex Replacement**	*L, A*	***SI-M***	***SI-M***	*LSI*	***SI-M***	***SI-M***	*LSI*
	Main Post Renovation Projects	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
	Projects to Foster MBW Integration with the Community	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*
Socioeconomics	**Population and Population Trends**	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Employment and Income	*S, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Housing	*L, A*	*LSI*	*LSI*	*LSI*	*NI*	*NI*	*NI*
	DC Tax Base	*L, A*	*LSI*	*LSI*	*LSI*	*NI*	*NI*	*NI*
Environmental Justice	**Human Health**	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*
	Environmental Effects	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*	*NI*

Table 4.11-1 Summary of Impacts Determinations

	Resource	Impact Duration, Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
Public Health and Safety	**Hazardous Materials**	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Hazardous Waste	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Toxic Substances	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Contaminated Sites	L, B	NI	LSI	LSI	LSI	NI	NI
	Underground Storage Tanks	L, B	NI	LSI	NI	NI	LSI	NI
	Protection of Children							
	Noise	S, A	LSI	NI	NI	LSI	LSI	NI
	Dust Emissions	S, A	LSI	NI	NI	LSI	LSI	NI
	Traffic	S, A	LSI	NI	NI	LSI	LSI	NI
Utilities and Infrastructure	Electrical Distribution	S, L, A	NI	NI	LSI	NI	NI	LSI
	Telecommunications	L, A	NI	NI	NI	NI	NI	LSI
	Potable Water	L, B	LSI	LSI	LSI	LSI	LSI	LSI
	Stormwater / Wastewater Collection	L, B	LSI	LSI	LSI	LSI	LSI	LSI
	Wastewater Treatment	L, A	NI	NI	NI	NI	NI	LSI
	Natural Gas	L, A	NI	NI	NI	NI	NI	LSI
	Solid Waste Disposal	S, A	LSI	LSI	LSI	LSI	LSI	LSI
Public Services	**Demolition, Construction, and Repair Activities**	S, A	NI	NI	NI	NI	LSI	NI
	Operation	L, A	LSI	LSI	NI	NI	NI	NI
Noise	**Demolition, Construction, and Repair Activities**	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Operation	L, B	LSI	LSI	LSI	LSI	LSI	NI
Geology and Soils	**Demolition; Construction, and Repair Activities**							
	Geology	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Soils	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Operation							
	Geology	L, B	LSI	LSI	LSI	LSI	LSI	NI
	Soils	L, B	LSI	LSI	LSI	LSI	LSI	NI
Water Resources	**Demolition, Construction, and Repair Activities**							
	Surface Water	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Groundwater	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Floodplains	NI	NI	NI	LSI	NI	NI	NI
	Operation							
	Surface Water	L, B	LSI	LSI	LSI	LSI	LSI	NI
	Groundwater	L, B	LSI	LSI	LSI	LSI	LSI	NI
	Floodplains	L, A	NI	NI	LSI	NI	NI	NI
Biological Resources	**Demolition, Construction, and Repair Activities**							
	Vegetation	S, V	LSI	LSI	LSI	LSI	LSI	NI
	Wildlife	S, A	LSI	LSI	LSI	LSI	LSI	NI
	Operation							
	Vegetation	L, B	LSI	LSI	LSI	LSI	LSI	NI
	Wildlife	L, V	LSI	LSI	LSI	LSI	LSI	NI

Table 4.11-1 Summary of Impacts Determinations

Resource		Impact Duration, Type	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	No Action
AIR QUALITY	**Demolition, Construction, and Repair Activities**	*S, A*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*
	Operation	*L, B*	*LSI*	*LSI*	*LSI*	*LSI*	*LSI*	*NI*

Legend: S = short-term; L = long-term; A = adverse; B = beneficial; V = varied (adverse & beneficial); *NI* = no impact; *LSI* = less than significant impact; *SI* = significant impact; *SI-M* = significant impact, but mitigation to be implemented; *UNK*= Unknown, further analysis required.
Note: Impacts considered ***SI*** or ***SI-M*** are shown in **bold red print**.

5.0 CUMULATIVE IMPACTS

5.1 OVERVIEW OF CUMULATIVE EFFECTS ANALYSIS

The approach taken in the analysis of cumulative impacts follows the objectives of NEPA, CEQ regulations, and CEQ guidance. Cumulative impacts are defined in 40 CFR Section 1508.7 as follows:

> The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

CEQ and the USEPA have published guidance addressing implementation of cumulative impact analyses—*Considering Cumulative Impacts Under NEPA, Guidance on the Consideration of Past Actions in Cumulative Effects Analysis,* and *Consideration of Cumulative Impacts in USEPA Review of NEPA Documents* (CEQ 1997, 2005; USEPA 1999). CEQ (1997) states that cumulative impact analyses should "...determine the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts…[and]...focus on truly meaningful impacts." CEQ (2005) states that "agencies should be guided in their cumulative effects analysis by the scoping process, in which agencies identify the scope and 'significant' issues to be addressed in an environmental impact statement." Furthermore, CEQ (2005) states that "in the context of scoping, agencies typically decide the extent to which 'it is reasonable to anticipate a cumulatively significant impact on the environment'."

Cumulative impacts are most likely to occur when a relationship or synergism exists between a proposed action and other actions within a specified geographic boundary or during a similar time period. Actions overlapping with or in close proximity to the Proposed Action would be expected to have more potential for a relationship than those actions more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts versus actions that occur years apart from each other. To identify cumulative impacts, the analysis needs to address the following questions.

1. Does a relationship exist such that impacts to the Proposed Action's affected resource areas might interact with the impacts to resources of past, present, or reasonably foreseeable actions? If a relationship does exist, is the affected resource area(s) subject to incremental effects taking into account the temporal and geographic extent of the Proposed Action?
2. Have previous analyses identified a cumulative effects concern? If so, could the Proposed Action have an incremental effect on these resources?

5.2 POTENTIAL CUMULATIVE EFFECTS BY RESOURCES

This cumulative impacts analysis follows the steps identified by CEQ (1997). Step 1 identifies the issues associated with the Proposed Action and defines assessment goals. Step 2 establishes the geographic

scope of the analysis. Step 3 establishes the analysis time frame. Step 4 identifies other actions affecting the resources included for analysis in this EIS. Steps 5 and 6 characterize the resources identified in Steps 1–4 and their responses to environmental changes. Step 7 defines the baseline condition for the resources. Step 8 identifies the important cause and effect relationships between human activities and the resources. Step 9 determines the magnitude of cumulative effects on the selected resource. Collectively, Steps 1–4 are considered "scoping," Steps 5–7 are considered "describing the affected environment," and Steps 8 and 9 are considered "determining the environmental consequences" (CEQ 1997). The following cumulative effects analysis follows this multi-step process.

5.2.1 Step 1: Identification of Issues and Assessment Goals

The cumulative impacts analysis applies to all action alternatives unless otherwise specified. The first step of the cumulative impacts analysis is to determine the appropriate level of cumulative analysis for each resource area and to determine whether the Proposed Action could have incremental impacts on nearby resources, ecosystems, and human communities. CEQ (1997) acknowledges that all impacts on affected resources are likely cumulative; however, the cumulative effects analysis should focus on important issues of national, regional, or local significance. In essence, the cumulative effects analysis should count what matters and not analyze resources that have little relevance to the effects of the proposed action or the eventual decision (CEQ 1997). In addition, CEQ (2005) states,

> It is not practical to analyze how the cumulative effects of an action interact with the universe; the analysis of environmental effects must focus on the aggregate effects of past, present, and foreseeable future actions that are truly meaningful. Thus, analysts must narrow the focus of the cumulative effects analysis to effects of significance to the proposal for agency action and its alternatives, based on thorough scoping.

Consistent with CEQ guidance, the cumulative impacts analysis focuses on those resource areas that are relevant to the effects of the Proposed Action (previously discussed in Chapter 3). This Draft EIS analyzed the potential impacts to the following resources: land use, transportation and circulation, cultural resources, socioeconomics and environmental justice, public health and safety, utilities and infrastructure, public services, noise, natural resources, and air quality.

Additionally, as part of the scoping for cumulative effects, the Marine Corps determined the extent to which it is reasonable to anticipate a cumulatively significant impact on the environment given the direct and/or indirect impacts from the Proposed Action (previously discussed in Chapter 4). As documented in Chapter 4, the Proposed Action was found to result in no, negligible, or minor direct and/or indirect adverse impacts to the following resource areas: environmental justice, public health and safety, utilities and infrastructure, public services, and natural resources. This cumulative impacts analysis has determined the direct and/or indirect impacts to these resources would 1) not have the potential to cause cumulative impacts, or 2) the direct and/or indirect impacts of the Proposed Action would be localized and temporary, based on the geographic and temporal scope of the cumulative impacts analysis (refer to Sections 5.2.2 and 5.2.3), and there is no reasonable likelihood the cumulative impacts would be significant. Therefore, because these resources are not subject to incremental effects, taking into account the temporal and geographic extent of the Proposed Action, they were not carried forward into the detailed cumulative impacts analysis. This methodology is also consistent with CEQ

(2005) which states, "scoping provides the agency the opportunity to focus in on those cumulative effects that may be significant."

5.2.2 Step 2: Geographic Scope of Analysis

The overall geographic scope of analysis consists of the 2,000-foot radius study area in the Near Southeast of DC. For various resource areas, however, the geographic scope is dependent on the characteristics and location of affected resources. These areas may be smaller or larger than the overall geographic scope and are defined in subsequent sections for each of the respective resource areas.

5.2.3 Step 3: Analysis Time Frame

By definition, the time frame for the analysis must include the past, present, and future. For most resource areas, the last five years mark the past temporal boundary for the cumulative effects analysis. The future temporal boundary includes those portions of the Proposed Action that were subject to detailed analysis in this Draft EIS (i.e., through an approximate 5-year planning horizon) and other reasonably foreseeable actions within the overall timeframe. The temporal boundary for the present is defined by actions in detailed planning, under construction, or that have been recently initiated. Since the potential effects to resources carried forward in the cumulative impacts analysis may require several years to recover following the construction of the various MBW projects (estimated to be within a 5-year planning horizon), the future temporal boundary is bound by activities that can be reasonably foreseen, which is approximately ten years.

5.2.4 Step 4: Other Actions Affecting the Resources of Concern

Other past, present, and reasonably foreseeable actions that could influence the resource areas carried forward for further analysis from Step 1 are evaluated here. This includes consideration of the other past and present actions and their locations, the extent of their direct and indirect effects, any likely future actions, and their relative contribution to cumulative impacts on the specific resource.

In accordance with CEQ guidance, past actions are relevant and useful in analyzing whether or not the reasonably foreseeable effects of the Proposed Action may have a continuing, additive, and significant relationship to those effects. Per CEQ guidance, the focus is placed on the current aggregate effects of past actions without delving into the historical details of individual past actions unless such information is necessary to describe the cumulative impact of all past actions combined.

A list of past, present, and reasonably foreseeable actions, along with the status of the NEPA analysis (if applicable), is provided in Table 5.2-1. A summary of the action is provided immediately following the table.

Table 5.2-1. Projects Incorporated into the Cumulative Action Evaluation

Action	Level of Analysis Completed	Decision Document	Lead Agency
MBW Building 8 Renovations	To be determined Section 106	N/A	Marine Corps
11th Street Bridge Project	Final EIS	ROD	FHWA
Virginia Avenue Tunnel	Final EIS	ROD	DDOT and FHWA
South Capitol Street Corridor Project – Frederick Douglass	Supplemental Draft EIS	N/A	DDOT

Table 5.2-1. Projects Incorporated into the Cumulative Action Evaluation

Action	Level of Analysis Completed	Decision Document	Lead Agency
Memorial Bridge			
Anacostia Riverwalk Trail	Final EA	FONSI	NPS
Anacostia River Projects	Final EA	FONSI	DC Water
Arthur Capper/Carrollsburg Housing Redevelopment	N/A	N/A	Private Developer
The Yards	Final EIS	ROD	Private Developer and GSA
1111 New Jersey Residential Redevelopment	N/A	N/A	Private Developer
Square 737	N/A	N/A	Private Developer
Square 699N	N/A	N/A	Private Developer
Maritime Plaza	N/A	N/A	Private Developer
Hine Junior High School Redevelopment	N/A	N/A	Private Developer
Re-Opening of Van Ness Elementary School	N/A	N/A	DC Public Schools
Memorials and Museums Master Plan	N/A	N/A	NCPC
M Street/Southeast-Southwest Transportation Planning Study	N/A	N/A	DDOT
DC Streetcar	Draft EA	FONSI (pending)	DDOT
Development of 801 Virginia	N/A	N/A	Private Developer
Development of Square 906	N/A	N/A	Private Developer
Development of Square 907	N/A	N/A	Private Developer

Notes: EA = Environmental Assessment; FHWA = Federal Highway Administration; FONSI = Finding of No Significant Impact

MBW Building 8 Renovations

Building 8, originally constructed in 1902, has not undergone a comprehensive modernization since the mid-1950s, when the facility was converted from an open bay barracks to its current administrative use as the Command Post. Key deficiencies driving the purpose and need for the Building 8 renovation project include the following:

- The current configuration of Building 8 does not meet DOD space standards to conduct Marine Battalion Headquarters and supporting functions. Interior spaces within the main working areas have been segmented and adapted over time and provide little to no flexibility or compatibility with modern administrative functions. Narrow corridors and multiple partitions significantly limit organizational opportunities, flow, and flexibility for conducting modern workspace functions. Current room layouts and circulation further reduce natural light in most working areas. The functionality of basement areas is restricted by low ceilings, overhead utilities, and narrow work areas.
- Building 8 has multiple UFC (including IBC2012) violations, including ABA accessibility, and the absence of separate male and female lockers and changing areas.
- Building 8 does not meet AT/FP requirements for progressive collapse, minimum standoff distance, unobstructed space, structural isolation, and air distribution.
- The electrical and communication systems are obsolete and do not meet applicable UFC, including IBC2012.
- The building lacks a fully functional fire suppression system.

- The HVAC system currently relies on a plant located in the basement of Building 20, and supply and return lines currently run beneath the public street. Long-term planning necessitates Building 8 utilities be independent from Building 20.

The proposed renovation project, currently programmed for funding in FY 2016, would 1) create a positive and collaborative working environment to significantly improve communication, flow, and QOL in the workplace; 2) maximize the existing footprint to become a flexible, efficient, and modern administrative facility capable of meeting the future needs of the Command Post; and 3) address operational and functional space deficiencies and provide a high-performance, sustainable, and safe working environment. It is estimated that the proposed renovation project would take approximately 18 months to execute. The proposed options would implement the following actions in order to modernize Building 8 so that it can continue to support the MBW mission into the future:

- Removal of some interior walls that are non-original, non-load bearing, and were added as modifications to the original structure.
- Upgrade building infrastructure to meet AF/FP requirements, including replacement and structural reinforcement of windows, interior and exterior doors, and related components with windows, doors, and related components that would approximate the originals while meeting applicable AT/FP requirements.
- Replacement of floor finishes, wall paneling, tile and plaster ceilings, and interior light fixtures.
- Replacement of all plumbing systems and fixtures.
- Upgrades to all HVAC systems, including disconnection from the heating and cooling plant in adjacent Building 20 and installation of an independent high efficiency HVAC system within the basement area of Building 8.
- Installation of fire detection and suppression systems.
- Replacement of electric power and lighting distribution lines and equipment.
- Upgrades to communication, security, and alarm systems.
- Restoration of all existing historic stairways to meet safety UFC, including IBC2012, requirements and incorporation of one centrally located four-stop elevator.
- Repairs and refinishing of the second floor breezeway connector and breezeway enclosure to Building 9.
- Construction of at-grade access to Building 8 from the west side that would be compliant with the requirements of the ABA.
- Abatement of hazardous building materials in order to create a safe working environment. Based on a January 2013 inspection/report, asbestos-containing building materials are in floor tiles and related materials, surface coatings including paint and plaster contain Pb, and some plumbing materials contain mercury (NAVFAC 2013).

The Marine Corps is in the process of preparing NEPA analysis and Section 106 consultation for this project.

11th Street Bridge Project

The 11th Street Bridges are a pair of one-way spans that cross the Anacostia River with the northern end in the Near Southeast area. The bridges were built in the mid-1960s to provide a link between the Anacostia Freeway (I-295/DC-295) and the Southeast Freeway (I-695). However, there were missing highway connections, which required drivers to use neighborhood streets (FHWA 2014a).

11th Street Bridge Project Study Area
Source: FHWA 2014b

Together, DDOT and the FHWA initiated the $300 million 11th Street Bridge Project in 2005 to improve the highway connection between the Southeast and the Anacostia Freeways. The Final EIS was issued in September 2008, and the ROD was signed in July 2009. The purpose of the project was as follows:

- 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 (FHWA 2014b).

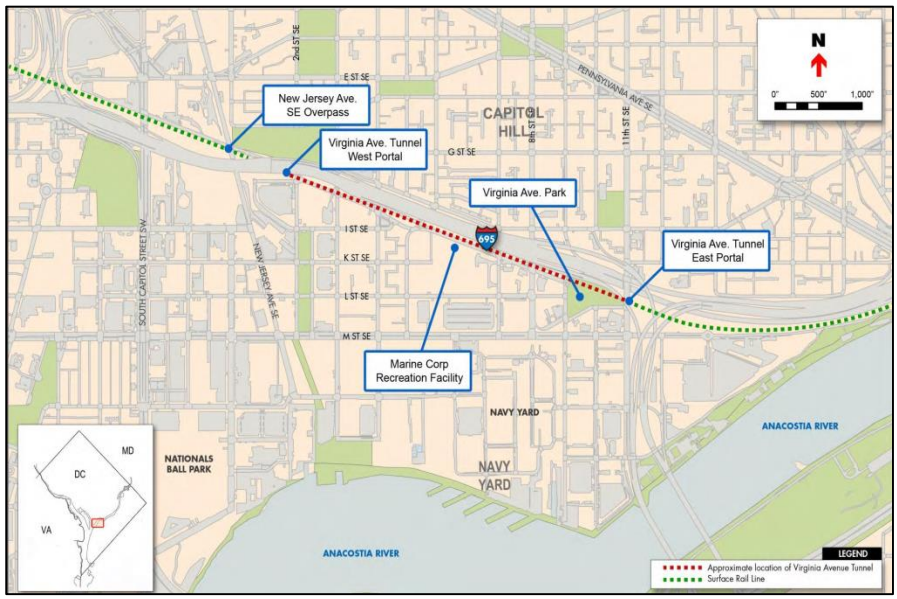
Once completed, the project will improve access to the Anacostia Freeway and reduce congestion on neighborhood streets, provide safe pedestrian and bicycle access across the river and to the Anacostia waterfront, replace bridges that are functionally and structurally obsolete, and upgrade this evacuation route (FHWA 2014b).

Source: Anacostia Waterfront 2014a

Phase 1 of the two-phase project, completed in July 2013, provided three new bridges, a 14-foot-wide pedestrian and bicycle sidewalk on the local bridge, stormwater drainage, an evacuation route, and design accommodations for the future streetcar system. Phase 2 will further improve connections along the Southeast Freeway and lay the groundwork for its reconstruction to a level boulevard between 8th Street SE and Barney Circle (Pennsylvania Avenue). Phase 2 construction began in July 2012 and is anticipated to be completed in mid-2015. When completed, Phase 2 will replace the old two-lane

Southeast Freeway bridge with a new three-lane bridge, provide better access to Capitol Hill and Historic Anacostia via new ramps, and raise the Southeast Freeway approximately 20 feet between 8th and 13th Streets SE (Anacostia Waterfront 2014b).

Virginia Avenue Tunnel



Source: FHWA and DDOT 2014

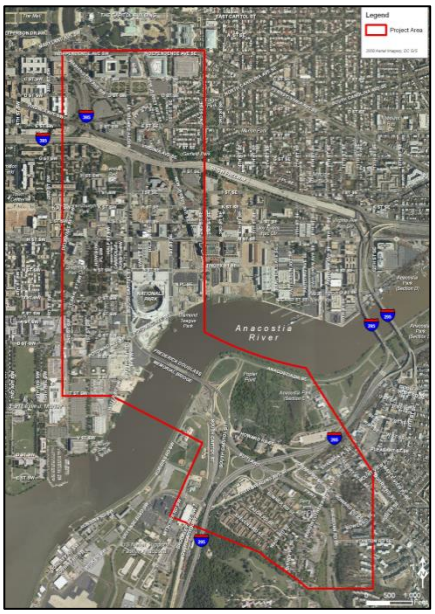
The FHWA and DDOT released a Final EIS and Section 4(f) Evaluation in June 2014, and a ROD was signed on 4 November 2014 for the proposed reconstruction of the Virginia Avenue Tunnel, which was originally constructed over 100 years ago. Owned by CSX Transportation, Inc., the tunnel is located in the Capitol Hill neighborhood beneath eastbound Virginia Avenue SE from 2nd Street SE to 9th Street SE; Virginia Avenue Park between 9th and 11th Streets SE; and the 11th Street Bridge ROW. The tunnel is also aligned on the south side of the Southeast Freeway. The tunnel portals are located a short distance west of 2nd Street SE and east of 11th Street SE. The tunnel and rail lines running through DC are part of CSX Transportation's eastern seaboard freight rail corridor, connecting the Mid-Atlantic and Midwest states (FHWA and DDOT 2014). The proposal evaluated in the EIS would transform the tunnel into a two-track configuration and provide the 21-foot vertical clearance necessary to allow double-stack intermodal container freight train operations (FHWA and DDOT 2014).

In addition to the no action alternative, three action alternatives were analyzed in the EIS. Regardless of the action alternative, the east portal would be extended by approximately 330 feet to a location northeast of the 12th and M Streets T-intersection, and the existing north tunnel wall would largely remain in place after construction. In addition, under all action alternatives, Virginia Avenue SE and other areas affected by construction, including the Virginia Avenue Park and MBW Annex sports field, would be restored (FHWA and DDOT 2014).

The Final EIS analyzed the following resource areas: land use, farmland, social and community conditions, economic conditions, climate and air quality, noise, vibration, site contamination (soil), water resources, vegetation and wildlife, historic and archaeological resources, public parks and recreational resources, visual and aesthetic conditions, utilities, and transportation. No impacts were anticipated under the no action alternative (Alternative 1), and minor impacts, to temporary moderate impacts, were expected to resources for Alternatives 2 through 4 (FHWA and DDOT 2014).

South Capitol Street Corridor Project – Frederick Douglass Memorial Bridge

The purpose of the South Capitol Street Corridor Project is to improve safety, mobility, accessibility, and support economic development throughout the project area (DDOT 2011). The major components of this proposed action include the following:



Source: DDOT 2011

- Building a new six-lane Frederick Douglass Memorial Bridge.
- Creating a new traffic oval west of the river that connects South Capitol Street, Potomac Avenue, and Q Street SE.
- Reconstructing South Capitol Street as a six-lane boulevard with an improved streetscape from the traffic oval to Independence Avenue SE/SW and an at-grade intersection at M Street SE.
- Creating a new at-grade traffic circle east of the river that connects South Capitol Street, Suitland Parkway, and Howard Road SE.
- Reconstructing the Suitland Parkway/I-295 interchange.
- Constructing a new diamond interchange on Martin Luther King Jr. Avenue and Suitland Parkway.
- Improving related portions of New Jersey Avenue, Howard Road, Firth Sterling Avenue, and Sheridan Road SE.
- Increasing bicycle and pedestrian facilities.
- Improving drainage and storm water management throughout the corridor (DDOT 2014a).

Two action alternatives and four alternative bridge types were evaluated in the Draft EIS. The Final EIS preferred alternative was a refined Alternative 2. An analysis of socioeconomic, natural, and cultural resources was conducted. Implementation of the preferred alternative would have no or minimal impacts on most of the resources evaluated. The Draft EIS did document there would be an adverse impact to historic resources, including the Plan for the City of Washington and Suitland Parkway. However, it was found that there would be beneficial impacts to community cohesion and visual quality in the project area (DDOT 2014a). The Final EIS/Section 4(f) Evaluation was released in March 2011 and signature of the ROD is pending; however, preliminary engineering and ROW land acquisition has been underway since January 2012 (DDOT 2014a).

Anacostia Riverwalk Trail

The Anacostia Waterfront Initiative is a 30-year, $10 billion program led by DC. The Anacostia Waterfront area straddles the Anacostia River and weaves through DC Wards 5, 6, 7, and 8, stretching from the Tidal Basin to DC's northeast border with Maryland (Anacostia Waterfront 2014c). The Anacostia Waterfront Initiative has the following five goals:

1. Restore the environment by eliminating pollution, controlling run-off, restoring streams and wetlands, and promoting water-based activities.
2. Connect with transportation to gain multi-modal access to waterfront lands and better serve neighborhoods.
3. Interconnect parks and waterfront spaces for access by residents and visitors.
4. Bring life and celebrations to the waterfront while enhancing and protecting the communities' character.
5. Promote sustainable economic development and reconnect the city to the river and waterfront park system (Anacostia Waterfront 2014c).

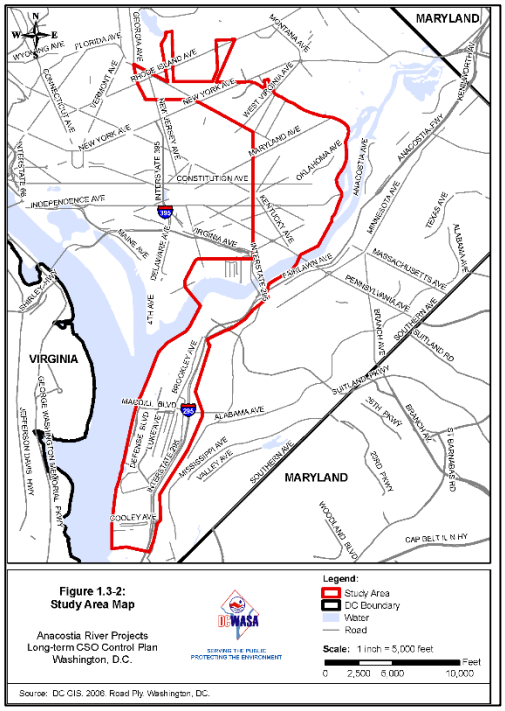


Figure 1.3-2: Study Area Map

Anacostia River Projects
Long-term CSO Control Plan
Washington, D.C.

In 2004, the NPS completed an EA that analyzed all three sections of the proposed Anacostia Riverwalk Trail. To date, 12 of the 20 miles of the Riverwalk Trail are open and used (DDOT 2014b). However, the NPS prepared an EA in December 2011 and signed a FONSI in June 2012 for the Anacostia Riverwalk Trail Section 3 Realignment (NPS 2011, 2012). Although Section 3 (the Kenilworth Aquatic Gardens segment) had been previously analyzed in the 2004 Anacostia Riverwalk Trail EA, realignment of the trail was needed based on additional site investigations and review. As documented in the 2011 EA, Alternative B (the preferred alternative) would not result in significant effects. Section 3 of the Anacostia Riverwalk Trail will provide seamless, scenic travel for pedestrians and bicyclists along the river to the Fish Market, National Park, Historic Anacostia, RFK Stadium, the National Arboretum, and 16 communities between the National Mall at the Tidal Basin and Bladensburg Marina Park in Maryland. The Kenilworth Aquatic Gardens segment, estimated to be completed in 2015, would extend the trail from Benning Road to the Bladensburg Trail in Maryland (DDOT 2014b).

Anacostia River Projects

The Anacostia River Projects are intended to control CSOs to the Anacostia River, and are located entirely within DC. DC Water is responsible for the existing water supply, sanitary sewer, and stormwater sewer systems servicing DC and parts of Maryland and Virginia. The sewer system periodically overflows to the Potomac and Anacostia Rivers when combined stormwater and sanitary sewers flows exceed the capacity of the sewer system during rain and melting snow events. These overflows are a source of water quality degradation. To correct this deficiency, DC Water proposes to construct a system of tunnels, diversion sewers, and overflow facilities to divert, temporarily store, and convey CSOs to the BPAWTP. In addition, plans also include correcting chronic surface flooding and basement backups associated with the combined sewer system in the northeast section of DC. The components of the tunnel system are referred to collectively as the Anacostia River Projects (NPS and DC Water 2010).

An EA analyzing the potential environmental effects of the proposed Anacostia River Projects was prepared in May 2010. Within the study area for this Draft EIS, work will occur on M Street SE, between 9th Street SE and 14th Street SE. Specifically, CSOs will be diverted from existing combined sewers using three diversion chambers, then conveyed to the future tunnel system along M Street SE through a series of 48-inch and 108-inch diameter diversion sewers constructed using trenchless methods. Combined sewer overflows totaling 695 million gallons per day will be delivered to the tunnel system. The project work will also rehabilitate selected portions of the Eastside Interceptor sewer and the Southeast Relief Water Main (DC Water 2014). Construction was estimated to be completed in spring 2014 (DC Water 2014).

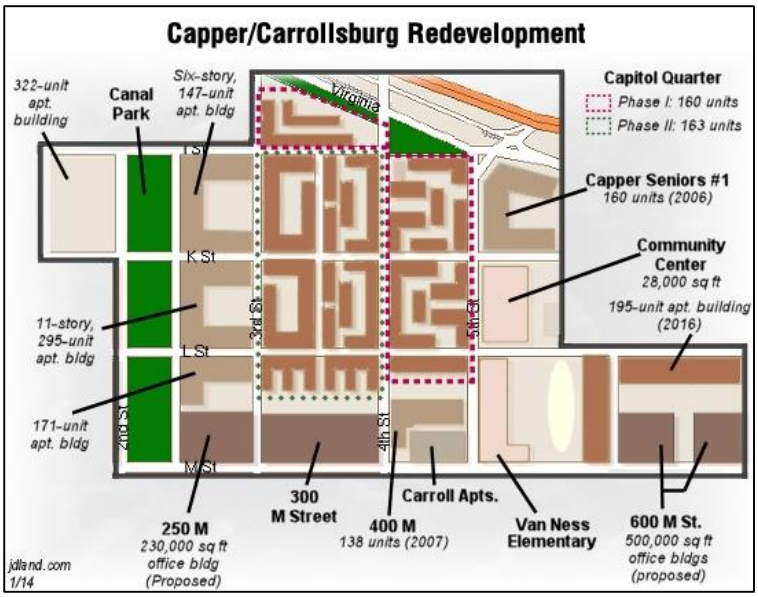
Arthur Capper/Carrollsburg Housing Redevelopment

The Capper/Carrollsburg housing redevelopment project site consists of a 23-acre site stretching from the Navy Yard to the Anacostia River (DCHA 2013). Formerly two public housing complexes consisting of 707 residential units, the site is transforming into a mixed-income community using $34.9 million received from a Hope VI grant from the U.S. Department of Housing and Urban Development (JDLand 2014a; DCHA 2013).

The development plan calls for more than 1,600 new rental and home ownership units comprising apartments, townhomes, and a seniors building. In addition, the project's economic stimulus plan includes retail space, office space, a community center, and a new public park (DCHA 2013).

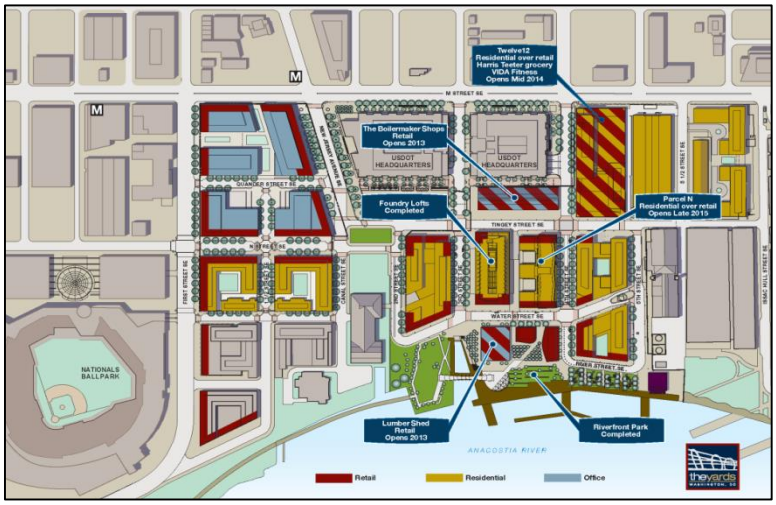
Two apartment buildings were constructed at 5th and K Streets SE (Capper Seniors #1 Building) and at 400 M Street SE (Capper #2 Building, called 400 M). The 162-unit Capper Seniors #1 Building was completed in December 2006. The 139-unit 400 M apartments (Building #2) were completed in November 2007 (JDLand 2014a, 2014b).

Capital Quarter is the townhome portion of the Arthur Capper/Carrollsburg redevelopment. The development covers the blocks between 5th and 3rd Streets SE, and Virginia Avenue SE and M Street SE. The townhomes provide approximately 138 market-rate townhomes, 76 workforce-rate townhomes, 13 Section 8 units, and 86 subsidized rental units. Construction on the first phase of townhomes was completed in 2010; the second phase of townhomes was completed in 2012 (JDLand 2014a).



Source: JDLand 2014a

The remaining residential units will be located along Canal Park, and another 195-unit mixed-income residential building will be constructed at 7th and L Streets SE, on the site of the old Capper Seniors building. Construction is anticipated to begin in 2014. Four or five additional buildings, with approximately 900 mixed-income residential units, are expected to be constructed in the future. Office buildings will be constructed at 250 M Street SE and on the site of the old Capper Seniors Building at 7th and M Streets SE (JDLand 2014b). Upgrades to the public infrastructure include new underground utilities, sanitary and water lines, and a new stormwater management system. The DCHA has secured commitments to provide at least 1,130 jobs over a 3-year period for public housing residents (DCHA 2013). Once complete, the Capper/Carrollsburg housing redevelopment would result in a projected increase of approximately 2,500 people and 4,900 jobs over the next 25 years (DDOT 2012).



Source: The Yards 2014c

SEFC "The Yards" Master Redevelopment Plan

As noted in Section 2.4.3, the GSA has an agreement in place to sell the development rights of up to 42 of the 55-acre SEFC site to Forest City for mixed-use development to enhance the value of the SEFC to the U.S. The SEFC EIS analyzed the development of the 42 acres; the EIS was completed 28 May 2004, and the ROD was signed 17 May 2005. The SEFC "The Yards" Master Redevelopment Plan addresses a 42-acre riverfront redevelopment site formerly known as the WNY Annex and the Naval Gun Factory. In 2004, GSA awarded Forest City with the redevelopment project (The Yards 2014a). In 2007, construction and redevelopment began. "The Yards" redevelopment currently features recreation and green space, 170 apartments in the Foundry Lofts, and retail/dining facilities (The Yards 2014b).

In December 2011, construction began on Twelve12, an approximate 200-unit apartment building with retail tenants, on the corner of 4th and M Streets SE. Construction is anticipated to be completed in 2014. In addition, an 11-story, 327-unit, apartment building is planned for construction at the southwest corner of 4th and Tingey Streets. Construction is anticipated to begin in 2014 and would be completed by 2016 (JDLand 2014c). Once complete, "The Yards" will accommodate 2,800 residential units and retail projects, resulting in a projected increase of approximately 6,000 people and 7,400 jobs (DDOT 2012).

1111 New Jersey Residential Redevelopment

The 1111 New Jersey project is located at the corner of M Street SE and New Jersey Avenue SE, above the Navy Yard-Ballpark Metro Station. Although the project was originally slated to be a premier 200,000-SF office/retail complex, in December 2013 it was announced a 13-story, 324-unit apartment

building would be constructed instead. Construction is anticipated to begin in 2014 and should be completed in 2016 (Donohoe Development Company 2014; Washington Business Journal 2013).

Square 737

Located at 880 New Jersey Avenue SE (corner of New Jersey Avenue SE and I Street SE), the Park Chelsea is expected to be a 433-unit luxury apartment building with 1,500 SF of retail space on the ground floor. Park Chelsea is the first of four phases on Square 737, and is anticipated to be completed in 2014 (JDLand 2014d; Capitol Riverfront 2014a).

The second phase on Square 737 is located at 800 New Jersey Avenue SE (between 2nd Street SE and New Jersey Avenue SE along H Street SE). At this location, a 336-unit apartment building is planned, and Whole Foods is expected to occupy the first floor. Construction is anticipated to begin in 2014 and should be completed in 2016. Whole Foods is anticipated to occupy the building in 2017 (JDLand 2014e).

Square 699N

In 2005, Square 699N, the block bounded by Half, K, L, and 1st Streets SE was sold for the purposes of developing a mixed-use project in three phases (JDLand 2005; Washington Business Journal 2005). Velocity, a 200-unit condominium building located at 1025 1st Street SE, opened in fall 2009. The second phase, located at 1st and K Streets SE, was sold to Toll Brothers in April 2012. The third phase, located along Half Street, was sold to Toll Brothers in October 2012 (JDLand 2014f). Toll Brothers is currently in the planning and development stages (Toll Brothers 2014).

Maritime Plaza

Source: Lincoln Property Company 2014b

Maritime Plaza is a 12-acre riverfront site located on M Street SE. The plaza consists of two existing office buildings that total 354,000 SF. An approved planned urban development allows for two additional office buildings (7 stories with 175,000 SF each) and a 250-room 8-story hotel (Capitol Riverfront 2014b; JDLand 2014g). Phase I of the Maritime Plaza is 100 percent leased with the exception of 3,443 SF on the ground floor. Phase II of the Maritime Plaza has some leasing availability (Lincoln Property Company 2014). There are also future plans for a parking lot or a 3-story office building. No construction timeline is currently available (JDLand 2014g).

Hine Junior High School Redevelopment

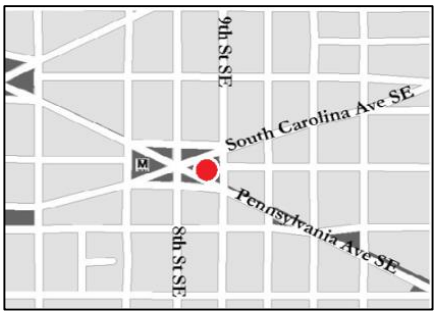
The former Hine Junior High School is located at 335 8th Street SE. In September 2012, construction began on a redevelopment project that includes 210,000 SF of office space; 50,000 SF of retail space; 130 residential units; and 200 parking units. Construction is estimated to be completed in September 2014 (DC 2014).

Re-Opening of Van Ness Elementary School

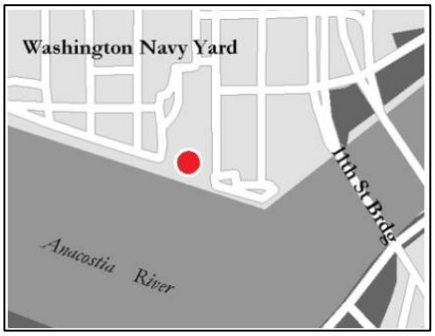
Van Ness Elementary School is located on the east side of 5th Street between L and M Streets SE; the eastern portion of this site is owned by the DC DPR. It is not an active school, but is used by DC Public Schools as administrative space for the Board of Education. In July 2010, DC Public Schools agreed to conduct a feasibility study to determine whether there would be sufficient enrollment to reopen and sustain Van Ness as an elementary school. The feasibility study considered population estimates, birth rates, housing information, enrollment trends, building capacity at area schools, and capital expenditure required to retrofit the building (DC Public Schools 2011). While population and development data indicate there are many new families and homes in the Capitol Riverfront, the growth does not justify opening a new school before school year 2014-2015; however, given current data, it is projected the school would open for school year 2015-2016 (DC Public Schools 2011; Capitol Riverfront 2014c).

Memorials and Museums Master Plan

The NCPC, Commission of Fine Arts, and National Capital Memorial Commission are the federal agencies that oversee the location and design of new commemorative works on federal land. In 1997, these agencies formed a joint task force to explore issues affecting future memorials and museums in DC and its environs. The task force developed a *Memorials and Museums Master Plan* in 2001, updated in 2006, which calls for placing memorials and museums and other public buildings in DC's traditional monumental core as a way to preserve the historic open space and vistas of the Mall and surrounding areas, and to distribute cultural and commemorative resources to all quadrants of the city (NCPC 2006).



Site 35 Location
Source: NCPC 2006



Site 68 Location
Source: NCPC 2006

The *Memorials and Museums Master Plan* identifies potential sites for future memorials and museums and provides general guidelines to determine where and how these facilities should be accommodated. The plan shows how to meet demand for museums and commemorative works while protecting the National Mall and preserving other existing museum and memorial settings. The plan identifies 100 locations as the most suitable sites for future memorials and museums, 20 of which were designated "prime sites" because of their high visibility and strong axial relationships with the U.S. Capitol and White House. Of the 80 most suitable (but not prime) candidate sites, only one, Site 35 was located within the study area. Two other candidate sites, Sites 68 and 69, were located within a short distance of the study area boundary and are included for the purposes of this cumulative impact analysis. A description of these three sites are as follows:

Site 69 Location
Source: NCPC 2006

- Site 35, located at the Intersection of Pennsylvania and South Carolina Avenues SE (near Eastern Market Metro Station at the

northernmost section of the study area), is identified as a potential site for small- or medium-scale future memorial features that provide increased aesthetic amenity for transit users, Pennsylvania Avenue commuters, and residents.

- Site 68, located along the north shore of the Anacostia River within the WNY complex, is identified as a potential site for a new small- or medium-scale museum or memorial to reinforce future uses of the base, while advancing the comprehensive redefinition of the Anacostia Waterfront.
- Site 69, located near the WNY and on the riverfront between the parallel spans of the Martin Luther King and Welsh Memorial Bridges, is identified as a potential site for a large memorial feature that would complement the dual spans of the bridges and the river crossing portal of which they are a part and/or a moderate scale memorial in conjunction with a future waterfront activity area (NCPC 2006).

Source: Capitol Riverfront 2013

M Street Southeast/Southwest Transportation Planning Study

In December 2012, DDOT released the M Street Southeast/Southwest Transportation Planning Study for the substantial new growth along M Street SE and in the Southeast/Southwest waterfront area. The study encompassed an approximate 1.7-square-mile area along the M Street Southeast/Southwest corridor and the Southwest Waterfront from River/Washington Channel. Elements of the proposed action presented in this EIS are located in three of the ten core areas identified in the study: the Near Southeast/Capitol Quarter, WNY, and The Yards.

According to the 2013 Capitol Riverfront BID Annual Report, existing development within this 500-acre area includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional, approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013) (Table 5.2-2).

Table 5.2-2. Capitol Riverfront Development Summary

Status	Office (SF)	Retail (SF)	Residential Units	Hotel Rooms
Existing/Completed	7,352,160	210,125	2,758	204
Under Construction	17,350	110,500	1,264	0
Planned	7,383,780	640,487	7,594	1,059
Total	14,753,290	961,115	11,616	1,263

Source: Capitol Riverfront 2013

The purpose of the transportation study was to consider current and future transportation conditions, review the planned future land uses, and develop a solution for the transportation network to promote livable communities and encourage reinvestment in properties within the study area. Among the factors evaluated were current and forecasted transportation conditions; planned land uses; and possible transportation enhancements to improve safety for drivers, pedestrians, and bicyclists; increase mobility; provide better local connects to the regional networks; and support planned development (Anacostia Waterfront 2014d). The M Street/Southeast-Southwest Transportation Planning Study identified improvements for the following three conditions:

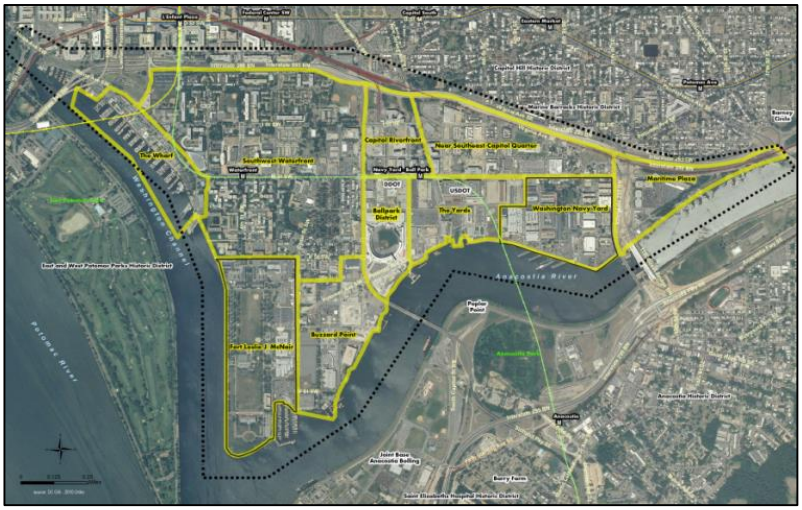
- Near-term conditions (2013–2016),
- Potential mid-term improvements (2015–2021), and
- Long-term conditions/solutions beyond the full build-out for new development (2020 and beyond) (DDOT 2012).

Public meetings for the transportation study were held in January, May, and September 2012. The DDOT anticipates beginning a formal NEPA process for proposed projects in 2014 (Anacostia Waterfront 2014d).

DC Streetcar

The DC Streetcar is expected to make travel within the District easier for residents, workers, and visitors, and would complement the existing transit options. Specifically, the objectives of the new DC Streetcar system include the following:

- Link neighborhoods with a modern, convenient, and attractive transportation alternative;
- Provide quality service to attract and reach new transit ridership;
- Offer a broader range of transit options for DC residents;
- Reduce short inner-city auto trips, parking demand, traffic congestions, and air pollution; and
- Encourage economic development and affordable housing options along streetcar corridors (DDOT 2014c).



Source: DDOT 2012

As part of DDOT's 2012 M Street Southeast/Southwest Transportation Planning Study, DDOT analyzed how to integrate transit (including the DC Streetcar) along M Street Southeast/Southwest, the southwest waterfront from 12th Street SE to 14th Street SW, and from the Southwest/Southeast Freeway south to the Anacostia River/Washington Channel (DDOT 2014d). The NEPA process is anticipated to begin in 2014.

801 Virginia

This site, which is located in the northwestern part of the Alternative 1 (Site A) replacement BEQ Complex at the corner of 8th Street and Virginia Avenue, is proposed for development as an office building with 19,000 SF and another 3,000 SF for retail. The planned development is referred to as the "Admiral at Barracks Row." The DC Board of Zoning Adjustment approved the project in 2008, but the developer has not yet secured funding for the project (DC Board of Zoning Adjustment 2008).

Square 906

National Community Church purchased much of land in this square, which is west of replacement BEQ Complex Alternative 1 (Site A). In 2012, the church obtained a raze permit for the existing structures and is planning a vertical campus with coffeehouse, performance theater, offices, and ministry space/child development center at the site. Development has been placed on hold likely until after the Virginia Avenue Tunnel is complete. In addition, there is a Beer Garden planned for 720 L Street (northwest corner of 8th and L Streets) that has been approved. It is not known when this project will be implemented (JDLand 2014h).

Square 907

This square houses the historic 770 M Street Southeast historic Car Barn property known as the "Blue Castle." Future development plans call for this property to be a centerpiece of the area's retail efforts and be renovated/re-purposed as a destination retail center with new uses desired by the community (Capitol Riverfront BID 2010).

Steps 5 and 6: Characterization of Resources and Their Responses to Change

Cumulative impacts analysis Steps 5 and 6 characterize the resource areas (identified in Steps 1 through 4) carried forward for further analysis in terms of their responses to change and capacity to withstand stresses affecting these resources, ecosystems, and human communities, and their relation to regulatory thresholds. For purposes of this analysis, they include the following resources and associated impacts:

- Land Use (Section 4.1)
- Transportation and Circulation (Section 4.2)
- Cultural Resources (Section 4.3)
- Socioeconomics (Section 4.4)
- Noise (Section 4.8)
- Air Quality (Section 4.10)

Steps 7 and 8: Baseline Condition and Cause-and-Effect Relationship between Human Activities and the Resources

The baseline conditions for the resources identified above that were carried forward in this cumulative impacts analysis are discussed in the following respective sections.

- Land Use (Section 3.1)

- Transportation and Circulation (Section 3.2)
- Cultural Resources (Section 3.3)
- Socioeconomics (Section 3.4)
- Noise (Section 3.8)
- Air Quality (Section 3.10)

Step 9: Determination of the Magnitude and Significance of Cumulative Effects on the Selected Resource

The magnitude of cumulative impacts depends on compiled information for the individual resource areas and the results of Step 8. The significance thresholds in the respective Chapter 4 resource analysis sections are carried forward for this cumulative impacts analysis and are reiterated below for ease of reference, followed by the cumulative effects analysis for each resource area.

5.2.4.1 Land Use

Description of Geographic Study Area

The study area focuses on two of the 39 neighborhood clusters currently used for community planning and related purposes in DC: Cluster 27, which includes the Arthur Capper, Carrollsburg, Near Southeast, and WNY and Cluster 26, which includes Capitol Hill, Capitol Hill East, and Lincoln Park. Both of these clusters are located in Ward 6, the largest of DC's eight wards.

Relevant Past, Present, and Future Actions

The construction projects planned by the FHWA, DDOT, NPS, DC Water, and various private developers (as listed in Table 5.2-1) all have the potential to affect land use. These actions include transportation projects, multi-use construction projects, recreational projects, and water quality projects. According to the 2013 Capitol Riverfront BID Annual Report, existing development within this 500-acre area includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional, approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013).

Cumulative Impact Analysis

Construction of a replacement BEQ Complex would generally be consistent with planned land use under all alternatives. For Alternatives 1 and 2, the Marine Corps would acquire 3.0 and 1.8 acres, respectively, of privately owned land in order to construct the replacement BEQ Complex. As discussed in Section 3.1.3, Site A is currently zoned "C-3-A", which includes medium density, mixed-use development and is within the ES Overlay District; Site B is currently zoned "C-M-1", a low bulk commercial manufacturing zoning district; Site C is currently zoned "CR", a commercial-residential area within the SEFC Overlay District; and Sites D and E, being federally owned within WNY and the MBW Annex, respectively, are currently un-zoned. If Alternatives 1 or 2 were implemented, Sites A and B zoning, respectively, could potentially change, the site would become public land, zoning would no longer apply, or the land would

be "unzoned". If Alternatives 3, 4, or 5 were implemented, zoning and planned land uses would not be affected as these three sites are currently zoned for federal use; therefore, Alternatives 3, 4, and 5 would not result in any cumulative impacts.

The Marine Corps has worked with NCPC and DCOP, cooperating agencies under this EIS, on what would be required with the road closure process for the affected ROW segments affected by Alternatives 1 and 2. In addition, the Marine Corps would continue to work with NCPC, DCOP, DC HPO, and ACHP during the design and site layout should Alternatives 1 or 2 be selected for implementaiton.

The past, present, and future actions are or would occur on public, federal, and parkland, and are specified in approved local and regional master planning documents. Specific to the implementation of Alternative 1, the planned Admiral at Barracks Row project would not occur, and there is the potential for interactive (i.e., countervailing or synergistic) cumulative impacts with respect to project funding, land acquisition, and future land use at this site. Adjacent planned development of Squares 906 and 907 west of Site A has the potential for minor interactive cumulative impacts in terms of site layout design and land use compatibility; however, the future land use overall would be compatible. Although implementation of Alternatives 1 and 2 might result in cumulative impacts, these impacts would be considered minor, as the Marine Corps' close coordination with appropriate agencies would ensure that the BEQ Complex is compatible with planned land use.

5.2.4.2 Transportation and Circulation

Description of Geographic Study Area

For the purposes of this cumulative impact analysis, the study area includes nine intersections described in Section 3.2, and the street segments that feed into, and lie between, the intersections. In addition, the study area also includes sidewalks and bicycle facilities along the previously listed road segments, transit facilities within close proximity to MBW properties, the alternative replacement BEQ Complex sites, Pennsylvania Avenue, and the Southeast Freeway.

Relevant Past, Present, and Future Actions

The construction projects planned by the FHWA, DDOT, NPS, DC Water, and various private developers (as listed in Table 5.2-1) all have the potential to affect transportation and circulation. These actions include transportation projects that affect circulation of people and goods by various travel modes, multi-use construction projects that increase the population (and therefore travel demand) of an area, recreational projects, and water quality projects that would temporarily affect circulation. With regards to existing, current, and planned construction and associated population, existing development within the Capitol Riverfront BID includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013).These projects would increase the number of residential and workforce occupants within the study area.

Cumulative Impact Analysis

The DDOT M Street Southeast/Southwest Transportation Planning Study (DDOT 2012) was conducted to prepare for the substantial growth along M Street SE and in the Southeast/Southwest waterfront area. The study focused on current and future transportation conditions, as well as developing effective solutions for communities, connections, and capacity. Based on the evaluation of 2035 "baseline conditions," the existing roadway infrastructure does not provide enough capacity, connections, or redundancy to handle the future traffic demand that would be derived primarily from growth and development within DDOT's study area. In addition, the conversion of South Capitol Street to an at-grade intersection at M Street SE would result in a major bottleneck for M Street SE and South Capitol Street, which would result in significant delays and queues due to the high traffic volumes traveling in both corridors.

With regards to transit modes, without additional services and new transit options, the transit system does not have enough capacity to handle the increased demand by 2035. The DDOT projects, that when future employment growth is superimposed with available transit services, several areas will be completely underserved by future transit services (DDOT 2012).

With regards to pedestrian and bicycle modes, DDOT's transportation study (DDOT 2012) noted that the overall operation on M and I Streets SE is adequate, but many segments are close to being marginal. In addition, South Capitol Street shows very poor LOS for pedestrians as a result of high traffic volumes, narrow sidewalks, and lack of connectivity. Several other places in the network also have inadequate sidewalk widths and lack of connectivity, which prevents pedestrians and bicyclists from traversing the area. The DDOT anticipates that the transportation network assumed for the 2035 "baseline conditions" will not be able to adequately handle the future demand if no system improvements are completed. Improvements will be needed either to increase the capacity of the roadway, transit, and pedestrian/bicycle facilities, or to generate a significant modal shift from automobile to an improved transit system, as well as to non-motorized modes of travel (DDOT 2012).

As discussed in Section 4.2 and shown in Table 4.2-1, implementation of the Marine Corps' Proposed Action, regardless of the action alternative selected, would result in negligible to minor impacts to traffic, transit service, and pedestrian and bicycle accessibility. There would be no additional long-term demand on the transportation system (commuters, parking, etc.) resulting from the Proposed Action; however, there would be a loss of parallel on-street parking spaces along L Street SE under Alternatives 1 and 2 (23 spaces and 9 spaces, respectively). There would be no loss of parking spaces under Alternatives 3, 4, or 5, and therefore no impacts. The loss in parking spaces under Alternatives 1 and 2 is considered a minor impact that would be offset by the local reduction in parking demand associated with existing residences and businesses that would be displaced under the Proposed Action. For these reasons, Alternatives 1 and 2 would have a minimal parking impact. Table 4.2-1 also indicates that the existing LOS at the intersection of M Street SE and 11th Street SE would decline from the current LOS D in the afternoon peak hour to LOS E under the No Action Alternative; however, this impact would not be caused by the Proposed Action. Instead, it would occur as the result of traffic increases from anticipated near-term development within the study area and background traffic growth in the surrounding region regardless of the preferred alternative chosen by the Marine Corps.

In summary, while there may be a significant cumulative impact to transportation and circulation as a result of other past, present, and reasonably foreseeable actions, the incremental contribution of impacts associated with the Proposed Action would be very minor. Projected congestion on traffic, transit, and pedestrian and bicycle facilities are largely due to existing and planned development in the area, which is increasing the number of residential and workforce occupants, and therefore travel demand. Although DDOT has developed potential near-term, mid-term, and long-term solutions that would encourage the use of public transit and non-motorized modes of transportation, improve vehicular capacity, provide more accessibility, and increase connectivity, it is anticipated that there would be a long-term significant cumulative impact to transportation and circulation. These impacts would be somewhat lessened by the planned DC Streetcar project because it would improve transit service, particularly along 8th and M Streets SE. Early planning for this streetcar project included the potential for a streetcar stop at the northwest corner of 11th and M Street (at the Alternative 2 replacement BEQ Complex site). Should Alternative 2 be selected for implementation, the Marine Corps would work with DDOT, DCOP, NCPC, and others to ensure that such a facility will be incorporated into the layout and design at this site (a streetcar stop would be compatible within the AT/FP vehicular standoff area).

5.2.4.3 Cultural Resources

Description of Geographic Study Area

The Marine Corps identified the APE, which is defined as the geographic area within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist (36 CFR 800.16[d]). The APE is influenced by the scale and nature of the undertaking. Generally, an area broader than the project footprint is considered. The APE includes consideration of potential direct and indirect effects to historic properties and historic viewsheds. Please see Figure 3.3-1 for the APE for the Proposed Action evaluated in this EIS.

Relevant Past, Present, and Future Actions

A few of the construction projects (as listed in Table 5.2-1) have the potential to affect cultural resources. Specifically, the Building 8 renovation project, 11th Street Bridge Project, Virginia Avenue Tunnel, South Capitol Street Corridor Project, Anacostia Riverwalk Trail, Anacostia River Projects, Memorials and Museums Master Plan, and M Street Southeast/Southwest Transportation Planning Study have the potential to impact cultural resources.

Cumulative Impact Analysis

Architectural Resources

Of the projects in the study area that could result in an incremental cumulative impact, the MBW Building 8 Renovations, 11th Street Bridge Project, Virginia Avenue Tunnel, South Capitol Street Corridor Project, Anacostia Riverwalk Trail, and Anacostia River Projects have the potential to adversely impact cultural resources. The Memorials and Museums Master Plan would enhance the area's cultural resources. The impacts associated with the M Street Southeast/Southwest Transportation Planning

Study depend on the plans that would be proposed; however, the DDOT intends to complete the NEPA process to assess impacts on historic and cultural resources.

According to the MBW ICRMP, the interior of Building 8, the Battalion Headquarters, has been renovated over time to accommodate the changing needs of the Marine Corps, and retains minimal historic fabric. However, staircases with ornate metal railings have been identified as character-defining interior features of Building 8 (MBW 2013). The interior renovation projects for Building 8 include modification of the historic stairways to meet current safety code. This work would follow to the maximum extent practicable the Secretary of the Interior's Standards for Rehabilitation in order to retain these historic interior features. No other actions for the interior renovations, however, involve historic fabric in Building 8. Existing non-load bearing interior partitions are not original to Building 8. Similarly, no existing interior finishes or light fixtures are original to Building 8, and neither are any of the infrastructure systems. As such, any changes to these building components would not affect the integrity of design, materials, or workmanship of the building. Installation of fire detection and suppression systems would be designed so as not to damage or obscure historic features. No character-defining interior features (i.e., the stairways) would be removed or altered for the installation of an elevator in Building 8. The basement and second floor breezeway do not comprise or contain significant interior character-defining features, so renovation work in these spaces would not affect the integrity of the building. Windows and doors being replaced for AT/FP requirements would be the same size and approximate the historic appearance of the originals. The Marine Corps would follow to the maximum extent practicable the Secretary of the Interior's Standards for Rehabilitation for the design and construction of an at-grade, ABA compliant access on the west side of Building 8. Therefore, the interior renovation projects in Building 8 would not diminish the integrity of Building 8 or the Main Post, and there would be no adverse effect to these historic properties.

The contributing buildings and features of the MBW Main Post are also contributing resources to the Capitol Hill Historic District. All actions would face the interior of the Main Post. Therefore, Building 8 renovation project would have no adverse effect to the Capitol Hill Historic District. No other historic properties in the APE would be adversely affected by the Building 8 renovation project.

Building 8 was constructed between 1903 and 1907. Construction might have destroyed any potential archaeological resources at that time. However, as the building was originally constructed as a barracks and a historic feature was discovered in the basement of the Commandant's House adjacent to Building 8, features associated with the original use of this building may be present in the basement.

The Virginia Avenue Tunnel project would demolish the existing tunnel that is eligible for the NRHP and would result in adverse impacts to the tunnel, Saint Paul AUMP Church, Capitol Hill Historic District, and L'Enfant Plan. Once an official adverse effects determination is made by FHWA, a Memorandum of Agreement to resolve these adverse effects will be developed pursuant to the requirements of Section 106.

The South Capitol Street Corridor Project would result in adverse effects on Suitland Parkway and the L'Enfant Plan (South Capitol Street and New Jersey Avenue SE). As part of that project, consultation with DC HPO occurred.

The Anacostia Riverwalk Trail would result in indirect minor, long-term impacts on historic structures and districts; however, mitigation measures would prevent direct and/or indirect impacts to the Anacostia Seawall.

Although the Anacostia River Projects were found to cause minor, short- and long-term adverse impacts to one area that contains a contributing element (the Anacostia Seawall) to Anacostia Park, this site containing the contributing element is outside the APE for the Proposed Action evaluated in this EIS.

Cumulatively, these past, present, and future actions, as well as the Proposed Action, would result in long-term adverse cumulative impacts to cultural resources within the APE. The Marine Corps will consult with the DC HPO, ACHP, and other consulting parties as part of the planning process and determine any possible mitigations required depending on the chosen alternative. Implementation of Alternatives 1, 2, 3, 4, or 5 would result in minor cumulative impacts to architectural resources.

Archaeological Resources

In regards to the Main Post renovation projects under Alternatives 1, 2, 3, 4, and 5, archaeological monitoring would be conducted during construction. Should archaeological deposits be identified on the selected BEQ Complex replacement site, the Marine Corps would follow the SOP for inadvertent discovery included in the agreement document for this undertaking and, if appropriate, consult with the DC HPO, ACHP, and other consulting parties regarding any cumulative effects above those accounted for during the original consultation. Archaeological surveys may be necessary to determine the presence of archaeological sites in compliance with Section 106 and in accordance with the SOPs of the MBW ICRMP. Construction of the replacement BEQ Complex at Site C under Alternative 3 or Site E under Alternative 5 is not likely to impact any NRHP-eligible archaeological sites; however, should Alternatives 1, 2, or 4 be chosen for the replacement BEQ Complex, archaeological monitoring would be conducted to determine the presence of archaeological sites in compliance with Section 106. Impacts to archaeological resources from the proposed reuse or redevelopment of Building 20 or the Building 20 site would be the same under all action alternatives.

Cumulative impacts could occur from implementation of other projects that would disturb deep soils. These projects include the Virginia Avenue Tunnel and South Capitol Street Corridor Project, as they have the potential to adversely impact archaeological resources. The impacts associated with the M Street Southeast/Southwest Transportation Planning Study depend on the plans that would be proposed; however, the DDOT intends to complete the NEPA process to assess impacts on historic and cultural resources. The Virginia Avenue Tunnel Draft EIS identified one archaeological site of cut stone block paving within the 11th Street Bridges ROW that is considered significant due to its physical association with the L'Enfant Plan. The South Capitol Street Corridor Project and Anacostia Riverwalk Trail would not affect archaeological resources.

Cumulatively, these past, present, and future actions have the potential to result in long-term adverse cumulative impact to archaeological resources. Based on the outcome of the archaeological monitoring, should archaeological deposits be identified on the selected BEQ Complex replacement site, the Marine Corps would follow the SOP for inadvertent discovery included in the agreement document for this undertaking and, if appropriate, consult with the DC HPO, ACHP, and other consulting parties regarding

any cumulative effects above those accounted for during the original consultation. This would ensure all adverse impacts are mitigated. In conclusion, any incremental cumulative impacts to archaeological resources associated with implementation of the Proposed Action would be considered minor.

5.2.4.4 Socioeconomics

Description of Geographic Study Area

The study area for socioeconomic impacts is two-fold. A larger geographic area that includes all of DC, and the MBW economic region of influence represented by DC; Fairfax County, Virginia; Arlington County, Virginia; and Prince George's County, Maryland. A smaller geographic area is focused on the vicinity where the Proposed Action would occur, and includes District Ward 6, two neighborhood clusters, and the four USCB census tracts in the vicinity of the MBW properties and alternative replacement BEQ Complex sites (identified in Figure 3.4-1). The primary focus of the socioeconomic analysis in this EIS is on the economic effects of the implementation of the major renovation and construction projects.

Relevant Past, Present, and Future Actions

The construction projects planned by the FHWA, DDOT, NPS, DC Water, and various private developers (as listed in Table 5.2-1) all have the potential to result in impacts to socioeconomics and environmental justice. These actions include transportation projects that affect circulation of people, multi-use construction projects that increase the population of an area, recreational projects, and water quality projects that will also result in socioeconomic impacts. With regards to existing, current, and planned construction and associated population, existing development within the Capitol Riverfront BID includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013).These projects would result in short-term impacts associated with construction and long-term impacts associated with the residential and workforce occupants.

Cumulative Impact Analysis

Socioeconomics

The proposed Building 7 renovations would take six months, while the BEQ Complex would take approximately 18 to 24 months. The Proposed Action would occur concurrently with several projects listed in Table 5.2-1. Implementation of the Proposed Action would not result in a change in personnel. Therefore, there would be no change to payrolls or any subsequent impacts to regional employment or income. This cumulative impacts analysis, therefore, will focus on impacts to income and changes to the tax base.

Short-term impacts are associated with the acquisition of land for the replacement BEQ Complex and demolition and construction activities. Under Alternatives 1 and 2, the Marine Corps would need to compensate landowners; specifically, the loss of 24 and five privately owned residential and commercial properties would occur under Alternatives 1 and 2, respectively.

Long-term impacts to the tax base would be associated with Alternatives 1 and 2. Under Alternatives 1 and 2, the loss of 24 and five privately owned residential and commercial properties would result in a loss of approximately $320,663 and $136,300 from the DC tax base, respectively. However, the redevelopment as a BEQ under Alternatives 1 and 2 would transform some currently vacant properties and could spur adjacent development along Lower 8th Street.

If the Marine Corps' selects Alternative 3, there would be a potential loss of socioeconomic impact associated with the planned 218-unit condominium complex at this site. Since funding for the planned project remains uncertain, there likely would be tradeoffs resulting from commitment for redevelopment as the replacement BEQ Complex (e.g., spurring other development). Under Alternative 4, the displacement of 20–25 occupants from Building 169 to Building 9 in the region would result in a minor shifting of the economic impact. Under Alternative 5, the BEQ Complex would be constructed at the MBW Annex, which currently consists of enlisted housing, training, and parking facilities. No loss of socioeconomic impact is associated with this alternative.

Cumulatively, past, present, and future construction projects would result in a small short-term demand for construction and secondary jobs, resulting in a minor to moderate temporary beneficial cumulative impact. In addition, there would be a slight decrease in property tax revenue under Alternatives 1 and 2. However, this loss of tax revenue would be offset by the tax revenue generated by the multiple private developments within the study area. Therefore, there would be short-term beneficial cumulative impacts and negligible to minor long-term adverse cumulative impacts to socioeconomics from implementation of Alternatives 1, 2, 3, 4, and 5.

Because the Proposed Action would not have disproportionately high and adverse human health or environmental effects on minority populations and low income populations compared to the community of comparison (DC), no analysis of cumulative environmental justice impacts is warranted.

5.2.4.5 Noise

Description of Geographic Study Area

The proposed Building 7 renovations would take six months, while the BEQ Complex would take approximately 18 to 24 months. The minor construction and improvements to the MBW Annex gate at 7th and K Streets, exterior façades and frontages of Building 7 at the Main Post along 9th Street SE, and pedestrian amenities throughout the MBW properties would be of short duration and have negligible noise impacts; therefore, they are not evaluated in further detail in this cumulative impact analysis. This cumulative impact analysis focuses on construction of the BEQ Complex. The study area, therefore, includes the areas in the vicinity of the proposed BEQ Complex alternative sites under Alternatives 1, 2, 3, and 4.

Relevant Past, Present, and Future Actions

The construction projects planned by the FHWA, DDOT, NPS, DC Water, and various private developers (as listed in Table 5.2-1) all have the potential to result in noise impacts. These actions include transportation projects that affect circulation of people, multi-use construction projects that increase the population of an area, recreational projects, and water quality projects that will all require noise-

producing equipment. With regards to existing, current, and planned construction, existing development within the Capitol Riverfront BID includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional, approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013).These projects would result in short-term impacts associated with construction and long-term impacts associated with the residential and workforce occupants.

Cumulative Impact Analysis

Past, present, and future construction projects would increase ambient noise levels. While construction-related noise is typically temporary and associated with one project at a time, the continuous development in the study area increases the background noise environment. However, the incremental contribution of the Marine Corps' Proposed Action is very small in comparison to the other projects. Therefore, while there may be short-term noise impacts, long-term noise impacts would not occur. In addition, the mitigation measures the Marine Corps would employ during construction would minimize noise impacts to the greatest extent possible. Therefore, implementing the Proposed Action would result in only a minor incremental contribution to the cumulative impacts to noise.

5.2.4.6 Air Quality

Description of Geographic Study Area

The study area considered in the cumulative analysis for this resource area includes areas in and near MBW. Refer to Section 5.2.6.7 for a discussion on cumulative impacts for GHGs.

Relevant Past, Present, and Future Actions

The construction projects planned by the FHWA, DDOT, NPS, DC Water, and various private developers (as listed in Table 5.2-1) are relevant in that they could impact air quality. These actions include transportation projects, multi-use construction projects, recreational projects, and water quality projects. With regards to existing, current, and planned construction and associated population, existing development within the Capitol Riverfront BID includes nearly 7.6 million SF of office and retail space, 2,758 residential units, and 204 hotel rooms. An additional, approximate 128,000 SF of office and retail space is under construction, with an additional 8.0 million SF of office and retail space planned. Moreover, 1,264 residential units are under construction, with an additional 7,594 residential units and 1,059 hotel rooms planned (Capitol Riverfront 2013).These projects would produce emissions that would be additive to those produced by implementation of the Proposed Action.

Cumulative Impact Analysis

Cumulative activities affecting air quality in the region include, but are not limited to, mobile sources such as automobiles and aircraft, other industry, construction, etc. The Proposed Action would occur concurrently with several projects listed in Table 5.2-1. However, the estimated emissions generated by demolition and construction activities would be well below any significance thresholds, and comprise a very small percentage of the overall air emissions occurring in the NCIAQCR. In addition, all construction projects occurring in the study area would be required to comply with existing federal and local

regulations relating to air quality. Further, it is not anticipated that air emissions from these actions, when considered incrementally with the Proposed Action, would exceed any regulatory standards.

In terms of long-term cumulative impacts, operation of the replacement BEQ Complex would include new stationary sources including, but not limited to, boilers and emergency generators. While the information needed to quantify emissions is unavailable at this time, the new, more energy efficient stationary sources would replace aging equipment. No other long-term emission sources have been identified for this cumulative impact analysis.

Overall, implementation of the Proposed Action in conjunction with other present and reasonably foreseeable projects listed in Section 5.2.4 would have minimal effects on air quality. Therefore, no significant cumulative impacts to air quality are expected from implementation of the Proposed Action.

5.2.4.7 GHG Emissions and Climate Change

Description of Geographic Study Area

Individual sources of GHG emissions are not large enough to have an appreciable effect on climate change. Since the potential effects of proposed GHG emissions on climate change are global by nature, the study area for this aspect is not defined.

Relevant Past, Present, and Future Actions

As discussed in Section 5.2.4 and listed in Table 5.2-1, there are numerous construction projects planned by FHWA, DDOT, NPS, DC Water, and various private developers. However, these projects are not considered relevant because GHG emissions on climate change are global by nature. As discussed below, the Proposed Action has a negligible impact when compared to U.S. GHG emissions.

Climate is generally defined as the average weather over many years and is typically measured in terms of temperature, precipitation, and wind. It is now understood that higher concentrations of heat-trapping GHGs in the atmosphere result in increasing global surface temperatures, a phenomenon commonly referred to as climate change. Higher global surface temperatures result in fundamental changes to components of the Earth's climate system, including the jet stream, El Niño, ocean temperature and acidity; the extent of alpine glaciers, sea ice and polar ice sheets; atmospheric water content; and the extent and health of boreal and tropical forests (IPCC 2007). At the federal level, several programs are now in place. Additionally, some of the above changes are resulting in specific impacts at the state and local level. Specific to the northeast, continued warming and extensive climate-related changes could alter the region's economy, landscape, character, and QOL (Karl et al. 2009).

Cumulative Impact Analysis

As stated previously, the potential effects of proposed GHG emissions are by nature global and cumulative. Individual sources of GHG emissions by themselves are generally not large enough to have an appreciable direct effect on climate change. Therefore, an appreciable impact on global climate change would only occur when proposed GHG emissions combine with GHG emissions from other man-made activities on a global scale. Currently, there are no formally adopted or published thresholds for assessing potential impacts from GHG emissions. On 24 December 2014, the CEQ released revised draft guidance for addressing climate change in NEPA documents (CEQ 2015). The draft guidance proposes a

reference point of 25,000 metric tons of CO_2e above which agencies should quantify and evaluate GHG emissions. This EIS also compares GHG emissions associated with the construction activities to the most recent U.S. net GHG baseline inventory (USEPA 2014) to determine the relative increase in proposed GHG emissions.

Table 5.2-2 summarizes the net change in annual GHG emissions that would occur from each year of construction compared to the GHG emissions inventories for the U.S. baseline. The calculation of GHG emissions, as CO_2e, can be found in Appendix D. The estimated GHG emissions from the Proposed Action are less than a hundred thousandths of 1 percent of the total GHG emissions generated by the U.S. in 2012 and are well below the 25,000 metric ton per year reference point suggested by CEQ.

Table 5.2-3. Estimated CO_2e Emissions from Demolition/Construction Activities

Activity	Metric Tons CO_2e per Year	Percent of U.S. 2012 GHG Emissions
Year 1	157	0.00002
Year 2	157	0.00002
Year 3	79	0.00001
U.S. 2012Total GHG Emissions	$6{,}525.6 \times 10^6$	-

Source: USEPA 2014

The Marine Corps and Navy are also implementing programs to reduce energy consumption and shift to renewable and alternative fuels, thereby reducing emissions of CO_2 and other GHGs. On 16 October 2009, the Secretary of the Navy, Ray Mabus, announced five energy targets for the Navy and Marine Corps. As part of its efforts to encourage the development of alternative fuels, on 22 January 2010 the Navy and the Department of Agriculture signed an MOU to encourage the development of advanced biofuels and other renewable energy systems.

The Commandant of the Marine Corps' *Facilities Energy and Water Management Program Campaign Plan* (2009) declared the intent to implement measures to conserve energy and to reduce GHG emissions and dependence on foreign oil. The campaign plan identifies long-term goals to reduce energy intensity and increase the percentage of renewable electrical energy consumed. This plan requires base commanders to "evaluate the effectiveness of incorporating emerging technologies" including integrated photovoltaics, cool roofs, daylighting, ground source heat pumps, heat recovery ventilation, high efficiency chillers, occupancy sensors, premium efficiency motors, radiant heating, solar water heating, and variable air volume systems. In 2011, the Commandant of the Marine Corps published the "U.S. Marine Corps Expeditionary Energy Strategy and Implementation Plan—Bases-to-Battlefield" to continue efforts to conserve energy and reduce dependence on fossil fuels across the spectrum of the Marine Corps mission—at installations and in deployed operational environments.

In June 2014, the DOD released the *2014 Climate Change Adaptation Roadmap* to document the DOD's efforts to plan for the changes that are occurring or expected to occur as a result of climate change (DOD 2014). Specifically, the DOD has the following three broad adaptation goals:

- Identify and assess the effects of climate change on the DOD.
- Integrate climate change considerations across the Department and manage associated risks.
- Collaborate with internal and external stakeholders on climate change challenges.

For each goal, the Roadmap provides an overview and specific details on how the DOD's adaptation will occur across the four lines of effort (i.e., plans and operations, training and testing, built and natural infrastructure, and acquisition and supply chain) and ongoing efforts (DOD 2014). Specific to MBW, the Marine Corps must assess the effects of projected climate change including on the design, operation, maintenance, and repair of buildings and transportation assets; management of natural infrastructure assets; energy, fuel, water supply, and utility services; adequacy of existing stormwater management systems; emergency preparedness and response; distribution of disease vectors; and key transportation modes and routes. In 2014, the DOD deployed a phased installation-level vulnerability assessment approach and will continue to reevaluate climate change risks and opportunities in order to develop policies and plants to manage its effects on the DOD's operating environment, missions, and facilities.

Per the requirements set forth in the Energy Policy Act and EO 13514, MBW has reduced the intensity of its energy consumption (and thus its GHG emissions) by 56 percent (measured in thousand British thermal units) per square foot of facility space) since its 2004 baseline, thus exceeding the mandated reduction goal. These reductions were largely the result of the construction of the Annex Facility (Buildings 25 and 26) in 2004 and the installation of energy efficient HVAC equipment at this location. A preliminary energy audit offered four recommended Energy Curtailment measures, to include the installation of: vending misers on all vending machines, solar panels on Building 20 to preheat domestic water, solar panels on Building 25 to off-set electrical load at that location, and energy efficient lighting. All vending machines have been retrofitted, and various light-emitting diode lighting upgrades have occurred in Building 26 (parking garage), Boiling 25 (Sousa Hall), and Building 9 (Crawford Hall). MBW has also established nine alternatively-fueled vehicles in its transportation fleet. Likewise, MBW is in the process of further efficiency upgrades across all enduring buildings on the installation, including the installation of visible meters at each location. Finally, per Marine Corps directive, all new and renovated buildings will be constructed to meet LEED Silver certification standards, and the introduction of renewable energy technology (e.g., solar, wind, geothermal, etc.) is being evaluated.

As climate science advances, the Marine Corps and Navy is committed to regularly reevaluating climate change risks and opportunities at bases and stations in order to develop policies and plans to manage its effects on the operating environment, missions, and facilities.

6.0 OTHER NEPA CONSIDERATIONS

This chapter addresses additional considerations required by NEPA, including consistency and compliance with federal and local plans, policies, and regulations; unavoidable adverse impacts to environmental resources; the relationship between short-term use of the environment and maintenance and enhancement of long-term productivity; and irreversible and irretrievable commitment of resources.

6.1 CONSISTENCY AND COMPLIANCE WITH FEDERAL, STATE, AND LOCAL PLANS, POLICIES, AND REGULATIONS

The Proposed Action alternatives have been assessed to determine their consistency and compliance with applicable environmental regulations and other plans, policies, and controls. This analysis indicates the Proposed Action alternatives would not conflict with the objectives of applicable plans, policies, and regulations. A summary of applicable environmental regulations and regulatory compliance is provided in Table 6.1-1.

Table 6.1-1. Summary of Applicable Environmental Regulations and Regulatory Compliance

Regulation, Plan, Policy, or Control	Regulatory Agency Authority	Status of Compliance	Section of EIS
NEPA and Public Review			
NEPA Section 102(2)(c)	DON/ Marine Corps	This Draft EIS has been prepared in compliance with Section (102)(2)(c) of NEPA and regulations implemented by the CEQ, DON NEPA regulations, and U.S. Marine Corps NEPA directives	All of document
CEQ Implementing Regulations (40 CFR 1500-1508)			
DON NEPA Regulations (32 CFR Part 775)			
MCO P5090.2A, Change 3			
Land Use			
Comprehensive Plan for the National Capital: Federal Elements	NCPC	Through consultation and coordination, all potential changes in land use under any of the alternatives would be consistent with the Federal Elements outlined in the Comprehensive Plan	Section 4.1
Comprehensive Plan for the National Capital: District Elements	DCOP	Through consultation and coordination, all potential changes in land use under any of the alternatives would be consistent with the District Elements outlined in the Comprehensive Plan	Section 4.1
The 1910 Height of Buildings Act (The Height Act)	DC Office of the Attorney General	The replacement BEQ Complex would comply with applicable laws governing height restrictions	Sections 2.3 and 4.1

Table 6.1-1. Summary of Applicable Environmental Regulations and Regulatory Compliance

Regulation, Plan, Policy, or Control	Regulatory Agency Authority	Status of Compliance	Section of EIS
Cultural Resources			
NHPA (54 USC 300101 *et al.*)	DC HPO	A PA to mitigate adverse effects to historic properties is recommended; archaeological surveys recommended for replacement BEQ Complex Sites A, B, and D (Alternatives 1, 2, and 4); and moderate sensitivity areas near Building 7	Section 4.3
ARPA (54 USC 300101 *et al.;* and Final Uniform Regulations, (32 CFR Part 229)	DC HPO	Archaeological surveys recommended for replacement BEQ Complex Sites A, B, and D (Alternatives 1, 2, and 4); and moderate sensitivity areas near Building 7	Section 4.3
Socioeconomics and Environmental Justice			
EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 Federal Register 7629)	USEPA	The Proposed Action would not result in disproportionately high and adverse human health or environmental effects on minority or low income populations	Section 4.4
EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (62 Federal Register 19883)	DON/ Marine Corps and USEPA	The Proposed Action would not result in disproportionate risks to children from environmental health risks or safety risks	Section 4.4
Public Health and Safety			
OSHA Standards (29 CFR 1910)	OSHA	Construction contractors would adhere to and MBW operate in compliance with all applicable OSHA regulations	Section 4.5
RCRA (42 USC 6901 *et al.*)	USEPA and DDOE	Construction contractors would adhere to and MBW operate in compliance with all applicable regulations and permits	Section 4.5
CERCLA (42 USC 9601 *et al.*)	USEPA and DDOE	The Proposed Action would not affect known active or closed IRP locations; however, existing USTs and potentially contaminated soils would be handled and disposed in compliance with all CERCLA regulations	Section 4.5
Noise			
Noise Control Act of 1972 and Quiet Communities Act of 1978	USEPA	Construction noise is consistent with these Acts	Section 4.8
DC Noise Control Act of 1977	Department of Consumer and Regulatory Affairs	Construction contractors would comply with this act and the Marine Corps institute management actions to remain compliant with the Act	Section 4.8
Natural Resources			
MBTA (16 USC 703 *et al.*)	USFWS	The Proposed Action would not affect migratory birds	Section 4.9

Table 6.1-1. Summary of Applicable Environmental Regulations and Regulatory Compliance

Regulation, Plan, Policy, or Control	Regulatory Agency Authority	Status of Compliance	Section of EIS
CWA (33 USC Sections 1251 to 1387) Safe Drinking Water Act of 1974 (42 USC Sections 300f to 300j-26)	USEPA and DDOE	Permits under CWA Sections 401 and 404 are not required. Stormwater runoff during construction and operational phases of the project would be managed in accordance with a construction SWPPP. Following construction, adherence to applicable federal and state stormwater and erosion BMPs would be applied	Section 4.9
Air Quality			
CAA (42 USC *et al.*)	USEPA and DDOE	The Proposed Action would not create a major regional source of air pollutants or affect the current attainment status at MBW. Implementation of the Proposed Action would be in compliance with all applicable local and regional air agency rules and regulations	Section 4.10

6.2 UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Avoidance, minimization, or mitigation of adverse effects to natural, cultural, and other environmental resources were integrated into the Proposed Action to the greatest extent possible and practicable.

6.3 RELATIONSHIP BETWEEN SHORT-TERM USE OF MAN'S ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

NEPA requires analysis of the relationship between a project's short-term impacts on the environment and the effects those impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. Choosing one option may reduce future flexibility in pursuing other options or committing a resource to a certain use may eliminate the possibility for other uses of that resource.

As discussed in this section, implementation of the Proposed Action would result in both short- and long-term environmental effects. However, implementation of the Proposed Action is not expected to result in the types of impacts that would reduce environmental productivity, affect biodiversity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to human safety or the general welfare of the public. While the short-term impacts associated with renovation, demolition, and construction activities would result in impacts to the natural and manmade environment during the period of construction, the improvements overall would increase operational facility efficiency at Building 7 and at the replacement BEQ Complex. Over the long-term, these more efficient facilities would require less use of energy resources than the existing facilities.

With respect to development potential, constructing a replacement BEQ Complex would represent a long-term relocation of displaced businesses, residents, and commitment of land use. For as long as the

site is serving as a BEQ Complex, other potential land uses would be precluded. In terms of socioeconomic output, the economic productivity that is currently generated would be shifted away from the local area and replaced over the long-term with the economic productivity of the BEQ Complex. Previously planned (but not initiated) private development of these alternative sites could be more productive than a BEQ Complex. This is particularly the case for the Alternative 3 site that is currently mostly vacant but where community residential land use has already been planned as part of SEFC "The Yards" Master Redevelopment Plan build-out. The long-term socioeconomic productivity of the Alternative 1 and 2 sites, but for the development of the BEQ Complex, site would be highly speculative as no formal plans for redevelopment of these areas has yet been formulated. The overall long-term productivity of the Alternatives 4 and 5 sites would likely be similar to the baseline; however, there would also be economic productivity that is shifted away from the local area.

6.4 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

An irreversible effect is the result of the permanent use (and subsequent loss) of a nonrenewable resource (e.g., minerals or energy). An irretrievable resource commitment involves the loss in value of an affected resource that cannot be restored as a result of an action (e.g., disturbance of a cultural site) or consumption of a renewable resource that is not permanently lost (e.g., old growth forests, wetlands). Secondary impacts could also result from environmental accidents, such as fires.

The Proposed Action would involve irretrievable commitments of nonrenewable and renewable resources. With regard to construction and demolition activities, resources such as capital, labor, fuels, and construction materials would be committed. The total amount of construction materials (e.g., wood, metal, concrete, asphalt, etc.) required for this action is relatively minor when compared to the resources available in the region. The construction materials and energy required for construction is not in short supply; their use would not have an adverse impact on the continued availability of these resources and the energy resource commitment is not anticipated to be excessive in terms of region-wide usage.

Under any of the alternatives, ground disturbance may potentially affect unknown archaeological resources. These impacts can be avoided, minimized, or mitigated, but could have a collective effect in reducing the overall number of archaeological resources in the area. However, if previously unknown archaeological resources are discovered during construction activities, work would be stopped immediately and the Marine Corps' procedures for inadvertent discovery implemented. This would minimize any irreversible or irretrievable effects to these resources.

To the extent possible, all construction would comply with EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* and EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. EO 13423 sets goals for federal agencies in energy efficiency, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, and water conservation. EO 13514 expands on the requirements set forth in EO 13423 and requires that all new construction comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. This includes employing design and construction strategies that increase energy efficiency, eliminate solid waste, and reduce stormwater runoff. One strategy for

reducing stormwater runoff is implementing LID technologies, which are to maintain or restore the natural hydrologic functions of a site, reduce the runoff rate, filter out pollutants, and facilitate the infiltration of water into the ground.

Following improvement-related activities at MBW, military operations would continue to use nonrenewable resources, such as fuel, at reduced levels as new facilities would comply with LEED and LID standards, as well as the requirements set forth in EOs 13423 and 13514. Implementing the Proposed Action would improve MBW's compliance posture with EO 13423, which sets as a goal for all federal agencies the improvement of energy efficiency and the "reduction of GHG emissions of the agency, through reduction of energy intensity by i) 3 percent annually through the end of FY 2015, or ii) 30 percent by the end of FY 2015, relative to the baseline of the agency's energy use in FY 2003."

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APPENDIX A

PUBLIC INVOLVEMENT

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A.1 INTRODUCTION

This appendix presents a summary of the public participation efforts for the *Environmental Impact Statement (EIS) for Multiple Projects in Support of Marine Barracks Washington* (MBW). Many opportunities have been available for public participation in the environmental analysis process, including a scoping session and comment period and agency notification and consultation. These efforts were used to identify issues addressed in the Draft EIS.

A.2 SCOPING PERIOD

Scoping is an early phase of the NEPA process designed to obtain comments from the public and other interested parties, and is used to determine the breadth and depth of an environmental analysis and identify any potential additional alternatives for consideration in the analysis. The scoping period for the EIS officially began with the publication of the United States Department of the Navy (DON) Notice of Intent (NOI) to prepare an EIS in the *Federal Register* on 6 September 2013. A public scoping meeting was held in Washington, DC at Tyler Elementary School on 24 September 2013. To announce the Marine Corps proposal, scoping letters were mailed to federal, state, and local governmental agencies, elected officials, and other interested parties; advertisements were placed in local newspapers; and a public website was launched. The original closing date for the public scoping period was 7 October 2013; however, the closing date was extended to 25 October 2013 due to the partial government shutdown, which occurred 1 through 17 October 2013. While the comment period officially closed on 25 October 2013, the Marine Corps continued to accept and consider agency and public scoping input to the maximum extent possible during the preparation of the Draft EIS.

Notice of Intent

The DON and the U.S. Marine Corps provided official notification of the initiation of the public scoping period and intent to prepare the EIS in the Notice of Intent (NOI), published in the *Federal Register* on 6 September 2013 (Volume 78, No. 173). The NOI announced the public scoping meeting, provided information on submitting comments, and provided supplementary information on the purpose and need for the proposed action, the development of alternatives, and environmental compliance. The NOI also informed stakeholders that the public scoping meeting would provide an opportunity for the public to engage in the National Historic Preservation Act (NHPA) Section 106 process.

Concurrent with publication of the NOI in the *Federal Register*, an announcement of NOI publication and information about the public scoping meeting was published as one-eighth (1/8)-page display notices in local newspapers. The newspaper and publication dates are provided in Table A-1. Copies of the NOI in the *Federal Register* and newspaper tear sheets are provided in Attachment A.

Table A-1. Newspaper Display Ad Schedules

Newspapers	Publication Days/Dates
The Washington Post	6 September 2013 and 17 September 2013
The Washington Business Journal	6 September 2013 and 20 September 2013

Mailings

As part of the scoping process, 135 general scoping notification letters were sent to federal, state, local representatives and governmental agencies as well as non-governmental organizations and individuals most likely to be interested in the proposal, including all owners of land that is at or within 50 feet of each of the potential BEQ Complex sites. Many of the stakeholders who received notification letters were involved in the Community Integrated Master Plan (CIMP) process, which preceded this NEPA effort. The letters described the Proposed Action and alternatives, provided agencies with information on the upcoming scoping meeting, requested information applicable to the project, and solicited input regarding issues and/or concerns related to the Proposed Action and alternatives and the Section 106 consultation process.

Scoping notification letters were mailed on 18 September 2013. A sample copy of the letter is provided in Attachment B.

In addition, a letter of invitation to be a cooperating agency under NEPA was sent to the following stakeholders: Advisory Neighborhood Commission (ANC) 6B, ANC 6D, DC Department of Parks (DCDPR) and Recreation, DC Office of Planning (DCOP), DC Department of Consumer and Regulatory Affairs (DCDCRA), DC Department of Transportation (DDOT), National Capital Planning Commission (NCPC), and National Park Service.. All agency coordination letters are provided in Appendix B.

A letter initiating NHPA Section 106 consultation was sent to the DC Historic Preservation Office on 11 September 2013 and a letter inviting the following stakeholders to become consulting parties under Section 106 was mailed on 11 September 2013: ANC 6B, ANC 6D, Barracks Row Main Street, Capitol Hill Restoration Society (CHRS), National Park Service, and NCPC. These letters are provided in Appendix B.

Emails

Based on input received prior to and during the scoping meeting, the EIS Team initiated an additional form of notification of potential stakeholders via electronic mailings from a no-reply “MBW EIS” account. An email distribution list was developed based on a similar list developed during the pre-NEPA CIMP process. The earlier list was modified to include those who participated in the scoping process and provided an email address. The first email was sent on 30 September thanking those who participated in the scoping meeting and advising that the scoping comment period would be adjusted if a partial government shutdown were to occur. Subsequent emails sent on 10 October and 17 October provided information about the comment period extension during and at the close of the partial government shutdown and an email sent on 28 October provided a reminder regarding the end of the scoping period. Copies of the emails distributed to the email distribution list can be found in Attachment C.

Scoping Meeting

A public scoping meeting was held on Tuesday, 24 September 2013 at Tyler Elementary School (1001 G Street, SE). The meetings were held in an open-house format to create an informal and engaging atmosphere. This meeting style provided the public with an opportunity to review information about the proposal and to ask detailed questions of project representatives in an open, one-on-one setting. Attendees were welcomed at the entrance by Marine Corps representatives who ensured attendees

signed in, were provided factsheets, and provided an overview of the scoping meeting layout. Displays were designed to provide the public with information regarding the NEPA process, the purpose and need, how the Marine Corps will assess environmental impacts, the proposed action and alternatives, the CIMP process, the NHPA Section 106 Consultation process, and the public's role in shaping the proposal. Fact sheets distributed to attendees illustrated the information presented on the displays and provided a comment form to submit comments (Attachment D). Marine Corps personnel encouraged attendees to review the displays, fact sheets, and ask questions. They were also encouraged to formulate and submit comments

The scoping meeting was held from 4:30 PM to 8:30 PM with agency attendance the first hour and public attendance starting at 5:30 PM. A total of 24 stakeholders signed in at the scoping meeting, including Linda O'Brien (Staff for DC Councilman Tommy Wells, Ward 6), Kirsten Oldenburg (Commissioner, ANC 6B), Jennifer Hirsch (Federal Preservation Officer, NCPC), and a representative from the CHRS. No media attended the scoping meeting.

As summarized in Table A-2, the Marine Corps received a total of 22 comments during the public scoping period: 0 comment sheets at the scoping meetings, 10 electronic comments via the MBW EIS public website, 11 letters/comment packages via mail postmarked prior to the official close of the scoping period (25 October 2013), and one comment submitted via both the public website and mail. One of the comment letters was signed by 19 individual stakeholders. Any comments received after the scoping period ended were compiled and provided to the EIS team as they prepared the Draft EIS.

Table A-2. Number of Scoping Comments Received During the Scoping Period

	Number of Comments
Comments Received at the Scoping Meeting	0
Comments Received via Website	10
Comments Received via Mail	11
Comments Received via the Website and Mail	1
Total Comments Received	**22**

A.3 DRAFT EIS DISTRIBUTION

Upon release of the Draft EIS, a Notice of Availability/Notice of Public Meetings will be published in the *Federal Register*. The Draft EIS will then be distributed to the agencies, organizations, and individuals and be made available for general review at the libraries listed in Table A-3.

Table A-3. Library Locations for Distribution of the Draft EIS

Library	Street Address
Southeast Public Library	403 7th St. S.E., Washington D.C. 20003
Southwest Public Library	900 Wesley Place S.W., Washington D.C. 20004
Northeast Public Library	330 7th St. N.E., Washington D.C. 20022

Attachment E provides a list of the individuals and organizations receiving the Draft Environmental Impact Statement (EIS) for Multiple Projects in Support of Marine Barracks Washington (MBW).

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Attachment A: Federal Register, NOI, and Newspaper Ads

Federal Register / Vol. 78, No. 173 / Friday, September 6, 2013 / Notices 54873

Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an ''online scoping meeting'' will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com,* or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute "reasonable walking distance" of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A "square" is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 6th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 6th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

The Department of the Navy, U.S. Marine Corps, announces its intent to prepare an Environmental Impact Statement (EIS) to address the potential environmental consequences that may result from implementation of multiple projects in support of Marine Barracks Washington (MBW). The proposed action is to implement various construction, renovation, and repair projects to address existing facilities deficiencies at MBW. Some of these projects are sufficiently ripe for detailed analysis under the National Environmental Policy Act (NEPA) and are the focus of the EIS analysis. The EIS will also provide a programmatic level of analysis of the potential effects of several additional projects for which information sufficient to conduct detailed NEPA analysis is not yet available. A range of action alternatives as well as the No-Action alternative are being evaluated in the EIS.

The Marine Corps **is holding a public scoping meeting** to help identify environmental issues and community concerns with respect to this proposal. There will be no formal presentations; but Marine Corps representatives will be available to answer questions and provide information about the proposed action at the meetings.

Concurrent with the NEPA process, the Marine Corps is also initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, the Marine Corps will hold a Section 106 meeting in a separate area where subject matter experts will explain the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Please plan to attend **at your convenience anytime between 5:30 pm and 8:30 pm.** The open house meeting is being held on the following date, at the following location in Washington, D.C.:

Tuesday, September 24, 2013	**Tyler Elementary School** **1001 G Street, SE**

Please visit our website where information regarding the proposal is available for viewing and downloading at www.mbweis.com. All comments should be postmarked or submitted no later than October 7, 2013 to ensure their full consideration in the EIS analysis. Comments may be submitted electronically at our website or through the mail by sending it to:

MBW EIS Project Manager – William Sadlon
1314 Harwood Street, SE
Building 212
Washington Navy Yard, DC 20374-5018

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MIRROR—1200. MANTLEPIECE OR WALL. 36 x 48. $150. 703-683-0800. Alexandria, VA. 703-683-0800.

Small Antique Trunk—42.00 leather. MD. 301-490-0015. 301-490-0015 dbrine@comcast.net

Vintage 1896 set of BOOKS—$150 (Laurel, MD. 301-490-0015) "Help from Heaven & Famous Events"

Appliances

Jenn-air Gas Stove—$400. Very nice condition. Can be seen in Falls Church area. Call Chris. VA. 703-328-3969

KIRBY Vacuum Cleaner—$249. HEPA filtration, self propelled, like new, cost $1,500 new. 571-606-0219

Lawn Mower, Toro—$49.99 regular fuel, VA. 703-303-9394. 4.5 HP. Excellent Condition! Toro 38cm

Room Air Purifier—$85.00. Fresh air purifier, like new, $150 new, asking $85. Great Call Now. 301-421-1884

WHIRLPOOL ELECTRIC—$200. SUMPTER, VA. 703-413-2367 WHITE WHIRLPOOL

WHIRLPOOL MICROWAVE—$40. SILVER FREED, VA. 703-691-2367 ABOVE STOVE WHITE

Art

Alpaca Wool Hanging—$50 (Mt. Penn) real alpaca wool. 33 x 45, perf cond. Silver Spring. 301-588-0870

Cameras & Photo

Canon Lens—Various Brands—$175.00 Canon, Sigma, Tamron, Tokina, Rokinon, Polaroid, Kodak, Vivitar

Luggage—$250. Women's Suitcase & Garment Bag. French Co leather, perfect used (Group 301-299-1034)

Collectibles

AURORA SLOT CARS Wanted—$ 1.00 & up cash paid. AURORA 1960s-1970s Tyco, Cox, AMT. 703-960-8884

Disney Collectibles—$25.00 (Fairfax, VA. 571-344-4000. Figurines, bells, plates, clocks, etc.

HERENDI PORCELAIN—top piece setting up group transport to Lenox, Wedgwood, Lladro, Cost $2,000 $450

STAMPS—Worldwide Kennedy, Hands, U.S. Commems. 703-914-7183

WANTED: SUPER MILITARY WWII, Korea, Vietnam Items, Uniforms, Medals. ETC. 1800-740-0020 FOR CASH OLD HELMETS. 301-637-8964

Wall Kerley Decorators—$25.00 (Silver up. Beautiful Collectibles. Rockville, MD. 301-774-8000

Computers

DELL LAPTOP—$75.00. MD. 240-292-4700 NO AC ADAPTER 4300MB XP 2ND BOOKS. CORN AD AC CORD

Dell optiplex 755 core 2 duo—$249.99 Alexandria, VA. 703-683-8484

Dell tower Optiplex—$82. MD. 240-292-4700 NO DISPL. 2 AP LCD 160 Fdrs on Hard Drive

DELL WINDOWS LAPTOP $99—Pro 15.6 Wide Screen, 4GB, 320 GB, Win 7. 703-303-0400. MD. 301-933-6400 Details: www.PCNETINC.com

Electronics

Electronics Sales—$25. Most DVD, Blu-ray, Home Theater, Gaming, Tablets, GPS, Cell Phones. 301-588-0870

New Heat Deals—$149.99 Washington, DC. 202-552-0700 Best Sleep Center Digital in Box DBD

New Solar Panel—$149.99 Washington, DC. 202-552-0700

Radio, wanted—$40. Reasonable radio, about 1940-1970, 1970, excel tone. 240-688-1170. Silver Spr

Heavy Equipment, Machinery & Tools

A-1 STEEL CONTAINERS: For rental or sales or overseas shipping. Call Tremble at 1-800-756-6855.

Miller Saw—$149. 14in. 12-inch Compound Miter Saw. Cost $300 new. Like Crafters. MD. 301-638-7000

Regulator Gauges—$140. Tube Cutter Air Gas. Flow Meter Regulator Gauge Grinder. MD. 301-638-7000

Furniture

Antique Bedroom set—$299. dark walnut bedroom set in dresser, 36 x 44-019-2057 Gaithersburg, MA

Bedroom Furniture—70" walnut dresser w/ mirror/bench - $1495 (north) $895. Brass queen headbd $295 (north) $2,000.238.2484 x700

Brown wooden table set chairs—$225.00 Cheltenham, MD. 301-702-3108

Dining Room Set—$800.00. Trestle table, 6 chairs, 2 leaves, 2 arm chairs, glass display cabinet. Gaithersburg, MD. 240-750-4209

Doris Room Set—$1197.00. Very Comfy Single bed for Under Bed Drawer. Cost Now. 301-490-1885

Green Marble Coffee Table—$229.00 Like new, 36 x 36 x 16 Marble top, modern Floor Lamp. 301-924-0167

Hydrangeas—$25.00. home grown face caps and root. Reach 8- 12" pots. Alexandria VA 703-971-2302

NEW QUEEN PILLOWTOP MATT. — $199.99 FREDERICK, MD. CALL 240-626-3899

Office Furniture—$245. Cherry wood desk, file cabinet, bookcase. Material file cab. 703-670-9614

Recliner - Wing Chair style—$249 Reason, VA. 703-801-1887

Sealy Posterpedic twin (Like new) — $199.00 Chantilly, VA. 703-830-2562

SLIC BEDSPREAD—$249 Lattice weave-yellow, pure silk queen-size Quilted. Item 91800. 202-234-2431

Sleep Sofa—$275.00. Bedcube, MD. Sleep sofa, Sleep Cube, Sleep Chair, rattan daybed, throw pillows

Teak 3 Display Cases—$150.00. 71"H x 32 3/4"W x 14 1/2" Cash Only. Gaithersburg, MD. 240-750-8289

Home & Garden

Antique Bedroom set Vanity—$200 Good Condition. Great for catered Bridal Shower. 703-683-0800

English Boxwoods—$49.00 Beautiful English grown 3- 4" tall plants. Alexandria, VA. 703-971-2367

Mini Tiller/Cultivator—$150.00. Great for Flower Beds & Small Gardens. Rockville, MD. 301-774-8087

SLIC BEDSPREAD—$249 Lattice weave-yellow, pure silk queen-size Quilted. Item 91800. 202-234-2431

Solid Hardwood Brazilian Cherry Flooring — 2932 sf. $2.50 per SF. 301-660-1190

Medical Equipment

alum—47 in. wide. 360-244-5705 (wine or crutch) welcome 10 Guardian wheelchair 26

Medical Equipment

Diphenhydrinhydro Scooter—$1000.00 (Hollywood, MD) 240-863-0944 wichamber, candy apple red, 350 lb weight capacity, excellent condition.

Invacare Table—$75. Falls Church, VA. 703-573-3983

WALKER—$25. ADULT FOLDING ALUMINUM. Good condition. Alexandria, VA. 703-971-2302

Wheelchair—$100.00. Bethesda, MD. 240-688-0944 Excellent condition

Merchandise Wanted

Ever been to a Pawnshop? The country's 2nd largest professional & still growing pawn chain. Pawnmart is looking for Pawnbrokers in Tacoma Park. Now celebrating 10 years 5 decades 1 Decade Pawnbroking Experience. 301-608-8116. www.pawnmart.com

HIFI RADIO TUBES—WANTED. Hi-Fi Radio Tubes, Amplifiers, Radio Electronic Parts 410-745-5223

RADIO TUBES—$2.00.00 WANTED. Ham Radios, Audio Speakers Tubes Alexandria, DC 301-587-0021

SMALL COLLECTOR PAYS CASH FOR ALL MANNER OF ITEMS. CALL 301-587-2134. 800 Come to your

Musical Instruments

1923 Steinway B Grand Piano—7 feet, 3 pedals, ivory keys, beautiful condition. Ready to play. Includes bench, Asian Mahogany, original & perfect ivory keys, vintage piano, recent factoryed, inlaid Mahogany Cabinet, Ebony, Ebony, Black Cat Home. 202-250-2184

OLYMPIA TACOMA GUITAR—$150.00 ACOUSTIC 202-527-4900

Sporting Goods & Services

GOLF BALLS—$25. Brandywine, MD. 301-735-0319 Every PING Model is in Stock. www.golfballsdirect.com

Hockey Equipment—Bauer Vapor Hyperlite Senior Gloves, Size Medium. 703-216-9879

HOME GYM EQUIPMENT—$50 - $300. PUNCHING BAG, TREADMILL, EXERCISE BIKE, YOUTH MACHINE, FREE & REASONABLE. CALL FOR PRICES 703-971-2302

Nordic Track Exercise—$150. Nordic Impact, cardio, variable arm/leg workout, cost $899, $71-648-8475

Relish Racing Bicycle (White)—$249 Tri-Bars, very Light, Great Condition. Frederick, MD 240-293-1325

TREADMILL—$100.00 Alexandria, VA. 703-971-2302 MOTOR VG 202-750-9000

Garage Sales, D.C.

Northwest—Park Side Garage Sale! 9 am -noon 5542 Aldermaster Street NW, Washington, DC

Van Ness—Sept 7 - 10-then Dec 7-10. Furniture, Art, Jewelry, Tools, Lots of Quality Stuff. 703-276-3380 5007 Fillmore NW, DC Near Sedgwick

Garage Sales, MD

Chevy Chase—4400 Block Jenifer St. 9/7-13. Yarn Tom. Furniture, art, Antiques, Jewelry

BACKYARD SALE—Saturday, Sept. 7. Community Wide Yard Sale. Deluxe Orchard Park (off of Layhill School). 9/7. Yarn Yarn, Bath Gate 9/8 Sunday Sept 8 9am-2pm. Yarn Yarn, Clothes, equipment, tools, and books.

Gaithersburg—SAT 9/7 & 8-3pm Sunday Sept. 8 9am-2pm. Clothes & MORE 2301 Crestview Dr 20882

Germantown—4800 Wheelchair Dr. 20876 SAT & SUN 8-4 Sp. Dangerous Blanks Antique Collections, Tools, Lighting Everything Must Go. CASH ONLY.

Rockville—Carlisle Place. 9/7 - 9am-12pm Toys, Books, Bath Goods, Wood Chairs, Tools, Lots of Misc. Stuff

Garage Sales, VA

Alexandria—Sat 9/7 8am-2pm. High St. Sat 9/7 Wednesday 9/11 Lots of Stuff. Fun Stuff. Proceeds Benefit Cancer Research

ALEXANDRIA: St. Annette Church - Rummer Sale! Sept 6-8 9am-4pm 710 North Columbus St. 22314 Silver Elephant Jewelry Custom & Silver Antique Forks & Knives, Mary Ann Jewelry, Antiques, & Clothing

BARGAIN
BRUNSWICK COMMUNITY SALE
Sept. 7th, 8am-3pm
3 blocks from Antique Row
Sept. 7th, 7am-1:30pm
Brunswick Community Center
EARLY SALE! $20 ON SHED

Burke—4420 Hunterwoods Dr. Sat 9/7 Ex-Sp. Furniture, antiques, house wares, books, tennis, Kitchen, Fabulous

HERNDON-609 Oak St. Sat 9/7 8-2 Furniture, Tools, Lawn Equipment, Kitchen Items, Toys, Clothes, Crafts, Jewelry, Clothing, Cash only. 703-435-2435

Lorton—9708 Lorton Station Blvd. Sat Sept 7, 9-11. Quarts of Fun Mill (Eco Millboard and Research)

BOSTON COMMUNITY YARD SALE—95 Families Sat 9/7 8:30-12 Mo Rt 1 Exit Boston Blvd Bent Creek Rd. 703-475-4527

Springfield—7231 Orinda Ave. Sat Sept. reminder 7 9am - No toys - Mostly stoneware pottery, jugs, crocks, tools, all kinds of stuff. 703-451-2367

Vienna—huge 3-family yard sale. Sat. Sept. 7, 8am-3pm. 1 Virginia Ct. 22180. Furniture, Art, Tools, Gear & a lot of stuff. 703-938-3

Moving Sale

Belle Haven—HOUSE MOVING! Sat 9/7 8am-3pm. Furniture, Antiques, Crafts, Fabric, Beds, vintage chest of drawers, headboards, antique bookcases and much more! 2616 Fort Drive, Alexandria, VA 22308. 703-765-10-4, 703-303-8212

Bethesda—Moving Sale! Crate! creekSteered. Crib, mini form and mattress, Kitchen Appliances, Furniture, Bedroom, MD. 301-229-8997, 301-229-9997

Burke—6220 Burkeigh Dr. Burke VA. 9/7/2013. 8am-12pm. 703-978-2291 Lots! yarn furniture, single bed, gift 703-978-2291

Burke—6220 Burkeigh Dr. Burke VA. 9/7/2013. 8am-12pm. 703-978-2291 Lots! yarn furniture, single bed, gift 703-978-2291

Chevy Chase—3700 Bradley Blvd. Sat. 9/7 9am-2pm. power tools, furniture, MOCCASIN Sale 571-436-3883

BOSTON TERRIER PUPPIES AKC, Shots and wormed, 2 weeks, $400. Also AKC Fox Red Lab male, Energetic and SAFE for calm Call 540-825-3789

Cane Corso—$1200 & up. IOCP reg. Male brindle, black, fully docked, dewormed. Stable With Dual Rotation fence guarantee 540-729-4149

Dogs for Sale

Cane Corso—IOCP registered Cane Corsos Mastiff's Puppies for director sale. 301-600-2299, $1200

COLLIE PUPS—AKC full Shots & dewormed. Sable/White, Parents on site. Ready 9/13. $350 - $400. 540-347-2788

Doberman—red & abc male, ears, tails, full shots, dewormed and over owner with time, exp. over 2 years old only.

ENGLISH SPRINGER SPANIEL PUPPY $750 AKC Fam raised, (no vetted) 410-939-1570. dawn@bigdogs.com

GERMAN SHEPHERD PUPPIES - A beautiful litter, healthy, with great temperament, for families with children, shots & wormed. 6 weeks old. $400 each. 540-825-3789

Golden Retriever—$350 each. Ready Now. Shots & Wormed. Call 301-752-1355. AKC Registered. Vet Checked, Raised on farmette.

Golden Retriever Puppies—Male Females Available. Ready 9/9. Shots & wormed. Raised in family home. Call 540-519-0526

Labradoodle Retriever Puppies—AKC Chocolate Male, Ready Now, Shots & wormed. $1,000. 240-374-6279

Lab/German Shepherd Mixed Puppies—Borgward Vet Clinic 276 Dekalb St Call 301-622-4310 See pics @ germanshepherd.com

LABRADOR—AKC Reg. $350. Black Chocolate. Male/Fem. 4 WKS. Shots, dewormed, family raised. Ready Sept. 13th. 703-540-7223

Labrador Retriever—$400. AKC, Black Male, Ready Now, Shots & Wormed. Vienna, Virginia. 703-938-4000 x327 Email: shannon2@gmail.com

Labrador Retriever Puppies—$1,100. Yellow and Black litter. Sire imported from Czech Republic. Dam AKC champion. Lots of pedigree. Ready 10/13. 540-270-0135

Labradoodle Puppies—$700. Beautiful chocolate, Super Chief Bloodline, health cert by vet 6 wks old, Gaithersburg

GOLDENDOODLE PUPS F1B mens coat, Parent Poodle/Golden, no shed, family raised, Ready 9/16/13 $1000 703-361-1159

Pug, fawn colored—$900.00. OBO Shots, Vet Check, Ready Now. Call Brian, 540-371-1159

Rottweiler—$400.00. AKC. CHAMPIONS BLOOD. LARGE BONE. DWORC 1st SHOTS & WORMED. 540-825-2500

ROTTWEILER PUPPIES - German lines, Ready Now, Vet Ck'd, Shots, Wormed, 1/2 Dewormed, parents on site, Great family pets, 540-825-2118

ROTTWEILER—BEAUTY VALLEY PUPS. 16 wks old, GERMAN BLOOD-LINES, Shots, Wormed, Vet Ck'd, Parents on site, 703-931-8941

Rottweiler—for old Punk Bred Rottweiler, championship bloodline available for stud. Serious inquiries only. 571-351-0000

SCOTTISH TERRIER PUPPY—Black male, shots and wormed, ready now, parents on site, 12 weeks, $500. 410-778-2198

SHIH TZU - PUPS BRED PUPS 8 weeks old, parents on premises, 1st shots, vet checked. Males $300. Females $400. Call 540-743-9956

Yorkie-Poodle Puppies for sale Red & White, Shot exam, 3 weeks old, Ready 9/13, Mother on premises, $400 obo. 540-427-6281

Yorkie - Poodle Puppies—$700. Male/Female, Shots, Dewormed, Vet Ck'd, Parents on site. Call 540-743-9956

Yorkie & MINIATURE SCHNAUZER PUPPIES—Ready 9/13, Shots, Wormed, Vet Ck'd, Parents on site, Beautiful healthy, intelligent, obedient, great search & rescue dogs. 540-825-3789, 540-827-6628

Yorkie—Lab—Trained, ready for Christmas, Shots, Wormed, Vet Ck'd, Parents on site, 540-825-3789, 540-827-6628

YORKIE-MALTESE CHICHOIS & CHORGIE PUPS. 8 weeks male & fem. Shots, Wormed, Vet Ck'd, $600 & up. Call 540-407-2621

YORKIE, MORKIE, YORKIE BICHON, YORKIE POO, BICHON POO, Non-Shed Males Available. Ready 9/13. Shots, Wormed, Vet Ck'd, Parents on site, 540-825-3789

YORKIE - YORKIE-POOS - Shots, Wormed, Vet Ck'd, Parents on site, Very active, 10 weeks old, Ready 9/13, 540-825-3789

Adopt Dogs

A BEST DAND FRIEND WAITS FOR YOU!
Over adoptable Dachshunds, all ages, sizes, colors. Rescue Hotline 703-425-8678 or www.dachshundrescue.com

Adopt a Buddy For Life
Saturday, September 7 from 9am-3pm
Petco 1 Lee-Hwy Fairfax, VA
703-352-3300 CFAA661

ADOPT A CAT KITTEN
Vet checked
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703-503-0365 www.flipz.org

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www.Felix-Fancies.com

Bids & Proposals

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25± UNIT AMENITY BUILDING
ZONED R-5-A • *"Chillum"*
(Known As)
5408 1ST PL., NW
WASHINGTON, DC 20011
BROKER CO-OP INVITED
NO BUYER'S PREMIUM

By virtue of the power of sale contained in that certain Credit Line Deed of Trust, Assignment of Rents and Leases, Security Agreement and Future Filing, (the "Deed of Trust") from Washington Communities II, LLC to John Gamble and Claude Barrington, Trustees, dated August 23, 2011, and recorded among the Land Records of the Office of the Recorder of Deeds for the District of Columbia as Instrument No. 2011080021, the holder of the indebtedness secured by said Deed of Trust, having subsequently confirmed John K. Gamble, Trustee and appointed Catherine K. Hopkin, Trustee, pursuant to D.C. Code § 42-817 and the indebtedness being in default and demand having been made for payment of the obligations secured thereby and after giving due notice of sale in accordance with Public Law 96-566 filed on March 1, 2012, the undersigned Trustee and Substitute Trustee will offer for sale at public auction on the premises at

THURSDAY, SEPTEMBER 12, 2013 AT 12 NOON

At that certain lot or parcel of land situate in the District of Columbia and being more particularly described as follows:

Lots Numbered Sixty-six (66) and Sixty-seven (67) in Square Numbered Thirty-three Hundred Twenty-three (3323) in Chillum Heights by Wright Gardner and Martin as per plat recorded in the office of the Surveyor for the District of Columbia in Liber 66 at folio 8. Properties: 5408 1st Place, N.W., Washington, DC 20011; SSL Nos.: 33930066; 33910067; and 33930077.

PROPERTY DESCRIPTION: The property is believed to be improved by brick, 2 story, 25 unit apartment building with a completely walk-up basement building with parking. The building is believed to contain 19,683± sq. ft.

TERMS OF SALE: A deposit of $25,000.00, in cash or certified funds will be required of the purchaser at the time and place of sale. The deposit must be increased to equal ten percent (10%) of the purchase price on or before 12:00 p.m. (noon) on September 16, 2013, and delivered to the office of the Auctioneer in the same form as the initial deposit. The property will be sold "AS IS", with all faults, defects or hazards and subject to all conditions and agreements of record affecting the same, if any, and with no warranty as to description and improvements. The property will also be sold subject to all applicable rules, obligations, easements, equitable servitudes and restrictions, subject to all matters and restrictions or records affecting the same, if any. Interest to be paid on the unpaid purchase amount at the rate of 6.5% from date of Auction Sale to date of settlement. The party second bidder, if a bidder, shall not be required to post a deposit or pay interest. The trustees reserve the right, in their sole discretion, to: (i) reject any bid; (ii) waive any defect in the sale; (iii) extend the time for receipt of bids and other terms of sale or settlement; and (iv) withdraw the property from sale at any time before or at the Auction. Taxes, water rent and all other public charges and assessments adjusted to date of auction sale and assumed by purchaser. "Cost of all documentary stamps, transfer taxes, document preparation, title insurance and all other expenses incidental to the conveyance of the property shall be paid by the purchaser. Settlement within 30 days of date of auction sale or the trustees may at their option declare the purchaser in default and proceed against the defaulting purchaser. Purchaser shall be responsible for obtaining physical possession of the property. Balance of the purchase price, over and above the retained deposit, with interest thereon as stated in the underlying loan documents, from the date of sale through the date of settlement, will be due at settlement in cash or immediately available funds. Conveyance shall be by Trustee's Deed without covenant or warranty, express or implied. Time is of the essence with respect to each and every term, condition and obligation of the purchaser. Notice of ratification of the sale shall be published in one weeks in one newspaper of general circulation published in Washington, DC. **TUESDAY, SEPTEMBER 17, 2013 AT 12 NOON OF SEPTEMBER 2013.** The Report of Sale states the amount of the sale to be $10,837.00.

Sheets & Knight
Clerk of the Circuit Court for Montgomery County, Maryland

IN THE CIRCUIT COURT FOR MONTGOMERY COUNTY MARYLAND
JOHN E. DRISCOLL III, et al
Substitute Trustees
Plaintiffs
vs.
MAI KANG
Defendant(s)
Civil Action No. 377101V

NOTICE

Notice is hereby given this 28th day of AUGUST, 2013, by the Circuit Court for Montgomery County, Maryland, that the sale of the property mentioned in these proceedings made and reported by the Substitute Trustees, will be ratified and confirmed unless cause to the contrary thereof be shown on or before the **23RD day of SEPTEMBER, 2013**, provided a copy of this NOTICE be published at least once in each of three successive calendar weeks in one newspaper of general circulation published in Montgomery County, Maryland, on or before **SEPTEMBER 23, 2013.**

The Report of Sale states the amount of the sale to be $148,999.99.

Sheets & Knight
Clerk of the Circuit Court for Montgomery County, Maryland

IN THE CIRCUIT COURT FOR MONTGOMERY COUNTY MARYLAND
JOHN E. DRISCOLL III, et al
Substitute Trustees
Plaintiffs
vs.
ESTATE OF LINDA JOHNSON JEREMIAH K. JOHNSON PERSONAL REPRESENTATIVE
Defendant(s)
Civil Action No. 374221V

NOTICE

Notice is hereby given this 28th day of AUGUST, 2013, by the Circuit Court for Montgomery County, Maryland, that the sale of the property mentioned in these proceedings made and reported by the Substitute Trustees, will be ratified and confirmed unless cause to the contrary thereof be shown on or before the **23RD day of SEPTEMBER, 2013**, provided a copy of this NOTICE be published at least once in each of three successive calendar weeks in one newspaper of general circulation published in Montgomery County, Maryland, on or before **SEPTEMBER 23, 2013.**

The Report of Sale states the amount of the sale to be $179,837.00.

Sheets & Knight
Clerk of the Circuit Court for Montgomery County, Maryland

Cats

MAINE COON KITTENS CFA registered Litterbaby Ready 9/13 Vet checked health guarantee $700 each Call 540-612-2364

Persian—CFA, black, dollface, show quality, vaccinated, chipped, dewormings, 757-870-9412 or Ann 757-566-8480

PERSIANS—CFA, Adorable Fluffy Kittens, Ready 9/13, Shots, Vet Ck'd, Parents on site, 540-825-3789, 540-827-6628

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Montgomery County

The Department of the Navy, U.S. Marine Corps, announces its intent to prepare an Environmental Impact Statement (EIS) to address the potential environmental consequences that may result from implementation of multiple projects in support of Marine Barracks Washington's mission. Proposed actions to implement various construction, renovation, and repair projects to address existing facilities deficiencies at MBW. Some of these projects are sufficiently type for detailed analysis under the National Environmental Policy Act (NEPA) and are the focus of the EIS analysis. The EIS will also provide a programmatic level of analysis of the potential effects of several additional projects for which information sufficient to conduct detailed NEPA analysis is not yet available. A range of action alternatives as well as the No-Action alternative are being evaluated in the EIS.

The Marine Corps is **holding a public scoping meeting** to help identify environmental issues and community concerns associated with the proposed action. Agencies, Tribes, and other interested parties will be available to answer questions and provide information about the proposed action at the meetings.

Concurrent with the NEPA process, the Marine Corps is also initiating National Historic Preservation Act Section 106 Consultation. Potential effects of the proposed action will be addressed in the EIS. Registered parties for the scoping meeting, the Marine Corps will hold a Section 106 meeting in a separate area where subject matter experts will explain the Section 106 process and solicit public input on the identification of historic properties and potential effects on historic properties. Registered parties are invited to participate.

Please plan to attend at **your convenience anytime between 5:30 pm and 8:30 pm.** The open house meeting is being held on the following date, at the following location in Washington, D.C.:

Tuesday, September 24, 2013	Tyler Elementary School 1001 G Street, NW

Please visit our website where information regarding the proposal is available for viewing and downloading at www.mbw.usmc.com. All comments should be postmarked or submitted no later than October 7, 2013 to ensure their full consideration in the EIS analysis. Comments may be submitted electronically at our website or through the mail by sending it to:

MBW EIS Project Manager – William Sadlon
1314 Harwood Street, SE,
Building 212
Washington Navy Yard, DC 20374-5018

Montgomery County

HEISE JORGENSEN & STEFANELLI P.A.
13310 Montgomery Village Avenue, Suite 400
Gaithersburg, MD 20878
(301) 977-5400

SUBSTITUTE TRUSTEES' SALE OF VALUABLE REAL ESTATE
Known As
13003 TRAILSIDE WAY, UNIT 5-0, GERMANTOWN, MARYLAND 20874

By virtue of the power and authority contained in a certain Deed of Trust from Bradley A. Weiner to Richard W. Euler, Trustee, dated June 29, 2006, recorded in Liber 36000 at Folio 250 of the Land Records of Montgomery County, Maryland, the undersigned substituted trustees by virtue of Deed of Appointment between Housing Opportunities Commission of Montgomery County, Maryland, Beneficiary, the owner in interest to Weiner-Davis Funding, Inc., and said trustees recorded among the Land Records of Montgomery County, will, on

TUESDAY, SEPTEMBER 10, 2013
AT 9:00 O'Clock, A.M.

offer for sale at public auction at the Knowles Street entrance of the Montgomery County Judicial Center, 50 Maryland Avenue, Rockville, Maryland, the property described in said Deed of Trust and as hereinafter described and described in said deed of trust as follows:

Unit 5-0, in a Plan of Condominium Subdivision known as "Phase 3 North-East Condominium" as per Declaration dated April 17, 1973 and recorded April 24, 1973 in Liber 5121 at Folio 751 by Plat recorded simultaneously therewith in Plat Book 108 at Plat Number 11, Land Records of Montgomery County, Maryland both amended by Amendment recorded 01 Liber 5162 at Folio 596 among the aforesaid Land Records.

Tax Identification No. 04-0102513 SD

The property is improved by a condominium unit, and is known as 13003 Trailside Way, Unit 5-0, Germantown, Maryland 20874 (the "Property").

TERMS OF SALE

The Property will be offered for sale, subject to matters known and unknown, in an "AS IS, WHERE IS" condition and will be sold and conveyed by the Substitute Trustees subject to all encumbrances, rights, reservations, covenants, conditions, easements, restrictions and standard rights of way now or hereafter vest over the Deed of Trust, as they may lawfully affect the Property.

The Substitute Trustees and the Beneficiary disclaim all warranties of any kind, either express or implied, for the Property, including, without limitation, any warranty relating to the zoning, structural integrity, habitability, fitness for a particular purpose, merchantability, environmental risks, materials, marketability, environmental condition, compliance with applicable laws, fitness for a particular purpose and merchantability.

The Property shall be sold subject to all conditions and declarations contained on the subdivision plats, easements, liens, conditions, restrictions, and all other matters of record, and all rights, easements, and agreements of record affecting the same (collectively, "Liens"). If such Liens have priority over the Deed of Trust and subject to all applicable rights of redemption, rights of possession, rights of tenants, rights of redemption, all existing housing, building and zoning code violations, subject to all environmental problems and violations which may exist on or with respect to the Property, and subject to all matters that an accurate survey or physical inspection of the Property might disclose. The risk of loss or damage to the Property is assumed by the purchaser from and after the date and time of the sale. Delivery of possession of the Property shall be the sole responsibility of the purchaser.

A deposit of twelve thousand dollars ($12,000.00), in the form of certified check or cashier's check, will be required at the time of sale will be required of the purchaser. The Beneficiary is not required to make a record. The Substitute Trustees reserve the right to waive or modify the deposit requirement; (ii) to approve the creditworthiness of any bidder or purchaser; (iii) to reject any bid; (iv) to withdraw the Property from any time prior to the commencement of bidding; (v) to postpone the sale upon for any length of time; (vi) to reject any or all bids; and (vii) to postpone the sale, all as the Substitute Trustees may determine in their discretion.

The balance of the purchase price for the Property, together with interest at the rate of 6.5% per annum from the date of the foreclosure sale, must be paid in cash within 15 days after time of the sale of the Property by the Circuit Court, time being of the essence with regard to all the purchaser's obligations.

Taxes, water, power, ground rent, condominium fees, and/or homeowners' association fees, if any, shall be paid by the purchaser, or if paid, shall be assumed thereafter by the purchaser. All other public charges and assessments payable on an annual basis, including sanitary and/or front foot assessments, if any, shall be adjusted to date of sale and assumed thereafter by the purchaser. All costs of conveyance, including transfer taxes and recordation taxes will be paid by the purchaser.

If any successful bidder fails for any reason to increase the Deposit or settle on the purchase of the Property, the Substitute Trustees may, at their option, apply to the costs of the sale including Substitute Trustees' fees, and the balance, if any, shall be delivered to the Beneficiary to be applied by the Beneficiary against the indebtedness secured by, and other amounts due under, the Deed of Trust in accordance with the Deed of Trust or retained by the Substitute Trustees to pay future costs.

Forfeiture of the Deposit shall not limit any rights or remedies of the Substitute Trustees or the Beneficiary with respect to any such default. If the purchaser fails to pay any such default, such sale shall be at the risk and the cost of the failing bidder, and the failing bidder shall be liable for any deficiency in the purchase price, together with all the expenses as well as all costs of conducting such resale.

Immediately upon conveyance by the Substitute Trustees of the Property to a purchaser at foreclosure, all duties, liabilities, and obligations of the Substitute Trustees, if any, with respect to the Property so conveyed shall cease and terminate. In the event the Property is not conveyed by deed or conveyance or other necessary instrument documents, the purchaser's sole remedy shall be the refund of the Deposit. In the event the Property is not conveyed by deed or conveyance or other instrument documents and one is requested, one is requested and paid for by the purchaser prior to the sale, or if for any other reason, the undersigned Substitute Trustees are unable to convey title to the purchaser, the purchaser's sole remedy shall be the refund of the Deposit and the purchaser shall have no further interest in the property and shall release.

The descriptive information contained herein was obtained from sources deemed reliable, but is not guaranteed. Additional information may be obtained from the Beneficiary or the Substitute Trustees makes any representations or warrantees with respect to the accuracy of this information.

Additional terms and conditions may be announced at the time of sale. All inquiries regarding the sale should be directed to Stephen B. Jackson, Substituted Trustee.

STEPHEN B. JACKSON AND JOHNR POLEY III
Substitute Trustees
13310 Montgomery Village Avenue, Suite 400
Gaithersburg, MD 20878
(301) 977-5400

AUGUST 23, 30, SEPTEMBER 6, 2013

TRUSTEE'S SALE

Trustee's Sale of valuable fee simple property improved by premises known as **13523 NIAGARA FALLS COURT, Germantown, MD 20874.** By virtue of the power and authority contained in a Deed of Trust from **SYED A. BURHANI AND FASINA S. BUNHARI,** dated April 20, 2005, and recorded in Liber 29114 at Page 330 among the land records of the **COUNTY OF MONTGOMERY,** in the original principal amount of $255,000.00. Upon default and request for sale, the undersigned trustees will offer for sale at public auction at the Courthouse for the COUNTY OF MONTGOMERY, at 50 Maryland Avenue, Rockville, Maryland, on **September 10, 2013 at 1:00 PM**, all that property described in said Deed of Trust including but not limited to:

Being known and designated as Lot numbered Two Hundred Sixty (260) in block lettered "A" in the subdivision known as "FOUNTAIN HILLS" as per plat recorded in Plat Book 181 at Plat No. 20108, among the Land Records of Montgomery County, Maryland, in liber 6 at folio 48.

Said property is in fee simple and is improved by a dwelling and is sold in "as is condition" and subject to all superior covenants, conditions, restrictions, easements, rights-of-way, as may affect same, if any.

TERMS OF SALE: A deposit of $25,000.00 cash or certified funds shall be required at the time of sale. The balance of the purchase price with interest at 6.00% per annum from the date of sale to the date of payment will be paid within TEN DAYS after the final ratification of the sale. Adjustments on all taxes, public charges and assessments payable annually will be made as of the date of sale and thereafter assumed by purchaser. If applicable, condominium and/or homeowners association dues and assessments that may become due after the time of sale will be the responsibility of the purchaser. Settlement charges, recordation, state revenue stamps, transfer taxes, title insurance, and all other costs incident to settlement are to be paid by the purchaser. Time is of the essence for the purchaser, otherwise the deposit will be forfeited and the property may be resold at risk and costs of the defaulting purchaser. If the sale is not ratified or the Substitute Trustees are unable to convey marketable title in accord with these terms of sale, the purchaser's only remedy is the return of the deposit.

Trustee's File No. 09-1632209 LOAN TYPE:= Conventional

Kristine D. Brown, et al., Substitute Trustees.

SHAPIRO BROWN & ALT, LLP, 10021 Balls Ford Road, Suite 200, Manassas, Virginia 20109 (410) 769-9797

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SEPTEMBER 20, 2013 59

BIZLEADS

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Marketplace

The Department of the Navy, U.S. Marine Corps, announces its intent to prepare an Environmental Impact Statement (EIS) to address the potential environmental consequences that may result from implementation of multiple projects in support of Marine Barracks Washington (MBW). The proposed action is to implement various construction, renovation, and repair projects to address existing facilities deficiencies at MBW. Some of those projects are sufficiently specific for detailed analysis under the National Environmental Policy Act (NEPA) and are the focus of the EIS analysis. The EIS will also provide a programmatic level of analysis of the potential effects of several additional projects for which information sufficient to conduct detailed NEPA analysis is not yet available. A range of action alternatives as well as the No-Action alternative are being evaluated in the EIS.

The Marine Corps is holding a public scoping meeting to help identify environmental issues and community concerns with respect to the proposal. There will be no formal presentations, but Marine Corps representatives will be available to answer questions and provide information about the proposed action at the meeting.

In conjunction with the NEPA process, the Marine Corps is also conducting National Historic Preservation Act Section 106 consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, the Marine Corps will hold a Section 106 meeting in a separate area where subject matter experts will explain the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Please plan to attend at your convenience anytime between 5:30 pm and 8:30 pm. The open house meeting is being held on the following date at the following location in Washington, D.C.:

Tuesday, September 24, 2013 Tyler Elementary School, 1001 G Street, SE

Please visit our website where information regarding the proposal is available for viewing and downloading at www.mbweis.com. All comments should be postmarked or submitted no later than October 7, 2013 to ensure their full consideration in the EIS analysis. Comments may be submitted electronically at our website or through the mail by sending it to:

MBW EIS Project Manager – William Sadlon
1314 Harwood Street, SE
Building 212
Washington Navy Yard, DC 20374-5018

BIZLEADS

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Marketplace

The Department of the Navy, U.S. Marine Corps, announces its intent to prepare an Environmental Impact Statement (EIS) to assess the potential environmental consequences that may result from implementation of multiple projects in support of Marine Barracks Washington (MBW). The proposed action is to implement various construction, renovation, and repair projects to address existing facilities deficiencies at MBW. Some of these projects are sufficiently ripe for detailed analysis under the National Environmental Policy Act (NEPA) and are the focus of the EIS analysis. The EIS will also provide a programmatic level of analysis of the potential effects of several additional projects for which information sufficient to conduct detailed NEPA analysis is not yet available. A range of action alternatives as well as the No-Action alternative are being evaluated in the EIS.

The Marine Corps is holding a public scoping meeting to help identify environmental issues and community concerns with respect to this proposal. There will be no formal presentation, but Marine Corps representatives will be available to answer questions and provide information about the proposed action at the meetings.

Concurrent with the NEPA process, the Marine Corps is also initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, the Marine Corps will hold a Section 106 meeting in a separate area where subject matter experts will explain the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Please plan to attend at your convenience anytime between 5:30 pm and 8:30 pm. The open house meeting is being held on the following date, at the following location in Washington, D.C.:

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MBW EIS Project Manager – William Sadlon
1314 Harwood Street, SE
Building 212
Washington Navy Yard, DC 20374-5018

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Attachment B: General Scoping Letter

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Southeast Public Library
Public Documents
403 7th St. S.E.
Washington, DC 20003

Dear Sir or Madam,

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an EIS to evaluate the potential environmental impacts that could result from implementation of multiple projects in support of MBW in southeast Washington, D.C. This analysis is being conducted in accordance with the National Environmental Policy Act of 1969 (NEPA). We would like to inform you about both the proposed action and an upcoming public scoping meeting. Scoping is an early and open public involvement process aimed at determining the scope of issues to be addressed and identifying the significant issues related to a proposed action. An open-house-style public scoping meeting is scheduled for September 24, 2013 at Tyler Elementary School Auditorium, 1001 G Street SE, Washington, DC, from 5:30 pm to 8:30 pm. Agencies are invited to attend prior to the general public, beginning at 4:30 pm.

Concurrent with the NEPA process, the Marine Corps is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

The proposed action is to implement several construction, renovation, and improvement projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in MBW's Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex replacement project, comprising four identified sites near MBW, as well

Subj: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

as the No Action Alternative. The attached enclosure depicts the location of the existing MBW properties and potential BEQ Complex alternative sites. Other longer-term (2018 or later) projects to be analyzed programmatically include Building 20 reuse and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

In preparing the EIS for this proposal, the Marine Corps will analyze a broad range of resources and issues, including those raised during scoping. Anticipated issues associated with the proposed action may include, but are not limited to, socioeconomics, land use, cultural resources, transportation and traffic, and environmental justice.

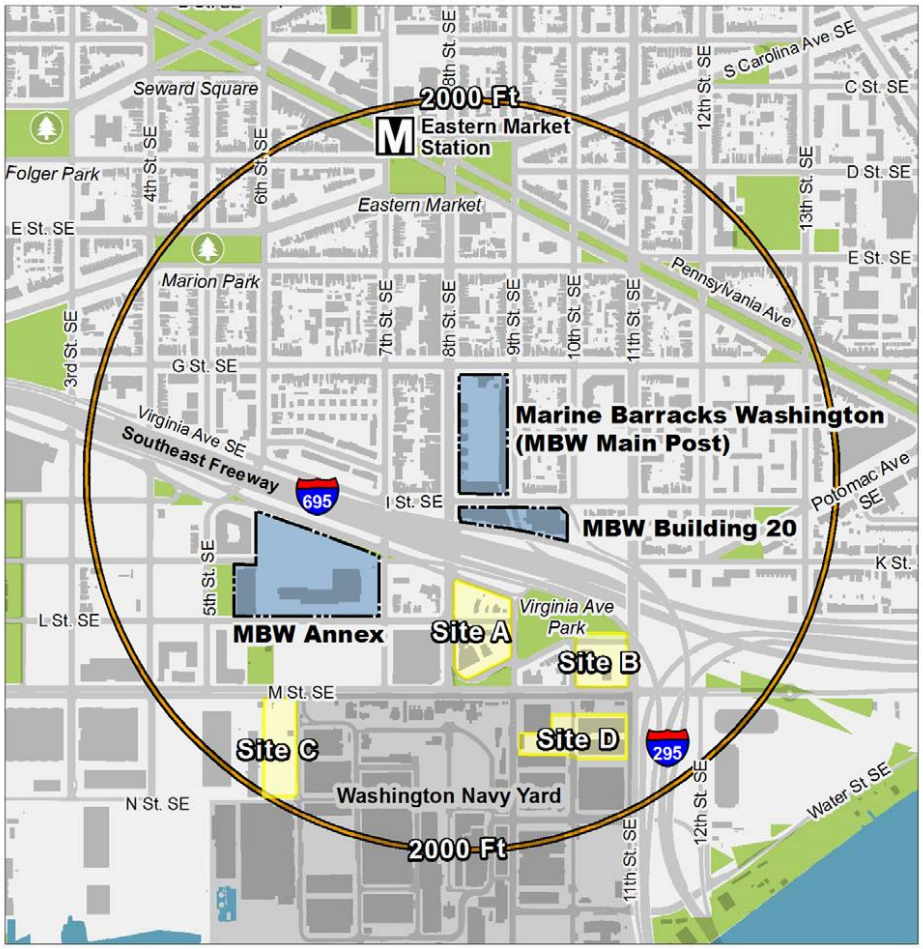
The 30-day public scoping process began with the publication of the Notice of Intent to prepare this EIS in the *Federal Register* on September 6, 2013 and is scheduled to conclude on October 7, 2013. Please provide your comments by October 7, 2013 to ensure their consideration in the EIS analysis. You can submit your comments at the scoping meeting, via the project website at www.mbweis.com, or by mail to the MBW EIS Project Manager: Mr. Bill Sadlon, at william.sadlon@navy.mil, (202) 685-0164, or 1314 Harwood St. SE, Bldg. 212, Washington Navy Yard, DC 20374-5018.

Please submit requests for special assistance, sign language interpretation for the hearing impaired, oral comments, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at (202) 433-6682 by September 13, 2013. If you have questions, or need further information, please contact the MBW EIS Project Manager or visit the project website at www.mbweis.com.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

Attachment C: Email Notifications During Scoping

From: MBW EIS
Sent: Monday, September 30, 2013 5:21 PM
Subject: Marine Barracks Washington Environmental Impact Statement Scoping

The U.S. Marine Corps would like to thank those of you who attended the September 24, 2013 scoping meeting for the Environmental Impact Statement (EIS) for Multiple Projects in Support of Marine Barracks Washington, D.C. In response to comments received to date regarding improving the notification process, the project team has generated this additional email notification process. Those receiving this email have been identified as potential stakeholders in the EIS scoping process and/or from the pre-NEPA, Community Integrated Master Plan (CIMP) phase of the project.

This email is to serve as a reminder that the official EIS scoping comment period is scheduled to close on October 7, 2013. If the federal government is subject to a partial shutdown, the comment period will be extended automatically by the number of days that the government is shut down. Comments received during the scoping process will be used to inform the development of the EIS analysis going forward. Note that the Marine Corps will continue to accept and consider agency and public scoping input to the maximum extent possible prior to publication of the Draft EIS. The public will then have an opportunity to review and provide comments on the Draft EIS. Comments can be provided electronically via the project website (www.mbweis.com) or by mailing them to:

William Sadlon
MBW EIS Project Manager
1314 Harwood St SE
Building 212
Washington Navy Yard, D.C. 20374-5018

Additional information on the EIS can be found at the project website listed above. Copies of the display boards used during the September 24, 2013 scoping meeting can be found at the following link:
http://www.mbweis.com/Resources/Documents/Marine_Barracks_Washington_EIS_Posters_small_size_lo-res.pdf

For further information, please contact Captain Jack Norton, the MBW Public Affairs Office Representative at (202) 433-6682.

This is an automated message, please do not reply. Comments may be submitted via the project website: www.mbweis.com.

From: MBW EIS
Sent: Thursday, October 10, 2013 4:23 PM
Subject: Marine Barracks Washington Environmental Impact Statement Scoping Update

The U.S. Marine Corps would like to inform you that, due to the partial federal government shutdown, the official scoping comment period for the Environmental Impact Statement (EIS) for Multiple Projects at Marine Barracks Washington has been extended beyond the original closing date of October 7, 2013. The Marine Corps will not establish a new closing date for the scoping comment period until the partial government shutdown is ended. However, the Marine Corps anticipates that the comment period will remain open for approximately one week following the end of the shutdown. Once the shutdown ends, you will receive an email notifying you of the revised scoping comment period closing date. Comments can be provided electronically via the project website (www.mbweis.com) or by mailing them to:

William Sadlon
MBW EIS Project Manager
1314 Harwood St SE
Building 212
Washington Navy Yard, D.C. 20374-5018

Comments received during the scoping process will be used to inform the development of the EIS analysis going forward. Note that the Marine Corps will continue to accept and consider agency and public scoping input to the maximum extent possible prior to publication of the Draft EIS, which is anticipated in summer 2014. The public will then have an opportunity to review and provide comments on the Draft EIS.

Additional information on the EIS and the latest updates on the process can be found at the project website listed above. Copies of the display boards used during the September 24, 2013 scoping meeting can be found at the following link:
http://www.mbweis.com/Resources/Documents/Marine_Barracks_Washington_EIS_Posters_small_size_lo-res.pdf

For further information, please contact Captain Jack Norton, the MBW Public Affairs Office Representative at (202) 433-6682.

This is an automated message, please do not reply.

From: MBW EIS
Sent: Thursday, October 17, 2013 11:47 AM
Subject: New Closing Date for MBW EIS Scoping: Oct. 25, 2013

As indicated in our prior notification on October 10, 2013, due to the partial federal government shutdown the official scoping comment period for the Environmental Impact Statement (EIS) for Multiple Projects at Marine Barracks Washington was extended beyond the original closing date of October 7, 2013. Now that action has been taken to bring an end to the shutdown, the Marine Corps would like to announce that the new closing date for the scoping period will be Friday, October 25, 2013. This new closing date corresponds with previous announcements made noting that the comment period would remain open for approximately one week following the end of the shutdown. Comments can be provided electronically via the project website (www.mbweis.com) or by mailing them to:

William Sadlon
MBW EIS Project Manager
1314 Harwood St SE
Building 212
Washington Navy Yard, D.C. 20374-5018

Comments received during the scoping process will be used to inform the development of the EIS analysis going forward. Note that the Marine Corps will continue to accept and consider agency and public scoping input to the maximum extent possible prior to publication of the Draft EIS, which is anticipated in summer 2014. The public will then have an opportunity to review and provide comments on the Draft EIS.

Additional information on the EIS and the latest updates on the process can be found at the project website listed above. Copies of the display boards used during the September 24, 2013 scoping meeting can be found at the following link:
http://www.mbweis.com/Resources/Documents/Marine_Barracks_Washington_EIS_Posters_small_size_lo-res.pdf

For further information, please contact Captain Jack Norton, the MBW Public Affairs Office Representative at (202) 433-6682.

This is an automated message, please do not reply.

From: MBW EIS
Sent: Monday, October 28, 2013 10:52 AM
Subject: Close of the MBW EIS Scoping Period

This announcement serves as a notification that the official scoping comment period for the Environmental Impact Statement (EIS) for Multiple Projects at Marine Barracks Washington (MBW) has closed. As indicated previously, the comment period was extended beyond the original closing date of October 7, 2013 to Friday, October 25, 2013 due to the recent partial government shutdown.

The Marine Corps would like to thank all of you who participated in the scoping process! Comments received during the scoping process will be used to inform the development of the EIS analysis going forward. Publication of Draft EIS is anticipated in summer 2014. The public will then have an opportunity to review and provide comments on the Draft EIS.

Please note that while the comment period has officially closed, the Marine Corps will continue to accept and consider agency and public scoping input to the maximum extent possible as the Draft EIS is prepared. Accordingly, comments can still be provided electronically via the project website (http://www.mbweis.com/Comments.aspx) or by mailing them to:

William Sadlon
MBW EIS Project Manager
1314 Harwood St SE
Building 212
Washington Navy Yard, D.C. 20374-5018

Additional information on the EIS and the latest updates on the process can be found at the project website, www.mbweis.com.

For further information, please contact Captain Jack Norton, the MBW Public Affairs Office Representative at (202) 433-6682.

This is an automated message, please do not reply.

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Attachment D: Scoping Meeting Factsheets

Environmental Impact Statement

for Multiple Projects in Support of Marine Barracks Washington, DC

Scoping Meeting

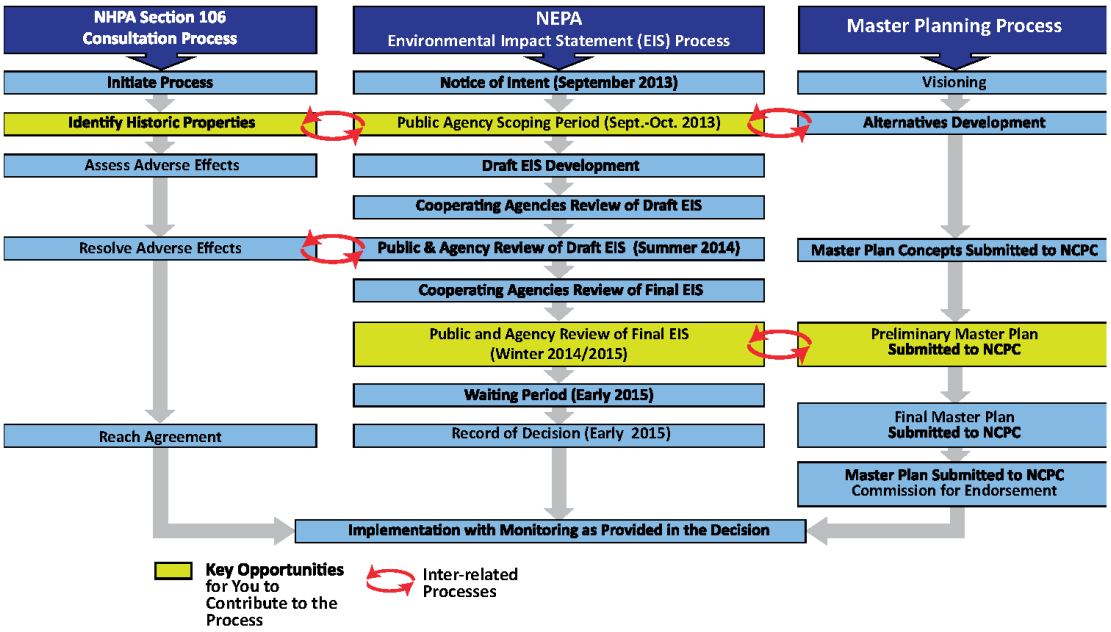
Your involvement assists the Marine Corps in making an informed decision.
Thank you for your participation.

September 2013

For more information, please visit the project website at: www.mbweis.com

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Planning Process Overview



The **National Environmental Policy Act (NEPA)** guides the Marine Corps' environmental analysis process.

The **National Historic Preservation Act (NHPA)** requires federal agencies to consider the effects of their actions on historic properties.

The **National Capital Planning Act** establishes the National Capital Planning Commission (NCPC) as the central planning agency for the federal government in the National Capital Region.

These inter-related processes will take place concurrently.

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Environmental Impact Statement | Purpose and Need

Marine Barracks Washington (MBW) Mission

Special Security and Ceremonial Duties for the Nation's Capital and the World

- Presidential Support Duties
- Ceremonial Marchers
- Silent Drill Platoon
- Body Bearers
- Color Guard
- Drum and Bugle Corps
- U.S. Marine Band

Marine Corps Institute

- Education and training of Marines worldwide
- Support for local Marine Barracks Washington DC mission events

Environmental Impact Statement Purpose & Need

*The **purpose** of the proposed action is to address existing and anticipated facility deficiencies at MBW.*

*The proposed action is **needed** to better support the functions and mission of MBW.*

Proposed projects are needed to address shortfalls in:

- Adequate Space for Mission and Support Functions
- Space Configuration
- Quality of Life
- Life Safety
- Sustainability/Energy Efficiency
- Anti-Terrorism and Force Protection (AT/FP)

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Proposed Action and Alternatives

5-Year Outlook (Detailed Analysis)

MBW Main Post

- Building 7 and 8 interior renovations
- Improve efficiency and function
- Meet sustainability goals

MBW Annex

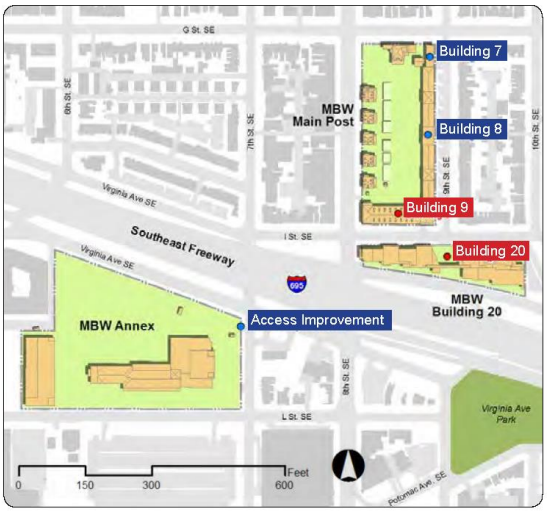
- Upgrade the existing access point at the corner of 7th and K Streets SE

New BEQ Complex

- Acquire land and construct replacement Bachelor Enlisted Quarters (BEQ) Complex
- 4 Alternative sites identified

Installation-wide

- Improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping



MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

Beyond 2018 ("Programmatic" Analysis)

Building 20 Reuse

- How will Building 20 site be used after it no longer serves as a BEQ Complex?

Other Projects

- Building 9 interior renovations
- Relocation of current functions/units
- Marine Corps Institute (currently a tenant at Washington Navy Yard)
- Additional landscaping and maintenance projects

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Proposed Action and Alternatives | BEQ Complex Sites

Site Screening Criteria

Within a 10-minute walk from MBW Main Post

- Necessary for MBW mission/campus requirements

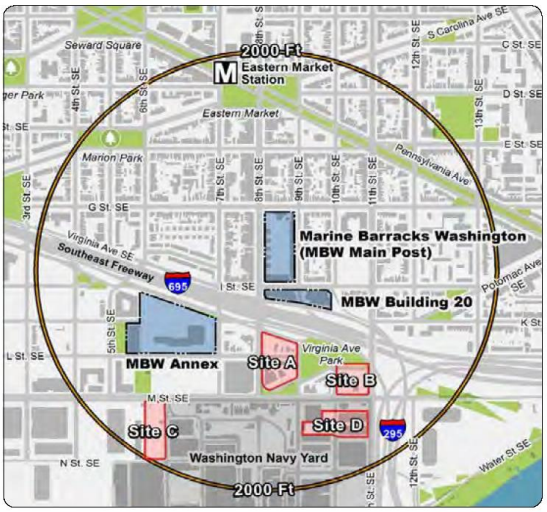
Must meet minimum developable area requirements:

- Area requirements include:
  - Appropriate AT/FP setback distances
  - Compliance with applicable laws governing height restrictions
- BEQ Complex Space Requirement is 191,405 SF (includes Supporting Facilities and Parking)

Must not be a site that currently provides or is planned to provide public services for DC residents

- Services include public housing, education, or public recreation services

Four Alternative Sites Identified Based on the Above Criteria (A, B, C, D)



Conceptual Massing Studies

5-Story BEQ Complex

8-Story BEQ Complex

9-Story BEQ Complex

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Proposed Action and Alternatives | Proposed Sites

BEQ Complex Alternative Sites A, B, C, and D

Alternative Site A

- 3.0-acre privately-owned site
- Composed of Squares 929, 930 and L Street SE between 8th and 9th Streets SE
- Adjacent to Virginia Avenue Park
- Site identified from the Community Integrated Master Plan (CIMP) Process
- Maximum height of buildings
  - Height Act: 90 feet (measured from Virginia Ave)

Alternative Site B

- 1.8-acre privately-owned site
- Composed of Square 976 and a portion of L Street SE between 10th and 11th Streets SE
- Site identified from CIMP Process
- Maximum height of buildings
  - Height Act: 110 feet (measured from M Street SE)

Alternative Site C

- 2.1-acre federally-owned site
- Composed of Square 853 in the Southeast Federal Center just west of Washington Navy Yard
- Site identified after the CIMP Process concluded
- Maximum height of buildings
  - Height Act: 110 feet (measured from M Street SE)

Alternative Site D

- 2.2-acre U.S. Navy-owned site
- Composed of Squares 977 & 953 within Washington Navy Yard boundary
- Site identified from CIMP Process
- Maximum height of buildings
  - Height Act: 110 feet (measured from M Street SE)

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

Environmental Impact Analysis

Areas of Analysis The EIS will evaluate potential environmental impacts to resources such as:

- **Transportation**
  - Traffic
  - Transportation Management Planning
  - Parking
- **Socioeconomics**
  - Impacts to Businesses and Residences
  - Environmental Justice
  - Construction Impacts
  - Tax Impacts
- **Natural Resources**
  - Floodplains
  - Coastal Zone
  - Urban Landscaping
- **Air Quality**
  - Construction-related Emissions
- **Water Quality**
  - Stormwater Management
- **Cultural Resources**
  - Historic Structures
  - Historic Districts
  - National Historic Landmarks
  - Archaeological Sites
  - L'Enfant Plan
- **Land Use**
  - Neighborhood Character
  - Land Use Compatibility
  - Urban Landscaping
- **Public Services**
  - Infrastructure and Utilities
  - Recreation
- **Safety**
  - Hazardous Materials
  - Contaminated Sites
  - AT/FP Issues

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

What is the Community Integrated Master Plan (CIMP) Process?

CIMP

- First-of-its-kind, transparent process to evaluate community-military partnership opportunities
- An effective method for community-driven, consensus-based solutions

Consensus Building Efforts

- Community Leadership Group
- Workshops and Open House Public Meetings:
  - Open House
  - Workshop Series (4 workshops, February through May 2010)
  - CIMP Forum (2 sessions, November and December 2010)
  - More than 100 stakeholder meetings

Major Outcomes

- Identification of viable BEQ Complex sites
- Three of the alternative sites for this EIS
- Development of consensus community development objectives
- Identification of issues also to be addressed in the EIS:
  - Minimize/mitigate impacts to the tax base and public services to DC residents
  - Maximize public space within AT/FP standoffs
  - Strive to respect the L'Enfant Plan

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

NEPA Public Involvement Process

Your Participation

Your involvement and feedback are essential in helping the Marine Corps make an informed decision on the Proposed Action. You can be involved by:

- Participating in the Scoping Meeting
- Identifying community-specific issues and concerns related to the Proposed Action
- Ensuring you are on the mailing list to receive future information

Input received today and throughout the scoping comment period assists the Marine Corps in identifying key environmental issues associated with the Proposed Action.

Participate Today

You can provide your comments in the following ways:

1. Submit them here at the meeting
2. Electronically enter them at www.mbweis.com
3. Mail written comments to:

William Sadlon
MBW EIS Project Manager
1314 Harwood St SE
Building 212
Washington Navy Yard, D.C.
20374-5018

For further information, please contact the Public Affairs Office (PAO) Representative at:

Captain Jack Norton, MBW PAO
(202) 433-6682

Please provide your comments by October 7, 2013 to ensure their consideration in the EIS analysis.

Participate in the Future

Your future involvement opportunities include:

- Reading and commenting on the analyses presented in the Draft EIS
- Participating in the Public Meetings following Draft EIS publication
- Reviewing the Final EIS

Get on the mailing list and/or check the project website at www.mbweis.com for updates on the Draft and Final EISs.

Only through your involvement can the Marine Corps make an informed decision on the Proposed Action and alternatives.

For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

EIS for Multiple Projects in Support of
Marine Barracks Washington, DC

National Historic Preservation Act (NHPA) and Section 106 Process

The Marine Corps requests your input on:

- The identification of historic properties in the erea of eotential effects (APE), and
- consideration of ways to avoid, minimize, and/or mitigate impacts.

Potential Direct and Indirect Effects on Historic Properties from the Proposed Action include:

- Construction
- Ground disturbance
- Demolition
- Alteration
- Restricting access (such as road closures)
- Intrusive visual and audible elements

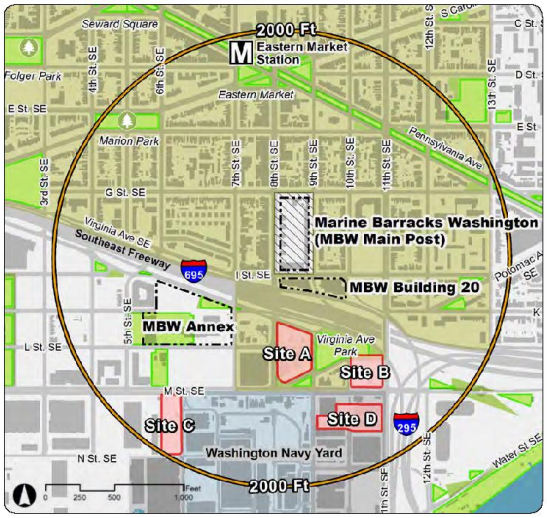
Types of Historic Properties Present in the APE

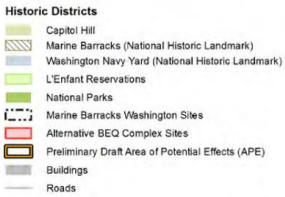
- Historic Districts
- Historic Structures
- L'Enfant Plan Historic Viewsheds and Reservations
- National Historic Landmarks
- Archaeological Sites

The NHPA requires federal agencies to consider the effects of their proposed actions on historic properties, which include archaeological sites, historic buildings and structures, districts, landscapes, and Traditional Cultural Properties that are eligible for listing in the National Register of Historic Places (NRHP).

Consultation Process

1) **Initiate the process**
   Establish proposed project
   Involve the public
   Identify consulting parties
2) **Identify historic properties**
   Establish the APE
   Conduct surveys and studies as needed
   Identify NRHP-eligible or listed sources
3) **Assess adverse effects**
   Will historic properties be adversely affected?
4) **Resolve potential adverse effects**
   Avoid, minimize, mitigate
   Execute Agreement Document





For more information, please visit the project website at: www.mbweis.com

Scoping Meeting September 2013

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Attachment E: Draft EIS Distribution List

Elected Officials

Organization	Title	Address 1	Address 2	City, State, Zip
U.S. House of Representatives	Delegate Eleanor Holmes Norton	2136 Rayburn HOB		Washington, DC 20515
Delegate Eleanor Holmes Norton	Robert White, Legislative Assistant	2136 Rayburn HOB		Washington, DC 20515
DC Council		1350 Pennsylvania Avenue NW	Suite 307	Washington, DC 20004
DC Council, Ward 6	Councilman	1350 Pennsylvania Avenue, NW	Suite 402	Washington, DC 20004
DC Council, Ward 6	Linda O'Brien, Deputy Chief of Staff	1350 Pennsylvania Avenue, NW	Suite 408	Washington, DC 20004
DC Executive Office of the Mayor	Mayor Muriel Bowser	1350 Pennsylvania Avenue, NW	Suite 316	Washington, DC 20004
DC Executive Office of the Mayor	Community Relations and Services - Ward 6	1350 Pennsylvania Avenue, NW	Suite 211	Washington, DC 20004
Advisory Neighborhood Commissions 6B01	Commissioner Jennifer Samolyk	407 2nd Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B02	Commissioner Diane Hoskins	649 C Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B03	Commissioner James Loots	634 G Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B04	Commissioner Kirsten Oldenburg	423 12th Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B05	Commissioner Steve Hagedorn	246 9th Street SE		Washington, DC 20003

Elected Officials

Organization	Title	Address 1	Address 2	City, State, Zip
Advisory Neighborhood Commissions 6B06	Commissioner Nick Burger	1336 E Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B07	Commissioner Daniel Chao	1329 K Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B08	Commissioner Chandler Jayaraman	1436 Independence Avenue SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B09	Commissioner Brian Flahaven	1628 Potomac Avenue SE		Washington, DC 20003
Advisory Neighborhood Commissions 6B10	Commissioner Denise Krepp	1837 A Street SE		Washington, DC 20003
Advisory Neighborhood Commissions 6D01	Commissioner Marjorie Lightman	605 4th Place SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D02	Commissioner Stacy Cloyd	771 Delaware Ave SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D03	Commissioner Rachel Reilly Carroll	800 4th Street SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D04	Commissioner Andy Litsky	423 N Street SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D05	Commissioner Roger Moffatt	1301 Delaware Avenue SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D06	Commissioner Rhonda Hamilton	44 O Street SW		Washington, DC 20024
Advisory Neighborhood Commissions 6D07	Commissioner Meredith Fascett	1100 1st Street SE		Washington, DC 20024

Federal and DC Agencies

Organization	Title	Address 1	Address 2	City, State, Zip
National Capital Planning Commission	Marcel Acosta, Executive Director	401 9th Street, NW	North Lobby, Suite 500	Washington, DC 20004
National Capital Planning Commission	Federal Preservation Officer	401 9th Street, NW	North Lobby, Suite 500	Washington, DC 20004
U.S. Environmental Protection Agency - Office of Federal Activities	EIS Filing Section	Ariel Rios Building (South Oval Lobby)	1200 Pennsylvania Avenue, NW	Washington, DC 20460
U.S. Environmental Protection Agency - Region 3	NEPA Lead	1650 Arch Street		Philadelphia, PA 19103-2029
U.S. Commission of Fine Arts	Secretary	401 F Street NW	Suite 312	Washington, DC 20001-2728
U.S. Department of Transportation	Director	Federal Highways Administration	1200 New Jersey Avenue, SE Room W80-318	Washington, DC 20590
National Park Service, National Capital Parks-East Headquarters	Robert Parker	1849 C Street NW		Washington, DC 20240
National Park Service	Jon Jarvis, Director	1849 C Street NW		Washington, DC 20240
National Park Service	Section 106 Compliance Officer	1849 C Street NW		Washington, DC 20240
National Park Service	Bob Vogel, Regional Director	1100 Ohio Drive SW		Washington, DC 20242
Architect of the Capitol	Stephen Ayers	SB-15 U.S. Capitol	U.S. Capitol Building	Washington, DC 20515
General Services Administration Region 11	Regional Administrator	301 7th Street, SW		Washington, DC 20407
DC Historic Preservation Office	Director	1100 4th Street, SW	Suite E650	Washington, DC 20024
DC Housing Authority	Adrianne Todman, Executive Director	1133 North Capitol Street NE	Suite 147	Washington, DC 20002
DC Department of Transportation	Leif A. Dormsjo, Director	55 M Street, SE	Suite 400	Washington, DC 20003
DC Office of Planning	Jennifer Steingasser, Deputy	1100 4th Street, SW	Suite E650	Washington, DC

Federal and DC Agencies

Organization	Title	Address 1	Address 2	City, State, Zip
	Director			20024
DC Office of Planning – Ward 6	Director	2000 14th Street, NW	4th Floor	Washington, DC 20009
DC Parks and Recreation	Keith A. Anderson, Director	1250 U Street NW		Washington, DC 20009
DC Public Schools	Superintendent	1200 First St, NE		Washington, DC 20002
DC Public Schools	Peggy O'Brien	825 N. Capitol St. NE	9th Floor	Washington, DC 20002
DC Office of the Deputy Mayor for Planning and Economic Development (DMPED)		1350 Pennsylvania Avenue NW	Suite 317	Washington, DC 20004
DC Fire and Emergency Medical Services Department	Edward R. Mills III, Chief	1923 Vermont Ave. NW	Suite 102	Washington, DC 20001
Advisory Council on Historic Preservation	John M. Fowler, Executive Director	1100 Pennsylvania Avenue NW	Suite 803	Washington, DC 20004
Department of Consumer and Regulatory Affairs	Melinda M. Bolling, Interim Director	1100 4th Street SW		Washington, DC 20024
District Department of the Environment	Tommy Wells, Director	1200 First Street NE		Washington, DC 20002
District Department of the Environment	Acting EIS Officer	1200 First Street NE		Washington, DC 20002

Organizations

Organization Name	Title	Address1	Address2	City, State, Zip
Eastern Market Metro Community Association	Mary Fraker	407 Seward Square SE		Washington, DC 20003
National Trust for Historic Preservation	President and CEO	1785 Massachusetts Ave, NW		Washington, DC 20036-2117
Anacostia Watershed Restoration Partnership		The George Washington House	4302 Baltimore Avenue	Bladensburg, MD 20710
Barracks Row Main Street		733 8th Street, SE	2nd Floor	Washington, DC 20003

Organizations

Organization Name	Title	Address1	Address2	City, State, Zip
Capitol Hill Business Improvement District	President	Union Station Parking Garage Bus Level	30 Massachusetts Ave. NE	Washington, DC 20002
Capitol Hill Chamber of Commerce (CHAMPS)	President	PO Box 15486		Washington, DC 20003
Capitol Hill Restoration Society	President	420 10th St. SE		Washington, DC 20003
Capitol Riverfront BID	Executive Director	1100 New Jersey Ave. SE	Suite 1010	Washington, DC 20003
Stanton Development		305 7th St. SE		Washington, DC 20003
Carrollsburg Resident Council		307 T St NE		Washington, DC 20002

Individuals	
Michael Blackwell	John Manley
Paul Ghiotto	Daniel McCahan
Jennifer Hirsch	Winfield Sealander

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APPENDIX B

AGENCY COORDINATION

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Marcel Acosta, Executive Director
National Capital Planning Commission
401 9th Street, NW
North Lobby, Suite 500
Washington, DC 20004

Dear Mr. Acosta,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the National Capital Planning Commission to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

The proposed action is to implement several construction, renovation, and improvement projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in MBW's Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex replacement project at four identified sites near MBW, as well as the No Action Alternative. The attached enclosure depicts the location of the existing MBW properties and potential BEQ Complex alternative sites. Other longer-term (2018 or later) projects to be analyzed programmatically include Building 20 reuse and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

In addition to soliciting your agency's interest in acting as a cooperating agency, the Marine Corps respectfully requests that your agency or you as an interested party identify any specific information,

Subject: COOPERATING AGENCY INVITIATION

issues, or concerns that should be included in the EIS during the scoping period. The public scoping process will begin with the publication of the Notice of Intent to prepare this EIS in the *Federal Register* on September 6, 2013 and is scheduled to conclude on October 7, 2013. For additional information, visit the project website at www.mbweis.com. An open-house-style public scoping meeting is scheduled for September 24, 2013 at Tyler Elementary School Auditorium, 1001 G Street SE, Washington, DC, from 5:30 pm to 8:30 pm. Agencies are invited to attend prior to the general public, beginning at 4:30 pm.

Concurrent with the NEPA process, the Marine Corps is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

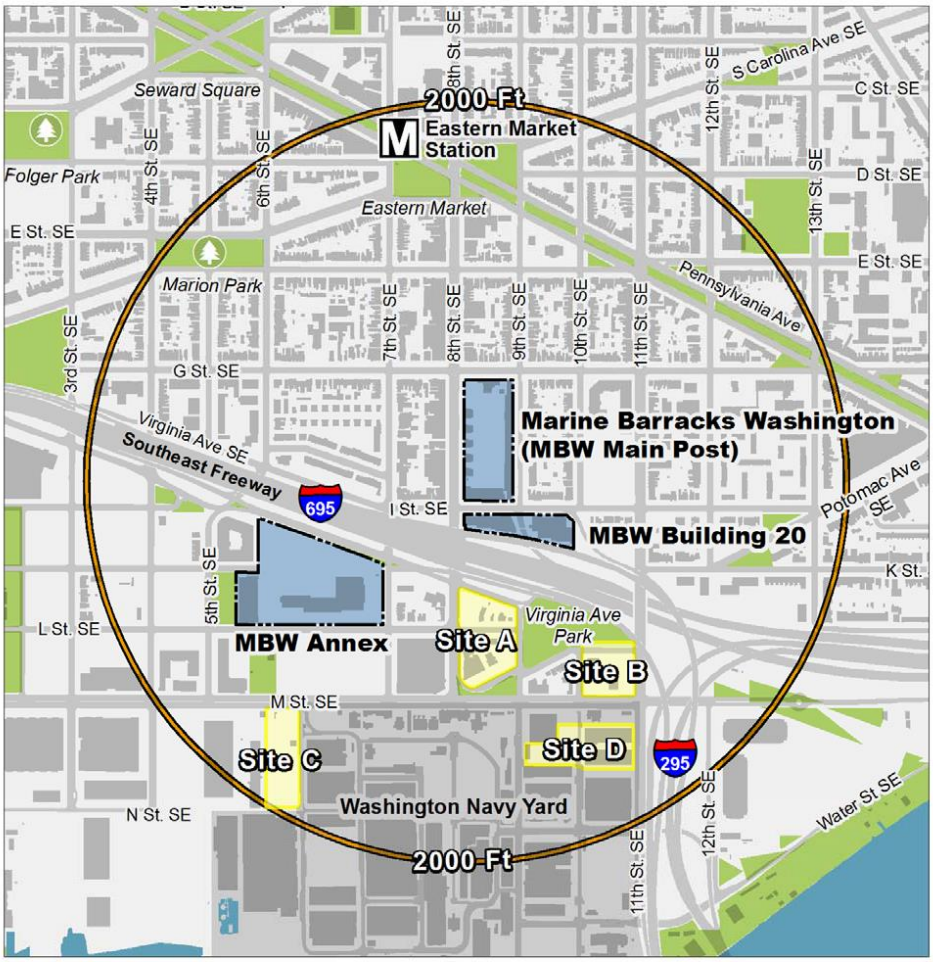
If the National Capital Planning Commission accepts this invitation to participate as a cooperating agency in the EIS, I would appreciate your office designating a point of contact to, among other things, work with the EIS team to disclose relevant information early in the analytical process, apply available technical expertise and staff support, avoid duplication of effort, and address intergovernmental issues. If we do not receive a response within 30 days of this letter it will be assumed that you are not interested in participating as a cooperating agency, but we will continue to include your agency on our project mailing list.

If you have any questions about the EIS, please contact the MBW EIS Project Manager, Mr. Bill Sadlon, at william.sadlon@navy.mil, (202) 685-0164, or 1314 Harwood St. SE, Bldg. 212, Washington Navy Yard, DC 20374-5018.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Steve Whitesell, Regional Director
National Park Service
1100 Ohio Drive, SW
Washington D.C. 20242

Dear Mr. Whitesell,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the National Park Service to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

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C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

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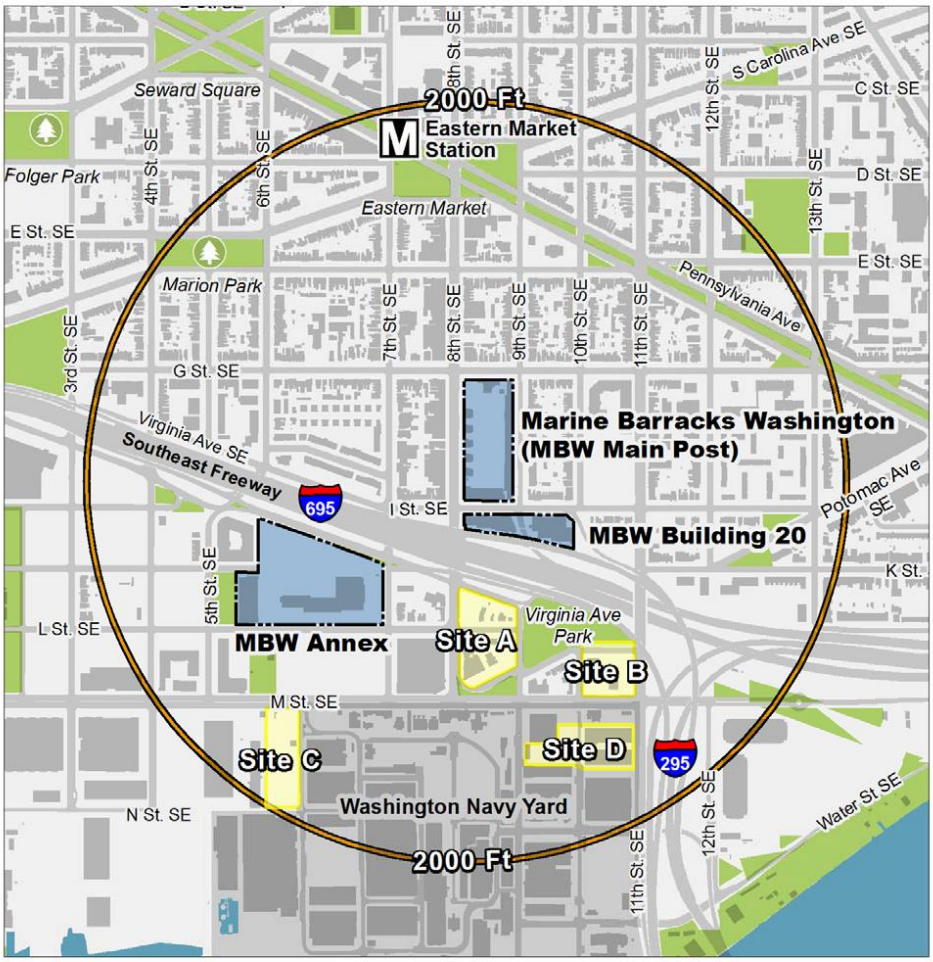

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- Parks
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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Jesus Aguirre, Director
DC Parks and Recreation
1250 U Street, NW
Washington, DC 20009

Dear Mr. Aguirre,

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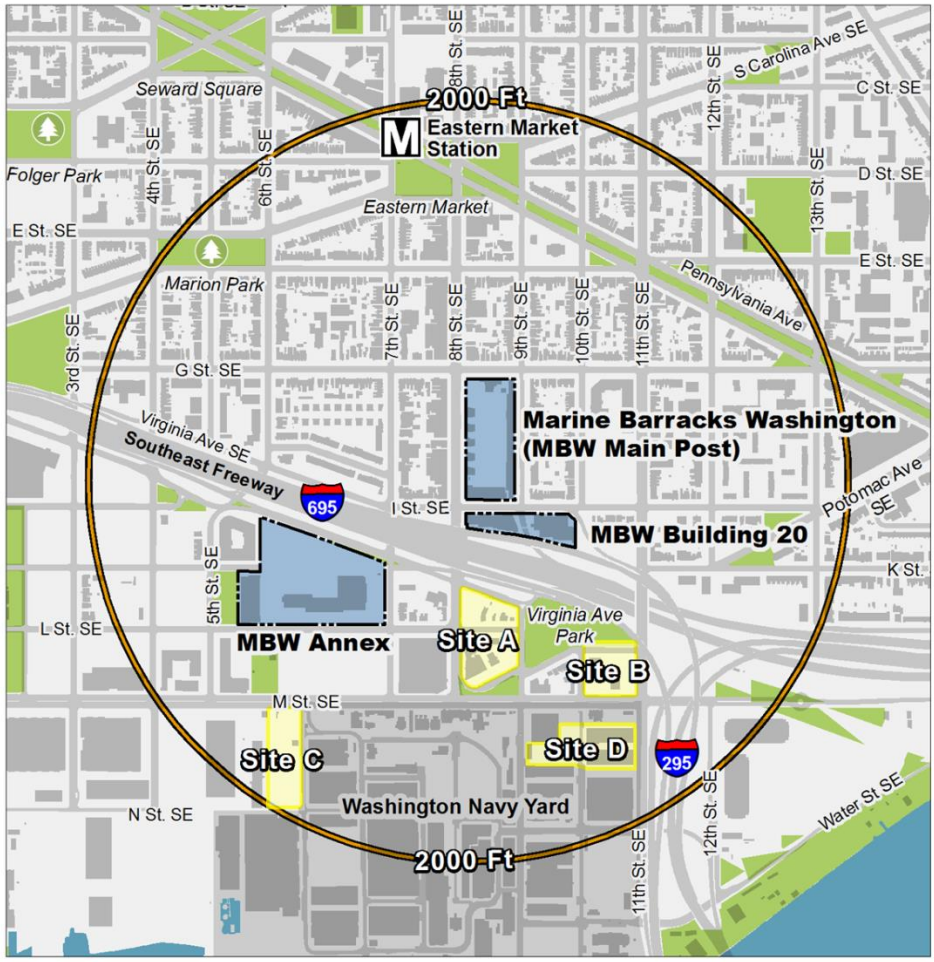
C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



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- Roads
- Parks
- WaterPly

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Harriet Tregoning, Director
Office of Planning
1100 4th Street, SW
Suite E650
Washington, DC 20024

Dear Ms. Tregoning,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the Office of Planning to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

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In addition to soliciting your agency's interest in acting as a cooperating agency, the Marine Corps respectfully requests that your agency or you as an interested party identify any specific information,

Subject: COOPERATING AGENCY INVITIATION

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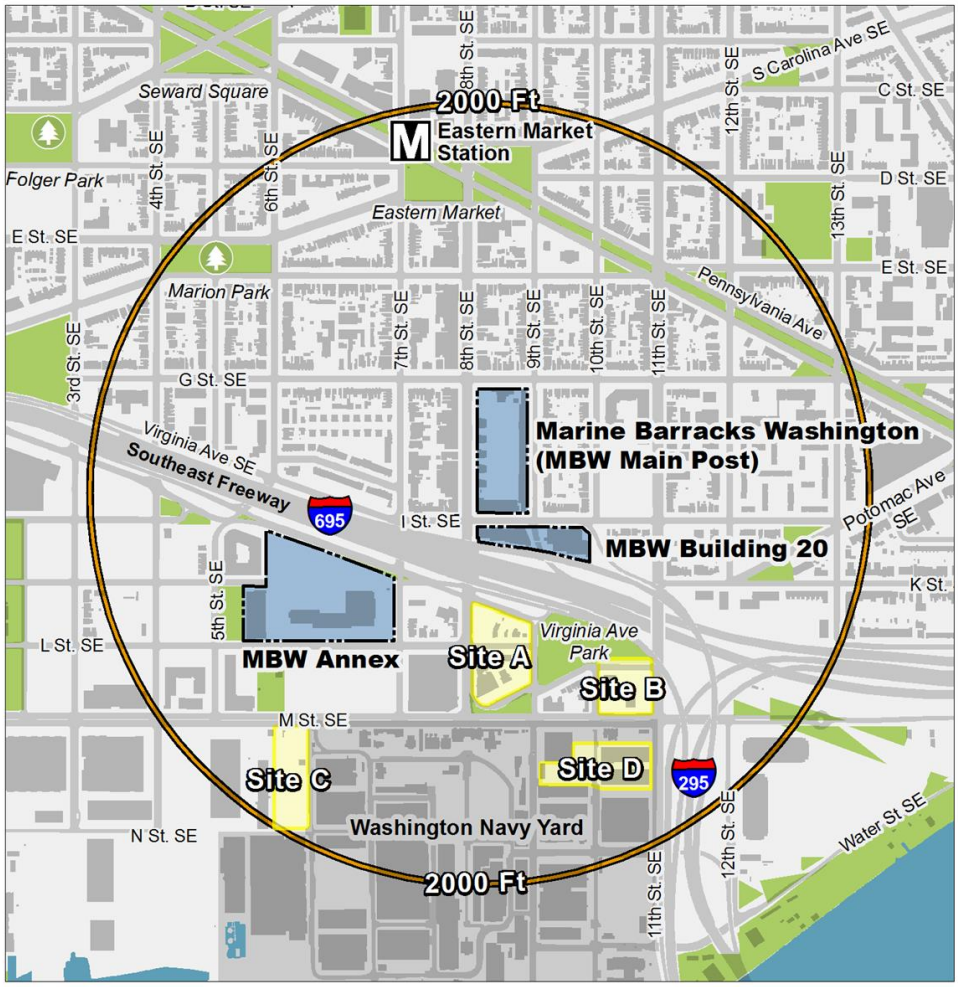
If the Office of Planning accepts this invitation to participate as a cooperating agency in the EIS, I would appreciate your office designating a point of contact to, among other things, work with the EIS team to disclose relevant information early in the analytical process, apply available technical expertise and staff support, avoid duplication of effort, and address intergovernmental issues. If we do not receive a response within 30 days of this letter it will be assumed that you are not interested in participating as a cooperating agency, but we will continue to include your agency on our project mailing list.

If you have any questions about the EIS, please contact the MBW EIS Project Manager, Mr. Bill Sadlon, at william.sadlon@navy.mil, (202) 685-0164, or 1314 Harwood St. SE, Bldg. 212, Washington Navy Yard, DC 20374-5018.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Nicholas Majett, Director
Department of Consumer and Regulatory Affairs
1100 4th Street SW
Washington, DC 20024

Dear Mr. Majett,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the Department of Consumer and Regulatory Affairs to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

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Subject: COOPERATING AGENCY INVITIATION

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Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

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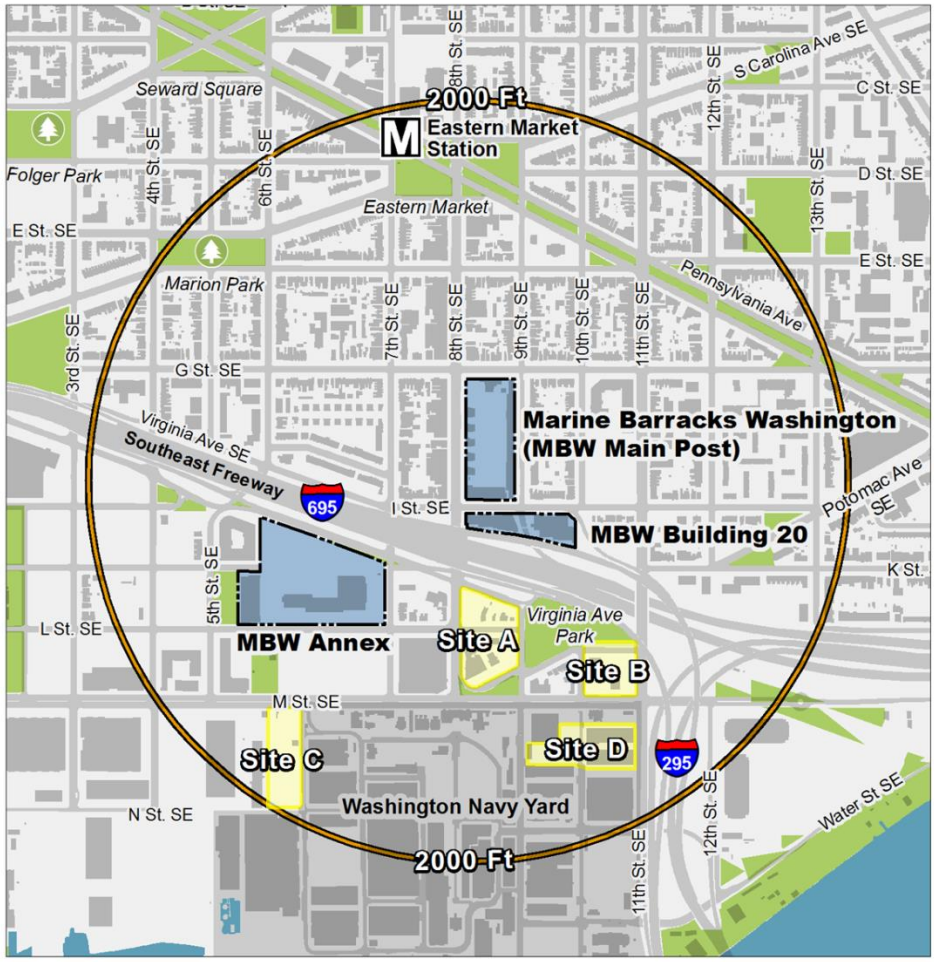

MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Terry Bellamy, Director
DC Department of Transportation
55 M Street, SE
Suite 400
Washington, DC 20003

Dear Mr. Bellamy,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the DC Department of Transportation to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

The proposed action is to implement several construction, renovation, and improvement projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available.

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In addition to soliciting your agency's interest in acting as a cooperating agency, the Marine Corps respectfully requests that your agency or you as an interested party identify any specific information,

Subject: COOPERATING AGENCY INVITIATION

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If the DC Department of Transportation accepts this invitation to participate as a cooperating agency in the EIS, I would appreciate your office designating a point of contact to, among other things, work with the EIS team to disclose relevant information early in the analytical process, apply available technical expertise and staff support, avoid duplication of effort, and address intergovernmental issues. If we do not receive a response within 30 days of this letter it will be assumed that you are not interested in participating as a cooperating agency, but we will continue to include your agency on our project mailing list.

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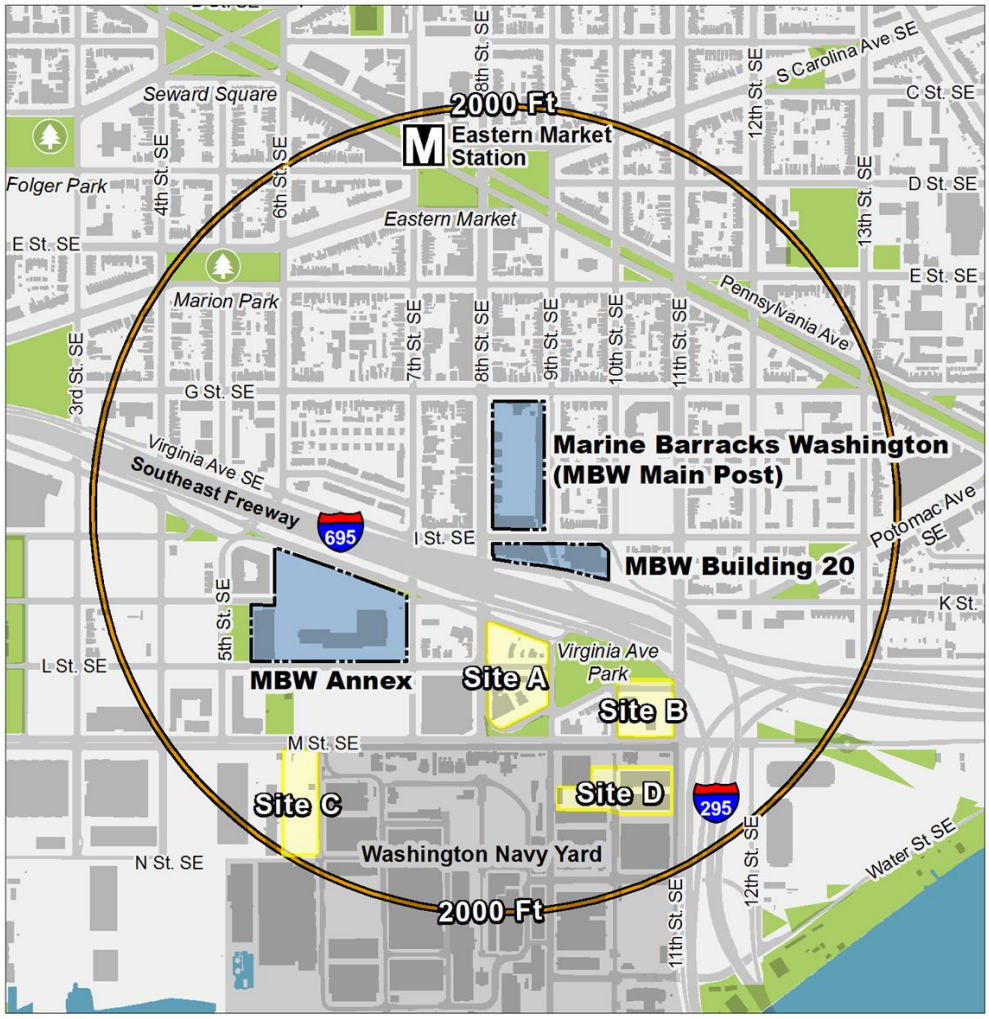
C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Keith A. Anderson, Director
District Department of the Environment
1200 First Street, NE
Washington, DC 20002

Dear Mr. Anderson,

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, the Department of the Navy, United States Marine Corps, is preparing an Environmental Impact Statement (EIS) to evaluate the potential environmental impacts that could result from the implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. I invite the District Department of the Environment to actively participate with the Marine Corps as a federal cooperating agency in the preparation of analyses and documentation required by NEPA.

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Subject: COOPERATING AGENCY INVITIATION

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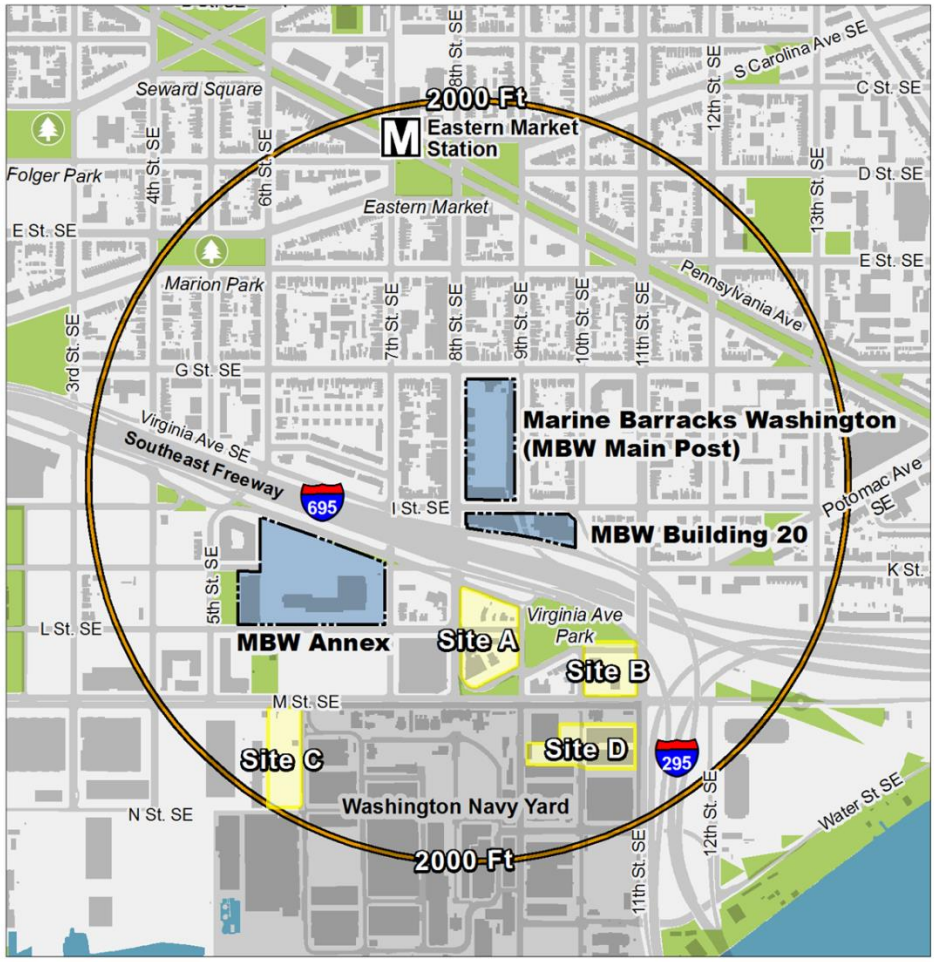
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Kirsten Oldenburg
Advisory Neighborhood Commission 6B
921 Pennsylvania Avenue, SE
Suite 305
Washington, DC 20003

Dear Ms. Oldenburg,

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Subject: COOPERATING AGENCY INVITIATION

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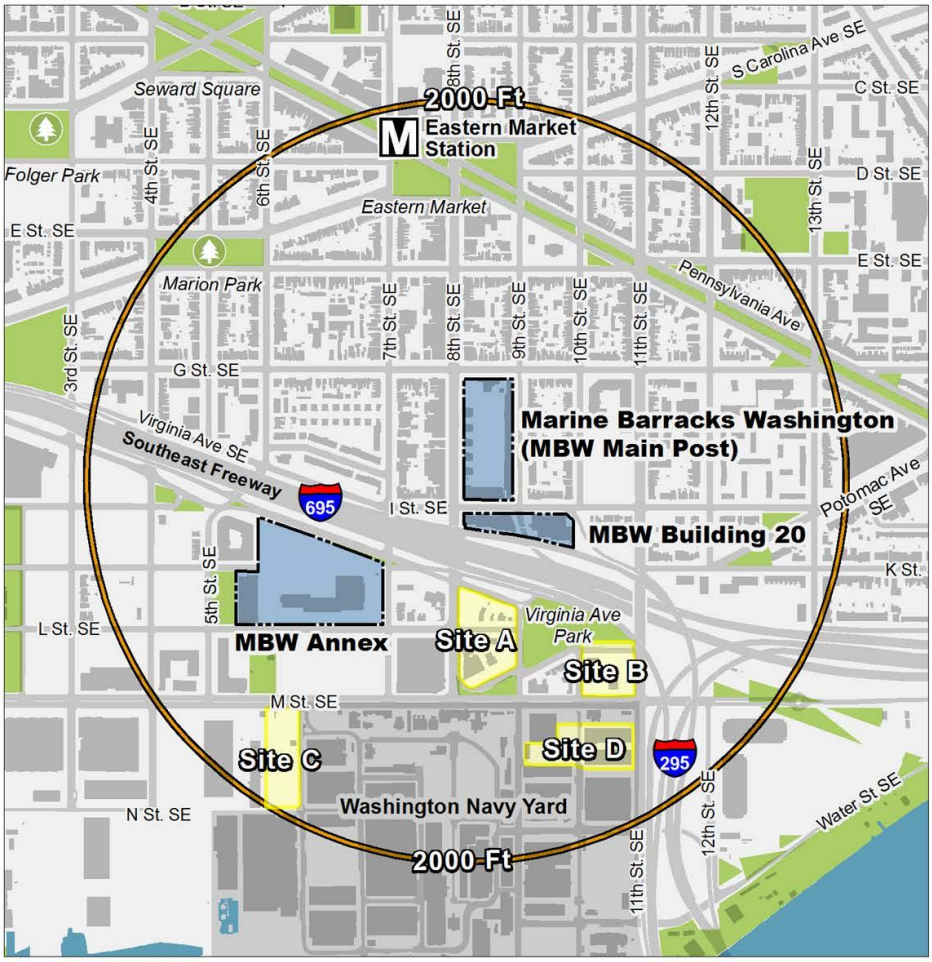
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

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Source: DC GIS Data Clearinghouse/Catalog

Key

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3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Advisory Neighborhood Commission 6D
1101 4th Street, SW, Suite W130
Washington, DC 20024

Dear Sir or Madam,

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Subject: COOPERATING AGENCY INVITIATION

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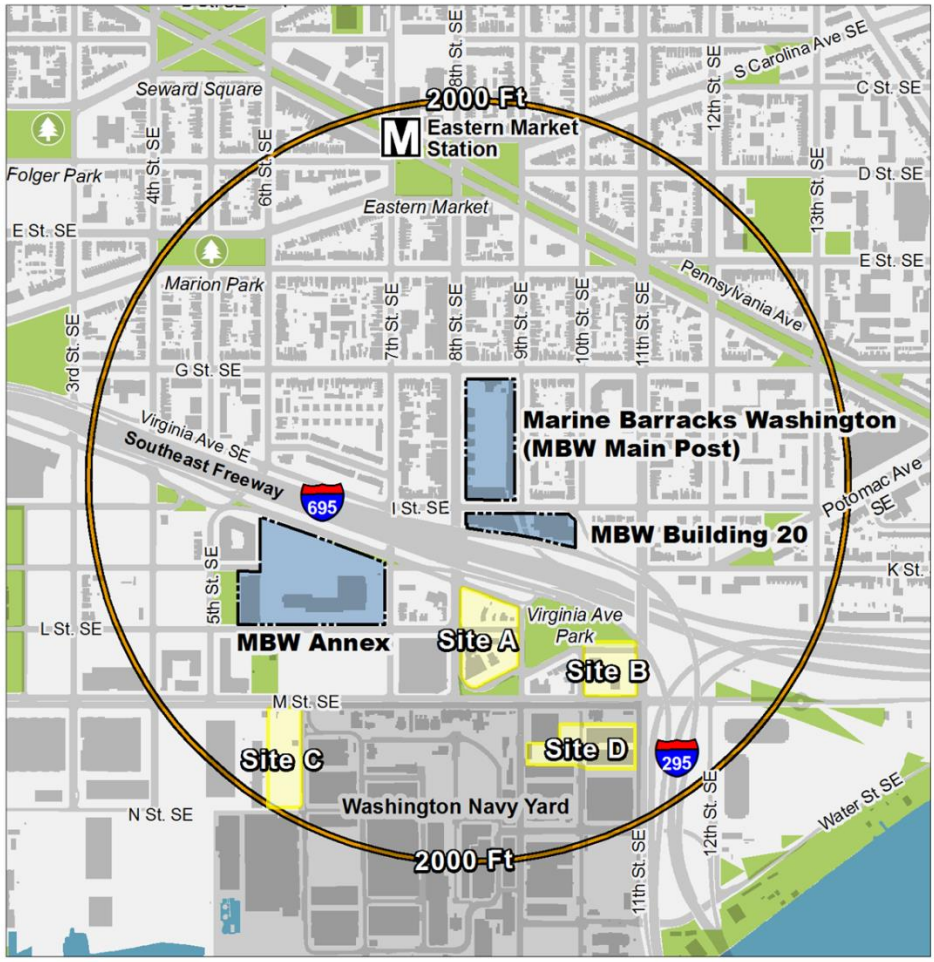
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

2



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

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Source: DC GIS Data Clearinghouse/Catalog

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3

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

National Capital Planning Commission
401 9th Street, NW
North Lobby, Suite 500
Washington, DC 20004

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

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Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

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Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

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Enclosure 1.

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Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an "online scoping meeting" will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com*, or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute "reasonable walking distance" of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A "square" is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 8th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 8th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

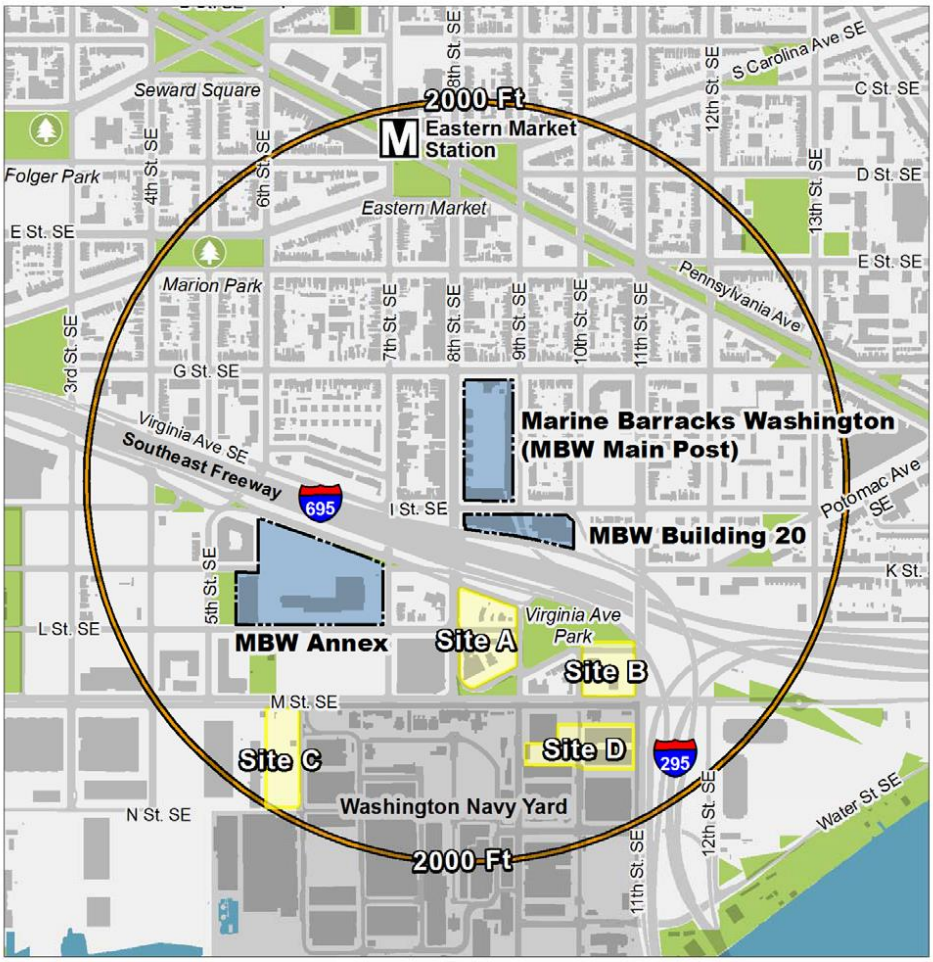
Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

8



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

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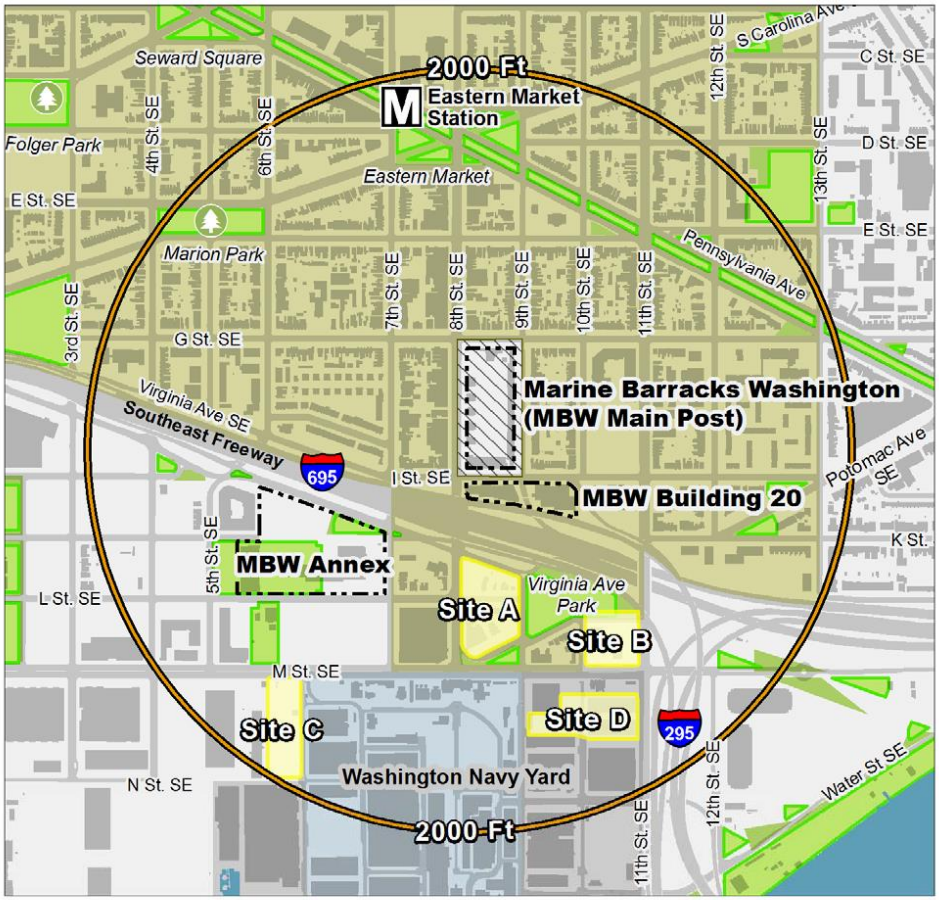
Enclosure 3. Preliminary Draft APE for the Proposed Action



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- Preliminary Draft Area of Potential Effects (APE)
- Buildings
- Roads

Historic Districts

- Capitol Hill
- Marine Barracks (National Historic Landmark)
- Washington Navy Yard (National Historic Landmark)
- L'Enfant Reservations
- National Parks

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

National Park Service
1100 Ohio Drive, SW
Washington D.C. 20242

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

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Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

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Enclosure 1.

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Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an "online scoping meeting" will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com*, or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute "reasonable walking distance" of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A "square" is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 8th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 8th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

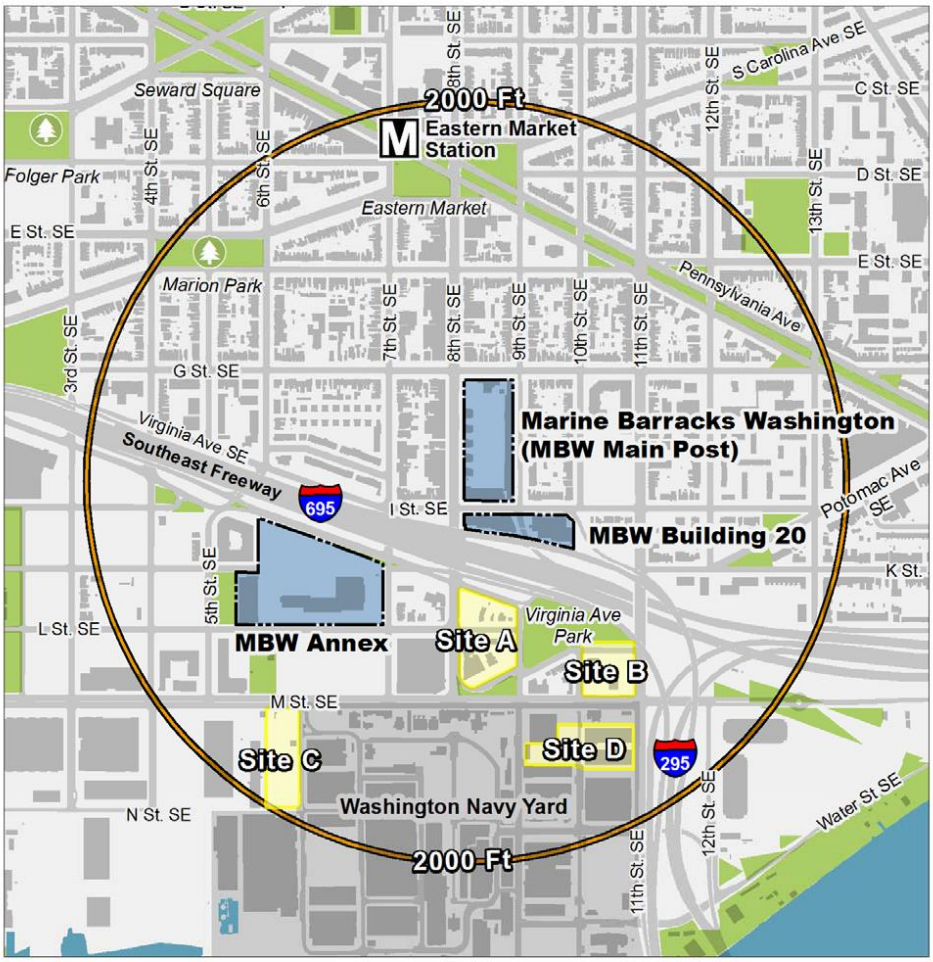
Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

8



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

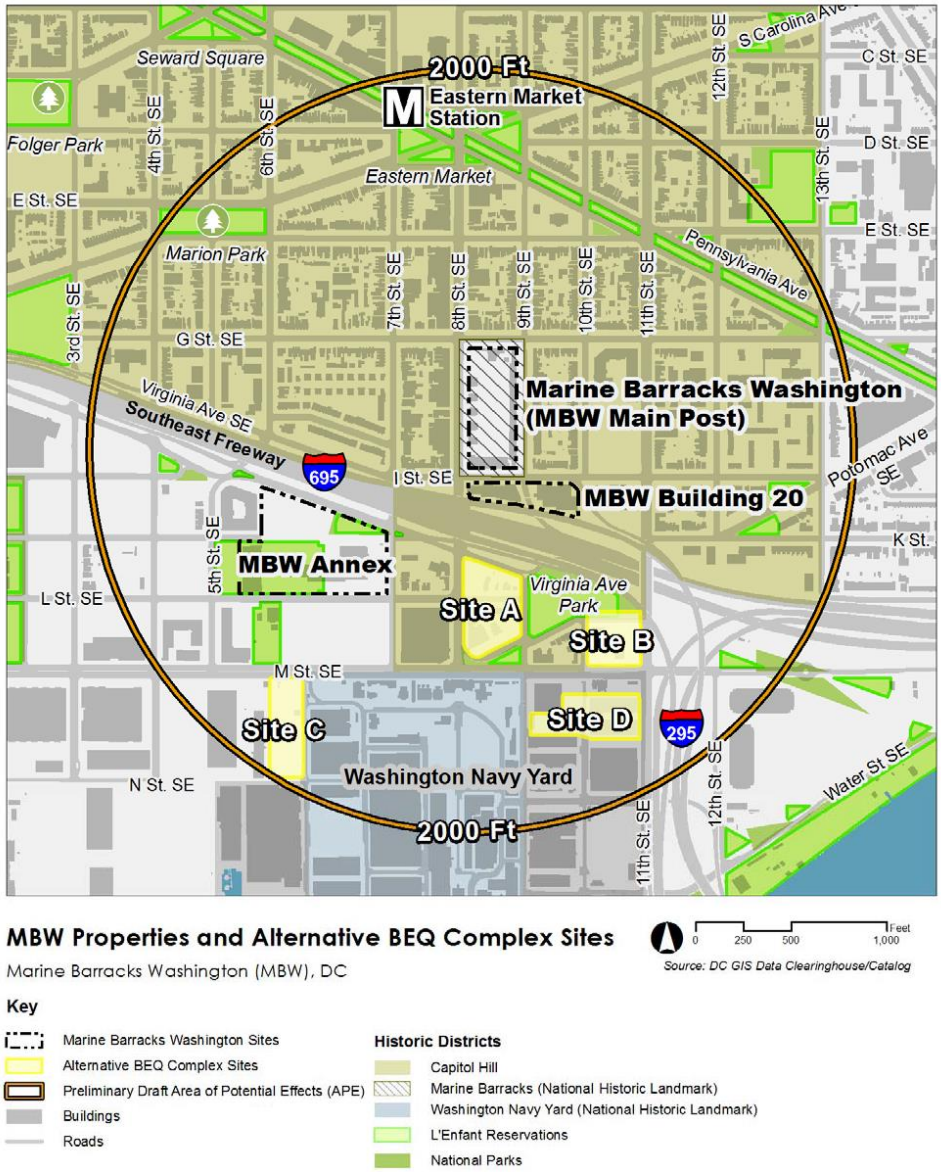
Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

9

Enclosure 3. Preliminary Draft APE for the Proposed Action



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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Capitol Hill Restoration Society
PO Box 15264
Washington, DC 20003

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

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Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

3

Enclosure 1.

4

Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an "online scoping meeting" will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

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Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com*, or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

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SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

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The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

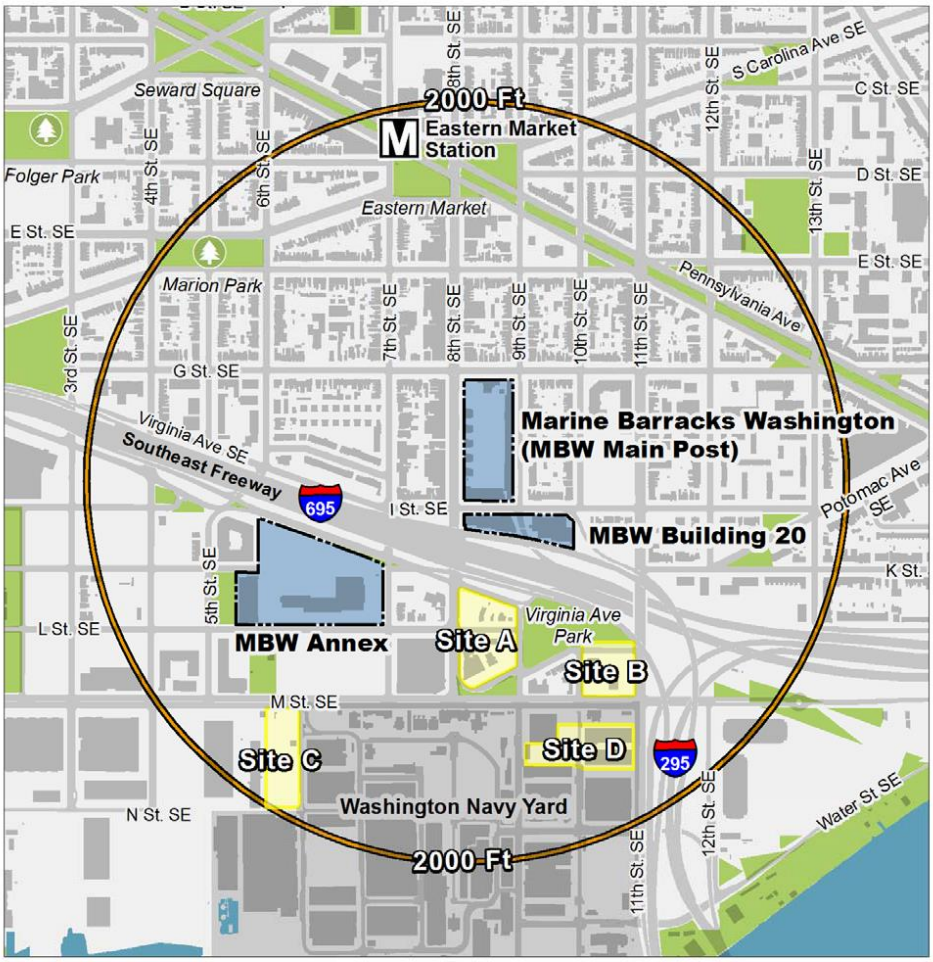
Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

8



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

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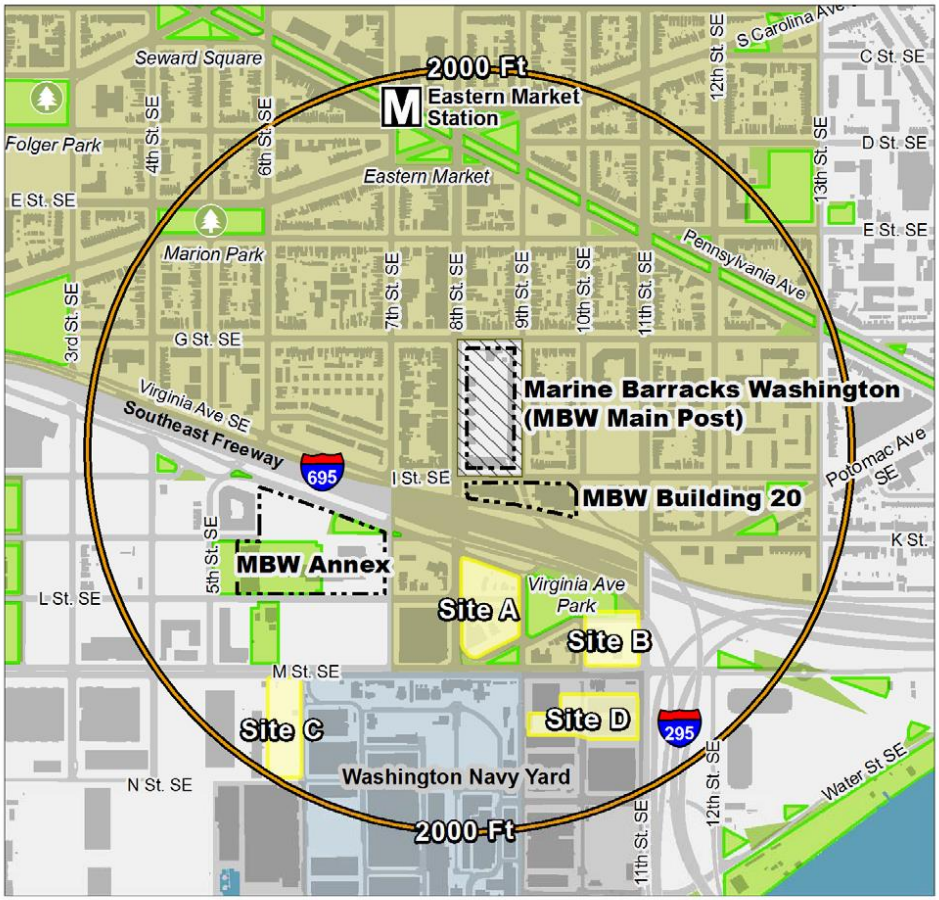
Enclosure 3. Preliminary Draft APE for the Proposed Action



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- Preliminary Draft Area of Potential Effects (APE)
- Buildings
- Roads

Historic Districts

- Capitol Hill
- Marine Barracks (National Historic Landmark)
- Washington Navy Yard (National Historic Landmark)
- L'Enfant Reservations
- National Parks

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Barracks Row Main Street
733 8th Street, SE
2nd Floor
Washington, DC 20003

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

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Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

3

Enclosure 1.

4

Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an "online scoping meeting" will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com*, or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute "reasonable walking distance" of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A "square" is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 8th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 8th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov.* Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

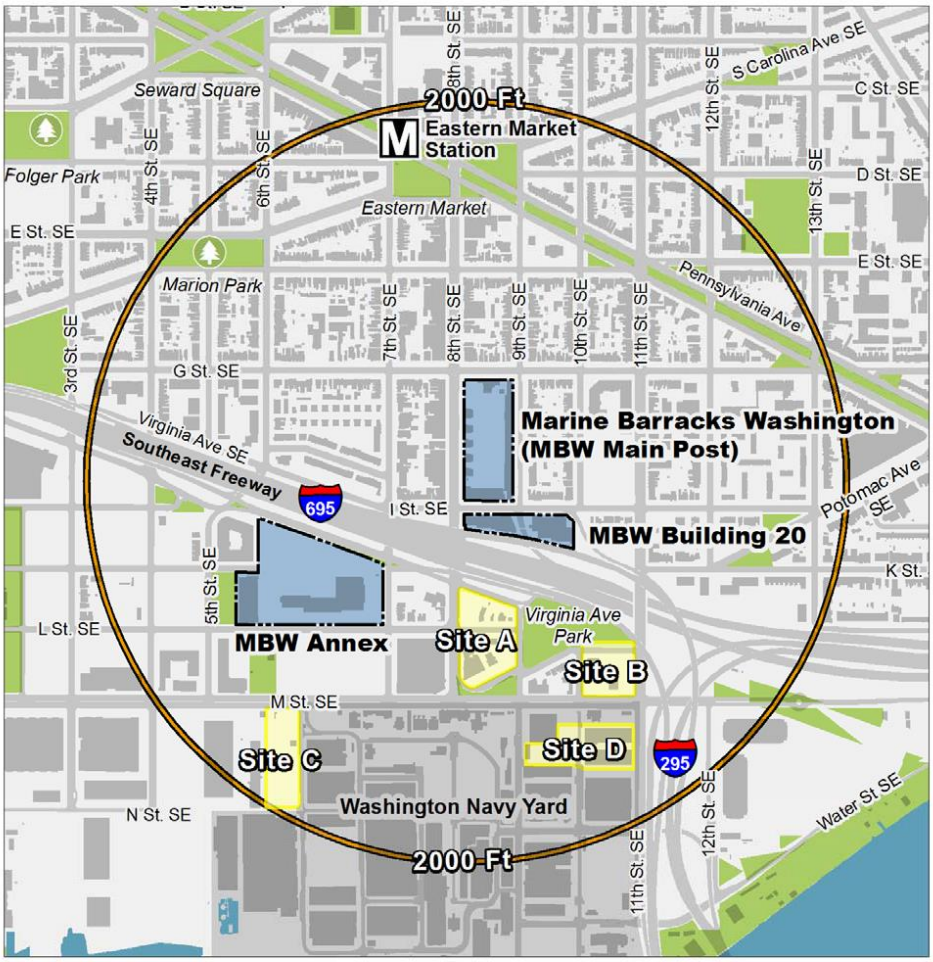
Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

8



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

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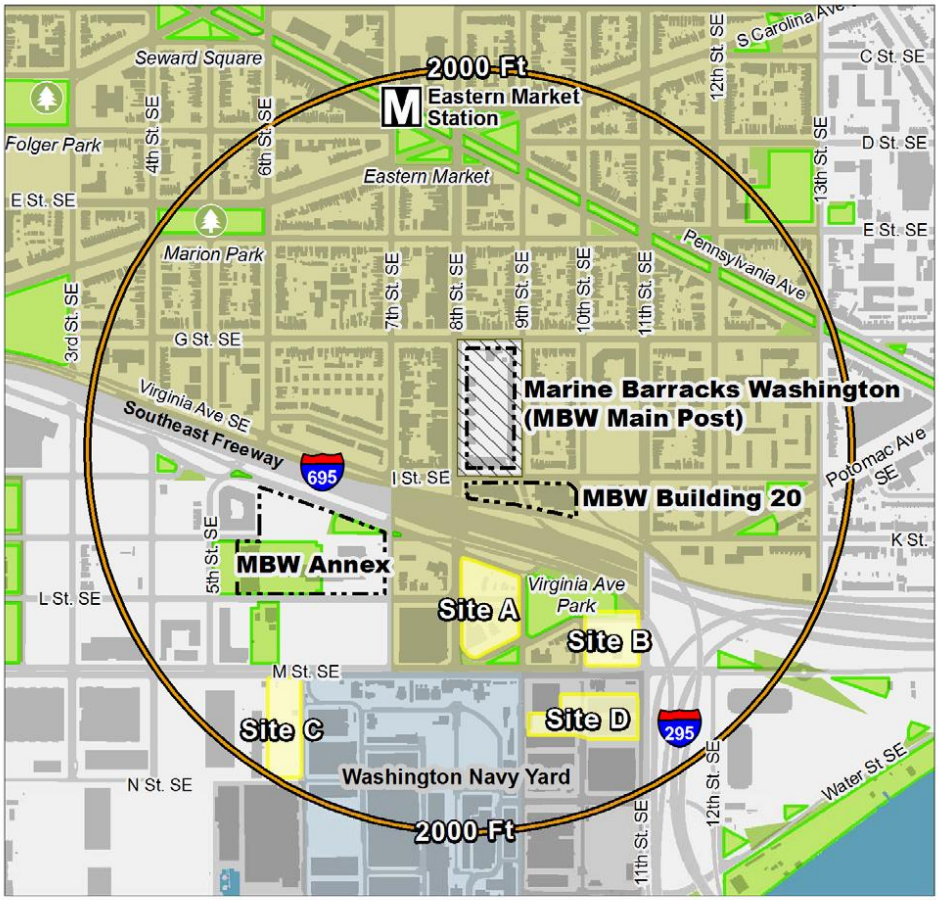
Enclosure 3. Preliminary Draft APE for the Proposed Action



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

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Source: DC GIS Data Clearinghouse/Catalog

Key

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- Alternative BEQ Complex Sites
- Preliminary Draft Area of Potential Effects (APE)
- Buildings
- Roads

Historic Districts

- Capitol Hill
- Marine Barracks (National Historic Landmark)
- Washington Navy Yard (National Historic Landmark)
- L'Enfant Reservations
- National Parks

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

ANC 6B
921 Pennsylvania Avenue, SE
Suite 305
Washington, DC 20003

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

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Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

3

Enclosure 1.

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Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an "online scoping meeting" will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com*, or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute "reasonable walking distance" of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A "square" is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 8th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 8th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov*. Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

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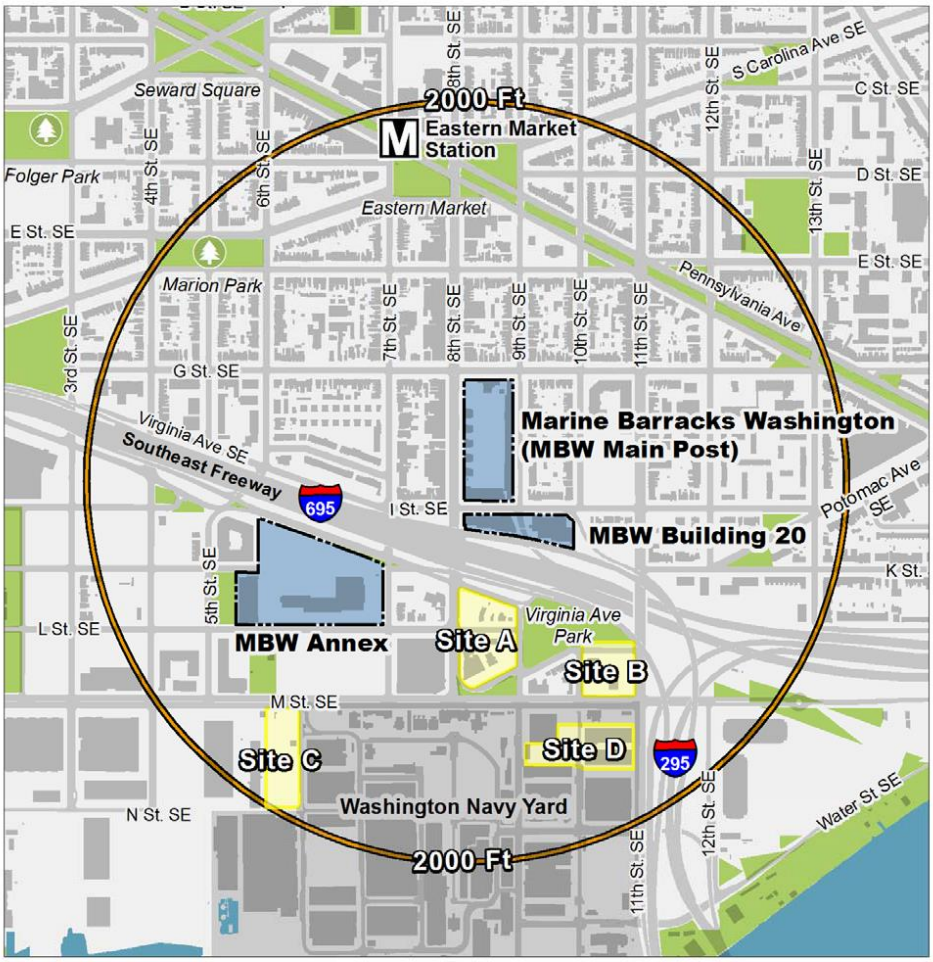

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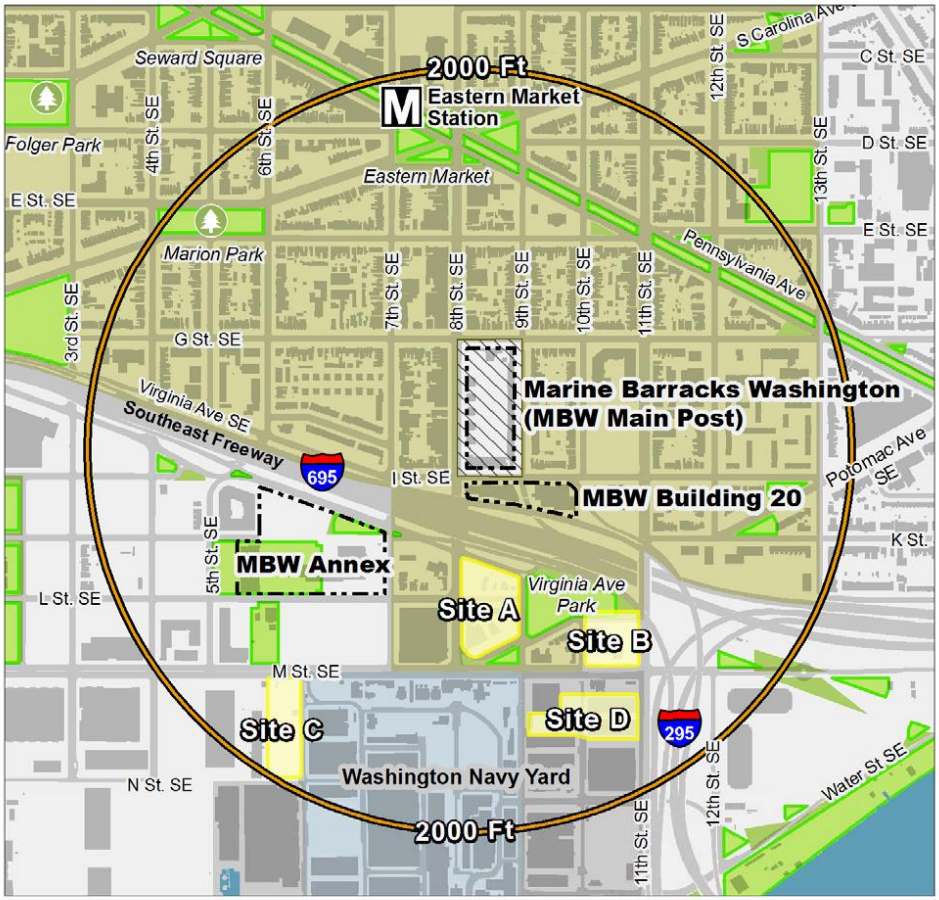

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- Capitol Hill
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- Washington Navy Yard (National Historic Landmark)
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- National Parks

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UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

ANC 6D
1101 4th Street, SW, Suite W130
Washington, DC 20024

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Sir or Madam:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C.

The proposed action is to implement several construction, renovation, and repair projects scheduled for completion in the next 5 years to address existing and anticipated facilities deficiencies at MBW. The EIS will also provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed National Environmental Policy Act (NEPA) analysis is not yet available.

The principal project to be analyzed in detail is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. This project was the focus of a pre-NEPA agency and public engagement process referred to as the Community Integrated Master Plan (CIMP) process. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

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these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The potential environmental impacts of the proposed action will be analyzed in the EIS. In proceeding with the planning of this undertaking, we intend to coordinate our Section 106 National Historic Preservation Act (NHPA) consultation with the development of the EIS pursuant to 36 CFR 800.8, and use the EIS as our primary NHPA consultation documentation. Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the Proposed Action and will be available for open discussion with agencies regarding issues and concerns.

Pursuant to 36 CFR 800.4(a)(1), the Marine Corps is consulting with the DC Historic Preservation Office to define the Area of Potential Effects (APE) for the proposed action. Once defined, pursuant to 36 CFR 800.4(a)(2), background research and cultural resource surveys will be initiated to identify historic properties within the APE. The results of these identification efforts, in addition to an assessment of the undertaking's effects on any historic properties within the APE, will be the subject of future consultation on this project as part of the Section 106 process.

The Marine Corps invites you to participate in the Section 106 consultation process. For this initial phase of consultation, the Marine Corps respectfully requests that you identify any concerns you may have regarding the Proposed Action and respond by October 7, 2013 so that we may address those concerns and incorporate them into the Draft EIS. In addition, please provide any comments you have regarding our efforts to identify all potential consulting parties and gather information, as outlined in 36 CFR 800.3(f) and 800.4(a)(4).

If you have any questions or need further information on the project, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine

2

Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838. Thank you in advance for your input on this important project.

Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures: 1. Notice of Intent to Prepare an EIS
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

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Enclosure 1.

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Tacoma Convention Center, 1500 Broadway, Tacoma, Washington 98402 on Thursday, October 17, 2013, from 5:00 p.m. to 8:00 p.m.

In addition, an ''online scoping meeting'' will be continuously hosted on the EIS Internet Web site at *www.millenniumbulkeiswa.gov* for the duration of the scoping period.

b. Potentially significant issues to be analyzed in the EIS include, but are not limited to direct, indirect, and cumulative effects of the project-specific activities proposed within the NEPA scope of analysis as described above on navigation (e.g., vessel traffic and navigational safety); aquatic habitats; aquatic species, including Endangered Species Act-listed species and Washington State species of concern; Tribal treaty rights; wetland and riparian habitat; wildlife; vehicle traffic; cultural, historic, and archeological resources; air and water quality; noise; recreation; land use; and aesthetics.

c. The Corps will consult with the Washington State Historic Preservation Officer and applicable Tribes to comply with the National Historic Preservation Act; the U.S. Fish and Wildlife Service and National Marine Fisheries Service to comply with the Endangered Species Act; the National Marine Fisheries Service to comply with the Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act; and applicable Tribes to comply with reserved treaty fishing rights.

d. Preparation of the draft EIS will begin after the close of the scoping period. The draft EIS is currently scheduled to be available for public review and comment by June 2015.

e. A 90-day public review period will be provided for interested parties to review and comment on the draft EIS. Interested parties are encouraged to contact the Corps if they wish to be notified when the draft EIS is issued.

f. All comments received will become part of the administrative record for this project and subject to public release to third-parties, including any personally identifiable information such as name, phone number, and address, included in the comment.

Dated: August 29, 2013.

Bruce A. Estok,

Colonel, Corps of Engineers, District Engineer.

[FR Doc. 2013–21780 Filed 9–5–13; 8:45 am]

BILLING CODE 3720–58–P

DEPARTMENT OF DEFENSE

Department of the Navy

Notice of Intent To Prepare an Environmental Impact Statement for Multiple Projects in Support of the Marine Barracks Washington, District of Columbia

AGENCY: Department of the Navy, DoD.

ACTION: Notice.

SUMMARY: Pursuant to Section (102)(2)(c) of the National Environmental Policy Act (NEPA) of 1969, and regulations implemented by the Council on Environmental Quality (40 Code of Federal Regulations [CFR] Parts 1500–1508), Department of the Navy (DoN) NEPA regulations (32 CFR Part 775), and United States Marine Corps (USMC) NEPA directives (Marine Corps Order P5090.2A, changes 1 and 2), the DoN intends to prepare an Environmental Impact Statement (EIS) for several proposed construction, repair, and renovation projects in support of the Marine Barracks Washington (MBW), District of Columbia (DC).

Dates and Addresses: The DoN, USMC, is initiating a 30-day public scoping process to identify community interests and local concerns to be addressed in the EIS, which starts with the publication of this Notice of Intent and ends on October 7, 2013. A public scoping meeting, using an informal open house format, will be held from 5:30 p.m. to 8:30 p.m. on September 24, 2013 at Tyler Elementary School, 1001 G St SE., Washington, DC 20390.

The public is invited to attend this meeting to view project-related displays, speak with USMC representatives, and submit verbal or written comments. All comments regarding the scope of issues that the USMC should consider during EIS preparation must be received prior to October 7, 2013 to be fully considered. Additional information concerning the meeting and the proposed alternatives is available on the EIS Web site at *www.mbweis.com* and will be announced in local and regional newspapers. Please submit requests for special assistance, sign language interpretation for the hearing impaired, or other auxiliary aids needed at the scoping meeting to the MBW Public Affairs Officer, Captain Jack Norton, at 202–433–6682 by September 13, 2013.

Concurrent with the NEPA process, the USMC is initiating National Historic Preservation Act Section 106 Consultation to determine the potential effects of the proposed action on historic properties. During the scoping meeting, one designated area of the room will focus on the Section 106 process and solicit public input on the identification of historic properties and potential effects of the proposed action on historic properties.

Submitting Comments: Federal, state, and local agencies and members of the public are encouraged to provide oral and written comments regarding the scope of the EIS, reasonable alternatives, and specific issues or topics of interest. There are three ways comments can be submitted: (1) In person at the public scoping open house meeting, (2) using the project's public Web site comment form at *www.mbweis.com,* or (3) providing written comments through U.S. mail. All comments on the scope of the EIS or any specific concerns regarding potential impacts to the environment should be submitted or postmarked no later than October 1, 2013. Comments submitted by mail should be sent to: Mr. William Sadlon, MBW CIMP EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

The USMC will consider all comments received during the scoping period. A mailing list has been assembled to facilitate preparation of the EIS. This list includes DC and federal agencies with jurisdiction or other interests in the alternatives. In addition, the mailing list includes adjacent property owners and other interested parties, such as historic preservation groups. Those on this list will receive notices and documents related to EIS preparation. Anyone wishing to be added to the mailing list may request to be added at the project Web site *www.mbweis.com* or by contacting the EIS project manager at the address provided below.

FOR FURTHER INFORMATION CONTACT: Mr. William Sadlon, MBW EIS Project Manager, 1314 Harwood St. SE., Bldg. 212, Washington Navy Yard, DC 20374–5018.

SUPPLEMENTARY INFORMATION: The USMC is preparing an EIS to analyze the potential effects resulting from implementation of several construction, repair, and renovation projects at or proximate to the Marine Barracks Washington scheduled for completion within the next 5 years. The principal project to be analyzed is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including supporting facilities and parking) currently housed in Building 20. Renovation and improvement projects include interior renovations to Buildings 7 and 8 at the Main Post; improvements to the MBW

Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation. The EIS is also intended to provide a programmatic analysis of the potential effects of several additional projects scheduled to occur in 2018 or later for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site. Other projects include renovation of Building 9 to accommodate relocation of units currently housed in temporary facilities aboard Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once these actions become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

The purpose of the proposed action is to address existing and anticipated facility deficiencies at MBW. The proposed action is needed to better support the functions of the USMC units assigned to the MBW and, in the case of the BEQ Complex replacement project, to meet current requirements for adequate space and mission support functions, space configurations, DoD Quality of Life standards, life safety, sustainability, and energy efficiency, and Anti-Terrorism and Force Protection (AT/FP) requirements. Building 20 cannot be renovated or redesigned within its existing footprint to meet those standards. The renovations for Buildings 7 and 8 are to upgrade the buildings to meet certain AT/FP and life safety standards, improve space utilization, and meet sustainability goals. The improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation would blend MBW facilities with the neighborhood.

Alternatives Development: The action alternatives analyzed in the EIS regard implementation of specific projects. Sufficient detail is available to fully analyze some proposed projects in the EIS; other proposed projects are analyzed programmatically, with the expectation that additional NEPA analyses will be conducted when more detail is available.

The primary project to be analyzed in the EIS is the BEQ Complex replacement project, which includes the acquisition of land on which to construct the replacement facilities. The pre-NEPA agency and public engagement effort referred to as the Community Integrated Master Plan process that preceded this EIS effort provided a foundation for the required rigorous exploration of a reasonable range of alternative sites to meet the purpose and need with respect to the BEQ Complex replacement project. The following screening criteria were used to further refine and narrow the range of alternative sites for the BEQ Complex project.

The location must be within a 10-minute ''reasonable walking distance'' of the MBW Main Post Main Gate Entrance (defined as an approximately 2,000-foot radius of the Main Post Main Gate Entrance). The site must meet the minimum developable area requirements, including setback distances to meet AT/FP standards, while also complying with applicable laws governing height restrictions. The space requirement for the BEQ Complex is 191,405 square feet (SF), which includes supporting facilities and parking. Any site chosen must not be a site that currently provides or is planned to provide public services for DC residents, to include public housing, education, or public recreation services.

Based on the siting criteria, four potential sites have been identified for possible acquisition and development of facilities to meet the BEQ Complex replacement requirements. The four sites are defined in terms of squares and adjacent streets, as applicable. A ''square'' is the unit of land defined by the DC Surveyor that normally consists of a single city block and contains recorded tax lots.

Site A is a privately-owned 3.0-acre site composed of Square 929, Square 930, and L Street between 8th and 9th Streets. Site B is a privately-owned 1.8-acre site that encompasses Square 976 and a segment of L Street between 10th and 11th Streets. Site C comprises a portion of Square 853 just west of Washington Navy Yard in the Southeast Federal Center. The federally-owned 2.1-acre site is bound by M Street SE to the north and Tingey Street to the south. Site D, owned by the U.S. Navy, is approximately 2.2 acres and located on the northeast corner of Washington Navy Yard. It is bound by 11th Street SE to the east and M Street SE to the north and comprises portions of Squares 977 and 953 within the Washington Navy Yard boundary.

Implementation of the Site A alternative would require acquisition of both squares and closure of and construction on L Street between 8th and 9th Streets. Implementation of the 191,405 SF BEQ Complex at Site B would require the vehicular closure of L Street between 10th and 11th Streets and utilize the closed road right-of-way and a portion of existing Virginia Avenue Park open space buffer to satisfy vehicular AT/FP standoff requirements (while also not affecting use of the park). Implementation of Site C would allow for reduced AT/FP setbacks, given its adjacency to the Washington Navy Yard. If the Site D alternative was implemented, the BEQ Complex would be constructed entirely within the Washington Navy Yard boundary.

The No-Action Alternative for the BEQ Complex project is to continue to utilize and maintain the existing inadequate Building 20 BEQ Complex. The No-Action Alternative does not meet the purpose and need for the action, but must be analyzed as the baseline against which the impacts associated with action alternatives will be evaluated.

Alternatives for the renovation and improvement projects to be analyzed in detail in the EIS consist of alternative space layouts and functional space assignments for MBW units. In some cases, the alternatives may be limited to implementing the project or taking no action. The No Action Alternative for the renovation and improvement projects would be to not implement interior renovations, which would result in continued inefficient space utilization functional layouts and energy systems, life safety issues, and hindering MBW's ability to meet sustainability goals.

Environmental Compliance: The EIS would evaluate potential environmental effects associated with each of the alternatives for each of the analyzed projects on the following: safety, land use, recreation, air quality, socioeconomics and environmental justice, water resources, noise, cultural resources, natural resources, traffic/transportation, hazardous materials and waste, and utilities. Relevant and reasonable measures that could avoid or mitigate adverse environmental effects will also be analyzed. Additionally, the USMC will undertake consultations required by the National Historic Preservation Act and any other applicable laws or regulations.

Schedule: This Notice of Intent is the first phase of the EIS process and announces the 30-day public comment period to identify community concerns and local issues that should be addressed in the EIS. The next phase occurs when a Notice of Availability (NOA) is published in the **Federal Register** and local media to publicly announce the release of the Draft EIS in Summer 2014. A 45-day public comment period for the Draft EIS will commence upon publication of the NOA in the **Federal Register**. The USMC will consider and respond to all comments

received on the Draft EIS when preparing the Final EIS. The USMC intends to issue the Final EIS in Winter 2014/2015, at which time an NOA would be published in the **Federal Register** and local media.

A Record of Decision is anticipated in early 2015.

Dated: August 29, 2013.

P.A. Richelmi,

Lieutenant, Office of the Judge Advocate General, U.S. Navy, Alternate Federal Register Liaison Officer.

[FR Doc. 2013–21713 Filed 9–5–13; 8:45 am]

BILLING CODE 3810–FF–P

DEPARTMENT OF EDUCATION

[Docket No. ED–2013–ICCD–0118]

Agency Information Collection Activities; Comment Request; Application for Approval To Participate in Federal Student Financial Aid Programs

AGENCY: Federal Student Aid (FSA), Department of Education (ED).

ACTION: Notice.

SUMMARY: In accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. chapter 3501 *et seq.*), ED is proposing an extension of an existing information collection.

DATES: Interested persons are invited to submit comments on or before November 5, 2013.

ADDRESSES: Comments submitted in response to this notice should be submitted electronically through the Federal eRulemaking Portal at *http://www.regulations.gov* by selecting Docket ID number ED–2013–ICCD–0118 or via postal mail, commercial delivery, or hand delivery. *Please note that comments submitted by fax or email and those submitted after the comment period will not be accepted.* Written requests for information or comments submitted by postal mail or delivery should be addressed to the Director of the Information Collection Clearance Division, U.S. Department of Education, 400 Maryland Avenue SW., LBJ, Room, 2E103 Washington, DC 20202–4537.

FOR FURTHER INFORMATION CONTACT: For questions related to collection activities or burden, please call Kate Mullan, 202–401–0563 or electronically mail *ICDocketMgr@ed.gov.* Please do not send comments here.

SUPPLEMENTARY INFORMATION: The Department of Education (ED), in accordance with the Paperwork Reduction Act of 1995 (PRA) (44 U.S.C. 3506(c)(2)(A)), provides the general public and Federal agencies with an opportunity to comment on proposed, revised, and continuing collections of information. This helps the Department assess the impact of its information collection requirements and minimize the public's reporting burden. It also helps the public understand the Department's information collection requirements and provide the requested data in the desired format. ED is soliciting comments on the proposed information collection request (ICR) that is described below. The Department of Education is especially interested in public comment addressing the following issues: (1) Is this collection necessary to the proper functions of the Department; (2) will this information be processed and used in a timely manner; (3) is the estimate of burden accurate; (4) how might the Department enhance the quality, utility, and clarity of the information to be collected; and (5) how might the Department minimize the burden of this collection on the respondents, including through the use of information technology. Please note that written comments received in response to this notice will be considered public records.

Title of Collection: Application for Approval to Participate in Federal Student Financial Aid Programs

OMB Control Number: 1845–0012

Type of Review: An extension of an existing information collection.

Respondents/Affected Public: Private Sector, State, Local, or Tribal Governments

Total Estimated Number of Annual Responses: 7,246

Total Estimated Number of Annual Burden Hours: 24,352

Abstract: The Higher Education Act of 1965, as amended requires postsecondary institutions to complete and submit this application as a condition of eligibility for any of the Title IV student financial assistance programs and for the other postsecondary programs authorize by the HEA. The institution must submit the form (1) Initially when it first seeks to become eligible for the Title IV programs; (2) when its program participation agreement expires (recertification); (3) when it changes ownership, merges, or changes structure, (4) to be reinstated to participate in the Title IV programs, (5) to notify the Department when it makes certain changes, e.g. name or address; and (5) if it wishes to have a new program (outside its current scope) or new location approved for Title IV purposes.

Kate Mullan,

Acting Director, Information Collection Clearance Division, Privacy, Information and Records Management Services, Office of Management.

[FR Doc. 2013–21675 Filed 9–5–13; 8:45 am]

BILLING CODE 4000–01–P

DEPARTMENT OF EDUCATION

Privacy Act of 1974; Computer Matching Program Between the Department of Education (ED) and the Social Security Administration (SSA)

AGENCY: Department of Education.

ACTION: Notice.

SUMMARY: Pursuant to the Computer Matching and Privacy Protection Act of 1988, the Computer Matching and Privacy Protections Amendments of 1990, and Office of Management and Budget (OMB) guidance on the conduct of computer matching programs, notice is hereby given of the renewal of the computer matching program between the ED (recipient agency), and the SSA (source agency). This renewal of the computer matching program will become effective as explained in paragraph 5.

SUPPLEMENTARY INFORMATION: In accordance with the Privacy Act of 1974 (5 U.S.C. 552a), as amended, OMB Final Guidance Interpreting the Provisions of Public Law 100–503, the Computer Matching and Privacy Protection Act of 1988, published in the **Federal Register** on June 19, 1989 (54 FR 25818), and OMB Circular No. A–130, Transmittal Memorandum #4, Management of Federal Information Resources (November 28, 2000), we provide the following information:

1. *Names of Participating Agencies.*

The U.S. Department of Education and the Social Security Administration.

2. *Purpose of the Match.*

The purpose of this matching program between ED and SSA is to assist the Secretary of Education with verification of immigration status and Social Security numbers (SSNs) under 20 U.S.C. 1091(g) and (p). SSA will verify the issuance of an SSN to, and will confirm the citizenship status of, those students and parents applying for financial assistance programs authorized under title IV of the Higher Education Act of 1965, as amended (HEA). Verification of this information by SSA will help ED satisfy its obligation to ensure that individuals applying for financial assistance meet

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

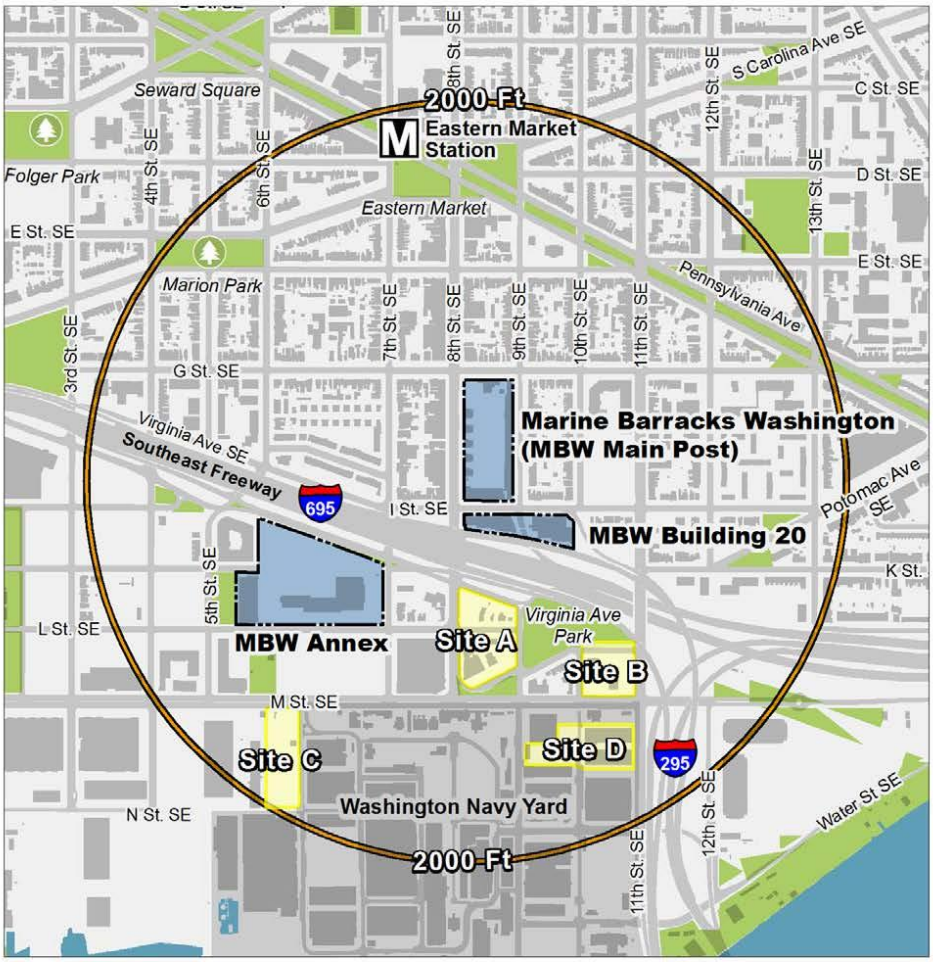
Source: DC GIS Data Clearinghouse/Catalog

Key

MBW Projects
- 2014-2018
- Beyond 2018

MBW Sites
Park

8



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

0 250 500 1,000 Feet

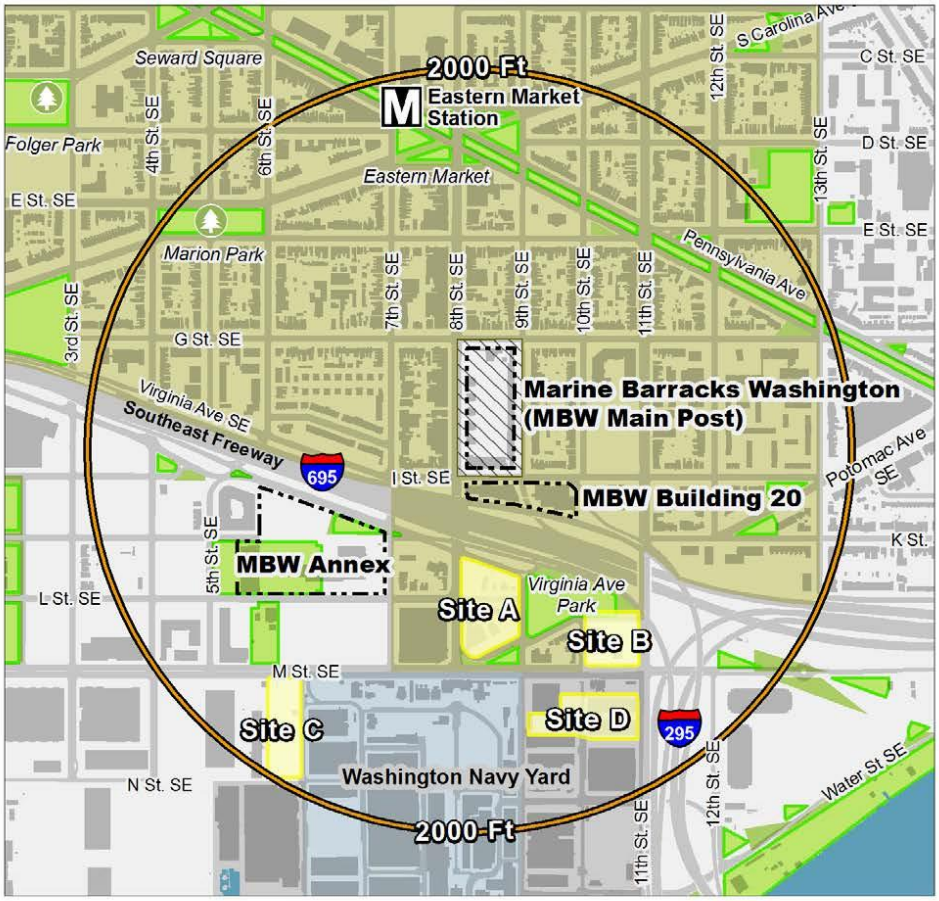
Source: DC GIS Data Clearinghouse/Catalog

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- 2000 Ft Buffer from MBW Main Post
- Buildings
- Roads
- Parks
- WaterPly

9

Enclosure 3. Preliminary Draft APE for the Proposed Action



MBW Properties and Alternative BEQ Complex Sites

Marine Barracks Washington (MBW), DC

Key

- Marine Barracks Washington Sites
- Alternative BEQ Complex Sites
- Preliminary Draft Area of Potential Effects (APE)
- Buildings
- Roads

Historic Districts

- Capitol Hill
- Marine Barracks (National Historic Landmark)
- Washington Navy Yard (National Historic Landmark)
- L'Enfant Reservations
- National Parks

10

UNITED STATES MARINE CORPS
MARINE BARRACKS
8th & I STREETS S. E.
WASHINGTON, D. C. 20390-5000

IN REPLY REFER TO:
1000
CO
6 Sept 13

Mr. David Maloney
State Historic Preservation Officer
Historic Preservation Office
1100 4th Street SW, Suite E650
Washington, DC 20024

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR MULTIPLE PROJECTS IN SUPPORT OF MARINE BARRACKS WASHINGTON (MBW)

Dear Mr. Maloney:

The Department of the Navy, U.S. Marine Corps, is in the initial stages of preparing an Environmental Impact Statement (EIS) to evaluate the potential impacts that could result from implementation of multiple projects in support of Marine Barracks Washington (MBW) in southeast Washington, D.C. (Enclosure 1). This analysis is being conducted in accordance with the National Environmental Policy Act of 1969 (NEPA) and this undertaking and its effects are being considered under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implementing regulations 36 CFR 800. The Navy is writing to inform you about the project and initiate consultation regarding the project Area of Potential Effects (APE) per 36 CFR 800.4(a)(1).

The primary project to be analyzed in the EIS is a land acquisition and construction project to replace a Bachelor Enlisted Quarters (BEQ) Complex (including support facilities and parking) currently housed in MBW's Building 20. Other projects to be analyzed in detail include interior renovations to Buildings 7 and 8 at the MBW Main Post; improvements to the MBW Annex gate at 7th and K Streets; and improvements to building facades, fencing, infrastructure, and pedestrian amenities throughout the installation that would blend MBW facilities with the neighborhood. At this time, it is anticipated the EIS would evaluate four action alternatives for the BEQ Complex project, as well as the No Action Alternative. The attached enclosures depict the locations of the existing MBW properties and potential BEQ Complex sites.

Other longer-term (2018 or later) projects to be analyzed programmatically involve reuse of Building 20 or the Building 20 site and interior renovations to Building 9 to accommodate relocation of functions from the Washington Navy Yard, as well as some additional landscaping and maintenance projects. Once

1

these projects become sufficiently ripe for detailed analysis, additional NEPA analysis will be completed.

In accordance with 36 CFR 800.4(a)(1), an APE needs to be established in consultation with your office. Based on the potential for direct effects to archaeological and architectural resources by the proposed action, the Marine Corps has tentatively identified an APE that comprises a 2,000-foot radius centered on the Main Post Main Gate Entrance, as shown in Enclosure 3.

The potential environmental effects of the proposed action will be analyzed in the EIS. Once the APE is defined, the Marine Corps will review site files to determine whether any of the parcels being considered have been previously surveyed and, if so, if there are any historic properties present. The Marine Corps will also contact the land owners of the parcels to request permission to conduct archaeological and historic structure surveys. The results of these identification efforts, in addition to an assessment of effects on historic properties by the preferred alternative once determined, will be the subject of future consultation with your office on this project.

Additionally, to fulfill our responsibilities under 36 CFR 800.3(e) and 800.4(a)(3), we will hold a Section 106 public meeting to solicit input from the public on potential effects on historic properties resulting from the proposed action. The public meeting will be held in conjunction with the EIS public scoping meeting on September 24, 2013 from 5:30 p.m. to 8:30 p.m., at Tyler Elementary School, located at 1001 G St SE, Washington, D.C. 20390. In addition to the public scoping meeting, the Marine Corps will hold an agency scoping meeting from 4:30 p.m. to 5:30 p.m., prior to the public scoping meeting. During that time, the Marine Corps will give a brief presentation of the undertaking and will be available for open discussion with agencies regarding issues and concerns.

We look forward to working with your office as this undertaking moves forward. If you have any questions or comments, please contact Sherry Frear, the Section 106 consultation coordinator at Headquarters Marine Corps/Marine Corps Installations Command, at sherry.frear@usmc.mil or (571) 256-2838.

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Sincerely,

C. G. CABANISS
Colonel, U.S. Marine Corps
Marine Barracks Washington, D.C.

Enclosures:
1. Regional Location Marine Barracks Washington
2. Proposed Action and Alternatives Maps
3. Preliminary Draft APE for the Proposed Action

3

Enclosure 1. MBW Vicinity

MBW PROPERTIES & LOCATION MAP

4

Enclosure 2. Figures of Proposed Action

MBW Planned Project Sites, Location Map

Marine Barracks Washington, DC

0 150 300 600 Feet

Source: DC GIS Data Clearinghouse/Catalog

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- 2014-2018
- Beyond 2018

MBW Sites
Park

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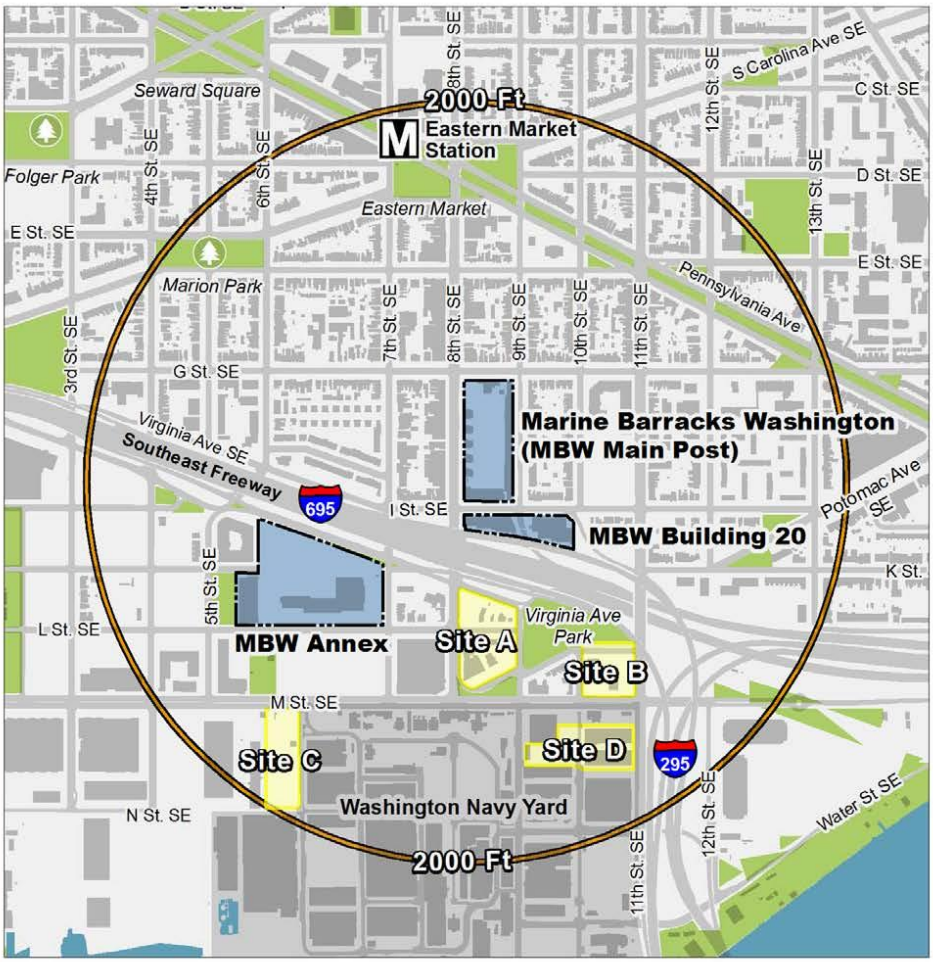

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- Roads
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6

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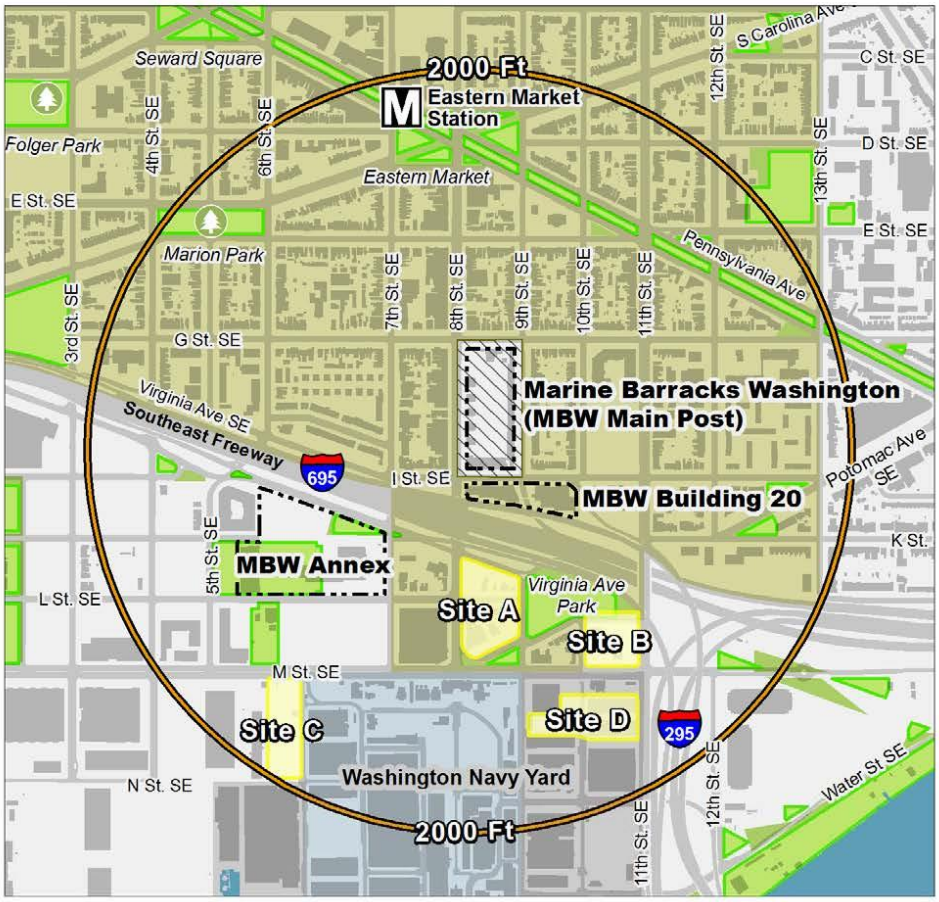

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- Buildings
- Roads

Historic Districts

- Capitol Hill
- Marine Barracks (National Historic Landmark)
- Washington Navy Yard (National Historic Landmark)
- L'Enfant Reservations
- National Parks

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APPENDIX C

TRANSPORTATION IMPACT ANALYSIS

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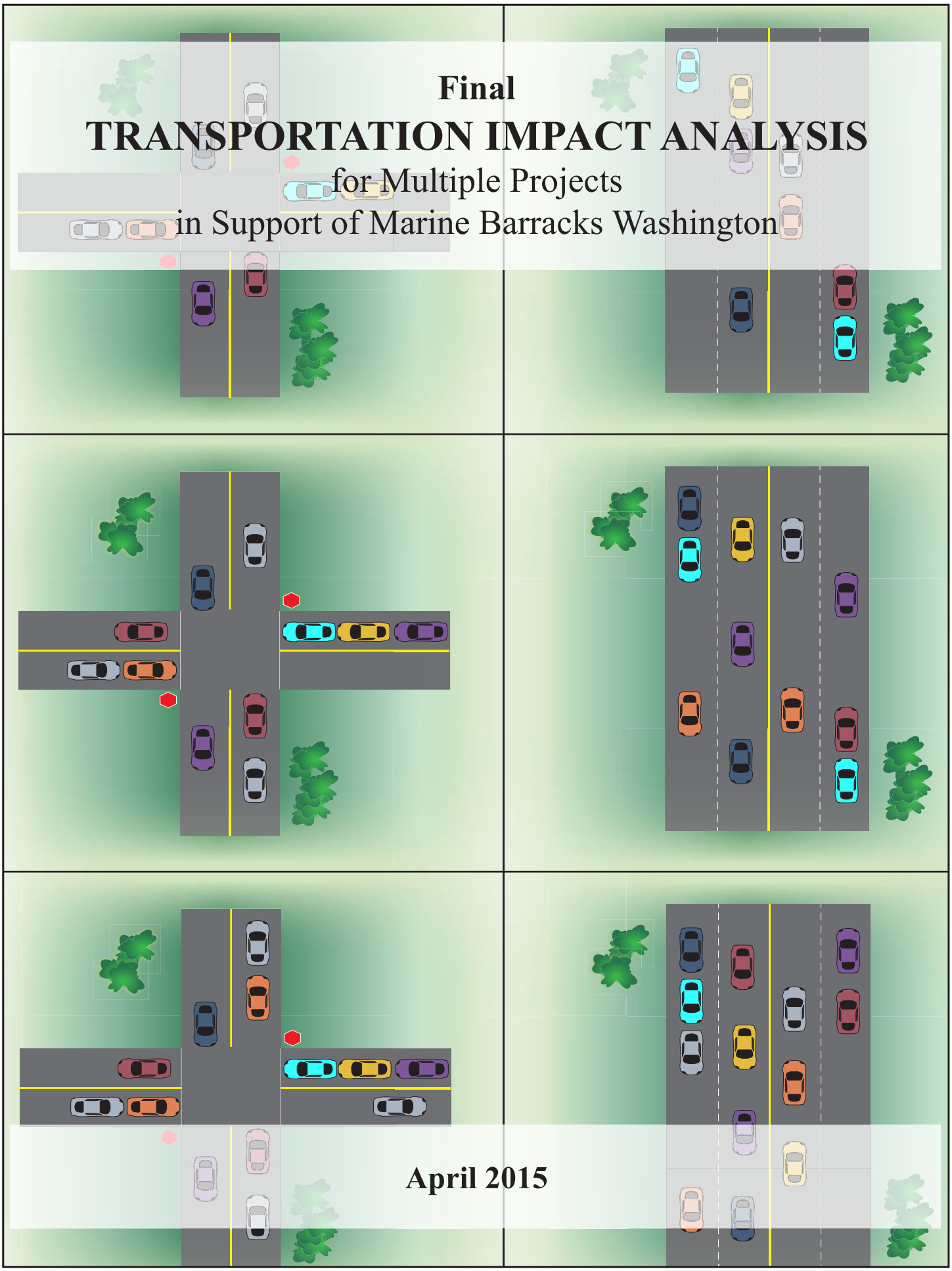

Final
TRANSPORTATION IMPACT ANALYSIS
for Multiple Projects
in Support of Marine Barracks Washington

April 2015

Acronyms and Abbreviations

BEQ	Bachelor Enlisted Quarters
DDOT	District of Columbia Department of Transportation
DC	District of Columbia
du	dwelling units
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FY	fiscal year
HCM	Highway Capacity Manual
I	Interstate
ITE	Institute of Transportation Engineers
ksf	thousands of square feet
LOS	Level of Service
MBW	Marine Barracks Washington
MCI	Marine Corps Institute
NAVFAC	Naval Facilities Engineering Command
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act
ROI	region of influence
ROW	right-of-way
TIA	Transportation Impact Analysis
TMP	Transportation Management Program
TRB	Transportation Research Board
WMATA	Washington Metropolitan Area Transit Authority
WNY	Washington Navy Yard

EXECUTIVE SUMMARY

The Proposed Action is to implement the following projects at or proximate to Marine Barracks Washington (MBW) anticipated to occur within an approximately 5-year planning horizon from the publication of the Record of Decision (anticipated early 2016) in order to meet the purpose of and need for the Proposed Action described in the Environmental Impact Statement (EIS) for Multiple Projects in Support of Marine Barracks Washington (i.e., the "MBW EIS").

- The Bachelor Enlisted Quarters (BEQ) Complex replacement project: This project, which is the principal project to be analyzed in this TIA, includes 1) securing a site (acquiring land or establishing a tenant site on Department of Defense property) and 2) constructing a 191,045 square foot BEQ Complex (including supporting facilities and parking) to replace the existing Building 20 BEQ Complex.
- Main Post renovation projects: These projects include interior renovations to Building 7 at the Main Post.
- Project to foster integrated communities: These projects include improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation that are consistent with the neighborhood context.

Because the transportation impacts associated with the Main Post renovation projects and the project to foster integrated communities would be localized and limited to the duration of construction, this TIA focuses on the potential operations impacts associated with the proposed BEQ Complex replacement project.

The BEQ Complex replacement would house the same number of military personnel (i.e., 250) as are berthed at Building 20 and would not introduce any new land uses or activities that are not currently operating at Building 20. Therefore, the Proposed Action would not generate any new trips on a recurring basis. Instead, existing trips already on the transportation network would shift from their current routes, as appropriate, to travel between the proposed BEQ Complex replacement and the Main Post. Transportation impacts would also arise from the permanent closure of existing public streets (i.e., Alternatives 1 and 2) and the demolition of existing, occupied land uses (i.e., Alternatives 1, 2, and 4). The Proposed Action's transportation effects were determined based on the capacity of the transportation network to accommodate the redistribution, diversion, and removal of existing and project-related trips. The analysis found that none of the alternatives would cause any significant impacts, either during construction or operation of the Proposed Action. Although no measures are required to minimize the Proposed Action's effect on pedestrian and bicycle accessibility, transit service, or traffic, the following management measures are recommended for each of the 5 alternatives:

- Continued implementation of the Transportation Management Plan program for MBW to encourage trip reduction; and
- Ongoing training of personnel in pedestrian safety and requirements for Marines to observe all pedestrian signals and rules.

Because Alternatives 1 through 3 would involve the construction of new parking facilities for the proposed BEQ Complex, the following additional management measure is recommended:

- Ensuring that design of the BEQ Complex considers the location of proposed driveways and assess the likelihood and extent of queues that may form as vehicles are processed for access to BEQ Complex parking facilities and, to the extent feasible, avoid blockage of through lanes.

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1.0 INTRODUCTION

1.1 PROJECT LOCATION

This Transportation Impact Analysis (TIA) evaluates the potential transportation-related effects caused by the proposed construction and operation of multiple projects in support of Marine Barracks Washington (MBW), District of Columbia (DC). This TIA supports National Environmental Policy Act (NEPA) analysis of the Proposed Action, and substantiates the analysis of transportation impacts documented in the Environmental Impact Statement (EIS) for Multiple Projects in Support of Marine Barracks Washington (referred to from here forward as the "MBW EIS").

Existing MBW properties consist of the Main Post, the Building 20 Complex, and the Annex. In addition, MBW occupies two tenant sites: one located at Washington Navy Yard (WNY) for the Marine Corps Institute (MCI) and the other at Joint Base Anacostia-Bolling for vehicle storage (Figure 1-1). MBW is located within the Southeast Quadrant of Washington, DC, which encompasses the Capitol Hill, Anacostia, Eastern Market, Navy Yard, and Barracks Row neighborhoods. Southeast Washington is bisected by the Anacostia River, with the portion northwest of the river and south of Interstate (I)-695 (i.e., the Southeast Freeway) commonly referred to as Near Southeast. The MBW Main Post and the Building 20 Complex are located in the Capitol Hill neighborhood. The MBW Annex is located in the Near Southeast neighborhood.

1.2 OVERVIEW OF THE PROPOSED ACTION

The Proposed Action is to implement the following projects at or proximate to MBW, which are anticipated to occur within the next 5 years, in order to meet the purpose of and need for the Proposed Action described in the MBW EIS.

- The Bachelor Enlisted Quarters (BEQ) Complex replacement project: This project, which is the principal project to be analyzed in this TIA, includes 1) securing a site (acquiring land or establishing a tenant site on Department of Defense property) and 2) constructing a 191,045 square foot BEQ Complex (including supporting facilities and parking) to replace the existing Building 20 BEQ Complex.
- Main Post renovation projects: These projects include interior renovations to Building 7 at the Main Post.
- Project to foster integrated communities: These projects include improvements to the MBW Annex gate at 7th and K Streets and improvements to building facades, fencing, infrastructure, pedestrian amenities, and landscaping throughout the installation that are consistent with the neighborhood context.

The Proposed Action also includes projects anticipated to occur beyond the 5 year planning horizon for which information sufficient to conduct detailed NEPA analysis is not yet available. Principal among these projects is the potential reuse of the Building 20 site (aside from the possible retention of below-grade parking to continue to meet the BEQ Complex parking requirement).

Figure 1-1 MBW Properties and Location Map

Other projects include renovation of Building 9 to accommodate relocation of MCI from the tenant site at WNY to the Main Post, as well as some additional landscaping and maintenance projects. Once sufficient details on these actions become available to conduct a detailed analysis, additional NEPA analysis will be completed.

1.3 ALTERNATIVES CARRIED FORWARD FOR ANALYSIS

The MBW EIS evaluates 5 action alternatives (Figure 1-2). Each of these alternatives would involve the elements described above in Section 1.2. The primary difference between the alternatives would be the location of the proposed BEQ Complex replacement project, as described in the paragraphs below. Both Alternative 1 and Alternative 2 would permanently close a short segment of L Street SE. Alternatives 1, 2, and 4 would demolish existing occupied land uses to make way for the proposed BEQ Complex replacement.

1.3.1 Alternative 1

Under Alternative 1, the Marine Corps would acquire privately owned land and a government-owned right-of-way (ROW) segment for the dedicated purpose of constructing the proposed BEQ Complex. The Alternative 1 potential BEQ Complex site, Site A, consists of 3.0 acres and an approximately 340-foot segment of L Street SE between 8th and 9th Streets SE. The affected segment of L Street SE would be closed to vehicular and pedestrian traffic and street parking because the Site A buildable area footprint would overlap this street segment. Construction of Alternative 1 would require the demolition of numerous occupied and vacant structures, and summarized in Table 2.4-1 of the MBW EIS.

1.3.2 Alternative 2

Under Alternative 2, the Marine Corps would acquire privately owned land and a government-owned ROW segment for the dedicated purpose of constructing the proposed BEQ complex. The Alternative 2 potential BEQ site, Site B, consists of 1.8 acres composed of privately owned land and an approximately 315-foot segment of the L Street ROW between 10th and 11th Streets SE. This closure would be necessary to satisfy the Anti-Terrorism/Force Protection vehicular standoff distance. Existing structures to be demolished are presented in MBW EIS Table 2.4-2.

1.3.3 Alternative 3

Under Alternative 3, the Marine Corps would obtain appropriate real estate interest in a portion of the federally-owned at the General Services Administration-owned Southeast Federal Center for the dedicated purpose of constructing the proposed BEQ Complex. The Alternative 3 site, Site C, is a 2.1-acre site bound by M Street SE to the north and Tingey Street SE to the south. Alternative 3 would not involve the demolition of any existing occupied structures or the permanent closure of any public streets.

1.3.4 Alternative 4

Under Alternative 4, the replacement BEQ Complex (including support facilities) would be constructed at the WNY and the associated parking requirement would be met by utilizing the existing below-grade

parking on both the eastern and western portions of the Building 20 site. Alternative 4 would involve the demolition of Building 169.

1.3.5 Alternative 5

Under Alternative 5, the replacement BEQ Complex (including support facilities) would be constructed at the MBW Annex and the associated parking requirement would be met by utilizing the existing below-grade parking on both the eastern and western portions of the Building 20 site. Alternative 5 would not involve the demolition of any existing buildings or the closure of any existing roadways.

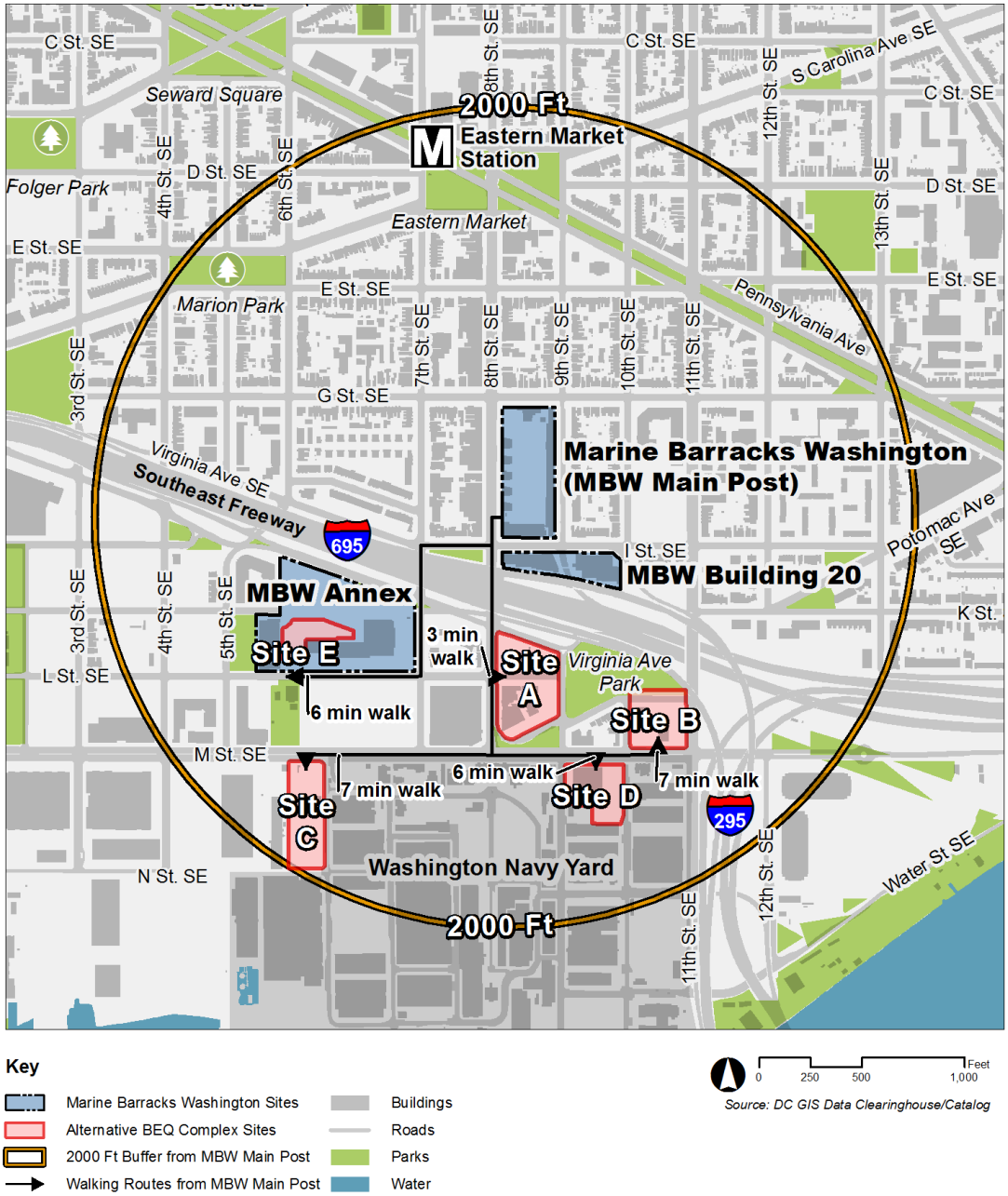

Figure 1-2 Alternatives Carried Forward for Detailed Analysis

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2.0 ANALYSIS METHODS

The BEQ Complex replacement project has the potential to impact various types of transportation facilities and modes of travel. For example, the proposed BEQ Complex replacement project would change the routes of pedestrian, bicycle, transit, and passenger car trips made by military personnel and civilian employees at the BEQ Complex for Alternatives 1 through 3. The proposed closure of existing public roads (i.e., Alternatives 1 and 2) would cause existing trips on these facilities to divert to alternate routes. Conversely, the demolition of existing occupied land uses (i.e., Alternatives 1, 2, and 4) would remove existing trips from the surrounding transportation network. Existing traffic patterns would also be affected by transportation improvements to be implemented by others, including the planned reconfiguration of the I-695 westbound off-ramp to I Street SE. Traffic impacts associated with the Main Post renovation projects and the project to foster integrated communities would be localized and limited to the duration of construction.

Impacts to pedestrian and bicycle accessibility, transit service, and parking were assessed qualitatively in Chapter 6. A significant impact on pedestrian accessibility may occur if a project were to increase walking distance beyond the “reasonable walking distance” defined by the NCPC. If a project were to remove or reroute bicycle facilities so as to substantially increase trip distances, then a significant impact to bicycle accessibility may result. Transit facilities may experience a significant impact if existing facilities and services are obstructed and/or rerouted, or if a substantial increase in transit demand occurs due to a project. A project may cause a significant impact to parking facilities is there is the net parking demand exceeds the available supply of spaces. Methods used to determine the significance of the Proposed Action’s traffic impacts are described in the following paragraphs.

2.1 CAPACITY ANALYSIS PROCEDURES

Roadway and intersection operating conditions and the adequacy of existing roadway systems to accommodate projected future traffic are described in terms of Level of Service (LOS) ratings. LOS is a method used to rate the performance of streets, intersections, and other highway facilities. Developed by the Transportation Research Board (TRB), and documented since 1965 in various editions of the Highway Capacity Manual (HCM), LOS rates performance on a scale of A to F, with LOS A reflecting free flowing conditions and LOS F representing heavily congested conditions (TRB 2010). Table 2-1 summarizes the general traffic conditions associated with each LOS rating, while Figure 2-1 illustrates representative levels of congestion for each LOS grade.

Table 2-1 Traffic Conditions Associated with LOS Ratings

LOS Rating	Description of Traffic Conditions
A	Traffic flows freely, with little or no restrictions to vehicle maneuvers within the traffic stream.
B	Reasonably free-flowing conditions, with slight restrictions to vehicle maneuvers within the traffic stream.
C	Traffic speed approaches free-flowing conditions, but freedom to maneuver within the traffic stream noticeably restricted.
D	Traffic speed begins to be reduced, and freedom to maneuver is seriously limited due to a high concentration of traffic.
E	Unpredictable traffic flow, with virtually no usable gaps in the traffic stream to accommodate vehicle maneuvers.
F	Unstable traffic flow resulting in delays and the formation of queues in locations where traffic demand exceeds roadway capacity.

Source: TRB 2010.

2.1.1 Intersection LOS

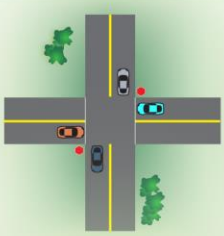
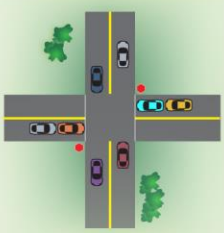
Intersection capacity analysis was conducted in accordance with procedures contained in Chapters 18 (signalized intersection) and 19 (unsignalized intersections with stop signs on one or two intersection legs) of the HCM (TRB 2010). Data used in intersection analysis include peak-hour[1] turning movement traffic volumes, the number of lanes, the timing and phasing of the traffic signal, and other factors. Analysis was performed using the Synchro 8 software (published by Trafficware), which incorporates HCM analysis procedures (TRB 2010). LOS for signalized intersections is measured in terms of delay in seconds per vehicle. Table 2-2 presents the delay values associated with each LOS grade for both signalized and unsignalized intersections.

Table 2-2 Intersection LOS Delay Thresholds

LOS Rating	Delay (seconds per vehicle)	
	Signalized Intersections	One-Way Stop-Controlled Intersections
A	≤10.0	≤10.0
B	>10.0 and ≤205.0	>10.0 and ≤15.0
C	>20.0 and ≤35.0	>15.0 and ≤25.0
D	>35.0 and ≤55.0	>25.0 and ≤35.0
E	>55.0 and ≤80.0	>35.0 and ≤50.0
F	>80.0	>50.0

Source: TRB 2010.

[1] Typically the single hour having the highest concentration of traffic that occurs during traditional morning and afternoon commuting periods (i.e., 6:00 to 9:00 am and 3:30 to 6:30 pm).

LEVEL OF SERVICE (LOS)				
LOS	Signalized Intersection		Unsignalized Intersection (a)	
A		• Very low delay of 10.0 seconds or less per vehicle. • Most vehicles arrive during the green phase. • Most vehicles do not need to stop.		• Delays of 10.0 seconds per vehicle. • Little or no delay to minor street traffic.
B		• Delay in range of 10.1 to 20.0 seconds per vehicle. • More vehicles stop than LOS A.		• Delay in range of 10.1 to 15.0 seconds per vehicle. • Short traffic delays to minor street traffic.
C		• Delay in range of 20.1 to 35.0 seconds per vehicle. • More vehicles stop than LOS B, minimal backup may occur.		• Delay in range of 15.1 to 25.0 seconds per vehicle. • Average traffic delays to minor street traffic.
D		• Delay in range of 35.1 to 55.0 seconds per vehicle. • Many vehicles stop. • Longer delays occur.		• Delay in range of 25.1 to 35.0 seconds per vehicle. • Long traffic delays to. minor street traffic.
E		• Delay in range of 55.1 to 80.0 seconds per vehicle. • Extensive queuing. • Poor traffic progression.		• Delay in range of 35.1 to 50.0 seconds per vehicle. • Very long delays to minor street traffic.
F		• Delay in excess of 80.0 seconds per vehicle. • Severe queuing and extensive delay.		• Delay in excess of 50.0 seconds per vehicle. • Extreme delays with queuing.

(a) Although a two-way stop controlled intersection is shown, LOS delay thresholds and congestion levels are the same for all-way stop controlled intersections.
Source: TRB 2010.

Figure 2-1 Representative Traffic Levels for Each LOS Rating

2.2 TARGET LOS AND SIGNIFICANCE CRITERIA

For the purposes of this TIA, the target LOS for intersections in the region of influence (ROI) is LOS D (Federal Highway Administration [FHWA] 2013a). Accordingly, LOS A, B, C, and D are considered to be acceptable LOS, while LOS E and F are considered to be unacceptable. Where a project has a significant impact on an intersection that does not meet the target LOS of D, mitigation measures may be identified to minimize or avoid the project's effect on traffic.

Based on typical industry standards, a project is considered to have a *significant impact* on the operations of an intersection when one of the following occurs:

- The addition of project traffic results in a LOS dropping from LOS D or better to LOS E or F; or
- If an intersection currently operates at LOS E or F under base conditions and the project adds more than an additional 2 seconds of average vehicle delay.

In addition, a project may contribute toward a substantial cumulative effect if its traffic, when taken together with traffic from past, present and reasonably foreseeable future projects, causes intersection LOS to decline from LOS A through D to LOS E or F, and the project increases average delay by 2 seconds or more.

2.3 TYPES OF PROJECT TRAFFIC EFFECTS

The Proposed Action would not involve any land uses or activities that would result in a recurring increase in operations-related traffic. Instead, traffic effects would arise for the following situations:

- Redistribution of military personnel and civilian worker trips due to the proposed BEQ Complex replacement project;
- Diversion of existing traffic due to permanent closure of public streets (i.e., portions of L Street SE); and
- Removal of existing traffic due to the demolition of existing occupied land uses.

As noted in the MBW EIS, each of the alternative sites was selected because of its proximity to the MBW Main Post. Specifically, each site is within a 10-minute walking distance of the Main Gate entrance to the Main Post. Therefore, it is likely that travel between the proposed BEQ Complex and the Main Post would be predominantly on foot, as it is today (refer to Section 5.1). However, given that Building 20 is located much closer to the Main Post than any of the action alternatives, it is possible that some pedestrian trips could shift to other travel modes under unusual circumstances (e.g., inclement weather). Although this mode shift would be atypical, this TIA accounts for a relatively minor shift in travel mode in order to provide a conservative analysis.

2.4 TRAFFIC REGION OF INFLUENCE

For the purposes of this TIA, the ROI consists of those intersections expected to accommodate the greatest concentration of redistributed and diverted traffic. These intersections lie along likely routes between the alternative BEQ Complex sites and the Main Post, and would therefore accommodate the bulk of redistributed and diverted traffic. The ROI consists of nine intersections (Figure 2-2). Table 2-3 lists the ROI intersections and type of existing traffic control provided at each location.

Table 2-3 ROI Intersections

Intersection*	Traffic Control
1. I Street SE/8th Street SE	Signal
2. I-695 on-ramp/8th Street SE	Signal
3. Virginia Ave SE/8th Street SE	Signal
4. M Street SE/8th Street SE	Signal
5. M Street SE/9th Street SE	Signal
6. M Street SE/11th Street SE	Signal
7. I Street SE/9th Street SE/I-695 off-ramp	One-Way Stop Control
8. I Street SE/11th Street SE	Signal
9. M Street SE/Isaac Hull Avenue SE	Signal

Note: *Figure 2-2 depicts the intersection numbers.

Figure 2-2 Intersections in the ROI

3.0 EXISTING CONDITIONS

The Proposed Action is located in an urbanized area that contains a mixture of land use types, and accommodates a variety of travel modes. As part of the planning process for the Proposed Action, the Naval Facilities Engineering Command (NAVFAC) prepared a Transportation Management Program (TMP) (NAVFAC 2012a). The purpose of the TMP was to reduce traffic congestion, conserve energy, and improve air quality by seeking to reduce and/or shorten the number of employee single-occupancy vehicle trips in the workday commute to and from MBW. The TMP also included an inventory of existing transportation facilities, an employee transportation demand survey, and other data. Attachment A contains excerpts from the TMP related to existing transportation conditions.

3.1 PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are provided along both sides of segments of I Street SE, Virginia Avenue SE, M Street SE, 7th Street SE, 8th Street SE and 11th Street SE. Marked crosswalks and pedestrian countdown heads are provided for all pedestrian movements at each of the intersections in the ROI. Although the traffic signals along 8th Street SE accommodate pedestrian movements, the signal timing favors vehicular traffic, and pedestrians have been observed to jaywalk instead of waiting for the pedestrian signal. Vehicle collisions with pedestrians have been documented at the 8th Street SE intersections with I Street SE and L Street SE. Under existing conditions, north/south pedestrian facilities along 7th Street SE, 8th Street SE, and 11th Street SE pass underneath I-695. Although street lights are provided along both 7th Street SE and 8th Street SE where these roadways pass beneath the freeway, the relative isolation of these areas could pose possible safety and security concerns for pedestrians, particularly if they traverse these areas during darkness.

View of 8th Street SE beneath I-695

View of 7th Street SE beneath I-695

Numerous existing and proposed bicycle routes and lanes are located near the Proposed Action (refer to Attachment A). There is a signed bike route with a striped bike lane along 11th Street SE. The Capital Bikeshare, a bicycle renting program, provides a Bikeshare station near the Main Post. Many roadways near the Proposed Action provide on-street vehicular parking and bike routes that are not delineated with pavement striping. In these circumstances, there is the potential for conflicts between passing bicyclists and parking vehicles and motorists entering or exiting their vehicles.

3.2 TRANSIT FACILITIES

Transit facilities near the Proposed Action include Metrorail (i.e., Green Line, Blue Line and Orange Line); DC Circulator bus service; and Metrobus service. The Metrorail Eastern Market Station (Blue and Orange Line service) is located within walking distance of the MBW Main Post. Numerous bus routes traverse 8th Street SE between M Street SE and I Street SE. Metrobus stops are provided proximate to the Main Post along 8th Street SE (refer to Attachment A).

3.3 HIGHWAY FACILITIES

Major regional roadways near the Proposed Action include Pennsylvania Avenue and I-695 (i.e., the Southeast Freeway). Multi-lane highways within the ROI include I Street SE (three lanes westbound, to the east of 8th Street SE); M Street SE (two lanes in each direction, plus parking lanes, west of 10th Street SE); and 11th Street SE (a mix of through and turning lanes north of M Street SE). Figure 3-1 shows the lane geometry and traffic control at ROI intersections.

3.3.1 Traffic Conditions

Existing (year 2012) traffic conditions within the ROI were evaluated as part of the Virginia Avenue Tunnel Reconstruction EIS (FHWA 2013b). In addition, a separate analysis was also performed at intersections 7 and 8 based on data furnished by the 11th Street Bridge Project contractor (Facchina Construction Company 2014). Analysis worksheets for these two intersections are provided in Attachment B. As shown in Table 3-1, all intersections are characterized by acceptable LOS D or better conditions during both peak hours (FHWA 2013a). It is noted that baseline traffic conditions in the study area are in transition, as the area is experiencing development and growth. This context is incorporated into the approach for the impacts analysis in Section 6.0.

Table 3-1 Summary of Intersection LOS – Existing Conditions

Intersection		Traffic Control	Peak Hour	Existing	
				Delay[(a)]	LOS
1	I Street SE/8th Street SE	Signal	AM	18.9	B
			PM	19.2	B
2	I-695 on-ramp/8th Street SE	Signal	AM	12.4	B
			PM	12.7	B
3	Virginia Avenue SE/8th Street SE	Signal	AM	34.7	C
			PM	42.5	D
4	M Street SE/8th Street SE	Signal	AM	18.2	B
			PM	13.3	B
5	M Street SE/9th Street SE	Signal	AM	10.7	B
			PM	13.9	B
6	M Street SE/11th Street SE	Signal	AM	20.0	C
			PM	42.6	D
7	I St. SE/9th St. SE/I-695 off-ramp	One-Way Stop	AM	25.6	D
			PM	13.9	B

Intersection		Traffic Control	Peak Hour	Existing	
				Delay[(a)]	LOS
8	I St. SE/11th St. SE	Signal	AM	20.2	C
			PM	18.9	B
9	M St. SE/Isaac Hull Ave. SE	Signal	AM	4.1	A
			PM	23.2	C

Notes: [(a)] Delay is measured in seconds per vehicle.
Sources: FHWA 2013a, Facchina Construction Company.

3.3.2 Parking

Vehicle parking at MBW is by permit only and finding a space is accomplished largely on an ad hoc basis. Of the 534 off-street spaces provided at MBW, 212 are provided at Building 20, 288 at the MBW Annex, and 34 at the Main Post. Of this total, 150 are allocated to commuters, while the remaining 384 are set aside for official vehicles and residents.

The majority of the public parking spaces in the study area restrict parking to a maximum of two hours, unless longer durations are allowed by residential permit. This includes on-street parking is provided along various roadways throughout the study area. There is a metered surface lot located southwest of the 8th and I Street SE intersection, beneath the I-695 freeway overpass. These spaces would be lost during construction of Virginia Avenue Tunnel Reconstruction (NAVFAC 2012a), but would be restored after the completion of the Virginia Avenue Tunnel project, which is projected to be complete by 2016 (refer to Section 4.1.1). Other private pay lots located within the study area include “Lot W” for the Nationals Stadium parking and the parking lot at the former Exxon Station site. Lot W is located at the southwest corner of 7th and L Streets SE. This site is planned for construction as part of the Cappers Carrollsburg planned unit development. It is typically operated weekdays and during Nationals home games. On-street parking is provided along various roadways adjacent to the Main Post, Building 20 and the MBW Annex.

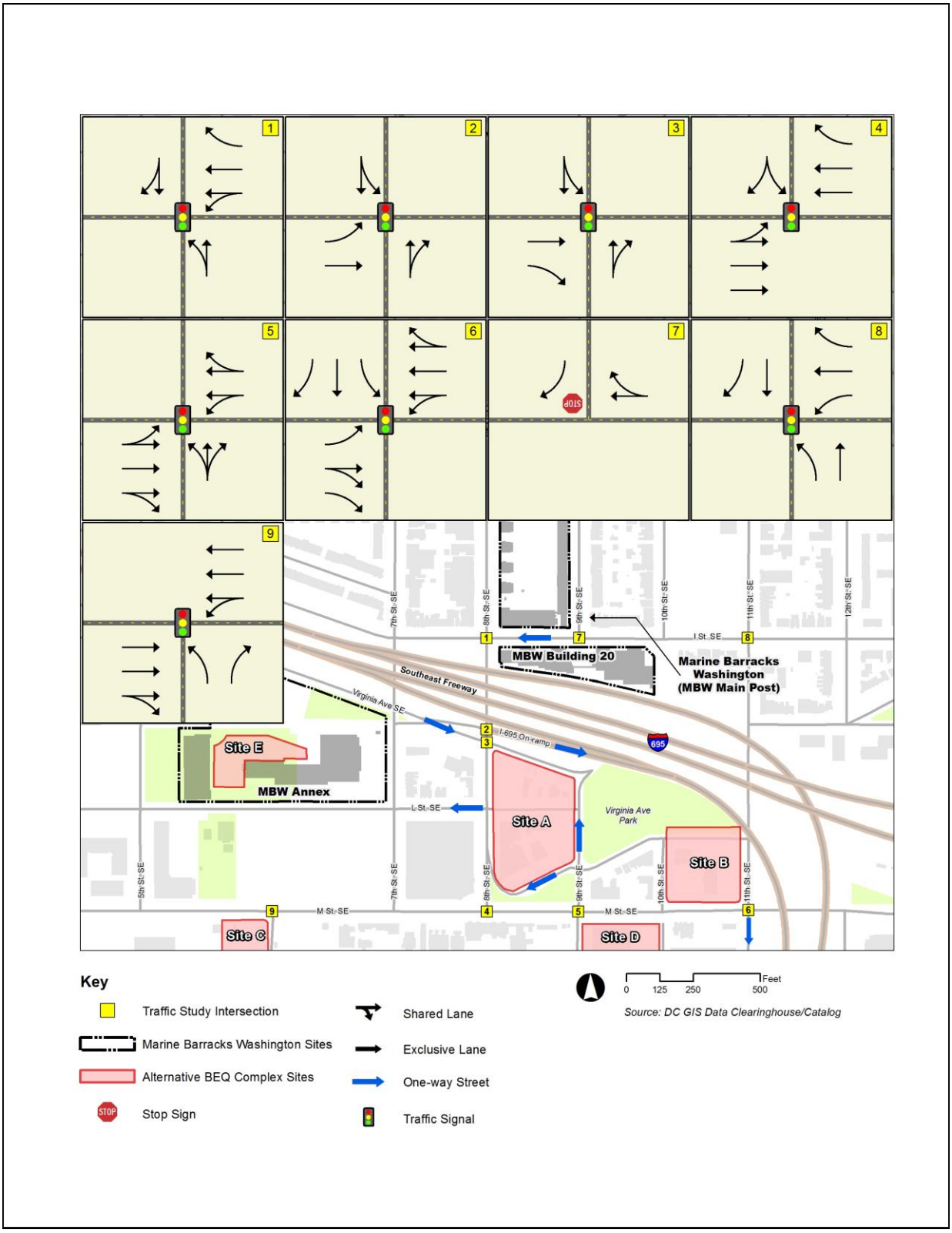


Figure 3-1 Existing Intersection Characteristics

4.0 NO ACTION ALTERNATIVE

The following paragraphs describe near term projects that will contribute to transportation conditions that are expected to be in place at the time the Proposed Action would be implemented (i.e., within an approximately 5-year planning horizon from the publication of the Record of Decision [anticipated early 2016]). The Proposed Action's traffic impacts were determined based on the incremental effect of each action alternative relative to the No Action Alternative.

4.1 NEAR TERM PROJECTS

There are several significant projects near the Proposed Action. Some of these projects would alter the transportation network in the ROI, while others would increase travel demand as the result of land development. Brief summaries of these projects are provided in the paragraphs that follow.

4.1.1 Virginia Avenue Tunnel Reconstruction Project

This project would involve the reconstruction of an existing railroad tunnel that runs generally parallel to the I-695 freeway between 2nd Street SE and 11th Street SE. The reconstructed tunnel would be substantially larger than the existing facility, and would provide sufficient width for two sets of track, and would be of sufficient height to accommodate double-stacked freight cars. The project would involve a sequence of improvements that would retain freight rail service along a temporary track while the tunnel reconstruction occurs. Although the limits of disturbance would encompass the existing alignment of Virginia Avenue SE (including the surface parking lot along 8th Street SE beneath I-695), north/south vehicular and pedestrian access would be maintained during construction. After construction, Virginia Avenue SE would be restored to its pre-construction condition. However, if desired by stakeholders, post-construction changes to this facility could be incorporated. One possible change involves removing one eastbound lane on Virginia Avenue SE east of 8th Street SE, and reconfiguring the east leg of the Virginia Avenue SE/8th Street SE intersection to accommodate both eastbound and westbound traffic[2]. Project construction is expected to be complete by 2016. The Draft EIS was circulated in July 2013, and the project web site indicates that the Record of Decision was planned to have been issued in Summer 2014. As of the date of this TIA (February 2015), the Record of Decision has not been issued.

4.1.2 11th Street Bridge Project

The 11th Street Bridge project involves the replacement of two existing bridges over the Anacostia River with three new bridges that would separate local and freeway traffic. The project has completed NEPA review and construction began on the first phase in late 2009. The second phase of this project involves various improvements along I-695, 11th Street NE, and Virginia Avenue SE near the Proposed Action. One of the most notable improvements involves elevating Southeast Boulevard between 8th Street SE and Barney Circle SE to form an at-grade intersection with 11th Street NE. This project, which is

[2] Only eastbound traffic is currently allowed on this segment.

scheduled for completion in 2015, would also reconfigure and relocate the existing on-ramp from 8th Street SE to I-695, and the existing off-ramp from I-695 to I Street SE.

4.1.3 M Street SE/SW Transportation Planning Study

The DC Department of Transportation (DDOT) completed an extensive analysis of alternative conceptual improvements along M Street SE and SW. The study considered reconfiguring the roadway to accommodate various combinations of different modes of travel along the curb lanes, including transit vehicles, bicycles, and personal vehicles. Depending on the alternative selected, the M Street SE/SW Transportation Planning Study could reduce on-street parking near the Proposed Action. The final report was approved in 2012 and NEPA analysis has not yet begun.

4.1.4 Arthur Capper/Carrollsburg Housing Redevelopment

In 2001, the District received a $34.9 million Hope VI grant to redevelop the 23-acre Capper/Carrollsburg public housing site as a mixed-use community with over 1,600 new rental and home ownership units, 700,000 square feet of office space, and 50,000 square feet of retail space. Construction on Phase I (a townhouse development called "Capitol Quarter") was completed in the summer of 2010 and is located between 3rd Street SE, 5th Street SE, Virginia Avenue SE, and L Street SE. Phase II, which is located in the blocks between 3rd Street SE, 4th Street SE, I Street SE, and L Street SE, was completed in 2012. In total, both phases of Capitol Quarter contain a combined total of about 320 residential units, most of which are single-family townhomes. Additional development areas are located in the city blocks surrounding Capitol Quarter, and will include senior housing units and office buildings (FHWA 2013b).

4.1.5 Other Redevelopment Activities

Various redevelopment activities are planned in the areas surrounding the ROI. These activities consist of new, or renovated, residential uses, office buildings, retail, hotel, and mixed-use developments. Between 2012 and 2016, it is anticipated that more than 7.7 million square feet of development would be built and occupied in the areas around the ROI (FHWA 2013b). Based on estimates provided by the Capitol Riverfront Business Improvement District, development between 2012 and 2016 would consist of the following:

- Over 4.1 million square feet of office space;
- Over twenty thousand office employees (assuming 200 square feet per employee);
- Over 2,600 new residential units;
- Over 400,000 square feet of retail space; and
- Nearly 400 new hotel rooms.

Traffic generation from these land uses was estimated and incorporated into the No Action Alternative, as described in the Traffic Operational Analysis Report (FHWA 2013a) prepared for the Virginia Avenue Tunnel Reconstruction EIS.

4.2 PEDESTRIAN AND BICYCLE CONDITIONS

Near term projects are expected to have a mixed effect on bicycle and pedestrian accessibility. The possible reduction in lanes on Virginia Avenue SE would reduce the amount of time required for

pedestrians to cross this roadway, and would be expected to provide a benefit in terms of pedestrian safety. Also, removal of the west leg of the I-695/8th Street SE intersection would reduce the number of potential vehicle/pedestrian conflicts, facilitating safe crossing of this intersection. However, the addition of westbound traffic to the Virginia Avenue SE/8th Street SE would introduce a new traffic movement that is unfamiliar to pedestrians and bicyclists, and possibly increase the likelihood of conflicts until pedestrians and bicyclists have adapted to this condition. Redevelopment activities would increase pedestrian activity, possibly resulting in congestion along sidewalk choke points (i.e., locations where sign posts, light poles and other urban infrastructure obstruct pedestrian flow along sidewalks). Depending on the alternative selected for the M Street SE/SW Transportation Planning study, bicycle access would be improved if new delineated bike lanes are to be provided along M Street SE, and if existing on-street parking is removed.

4.3 TRANSIT CONDITIONS

Transit service along M Street SE may be improved, depending on the alternative selected in the M Street SE/SW Transportation Planning Study. However, this benefit would be balanced somewhat by the increase in demand associated with various redevelopment projects, which could increase crowding on existing transit facilities.

4.4 TRAFFIC CONDITIONS

4.4.1 Highway Network

Under the No Action Alternative, most intersections in the ROI are expected to have the same intersection lane geometry and traffic control as under existing conditions. However, the possible change at the 8th Street SE intersection with Virginia Avenue SE contemplated in the Virginia Avenue Tunnel Reconstruction project is assumed to be in place. Also, the planned reconfiguration of the I-695 off-ramp to I Street SE is assumed to have been implemented. This improvement would close the existing off-ramp that is located near the I Street SE/10th Street SE intersection, and would re-open the existing off-ramp that bisects the Building 20 site, and is situated opposite 9th Street SE. This improvement would involve constructing a narrow median along a portion of I Street SE to separate westbound through traffic on I Street SE from traffic turning onto I Street SE from the I-695 off-ramp. This design would allow northbound left turning vehicles to turn onto I Street SE without having to merge with westbound through traffic on I Street SE. This planned improvement would result in the diversion of trips approaching Building 20 via the existing I-695 off-ramp. Figure 4-1 illustrates intersection characteristics under the No Action Alternative.

4.4.2 Traffic Volumes

Peak hour traffic volumes were estimated based on the year 2016 conditions evaluated in the Virginia Avenue Tunnel EIS. The year 2016 volumes were increased by a factor of 0.8 percent per year based on growth factors described in Chapter 4 of the Traffic Operations Analysis Report (FHWA 2013a) to reflect traffic growth from development in the region. In order to provide a conservative analysis, three years of growth were assumed, even though the Proposed Action is expected to be constructed within the 5-year planning horizon. Figure 4-2 shows peak hour traffic volumes under the No Action Alternative.

4.4.3 Intersection Analysis

Table 4-1 displays the LOS analysis results for ROI intersections under the No Action Alternative. As shown in the table, all intersections within the ROI would operate at LOS C or better conditions during both peak hours, with the exception of the M Street SE/11th Street SE intersection, which is characterized by congested LOS E conditions during the afternoon peak hour. As shown in this table, the increase in delay and drop in LOS indicates a significant traffic effect based on the significance criteria described in Section 2.2; however this impact would not be caused by the Proposed Action. Instead, it would occur as the result of traffic increases from anticipated near-term development near the ROI and background traffic growth in the surrounding region. Refer to Attachment B for intersection capacity worksheets.

Table 4-1 Summary of Intersection LOS and Traffic Effects under the No Action Alternative

Intersection		Peak Hour	Existing Conditions		No Action Alternative		Impact	
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ [c]	Significant?
1	I Street SE/8th Street SE	AM	18.9	B	21.8	C	2.9	NO
		PM	19.2	B	20.1	C	0.9	NO
2	I-695 on-ramp/8th Street SE	AM	12.4	B	4.0	A	-8.4	NO
		PM	12.7	B	0.6	A	-12.1	NO
3	Virginia Avenue SE/8th Street SE	AM	34.7	C	19.0	B	-15.7	NO
		PM	42.5	D	22.3	C	-20.2	NO
4	M Street SE/8th Street SE	AM	18.2	B	26.2	C	8.0	NO
		PM	13.3	B	13.4	B	0.1	NO
5	M Street SE/9th Street SE	AM	10.7	B	12.3	B	1.6	NO
		PM	13.9	B	16.9	B	3.0	NO
6	M Street SE/11th Street SE	AM	20.0	C	33.8	C	13.8	NO
		PM	42.6	D	76.7	E	34.1	YES[c]
7	I Street SE/9th Street SE/I-695 off-ramp	AM	25.6	D	19.8	C	-5.8	NO
		PM	13.9	B	11.7	B	-2.2	NO
8	I Street SE/11th Street SE	AM	20.2	C	20.6	C	0.4	NO
		PM	18.9	B	19.1	B	0.2	NO
9	M Street SE/Isaac Hull Avenue SE	AM	4.1	A	5.1	A	1.0	NO
		PM	23.2	C	24.9	C	1.7	NO

Notes: [a] Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b] LOS calculations are based on the methodology in TRB (2010) and performed using Synchro 8.
[c] Change in delay projected near term traffic growth from development in the surrounding area, as compared to existing conditions, not due to the Proposed Action. This impact is cumulative and would occur under all alternatives..

4.4.4 Parking

Implementation of all projects proposed within or near the ROI would have an adverse effect on both parking supply and demand. Alternatives considered in the M Street SE/SW Transportation Planning Study would permanently remove existing on-street parking along M Street SE, and the Virginia Avenue Tunnel Reconstruction project would temporarily close an existing surface parking lot located on 8th Street SE, located beneath the I-695 bridge. Proposed redevelopment would likely increase demand for both on-street and off-street parking spaces.

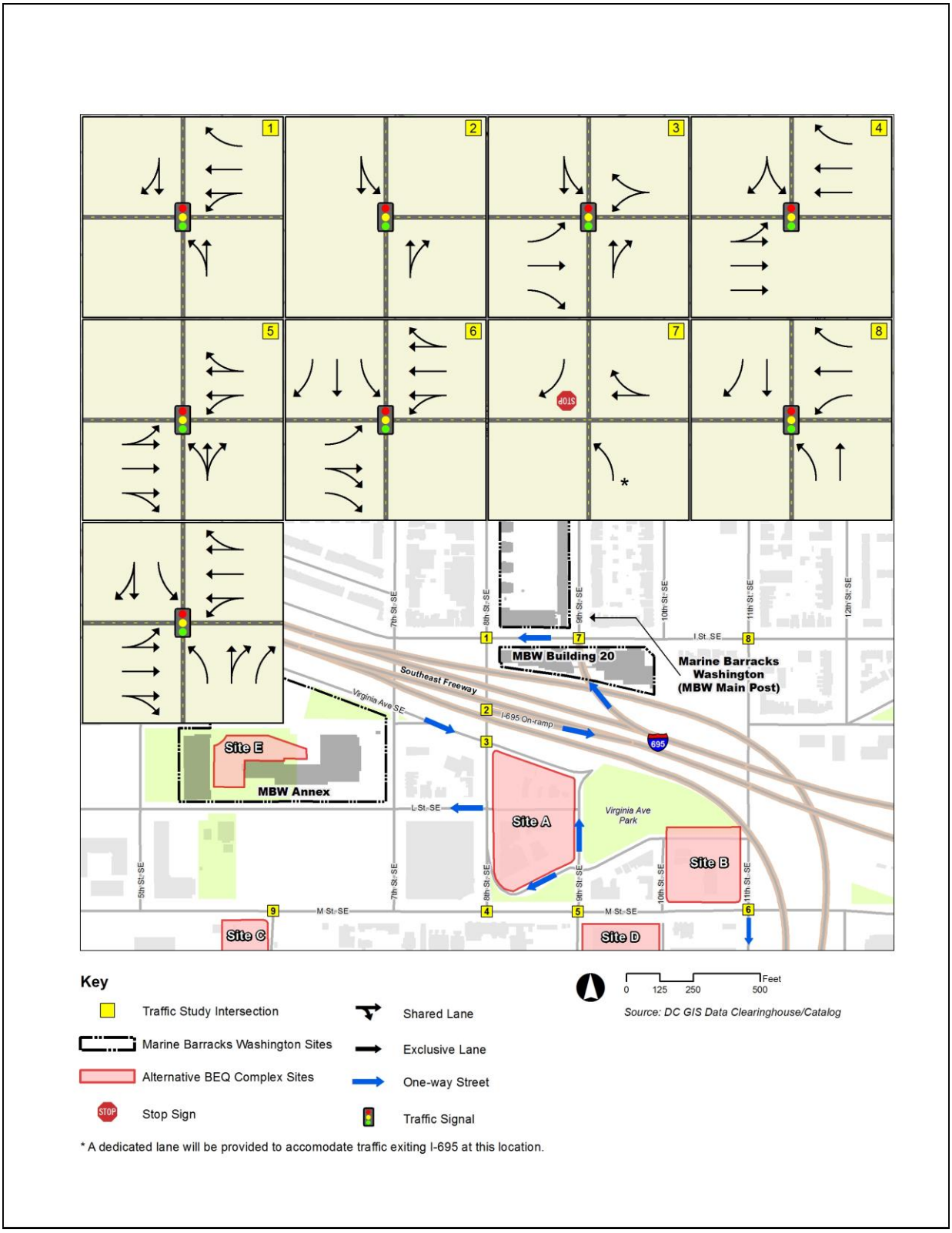


Figure 4-1 No Action Alternative Intersection Characteristics

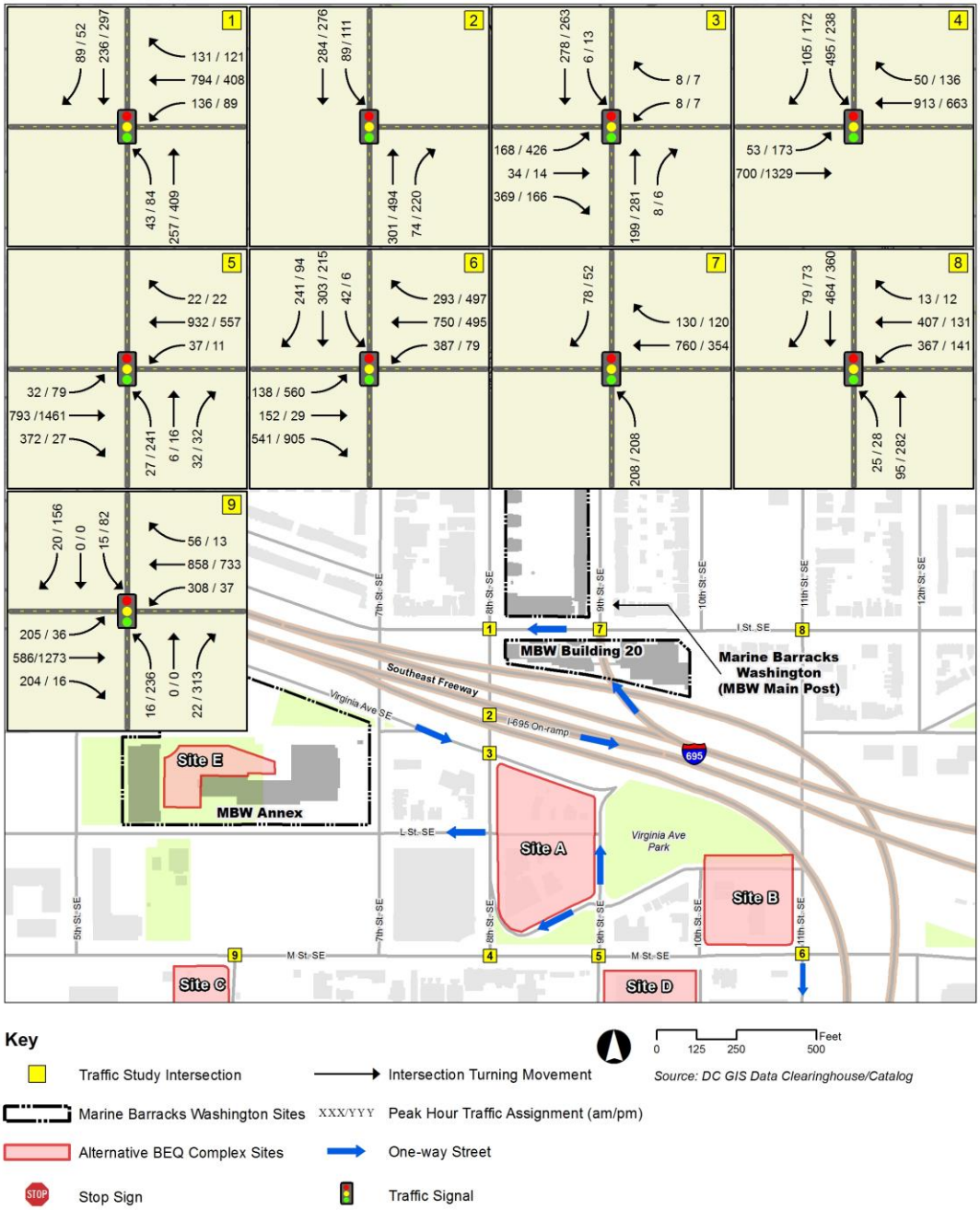


Figure 4-2 No Action Alternative Traffic Volumes

5.0 PROJECT TRAFFIC

As discussed in Section 2.3, implementation of the Proposed Action would not add any new trips to the surrounding street system on a recurring basis. Instead, traffic effects would arise from the redistribution of trips by military personnel and civilian employees due to the replacement of the BEQ Complex; the diversion of existing trips due to the closure of public streets; and the removal of existing trips due to the demolition of existing occupied buildings. This TIA also considers the possibility that some pedestrian trips may shift to personal vehicles and/or other modes of travel, as the result of the increased walking distance (relative to existing conditions), and under unusual circumstances. The following paragraphs describe the process used to estimate these anticipated traffic effects.

5.1 TRAFFIC REDISTRIBUTION

As part of the TMP, a travel survey was distributed to military personnel and civilian employees of MBW. The survey collected data on a wide range of topics, including the time of day, day of week, and mode of travel for weekday commuting. Table 5-1 presents the number of trips by personal vehicle or other modes for military personnel and civilian workers. Under existing conditions, travel by military personnel between Building 20 and their work destination (i.e., the Main Post) is entirely on foot (i.e., walking or jogging). This is reasonable, given that the Main Post is located directly across I Street SE from Building 20. Civilian worker trips to and from Building 20 are more or less evenly split between personal vehicle and public transit (i.e., Metrorail).

The redistribution of civilian employee personal vehicle trips was estimated based on the trip origin data provided in the TMP. Based on this data, it was assumed that 50 percent of the employee trips currently approach Building 20 via I-695 eastbound, with the balance coming in by I-695 westbound. For Alternatives 1 through 3, existing civilian employee trips were removed from existing routes and redistributed to new routes to and from each alternative site using this regional distribution pattern. Because Alternative 4 would provide parking at the existing Building 20 parking structure, no traffic redistribution would occur as a result of this alternative.

To provide a conservative analysis, this TIA evaluates a mode shift for military personnel trips due to the increased walking distance. Although driving would be discouraged by limited parking supply, other types of trips (such as informal shuttles) could occur. To reflect this possibility, it was assumed that 15 percent of the other modes trips for Alternatives 1 through 3 would shift to personal vehicles under unusual conditions (i.e., inclement weather). These trips were added to the ROI based on the most direct route between each alternative site and the Main Post. Because parking for Alternatives 4 and 5 would be provided at Building 20, which is located approximately 500 feet from the Main Post, the potential mode shift for this alternative is expected to involve public transit rather than personal vehicles.

Table 5-1 Building 20 Weekday Trip Generation

Trip Generator	Number	Percentage of Trips on Weekdays	Percentage of Weekday Trips in Peak Hour	Percentage of Trips by Personal Vehicle	AM Peak Hour [a]				PM Peak Hour [a]			
					Inbound		Outbound		Inbound		Outbound	
					Personal Vehicle	Other Modes [b]	Personal Vehicle	Other Modes [b]	Personal Vehicle	Other Modes [b]	Personal Vehicle	Other Modes [b]
Military Personnel	250 personnel	80%	42%	nominal	0	0	0	84	0	84	0	0
Civilian Employees	12 employees	100%	75%	41%	4	5	0	0	0	0	4	5
Total Weekday Peak Hour Trip Generation:					**4**	**5**	**0**	**84**	**0**	**84**	**4**	**5**

Notes: [a] Although many military and civilian trips occur before the morning commuting period (i.e., 6:00 to 9:00 am), all trips are included to provide a conservative estimate of trip generation.

[b] For military personnel, "other modes" refers to pedestrian trips (i.e., walking or jogging). For civilian employees, "other modes" refers to transit trips (i.e., Metrorail).

Source: NAVFAC 2012a.

5.2 TRAFFIC DIVERSION

The permanent closure of portions of L Street SE under Alternatives 1 and 2 would cause some existing trips to divert from this facility to alternate routes. Although no traffic data was collected on these segments, the volume of traffic is expected to be relatively minor given the design and location of this facility (i.e., a narrow street providing access to and from local land uses). For the purposes of this TIA, it was assumed that the volume of traffic diverted would be equivalent to the relatively minor amount of traffic removed from the network as the result of demolishing existing occupied buildings under Alternatives 1 and 2.

5.3 TRAFFIC REMOVAL

Table 5-2 presents the volume of traffic to be removed as the result of each of the action alternatives. The amount of traffic to be removed as the result of demolishing existing land uses was estimated using peak hour trip generation rates published in the 9th Edition of the Trip Generation Manual (Institute of Transportation Engineers [ITE] 2012). As noted in the Trip Generation Manual, trip rates were based on counts performed at land uses located in suburban contexts, where development patterns and transportation infrastructure emphasize access by personal vehicles. To more accurately estimate traffic generation of these uses within the more urbanized context, the ITE rates were adjusted based on household travel survey data for infill developments collected by the Metropolitan Washington Council of Governments (National Cooperative Highway Research Program 2013). Table 5-2 presents the estimated traffic generation of existing uses to be demolished.

As discussed above, for Alternatives 1 and 2, the relatively minor amount of traffic to be removed as the result of building demolition is assumed to be equivalent to the amount of traffic to be diverted as the result of street closure. Therefore, no traffic assignment was made for traffic removal for these alternatives. For Alternative 4, the reduction of traffic was estimated based on the distribution of trips at each of the WNY access points (NAVFAC 2012b) and existing traffic patterns at the M Street SE intersection with 9th Street SE.

5.4 TRAFFIC REDISTRIBUTION AND ASSIGNMENT

Figures 5-1 through 5-5 present the combined redistribution and assignment of traffic associated with the Proposed Action for Alternatives 1 through 5, respectively.

Table 5-2 Traffic Generation Reductions due to Demolition of Occupied Land Uses, by Alternative

Land Use [a]	Intensity	AM Peak Hour					PM Peak Hour				
		Trip Rate [b]	In : Out Ratio [b]	In	Out	Total	Trip Rate [b]	In : Out Ratio [b]	In	Out	Total
Alternative 1											
Single Tenant Office Building	12 ksf	0.85	0.89 : 0.11	9	1	10	0.9	0.45 : 0.55	5	6	10
Specialty Retail Center	7.6 ksf	0.50	0.61 : 0.39	2	1	4	1.0	0.44 : 0.56	3	4	8
Single-Family Detached Housing	2.0 du	0.48	0.25 : 0.75	0	1	1	0.7	0.63 : 0.37	1	0	1
Apartment	4.0 du	0.33	0.20 : 0.80	0	1	1	0.4	0.65 : 0.35	1	1	2
High-Turnover (Sit-Down) Restaurant	9 ksf	9.91	0.52 : 0.48	47	44	91	7.8	0.59 : 0.41	42	29	72
Alternative 1 Traffic Generation Reduction:				**59**	**48**	**107**			**52**	**41**	**93**
Alternative 2											
Specialty Retail Center	3.1 ksf	0.50	0.61 : 0.39	1	1	2	1.0	0.44 : 0.56	1	2	3
Single-Family Detached Housing	4.0 du	0.48	0.25 : 0.75	0	1	2	0.7	0.63 : 0.37	2	1	3
Alternative 2 Traffic Generation Reduction:				**1**	**2**	**3**			**3**	**3**	**6**
Alternative 4											
Government Office Building	22 ksf	2.76	0.84 : 0.16	50	10	60	5.4	0.74 : 0.26	86	30	117
Alternative 4 Traffic Generation Reduction:				**50**	**10**	**60**			**86**	**30**	**117**

Notes: du = dwelling unit(s); ksf = thousands of square feet.

[a] Land use categories taken from ITE Trip Generation Manual, 9th Edition (ITE 2012).

[b] Peak hour trip generation rates and directional splits were taken from ITE 2012. Rates were adjusted to reflect enhanced transit service and pedestrian accessibility using adjustment factors published in National Cooperative Highway Research Program 2013. The morning trip rate and directional distribution for the Shopping Center land use category was used to represent the Specialty Retail Center.
There would be no trip reduction for Alternatives 3 and 5, as they would be constructed on vacant land.

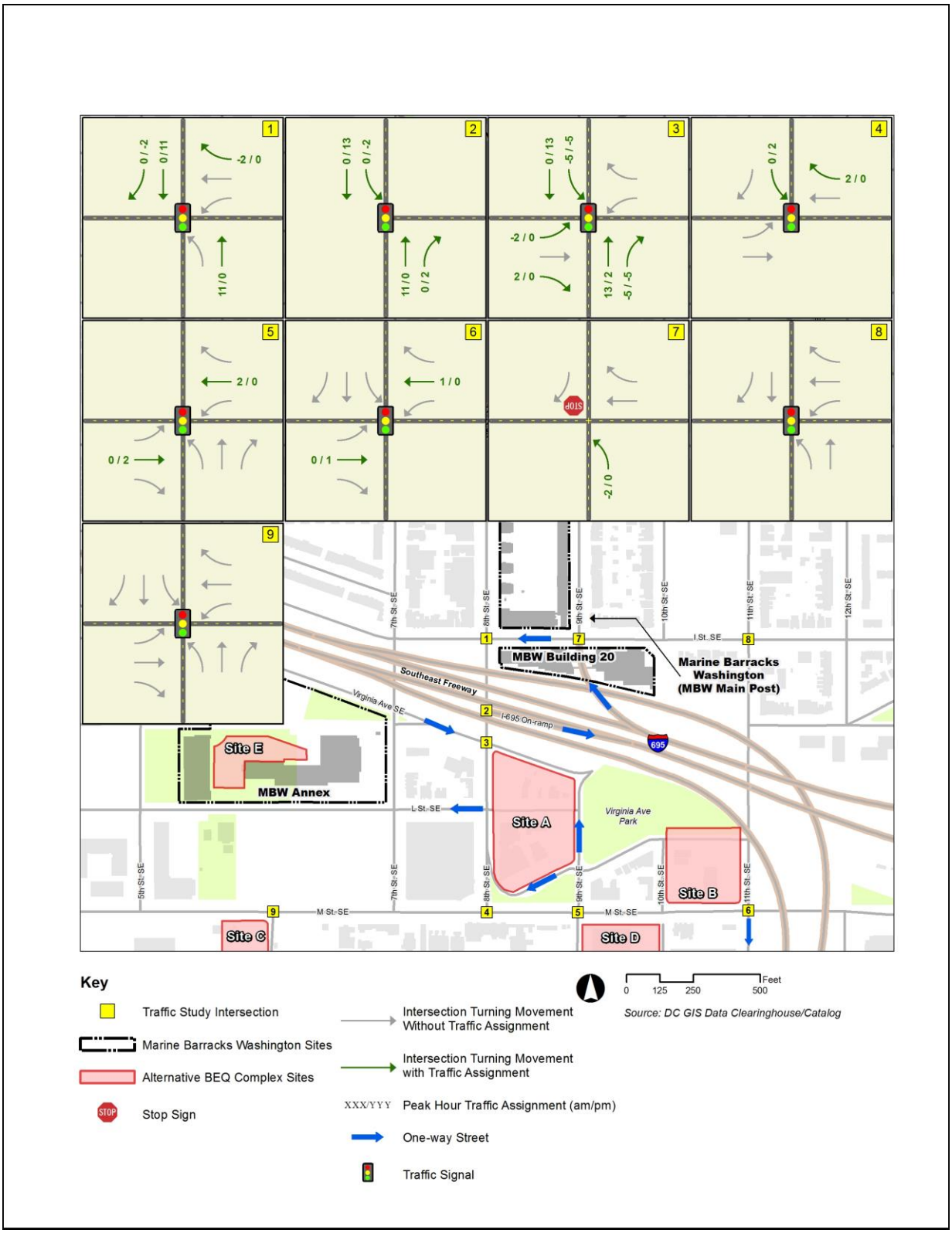


Figure 5-1 Alternative 1 Trip Redistribution and Assignment

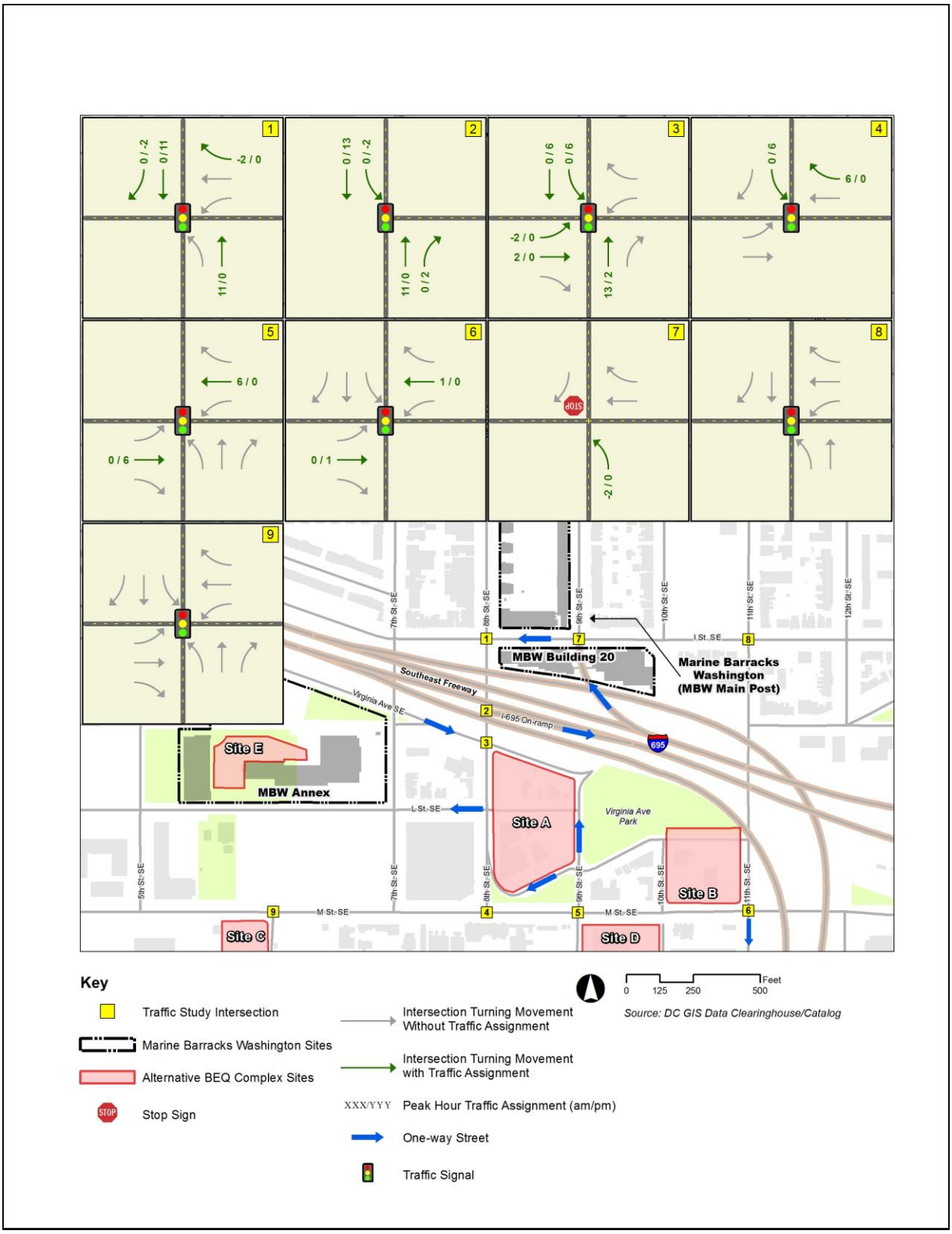


Figure 5-2 Alternative 2 Trip Redistribution and Assignment

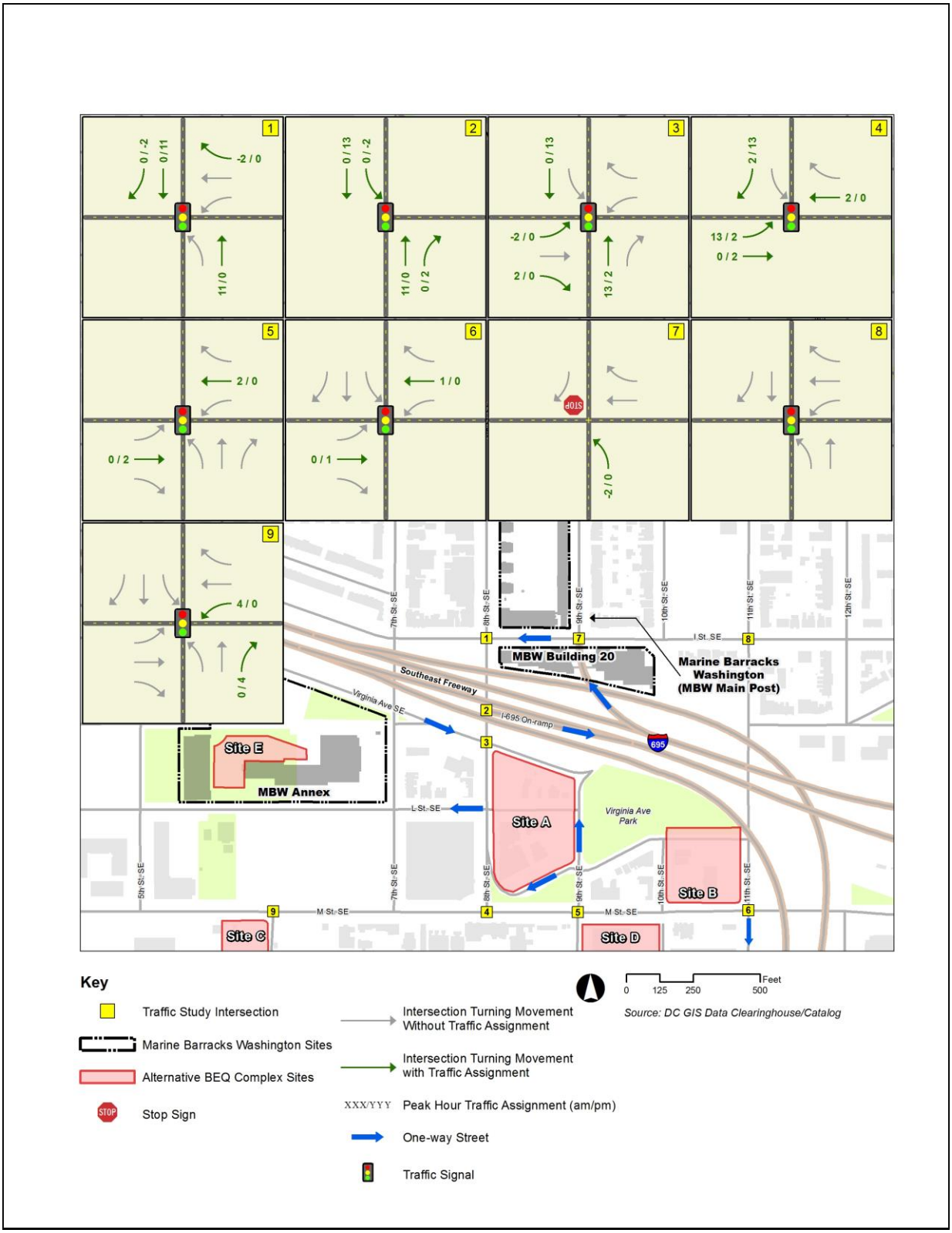


Figure 5-3 Alternative 3 Trip Redistribution and Assignment

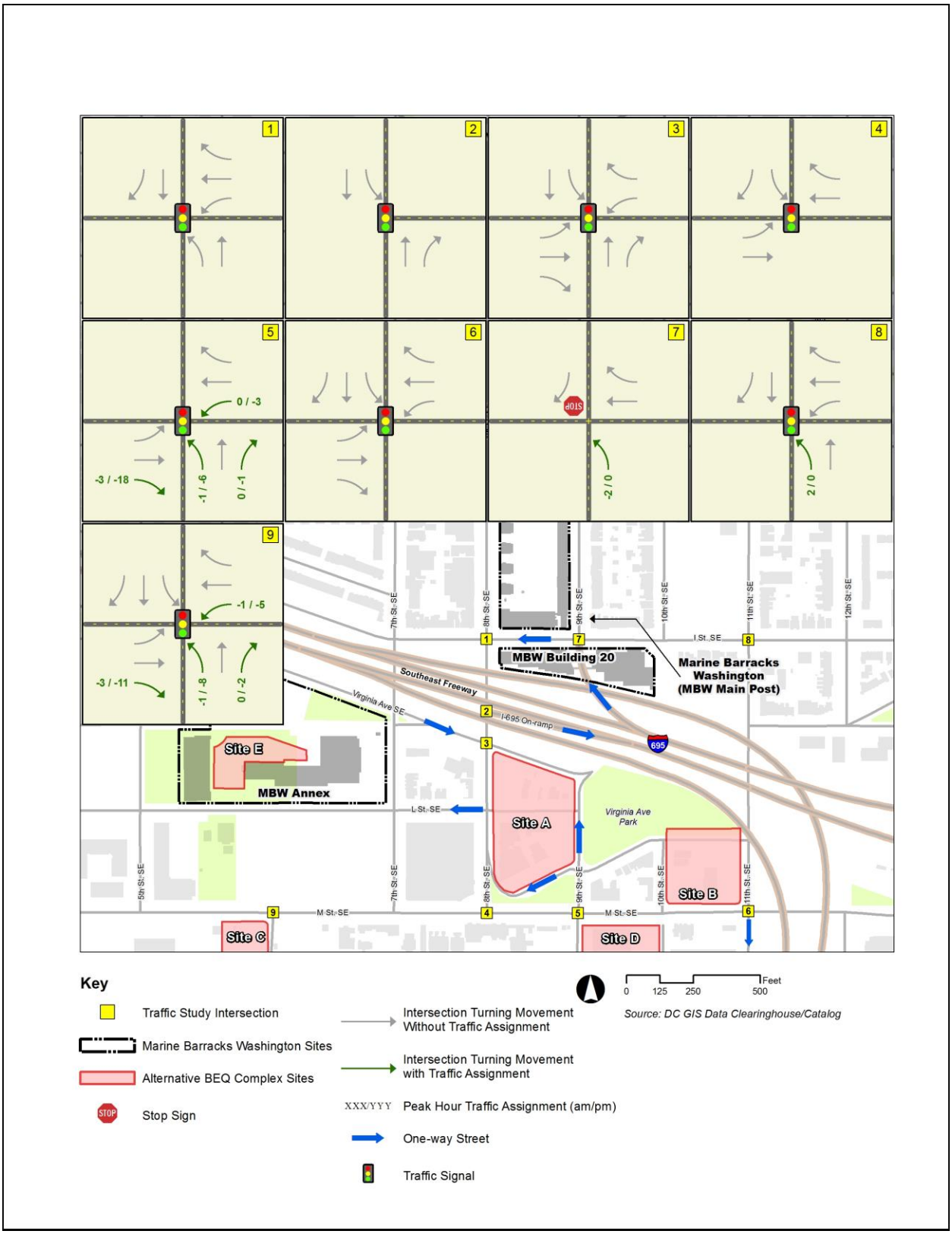


Figure 5-4 Alternative 4 Trip Redistribution and Assignment

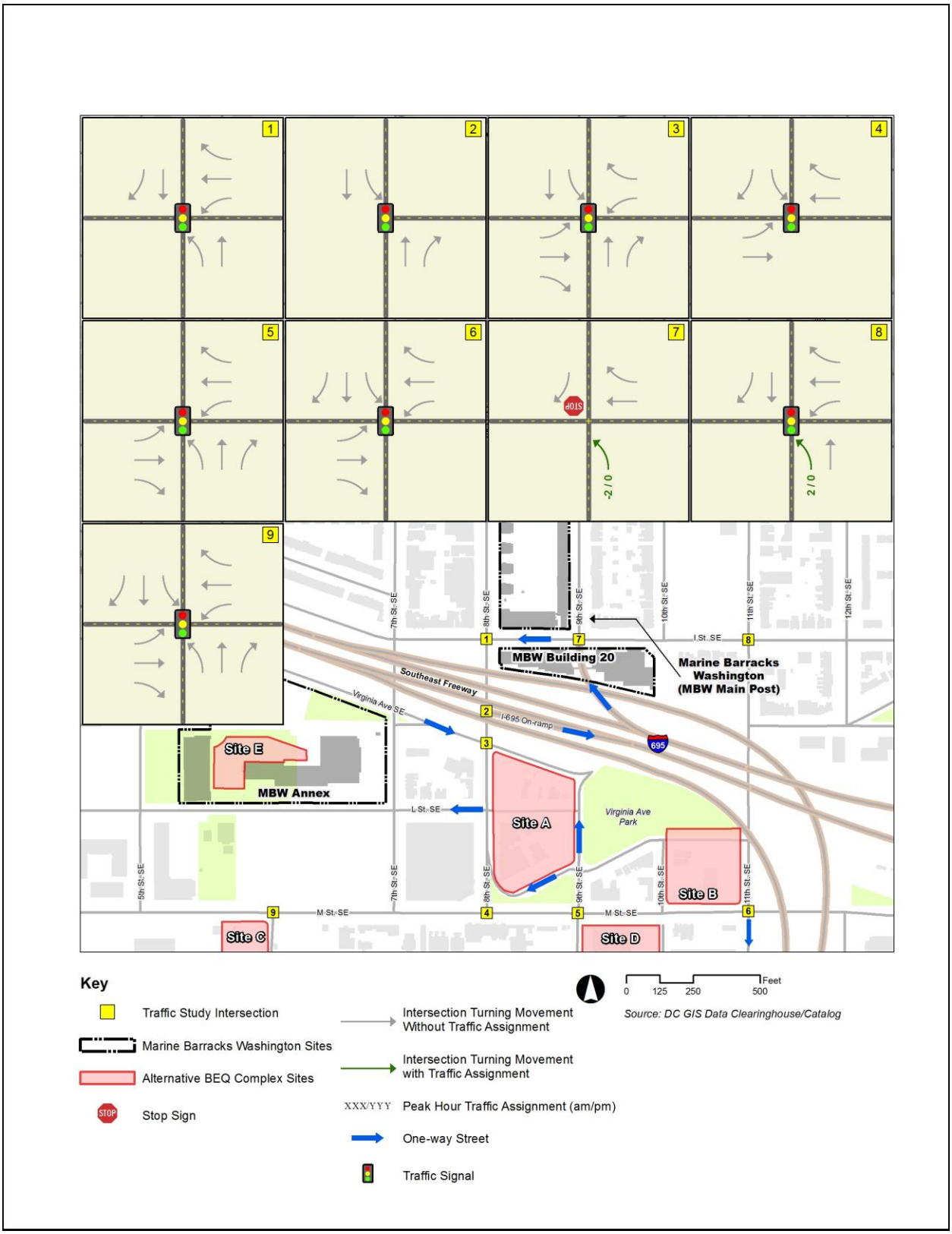


Figure 5-5 Alternative 5 Trip Redistribution and Assignment

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6.0 PROJECT IMPACTS

6.1 ALTERNATIVE 1

6.1.1 Pedestrian and Bicycle Impacts

Alternative 1 would involve the permanent closure of existing sidewalks along L Street SE between 8th Street SE and 9th Street SE. Existing pedestrian and bicycle trips between Virginia Avenue Park and land uses to the west of Site A would have be diverted around the proposed BEQ replacement, resulting in additional travel time and distance (i.e., approximately 700 feet) for these trips. Pedestrian and bicycle trip distance between the proposed BEQ Complex and the Main Post would increase from approximately 500 feet to approximately 800 feet. However, the proposed BEQ replacement would be within "reasonable walking distance," as defined by the National Capital Planning Commission (National Capital Planning Commission [NCPC] 2004); therefore, the additional walking and bicycling distance would not be a significant impact. Military personnel (and some civilian employees) would pass beneath the I-695 overpass and adjacent to the existing surface lot along 8th Street SE.

The following management measures would be implemented:

- Continued implementation of the Transportation Management Plan program for MBW to encourage trip reduction;
- Ongoing training of personnel in pedestrian safety and requirements for Marines to observe all pedestrian signals and rules; and
- Ensuring that design of the BEQ Complex considers the location of proposed driveways and assess the likelihood and extent of queues that may form as vehicles are processed for access to BEQ Complex parking facilities and, to the extent feasible, avoid blockage of through lanes.[3]

In conclusion, the impact of implementation of Alternative 1 to pedestrian and bicycle access would not be significant.

6.1.2 Transit Impacts

Alternative 1 would not involve any obstruction or re-routing of any existing or planned transit service. The relatively minor increase in walking and biking distance could increase the propensity to use public transit under unusual circumstances. However, this possible increase would be negated by the removal of existing occupied land uses within the Site A footprint. The Marine Corps would coordinate with Metro during the replacement BEQ site layout and design to ensure that the proposed design does not interfere with existing and planned transit service, including the location of transit stops and stations. In conclusion, the impact of implementing Alternative 1 to transit services would not be significant.

[3] This measure is not applicable to Alternatives 4 or 5, because parking will be provided at the existing Building 20 parking structure.

6.1.3 Traffic Impacts

Peak hour volumes with Alternative 1 are shown in Figure 6-1. The redistribution and assignment of traffic under Alternative 1 would not result in any significant traffic impact (Table 6-1). Alternative 1 would involve the removal of approximately 23 on-street parallel parking spaces along a portion of L Street SE. However, it is likely that these spaces are used, in part, by existing land uses that would be removed as part of the Proposed Action. In addition to the removal of on-street parking, Alternative 1 would eliminate 212 parking spaces provided at the Building 20 site. The loss of 235 on and off-street parking spaces would be offset by the 212 new off-street parking spaces provided by the replacement BEQ Complex for MBW residents and employees. The result would be a relatively minor net loss of 23 parking spaces; however, the net loss in parking would be offset by a reduction in parking demand due to the demolition of existing occupied land uses within Site A; therefore, the impact would be relatively minor. Although nominal vehicular traffic would access the site during peak commuting hours, inbound vehicles may form queues at project access driveways during off-peak periods. With the application of management measures described above, the long-term adverse impact of implementation of Alternative 1 to traffic would not be significant.

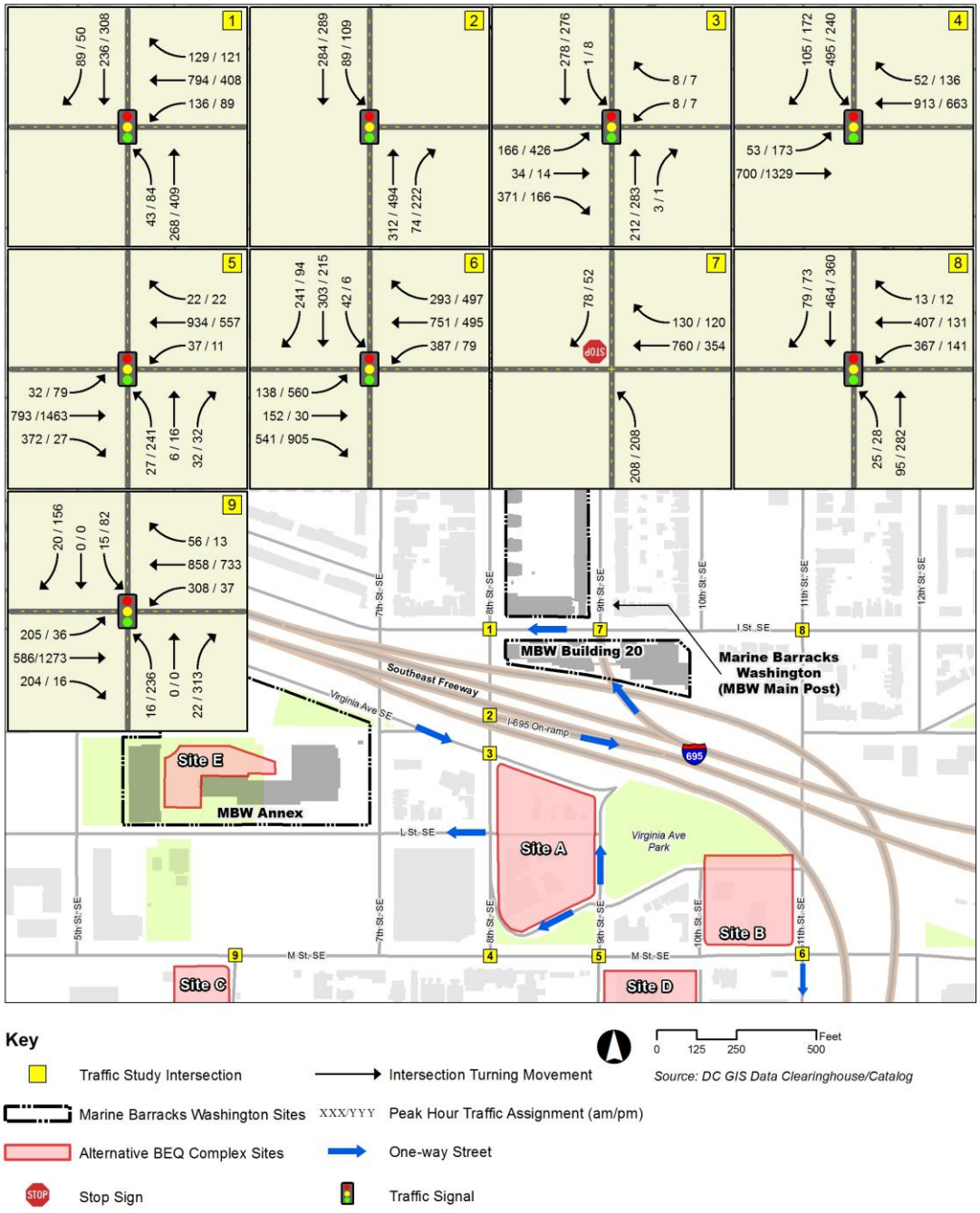

Figure 6-1 Peak Hour Traffic Volumes, Alternative 1

Table 6-1 Summary of Intersection LOS and Project Effects under Alternative 1

Intersection		Peak Hour	No Action		With Alt. 1		Impact	
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ [c]	Significant?
1	I Street SE/8th Street SE	AM	21.8	C	21.8	C	0.0	NO
		PM	20.1	C	20.3	C	0.2	NO
2	I-695 on-ramp/8th Street SE	AM	4.0	A	4.2	A	0.2	NO
		PM	0.6	A	0.6	A	0.0	NO
3	Virginia Avenue SE/8th Street SE	AM	19.0	B	19.2	B	0.2	NO
		PM	22.3	C	22.0	C	-0.3	NO
4	M Street SE/8th Street SE	AM	26.2	C	26.2	C	0.0	NO
		PM	13.4	B	14.2	B	0.8	NO
5	M Street SE/9th Street SE	AM	12.3	B	12.3	B	0.0	NO
		PM	16.9	B	16.9	B	0.0	NO
6	M Street SE/11th Street SE	AM	33.8	C	33.8	C	0.0	NO
		PM	76.7	E	76.7	E	0.0	NO
7	I Street SE/9th Street SE/I-695 off-ramp	AM	19.8	C	19.8	C	0.0	NO
		PM	11.7	B	11.7	B	0.0	NO
8	I Street SE/11th Street SE	AM	20.6	C	20.6	C	0.0	NO
		PM	19.1	B	19.1	B	0.0	NO
9	M Street SE/Isaac Hull Avenue SE	AM	5.1	A	5.1	A	0.0	NO
		PM	24.9	C	24.9	C	0.0	NO

Notes: [a] Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b] LOS calculations are based on the methodology in TRB (2010) and performed using Synchro 8.
[c] Change in delay due to traffic redistribution as a result of the Proposed Action.

6.2 ALTERNATIVE 2

6.2.1 Pedestrian and Bicycle Impacts

Although Alternative 2 would permanently close L Street SE between 10th Street SE and 11th Street SE to vehicular traffic, pedestrians and bicyclists would be able to continue to use this roadway. Therefore, the closure would not increase travel time or distance for pedestrian or bicycle trips. Walking and biking trip distance for military personnel from Site B to the Main Post would increase from approximately 500 feet to approximately 1,700 feet. This distance would be within the 2,000 foot "reasonable walking distance" defined by NCPC, and is therefore not a significant impact with respect to pedestrian or bicycle accessibility. Military personnel (and some civilian workers) approaching the main post via 8th Street SE would pass beneath the I-695 freeway. With the application of management measures outlined for Alternative 1, impacts to pedestrian and bicycle accessibility would not be significant under Alternative 2.

6.2.2 Transit Impacts

As with Alternative 1, Alternative 2 would not block or re-route any transit services. The increase in walking and biking distance could increase the use of public transit, particularly during inclement weather. However, increased transit demand would be offset by the removal of existing, occupied land uses to make way for Site B. With the application of the management measures identified for Alternative 1, there would not be a significant impact with implementation of Alternative 2.

6.2.3 Traffic Impacts

Figure 6-2 presents peak hour volumes with Alternative 2, while Table 6-2 summarizes the analysis of peak hour intersection capacity. As shown in Table 6-2, Alternative 2 would not result in any significant traffic impact. (Refer to Attachment B for intersection worksheets). The proposed closure of L Street SE between 10th Street SE and 11th Street SE would remove approximately nine on-street parallel parking spaces. Similar to Alternative 1, the permanent loss of 9 on-street parking spaces along L Street SE would be offset by a reduction in parking demand due to the demolition of existing occupied uses. Therefore, the net loss in parking would be relatively minor. Alternative 2 would provide the same amount of off-street parking that is currently available at the Building 20 site; therefore, the Proposed Action would not cause any net reduction in off-street parking supply. As with Alternative 1, inbound vehicles may form queues at project access driveways during off-peak periods. With the application of the same management measures outlined for Alternative 1, traffic impacts would not be significant under Alternative 2.

Table 6-2 Summary of Intersection LOS and Project Effects under Alternative 2

Intersection		Peak Hour	No Action		With Alt. 2		Impact	
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ [c]	Significant?
1	I Street SE/8th Street SE	AM	21.8	C	21.8	C	0.0	NO
		PM	20.1	C	20.3	C	0.2	NO
2	I-695 on-ramp/8th Street SE	AM	4.0	A	4.2	A	0.2	NO
		PM	0.6	A	0.6	A	0.0	NO
3	Virginia Avenue SE/8th Street SE	AM	19.0	B	19.1	B	0.1	NO
		PM	22.3	C	22.2	C	-0.1	NO
4	M Street SE/8th Street SE	AM	26.2	C	26.2	C	0.0	NO
		PM	13.4	B	14.7	B	1.3	NO
5	M Street SE/9th Street SE	AM	12.3	B	12.4	B	0.1	NO
		PM	16.9	B	17.0	B	0.1	NO
6	M Street SE/11th Street SE	AM	33.8	C	33.8	C	0.0	NO
		PM	76.7	E	76.7	E	0.0	NO
7	I Street SE/9th Street SE/I-695 off-ramp	AM	19.8	C	19.8	C	0.0	NO
		PM	11.7	B	11.7	B	0.0	NO
8	I Street SE/11th Street SE	AM	20.6	C	20.6	C	0.0	NO
		PM	19.1	B	19.1	B	0.0	NO
9	M Street SE/Isaac Hull Avenue SE	AM	5.1	A	5.1	A	0.0	NO
		PM	24.9	C	24.9	C	0.0	NO

Notes: [a] Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b] LOS calculations are based on the methodology in TRB (2010) and performed using Synchro 8.
[c] Change in delay due to traffic redistribution as a result of the Proposed Action.

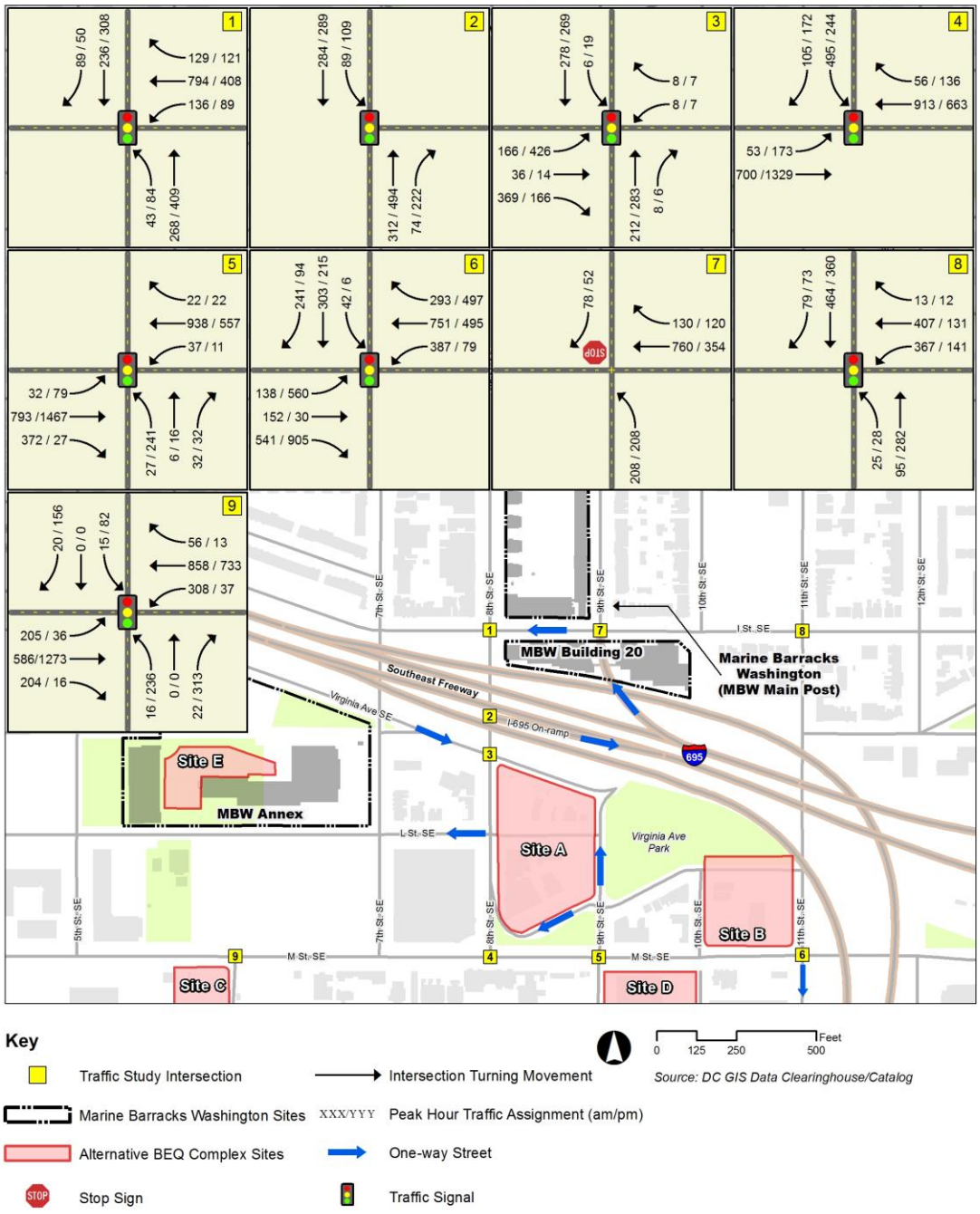

Figure 6-2 Peak Hour Traffic Volumes, Alternative 2

6.3 ALTERNATIVE 3

6.3.1 Pedestrian and Bicycle Impacts

Unlike Alternatives 1 and 2, Alternative 3 would not involve any street closure; therefore, Site C would not result in any changes to existing walking and biking trip patterns. The distance between the BEQ and the Main Post would increase from approximately 500 feet to approximately 2,000 feet, and military personnel (and some civilian workers) would have to cross M Street SE and pass beneath I-695 along 7th Street SE and/or 8th Street SE to access the Main Post. The walking and bicycling distance is equal to the "reasonable walking distance" defined by NCPC. With the implementation of management measures, impacts on pedestrian and bicycle access and circulation would not be significant under Alternative 3.

6.3.2 Transit Impacts

As with the preceding alternatives, Alternative 3 would not obstruct or re-route any transit services. The increase in walking and biking distance may increase the propensity to use public transit, especially during inclement weather. Because no occupied land uses would be demolished, an increase in transit use would likely occur. Military personnel would likely use the WMATA Union Station – Navy Yard Metro Circulator route, which provides local bus service along M Street SE and 8th Street SE. Bus stops are located adjacent to Site C and near the intersection of 8th Street SE and G Street SE, next to the Main Post. However, given the number of military personnel travelling during the peak hour and the availability of transit services in the area, this increase is expected to be relatively minor. With the implementation of management measures, impacts to transit services would not be significant under Alternative 3.

6.3.3 Traffic Impacts

Peak hour volumes under Alternative 3 are shown in Figure 6-3; while Table 6-3 presents intersection analysis results. As shown in this table, Alternative 3's traffic impacts would not be significant. (Refer to Attachment B for intersection worksheets). Proposed off-street parking supply would be identical to the number of spaces currently provided at Building 20; therefore, there would be no net increase in parking demand. As with the preceding alternatives, inbound vehicles may form queues at project access driveways during off-peak periods. With the implementation of management measures, impacts to traffic would not be significant under Alternative 3.

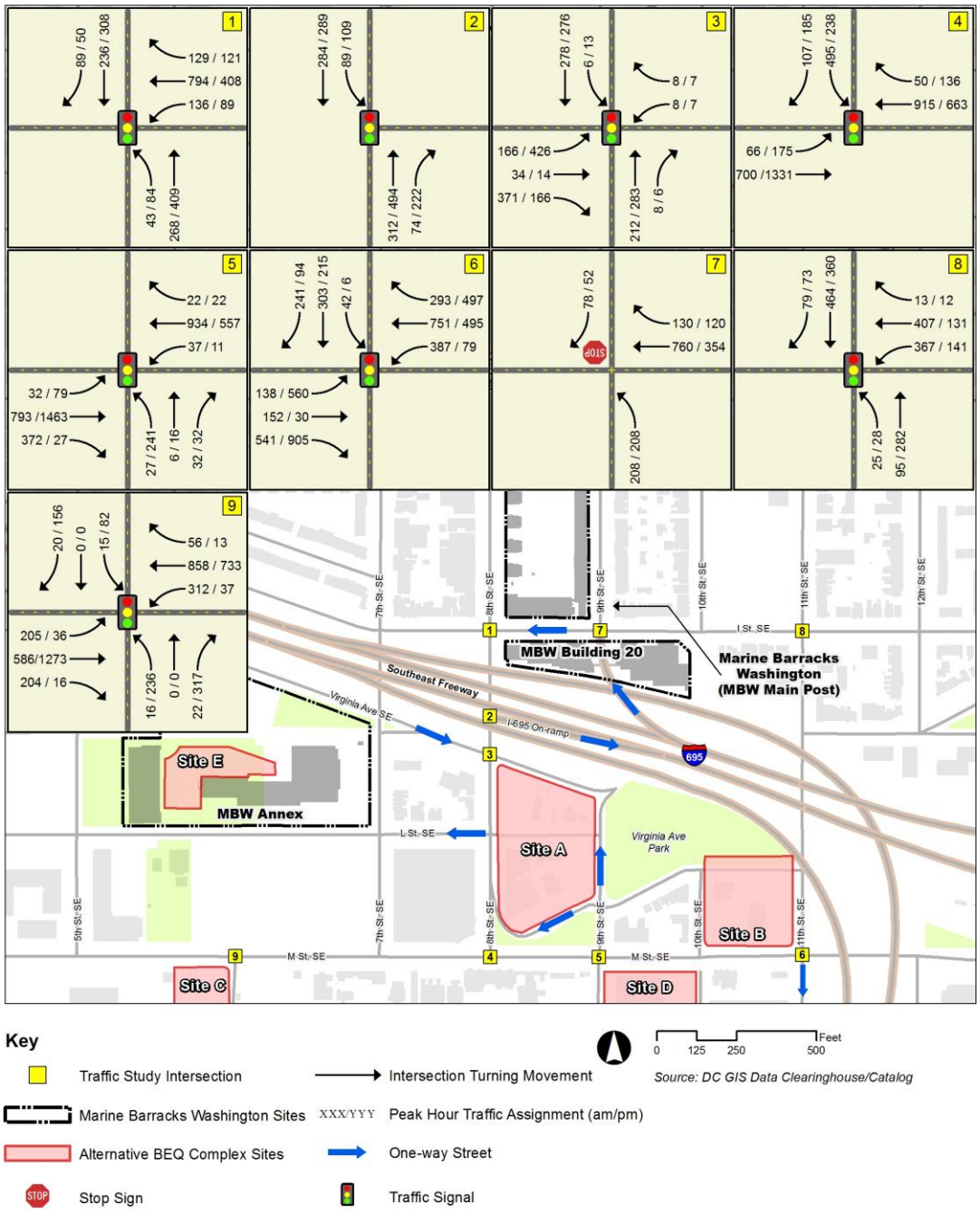

Figure 6-3 Peak Traffic Volumes, Alternative 3

6.4 ALTERNATIVE 4

6.4.1 Pedestrian and Bicycle Impacts

Alternative 4 would not close any existing pedestrian or bicycle facilities; therefore, there would be no change in existing walking or biking routes. Trip distance for military personnel from Site D to the Main Post would increase from approximately 500 feet to approximately 1,700 feet, which remains within the "reasonable walking distance" defined by NCPC. Military personnel (and some civilian workers) approaching the Main Post via 8th Street SE would have to cross M Street SE and pass beneath the I-695 freeway. With the application of management measures, impacts to pedestrian and bicycle accessibility would not be significant under Alternative 4.

6.4.2 Transit Impacts

As with preceding alternatives, Alternative 4 would not block or re-route any transit services. The increase in walking and biking distance could increase transit demand, particularly during harsh weather conditions. However, given the number of military personnel travelling during the peak hour, and considering the availability of several transit routes in the area, this increase is expected to be relatively minor. With the application of management measures, impact to transit services would not be significant under Alternative 4.

6.4.3 Traffic Impacts

Peak hour traffic volumes under Alternative 4 are displayed in Figure 6-4. As shown in Table 6-4, Alternative 4 would not result in any significant traffic impacts. (Refer to Attachment B for intersection worksheets). The planned reconfiguration of the I-695 off-ramp to I Street SE would cause some existing employee trips to divert to the I Street SE/11th Street SE intersection. However, this additional traffic would not result in any change in delay at this intersection, as compared to the No Action Alternative. The removal of existing trips due to the demolition of an existing building at Site D would result in a minor beneficial traffic impact at the M Street SE intersections with Isaac Hull Avenue SE and 9th Street SE. Parking would continue to be provided at Building 20, and therefore parking conditions would be the same as under the No Action Alternative. With the application of management measures described above for Alternative 1[4], the impact to traffic would not be significant under Alternative 4.

[4] Because Alternative 4 would provide parking within the existing Building 20 parking structure, the management measure related to queuing and storage at garage access driveways is not applicable to this alternative.

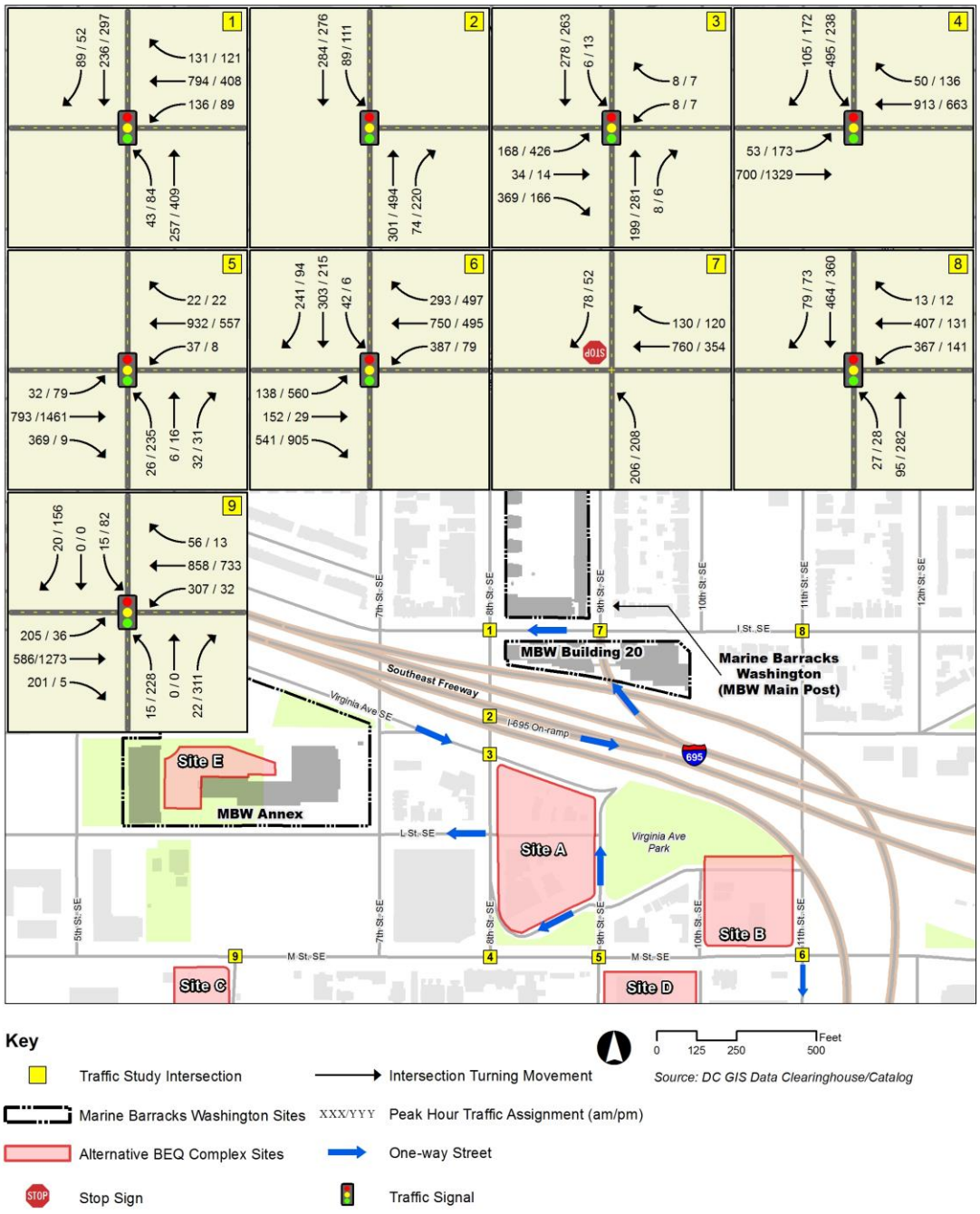

Figure 6-4 Peak Hour Traffic Volumes, Alternative 4

Table 6-4 Summary of Intersection LOS and Project Effects under Alternative 4

Intersection		Peak Hour	No Action		With Alt. 4		Impact	
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ [c]	Significant?
1	I Street SE/8th Street SE	AM	21.8	C	21.8	C	0.0	NO
		PM	20.1	C	20.1	C	0.0	NO
2	I-695 on-ramp/8th Street SE	AM	4.0	A	4.0	A	0.0	NO
		PM	0.6	A	0.6	A	0.0	NO
3	Virginia Avenue SE/8th Street SE	AM	19.0	B	19.0	B	0.0	NO
		PM	22.3	C	22.3	C	0.0	NO
4	M Street SE/8th Street SE	AM	26.2	C	26.2	C	0.0	NO
		PM	13.4	B	13.4	B	0.0	NO
5	M Street SE/9th Street SE	AM	12.3	B	12.3	B	0.0	NO
		PM	16.9	B	16.5	B	-0.4	NO
6	M Street SE/11th Street SE	AM	33.8	C	33.8	C	0.0	NO
		PM	76.7	E	76.7	E	0.0	NO
7	I Street SE/9th Street SE/I-695 off-ramp	AM	19.8	C	19.8	C	0.0	NO
		PM	11.7	B	11.7	B	0.0	NO
8	I Street SE/11th Street SE	AM	20.6	C	20.6	C	0.0	NO
		PM	19.1	B	19.1	B	0.0	NO
9	M Street SE/Isaac Hull Avenue SE	AM	5.1	A	5.1	A	0.0	NO
		PM	24.9	C	23.6	C	-1.3	NO

Notes: [a] Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b] LOS calculations are based on the methodology in TRB (2010) and performed using Synchro 8.
[c] Change in delay due to traffic redistribution as a result of the Proposed Action.

6.5 ALTERNATIVE 5

6.5.1 Pedestrian and Bicycle Impacts

Alternative 5 would not close any existing pedestrian or bicycle facilities; therefore, there would be no change in existing walking or biking routes. Trip distance for military personnel from Site E to the Main Post would increase from approximately 600 feet to approximately 1,800 feet, which remains within the "reasonable walking distance" defined by NCPC. Military personnel (and some civilian workers) approaching the Main Post via 7th Street SE and 8th Street SE would pass beneath the I-695 freeway. With the application of management measures, impacts to pedestrian and bicycle accessibility would not be significant under Alternative 5.

6.5.2 Transit Impacts

As with preceding alternatives, Alternative 5 would not block or re-route any transit services. The increase in walking and biking distance could increase transit demand, particularly during harsh weather conditions. However, given the number of military personnel travelling during the peak hour, and considering the availability of several transit routes in the area, this increase is expected to be relatively minor. With the application of management measures, impact to transit services would not be significant under Alternative 5.

6.5.3 Traffic Impacts

Peak hour traffic volumes under Alternative 5 are displayed in Figure 6-5. As shown in Table 6-5, Alternative 5 would not result in any significant traffic impacts. (Refer to Attachment B for intersection worksheets). The planned reconfiguration of the I-695 off-ramp to I Street SE would cause some existing employee trips to divert to the I Street SE/11th Street SE intersection. However, this additional traffic would not result in any change in delay at this intersection, as compared to the No Action Alternative. Parking would continue to be provided at Building 20, and therefore parking conditions would be the same as under the No Action Alternative. With the application of management measures described above for Alternative 1[5], the impact to traffic would not be significant under Alternative 5.

[5] Because Alternative 5 would provide parking within the existing Building 20 parking structure, the management measure related to queuing and storage at garage access driveways is not applicable to this alternative.

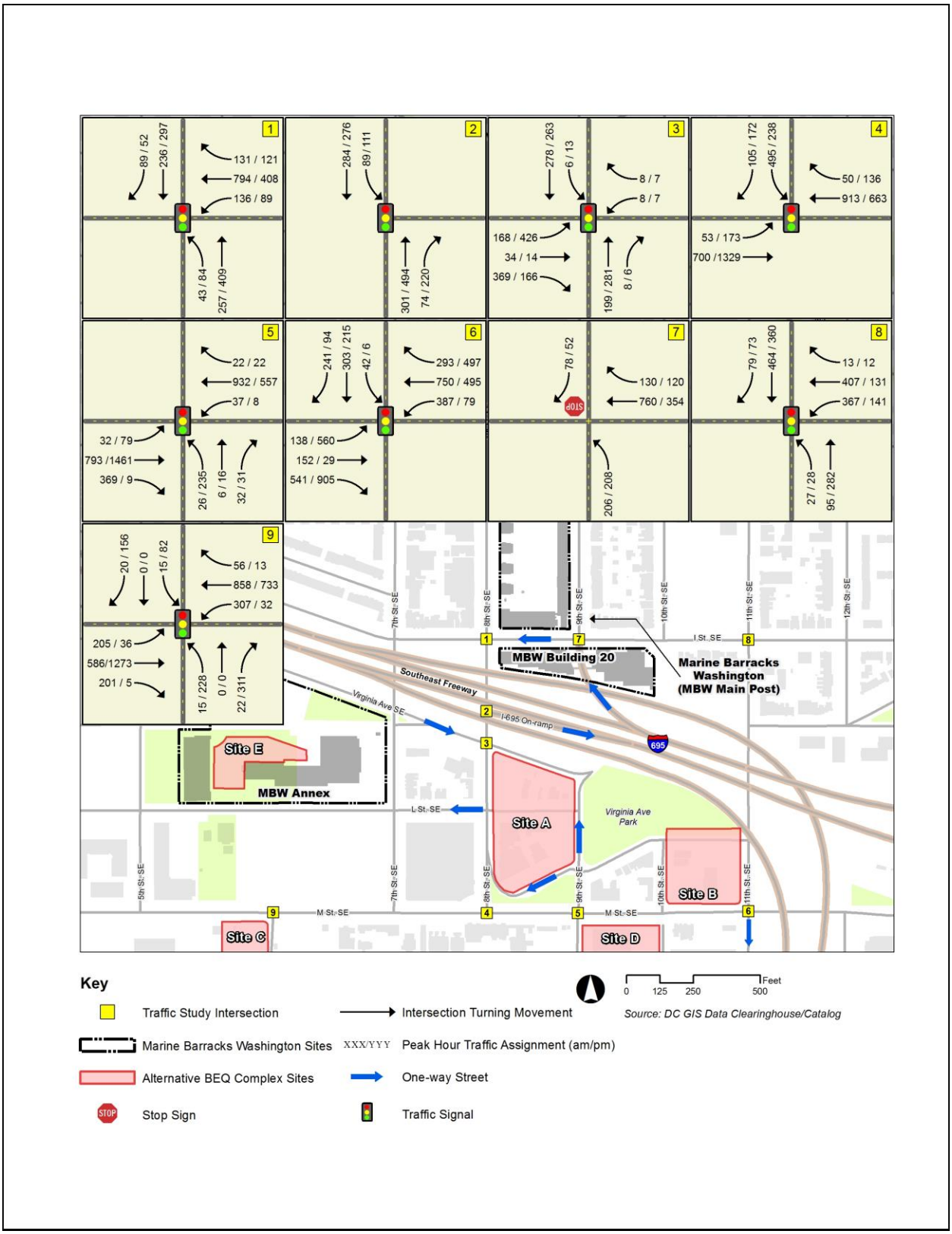

Figure 6-5 Peak Hour Traffic Volumes, Alternative 5

Table 6-5 Summary of Intersection LOS and Project Effects under Alternative 5

Intersection		Peak Hour	No Action		With Alt. 5		Impact	
			Delay[a]	LOS[b]	Delay[a]	LOS[b]	Δ [c]	Significant?
1	I Street SE/8th Street SE	AM	21.8	C	21.8	C	0.0	NO
		PM	20.1	C	20.1	C	0.0	NO
2	I-695 on-ramp/8th Street SE	AM	4.0	A	4.0	A	0.0	NO
		PM	0.6	A	0.6	A	0.0	NO
3	Virginia Avenue SE/8th Street SE	AM	19.0	B	19.0	B	0.0	NO
		PM	22.3	C	22.3	C	0.0	NO
4	M Street SE/8th Street SE	AM	26.2	C	26.2	C	0.0	NO
		PM	13.4	B	13.4	B	0.0	NO
5	M Street SE/9th Street SE	AM	12.3	B	12.3	B	0.0	NO
		PM	16.9	B	16.9	B	0.0	NO
6	M Street SE/11th Street SE	AM	33.8	C	33.8	C	0.0	NO
		PM	76.7	E	76.7	E	0.0	NO
7	I Street SE/9th Street SE/I-695 off-ramp	AM	19.8	C	19.8	C	0.0	NO
		PM	11.7	B	11.7	B	0.0	NO
8	I Street SE/11th Street SE	AM	20.6	C	20.6	C	0.0	NO
		PM	19.1	B	19.1	B	0.0	NO
9	M Street SE/Isaac Hull Avenue SE	AM	5.1	A	5.1	A	0.0	NO
		PM	24.9	C	24.9	C	0.0	NO

Notes: [a] Delay refers to the average control delay for the entire intersection, measured in seconds per vehicle.
[b] LOS calculations are based on the methodology in TRB (2010) and performed using Synchro 8.
[c] Change in delay due to traffic redistribution as a result of the Proposed Action.

6.6 CONSTRUCTION IMPACTS

Implementation of any action alternative would involve temporary traffic impacts resulting from demolition and construction activities. The following types of additional trips are expected be added to the highway network:

- Construction worker commuting trips;
- Trips involving the delivery and removal of construction equipment and materials; and
- Trips involving the removal of demolition debris and excess fill material.

These trips would be associated primarily with the BEQ Complex replacement project. However, construction traffic would also be associated with the Main Post renovation projects and project to foster integrated communities.

Section 2.2.2 of the MBW EIS describes various measures that will be implemented by the Marine Corps to lessen potential construction-related neighborhood impacts. One of these measures includes not scheduling deliveries of supplies or materials during peak commuting periods (i.e., 6 AM to 9 AM and 3 PM to 6 PM) to lessen impacts to traffic. Given this measure, considering the temporary nature of construction traffic, and accounting for adequate intersection LOS at most ROI intersections, construction related impacts are not expected to be significant.

6.7 FUTURE ELEMENTS ADDRESSED PROGRAMMATICALLY

Certain future activities (potential reuse of the approximately 1.56-acre Building 20 site, renovation of Building 9, and select landscaping and maintenance projects) are anticipated, but there is not sufficient information to conduct a detailed NEPA review of these elements at this time. Of these elements, the reuse of Building 20 has the greatest potential for transportation-related impacts, given the size of the building and the range of reuse options being considered. Once sufficient information becomes available, it will be necessary to estimate the traffic generation of the Building 20 site (and the renovated Building 9 if any expansion or increase in personnel is proposed), to assess the likely travel patterns to and from this facility, and to scope a multi-modal transportation impact analysis based on this pattern. This document can be prepared as an appendix to the appropriate NEPA documentation.

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7.0 FINDINGS AND RECOMMENDATIONS

The Proposed Action would accommodate existing land uses and activities, described in Section 2.3, that are already occurring near the MBW Main Post. Therefore, the Proposed Action would not generate any new trips on a recurring basis. Instead, existing trips already on the transportation network would shift from their current routes, as appropriate, to travel between proposed BEQ Complex replacement and the Main Post. Minor transportation impacts would be anticipated from the permanent closure of existing public streets (i.e., Alternatives 1 and 2) and the demolition of existing, occupied land uses (i.e., Alternatives 1, 2, and 4). The Proposed Action's transportation effects were determined based on the capacity of the transportation network to accommodate the redistribution, diversion, and removal of existing and project-related trips. The analysis found that none of the alternatives would cause any significant impacts, either during construction or operation of the Proposed Action. Although no measures are required to minimize the Proposed Action's effect on pedestrian and bicycle accessibility, transit service, or traffic, the following management measures are recommended for all alternatives:

- Continued implementation of the Transportation Management Plan program for MBW to encourage trip reduction; and
- Ongoing training of personnel in pedestrian safety and requirements for Marines to observe all pedestrian signals and rules.

Because Alternatives 1 through 3 would involve the construction of new parking facilities for the proposed BEQ Complex, the following additional management measure is recommended:

- Ensuring that design of the BEQ Complex considers the location of proposed driveways and assess the likelihood and extent of queues that may form as vehicles are processed for access to BEQ Complex parking facilities and, to the extent feasible, avoid blockage of through lanes.

8.0 REFERENCES

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Attachment A

Excerpts from the Transportation Management Program

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MAJOR ROADWAYS IN MBW VICINITY

Marine Barracks Washington (MBW)
Transportation Management Program

Key

- MBW Sites
- 2,000 ft Walking Radius
- Neighborhood Streets

Figure 5

METRORAIL & BUS ROUTES IN MBW VICINITY

Marine Barracks Washington (MBW)
Transportation Management Program

Figure 2

Key

Metrorail
- Blue Line
- Green Line
- Orange Line
- Red Line
- Yellow Line
- Metrorail Station

DC Circulator
- Blue Route
- Green Route
- Orange Route
- Purple Route
- Yellow Route

- Metrobus Route
- Metrobus Stop
- 2,000 ft Walking Radius
- Neighborhood Streets
- MBW Sites

BIKE ROUTES & FACILITIES
MBW VICINITY

Marine Barracks Washington (MBW)
Transportation Management Program

Key

- Existing Bike Lane
- Proposed Bike Lane
- Signed Bike Route
- Capital Bikeshare Location
- 2,000 ft Walking Radius
- MBW Sites

Figure 4

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Attachment B

Intersection Worksheets

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Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	0	930	125	0	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	1033	139	0	83

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	1103	1103
Stage 1	-	-	1103	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	189	257
Stage 1	-	-	256	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	189	257
Mov Cap-2 Maneuver	-	-	189	-
Stage 1	-	-	256	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	25.6
HCM LOS		D

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	257
HCM Lane V/C Ratio	-	-	0.324
HCM Control Delay (s)	-	-	25.6
HCM Lane LOS	-	-	D
HCM 95th %tile Q(veh)	-	-	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	352	391	13	24	92	0	0	446	76
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				391	434	14	27	102	0	0	496	84
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	308	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	831	1863	0	0	1863	1583
Grp Volume(v), veh/h				391	434	14	27	102	0	0	496	84
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	831	1863	0	0	1863	1583
Q Serve(g_s), s				15.1	16.3	0.5	2.4	3.0	0.0	0.0	19.1	3.0
Cycle Q Clear(g_c), s				15.1	16.3	0.5	21.5	3.0	0.0	0.0	19.1	3.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	308	885	0	0	885	736
V/C Ratio(X)				0.47	0.50	0.02	0.09	0.12	0.00	0.00	0.56	0.11
Avail Cap(c_a), veh/h				825	866	720	308	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.4	18.7	15.0	26.5	14.6	0.0	0.0	18.8	15.1
Incr Delay (d2), s/veh				2.0	2.1	0.0	0.6	0.3	0.0	0.0	2.6	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				7.8	8.8	0.2	0.6	1.6	0.0	0.0	10.4	1.4
LnGrp Delay(d),s/veh				20.3	20.7	15.0	27.0	14.8	0.0	0.0	21.3	15.4
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					839			129			580	
Approach Delay, s/veh					20.4			17.4			20.5	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				23.5		18.3		21.1
Green Ext Time (p_c), s				4.3		2.7		4.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	297	52
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	330	58
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	152	700	0	0	810	142
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	208	1322	0	0	1529	269
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	388
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1530	0	0	0	0	1798
Q Serve(g_s), s				11.3	10.1	5.9	15.5	0.0	0.0	0.0	0.0	13.0
Cycle Q Clear(g_c), s				11.3	10.1	5.9	28.4	0.0	0.0	0.0	0.0	13.0
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				751	726	596	853	0	0	0	0	953
V/C Ratio(X)				0.39	0.36	0.22	0.64	0.00	0.00	0.00	0.00	0.41
Avail Cap(c_a), veh/h				751	726	596	853	0	0	0	0	953
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	17.8	0.0	0.0	0.0	0.0	14.1
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.7	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.1	0.0	0.0	0.0	0.0	6.7
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.5	0.0	0.0	0.0	0.0	15.4
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			388	
Approach Delay, s/veh					21.8			21.5			15.4	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				30.4		13.3		15.0
Green Ext Time (p_c), s				4.4		0.0		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	220	111	276
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	244	123	307
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1151	512	62	132
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1212	539	16	136
Grp Volume(v), veh/h			0	793	430	0
Grp Sat Flow(s),veh/h/ln			0	1750	153	0
Q Serve(g_s), s			0.0	0.0	1.5	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.5	0.0
Prop In Lane				0.31	0.29	
Lane Grp Cap(c), veh/h			0	1663	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1663	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			793			430
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.5
Green Ext Time (p_c), s				8.6				8.7

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	281	6	13	263	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	312	7	14	292	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	452	10	38	456	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1810	41	2	1059	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	319	306	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1850	1061	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.02	0.05		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	42.2	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			319			306	
Approach Delay, s/veh		23.3			14.2			42.2			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.6		2.5		13.7
Green Ext Time (p_c), s		2.8		0.7		3.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1329	0	0	663	136	0	0	0	238	0	172
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	211	1621	0	0	809	166	0	0	0	290	0	210
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	2269	0	0	2237	955	0	2	0	279	0	202
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	416	3742	0	0	3632	1539	0	1863	0	972	0	704
Grp Volume(v), veh/h	447	1385	0	0	809	166	0	0	0	500	0	0
Grp Sat Flow(s),veh/h/ln	920	1543	0	0	1770	1539	0	1863	0	1676	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.58		0.42
Lane Grp Cap(c), veh/h	632	1950	0	0	2237	955	0	2	0	481	0	0
V/C Ratio(X)	0.71	0.71	0.00	0.00	0.36	0.17	0.00	0.00	0.00	1.04	0.00	0.00
Avail Cap(c_a), veh/h	632	1950	0	0	2237	955	0	193	0	481	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.96	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	50.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.2	0.0	0.0
LnGrp Delay(d),s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	80.9	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1832			975			0			500	
Approach Delay, s/veh		1.9			0.4			0.0			80.9	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		29.9		0.0		29.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1461	27	11	557	22	241	16	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1623	30	12	619	24	268	18	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	136	2118	39	48	1533	59	679	46	91			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	201	4506	83	22	3262	125	1445	97	194			
Grp Volume(v), veh/h	577	558	606	337	0	318	322	0	0			
Grp Sat Flow(s),veh/h/ln	1572	1543	1675	1750	0	1659	1736	0	0			
Q Serve(g_s), s	19.2	26.1	26.2	0.0	0.0	1.9	12.1	0.0	0.0			
Cycle Q Clear(g_c), s	25.6	26.1	26.2	1.7	0.0	1.9	12.1	0.0	0.0			
Prop In Lane	0.15		0.05	0.04		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	780	725	787	842	0	780	816	0	0			
V/C Ratio(X)	0.74	0.77	0.77	0.40	0.00	0.41	0.39	0.00	0.00			
Avail Cap(c_a), veh/h	780	725	787	842	0	780	816	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.4	14.8	14.9	1.7	0.0	1.7	17.3	0.0	0.0			
Incr Delay (d2), s/veh	6.2	7.7	7.2	1.4	0.0	1.6	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	12.5	13.5	1.1	0.0	1.1	6.1	0.0	0.0			
LnGrp Delay(d),s/veh	20.6	22.6	22.0	3.1	0.0	3.3	18.8	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1741			655			322				
Approach Delay, s/veh		21.7			3.2			18.8				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		28.2		14.1		3.9		
Green Ext Time (p_c), s		10.9		0.0		17.6		

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	29	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1027	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1176	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2352	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1027	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1117	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1649			1190						350	
Approach Delay, s/veh		124.8			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	16	37	733	13	236	0	313	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	23	53	1047	19	337	0	447	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	2715	34	74	1823	33	333	0	530	141	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4721	59	3	3171	58	1153	0	1583	939	0	1583
Grp Volume(v), veh/h	644	597	652	53	509	557	337	0	447	117	0	223
Grp Sat Flow(s),veh/h/ln	1641	1543	1685	3	1543	1685	1153	0	1583	939	0	1583
Q Serve(g_s), s	7.9	26.8	26.9	26.4	0.0	0.0	22.6	0.0	26.2	7.3	0.0	10.9
Cycle Q Clear(g_c), s	24.5	26.8	26.9	26.4	0.0	0.0	33.5	0.0	26.2	33.5	0.0	10.9
Prop In Lane	0.08		0.04	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
V/C Ratio(X)	0.66	0.67	0.67	0.00	0.57	0.57	1.01	0.00	0.84	0.83	0.00	0.42
Avail Cap(c_a), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	14.7	14.7	0.0	0.0	0.0	41.1	0.0	30.8	47.8	0.0	25.7
Incr Delay (d2), s/veh	3.4	4.1	3.7	0.0	2.5	2.3	52.7	0.0	11.8	32.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	12.3	13.3	0.0	0.6	0.6	14.0	0.0	13.2	4.5	0.0	4.8
LnGrp Delay(d),s/veh	17.3	18.8	18.5	0.0	2.5	2.3	94.0	0.0	42.6	80.0	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	F		C
Approach Vol, veh/h		1893			1119			784			340	
Approach Delay, s/veh		18.2			2.2			64.7			44.8	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.9		35.5		28.4		35.5
Green Ext Time (p_c), s		13.5		0.0		25.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	206	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	229	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.6
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.327	-	-	-	-	-	0.263
HCM Control Delay (s)	12.6	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1375	917
Stage 1	917	917	-
Stage 2	0	458	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	145	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	0	330
Mov Cap-2 Maneuver	203	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	131	43	257	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	146	48	286	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	126	725	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	174	1479	0	0	1266	478
Grp Volume(v), veh/h				551	482	146	334	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1653	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	6.0	0.4	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	6.0	13.8	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	851	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.39	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	851	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.4	15.9	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.0	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.2	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1179			334			361	
Approach Delay, s/veh					24.2			17.2			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.8		25.5		15.4
Green Ext Time (p_c), s				3.2		0.0		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	301	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			334	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1365	335	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1436	353	14	166
Grp Volume(v), veh/h			0	416	415	0
Grp Sat Flow(s),veh/h/ln			0	1789	180	0
Q Serve(g_s), s			0.0	17.3	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.3	1.1	0.0
Prop In Lane				0.20	0.24	
Lane Grp Cap(c), veh/h			0	1700	0	0
V/C Ratio(X)			0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h			0	1700	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			416			415
Approach Delay, s/veh			8.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.3				3.1
Green Ext Time (p_c), s				4.2				4.2

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	168	34	369	8	0	8	0	199	8	6	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	187	38	410	9	0	9	0	221	9	7	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	869	35	37	625	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	601	0	1773	72	1	1275	0
Grp Volume(v), veh/h	187	38	410	18	0	0	0	0	230	316	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1202	0	0	0	0	1845	1276	0	0
Q Serve(g_s), s	9.2	1.2	20.8	0.0	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Cycle Q Clear(g_c), s	9.8	1.2	20.8	0.6	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.04	0.02		0.00
Lane Grp Cap(c), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.5	17.6	0.0	0.0	0.0	0.0	25.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.1	4.7	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.8	0.3	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.7	17.9	28.3	17.7	0.0	0.0	0.0	0.0	26.6	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		635			18			230			316	
Approach Delay, s/veh		25.7			17.7			26.6			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.8		12.9		2.6		12.6
Green Ext Time (p_c), s		2.8		2.0		3.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	700	0	0	913	50	0	0	0	495	0	105
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	59	778	0	0	1014	56	0	0	0	550	0	117
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2365	0	0	2034	864	0	2	0	493	0	105
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	233	4268	0	0	3632	1534	0	1863	0	1429	0	304
Grp Volume(v), veh/h	256	581	0	0	1014	56	0	0	0	667	0	0
Grp Sat Flow(s),veh/h/ln	1263	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.23		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	762	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.50	0.06	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	762	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	71.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.2	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	99.7	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		837			1070			0			667	
Approach Delay, s/veh		0.6			0.5			0.0			99.7	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.3		0.0		14.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	372	37	932	22	27	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	413	41	1036	24	30	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1427	657	76	1536	35	297	69	356			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2912	1341	75	3134	72	660	154	792			
Grp Volume(v), veh/h	432	474	423	541	0	560	73	0	0			
Grp Sat Flow(s),veh/h/ln	1397	1543	1374	1606	0	1675	1605	0	0			
Q Serve(g_s), s	10.5	1.6	3.1	7.3	0.0	25.7	2.7	0.0	0.0			
Cycle Q Clear(g_c), s	36.1	1.6	3.1	23.2	0.0	25.7	2.7	0.0	0.0			
Prop In Lane	0.08		0.98	0.08		0.04	0.41		0.49			
Lane Grp Cap(c), veh/h	724	756	673	810	0	821	722	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.68	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	724	756	673	810	0	821	722	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.1	0.5	1.1	18.5	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.3	3.6	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	1.0	1.4	11.8	0.0	12.3	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.3	4.1	5.1	20.5	0.0	21.6	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1330			1101			73				
Approach Delay, s/veh		4.8			21.1			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.1		4.7		27.7		
Green Ext Time (p_c), s		6.9		0.0		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	750	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	833	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	396	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2204	862				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	576				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	396	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	396	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.2	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1589						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	27	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	30	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	30	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.8	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.9	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.4	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.7	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.7	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	28.1	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			136			604	
Approach Delay, s/veh					20.8			17.8			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.9		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	204	308	858	56	16	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	314	474	1320	86	25	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1915	667	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2297	800	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	606	610	474	677	729	25	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1554	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.4	10.0	100.0	0.0	0.0	1.5	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.4	10.0	100.0	0.0	0.0	3.1	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1296	0	1286	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.13	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1296	0	1286	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.6	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.1	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1531			1880			59			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		11.6		88.4		11.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.1		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	297	52
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	330	58
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	152	700	0	0	810	142
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	208	1322	0	0	1529	269
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	388
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1530	0	0	0	0	1798
Q Serve(g_s), s				11.3	10.1	5.9	15.5	0.0	0.0	0.0	0.0	13.0
Cycle Q Clear(g_c), s				11.3	10.1	5.9	28.4	0.0	0.0	0.0	0.0	13.0
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				751	726	596	853	0	0	0	0	953
V/C Ratio(X)				0.39	0.36	0.22	0.64	0.00	0.00	0.00	0.00	0.41
Avail Cap(c_a), veh/h				751	726	596	853	0	0	0	0	953
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	17.8	0.0	0.0	0.0	0.0	14.1
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.7	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.1	0.0	0.0	0.0	0.0	6.7
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.5	0.0	0.0	0.0	0.0	15.4
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			388	
Approach Delay, s/veh					21.8			21.5			15.4	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				30.4		13.3		15.0
Green Ext Time (p_c), s				4.4		0.0		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	220	111	276
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	244	123	307
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1151	512	62	132
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1212	539	16	136
Grp Volume(v), veh/h			0	793	430	0
Grp Sat Flow(s),veh/h/ln			0	1750	153	0
Q Serve(g_s), s			0.0	0.0	1.5	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.5	0.0
Prop In Lane				0.31	0.29	
Lane Grp Cap(c), veh/h			0	1663	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1663	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			793			430
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.5
Green Ext Time (p_c), s				8.6				8.7

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	281	6	13	263	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	312	7	14	292	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	452	10	38	456	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1810	41	2	1059	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	319	306	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1850	1061	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.02	0.05		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	42.2	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			319			306	
Approach Delay, s/veh		23.3			14.2			42.2			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.6		2.5		13.7
Green Ext Time (p_c), s		2.8		0.7		3.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1329	0	0	663	136	0	0	0	238	0	172
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	211	1621	0	0	809	166	0	0	0	290	0	210
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	2269	0	0	2237	955	0	2	0	279	0	202
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	416	3742	0	0	3632	1539	0	1863	0	972	0	704
Grp Volume(v), veh/h	447	1385	0	0	809	166	0	0	0	500	0	0
Grp Sat Flow(s),veh/h/ln	920	1543	0	0	1770	1539	0	1863	0	1676	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.58		0.42
Lane Grp Cap(c), veh/h	632	1950	0	0	2237	955	0	2	0	481	0	0
V/C Ratio(X)	0.71	0.71	0.00	0.00	0.36	0.17	0.00	0.00	0.00	1.04	0.00	0.00
Avail Cap(c_a), veh/h	632	1950	0	0	2237	955	0	193	0	481	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.96	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.9	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	50.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.2	0.0	0.0
LnGrp Delay(d),s/veh	3.9	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	80.9	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1832			975			0			500	
Approach Delay, s/veh		1.9			0.4			0.0			80.9	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		29.9		0.0		29.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1461	9	8	557	22	235	16	31	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1623	10	9	619	24	261	18	34			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	137	2147	13	44	1553	60	681	47	89			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	204	4567	28	15	3304	127	1449	100	189			
Grp Volume(v), veh/h	567	551	603	339	0	313	313	0	0			
Grp Sat Flow(s),veh/h/ln	1568	1543	1688	1788	0	1658	1738	0	0			
Q Serve(g_s), s	18.5	25.5	25.5	0.0	0.0	1.9	11.7	0.0	0.0			
Cycle Q Clear(g_c), s	24.9	25.5	25.5	1.8	0.0	1.9	11.7	0.0	0.0			
Prop In Lane	0.16		0.02	0.03		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	779	725	794	859	0	779	817	0	0			
V/C Ratio(X)	0.73	0.76	0.76	0.39	0.00	0.40	0.38	0.00	0.00			
Avail Cap(c_a), veh/h	779	725	794	859	0	779	817	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.2	14.7	14.7	1.7	0.0	1.7	17.2	0.0	0.0			
Incr Delay (d2), s/veh	5.9	7.3	6.7	1.4	0.0	1.5	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.0	12.1	13.1	1.1	0.0	1.0	5.9	0.0	0.0			
LnGrp Delay(d),s/veh	20.2	22.1	21.5	3.0	0.0	3.2	18.6	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1721			652			313				
Approach Delay, s/veh		21.2			3.1			18.6				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		27.5		13.7		3.9		
Green Ext Time (p_c), s		11.0		0.0		17.2		

Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	29	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1027	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1176	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2352	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1027	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1117	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1649			1190						350	
Approach Delay, s/veh		124.8			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	5	32	733	13	227	0	311	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	7	46	1047	19	324	0	444	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	90	2741	10	74	1823	33	333	0	530	143	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4767	18	3	3171	58	1153	0	1583	942	0	1583
Grp Volume(v), veh/h	636	592	649	46	509	557	324	0	444	117	0	223
Grp Sat Flow(s),veh/h/ln	1639	1543	1692	3	1543	1685	1153	0	1583	942	0	1583
Q Serve(g_s), s	7.4	26.4	26.4	23.4	0.0	0.0	22.6	0.0	25.9	7.6	0.0	10.9
Cycle Q Clear(g_c), s	24.0	26.4	26.4	23.4	0.0	0.0	33.5	0.0	25.9	33.5	0.0	10.9
Prop In Lane	0.08		0.01	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	981	887	973	0	887	969	333	0	530	143	0	530
V/C Ratio(X)	0.65	0.67	0.67	0.00	0.57	0.57	0.97	0.00	0.84	0.82	0.00	0.42
Avail Cap(c_a), veh/h	981	887	973	0	887	969	333	0	530	143	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	14.6	14.7	0.0	0.0	0.0	40.9	0.0	30.7	47.7	0.0	25.7
Incr Delay (d2), s/veh	3.3	4.0	3.6	0.0	2.5	2.3	42.2	0.0	11.3	29.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	12.1	13.2	0.0	0.6	0.6	12.8	0.0	13.0	4.4	0.0	4.8
LnGrp Delay(d),s/veh	17.1	18.6	18.3	0.0	2.5	2.3	83.2	0.0	42.0	76.9	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	E		C
Approach Vol, veh/h		1877			1112			768			340	
Approach Delay, s/veh		18.0			2.3			59.4			43.7	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.4		35.5		25.4		35.5
Green Ext Time (p_c), s		13.8		0.0		27.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	206	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	229	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.6
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.327	-	-	-	-	-	0.263
HCM Control Delay (s)	12.6	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1375	917
Stage 1	917	917	-
Stage 2	0	458	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	145	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	0	330
Mov Cap-2 Maneuver	203	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	131	43	257	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	146	48	286	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	126	725	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	174	1479	0	0	1266	478
Grp Volume(v), veh/h				551	482	146	334	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1653	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	6.0	0.4	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	6.0	13.8	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	851	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.39	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	851	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.4	15.9	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.0	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.2	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1179			334			361	
Approach Delay, s/veh					24.2			17.2			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.8		25.5		15.4
Green Ext Time (p_c), s				3.2		0.0		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	301	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			334	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1365	335	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1436	353	14	166
Grp Volume(v), veh/h			0	416	415	0
Grp Sat Flow(s),veh/h/ln			0	1789	180	0
Q Serve(g_s), s			0.0	17.3	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.3	1.1	0.0
Prop In Lane				0.20	0.24	
Lane Grp Cap(c), veh/h			0	1700	0	0
V/C Ratio(X)			0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h			0	1700	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			416			415
Approach Delay, s/veh			8.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.3				3.1
Green Ext Time (p_c), s				4.2				4.2

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	168	34	369	8	0	8	0	199	8	6	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	187	38	410	9	0	9	0	221	9	7	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	869	35	37	625	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	601	0	1773	72	1	1275	0
Grp Volume(v), veh/h	187	38	410	18	0	0	0	0	230	316	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1202	0	0	0	0	1845	1276	0	0
Q Serve(g_s), s	9.2	1.2	20.8	0.0	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Cycle Q Clear(g_c), s	9.8	1.2	20.8	0.6	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.04	0.02		0.00
Lane Grp Cap(c), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.5	17.6	0.0	0.0	0.0	0.0	25.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.1	4.7	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.8	0.3	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.7	17.9	28.3	17.7	0.0	0.0	0.0	0.0	26.6	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		635			18			230			316	
Approach Delay, s/veh		25.7			17.7			26.6			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.8		12.9		2.6		12.6
Green Ext Time (p_c), s		2.8		2.0		3.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	700	0	0	913	50	0	0	0	495	0	105
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	59	778	0	0	1014	56	0	0	0	550	0	117
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2365	0	0	2034	864	0	2	0	493	0	105
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	233	4268	0	0	3632	1534	0	1863	0	1429	0	304
Grp Volume(v), veh/h	256	581	0	0	1014	56	0	0	0	667	0	0
Grp Sat Flow(s),veh/h/ln	1263	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.23		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	762	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.50	0.06	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	762	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	71.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.2	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	99.7	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		837			1070			0			667	
Approach Delay, s/veh		0.6			0.5			0.0			99.7	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.3		0.0		14.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	369	37	932	22	26	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	410	41	1036	24	29	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1431	654	76	1536	35	291	70	361			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2920	1334	75	3135	72	646	156	801			
Grp Volume(v), veh/h	431	473	423	541	0	560	72	0	0			
Grp Sat Flow(s),veh/h/ln	1397	1543	1376	1607	0	1675	1603	0	0			
Q Serve(g_s), s	10.4	1.6	3.0	7.3	0.0	25.7	2.6	0.0	0.0			
Cycle Q Clear(g_c), s	36.1	1.6	3.0	23.2	0.0	25.7	2.6	0.0	0.0			
Prop In Lane	0.08		0.97	0.08		0.04	0.40		0.50			
Lane Grp Cap(c), veh/h	724	756	674	810	0	821	721	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.68	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	724	756	674	810	0	821	721	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.0	0.5	1.1	18.5	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.3	3.6	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	1.0	1.4	11.8	0.0	12.3	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.3	4.1	5.1	20.5	0.0	21.6	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1327			1101			72				
Approach Delay, s/veh		4.8			21.1			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.1		4.6		27.7		
Green Ext Time (p_c), s		6.9		0.0		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	750	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	833	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	396	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2204	862				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	576				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	396	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	396	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.2	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1589						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	27	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	30	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	30	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.8	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.9	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.4	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.7	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.7	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	28.1	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			136			604	
Approach Delay, s/veh					20.8			17.8			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.9		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.7

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	200	307	858	56	15	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	308	472	1320	86	23	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1926	658	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2310	789	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	602	608	472	677	729	23	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1556	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.3	9.9	100.0	0.0	0.0	1.4	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.3	9.9	100.0	0.0	0.0	3.0	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1298	0	1287	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.12	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1298	0	1287	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.5	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.0	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1525			1878			57			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.5		11.5		88.5		11.5
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.0		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	308	50
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	342	56
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	151	694	0	0	820	134
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	206	1309	0	0	1548	253
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	398
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1515	0	0	0	0	1801
Q Serve(g_s), s				11.3	10.1	5.9	15.7	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				11.3	10.1	5.9	29.1	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.14
Lane Grp Cap(c), veh/h				751	726	596	845	0	0	0	0	955
V/C Ratio(X)				0.39	0.36	0.22	0.65	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				751	726	596	845	0	0	0	0	955
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	18.0	0.0	0.0	0.0	0.0	14.2
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.8	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.3	0.0	0.0	0.0	0.0	7.0
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.8	0.0	0.0	0.0	0.0	15.6
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			398	
Approach Delay, s/veh					21.8			21.8			15.6	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				31.1		13.3		15.4
Green Ext Time (p_c), s				4.4		0.0		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	222	109	289
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	247	121	321
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1146	516	61	139
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1207	543	16	143
Grp Volume(v), veh/h			0	796	442	0
Grp Sat Flow(s),veh/h/ln			0	1749	159	0
Q Serve(g_s), s			0.0	0.0	1.6	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.6	0.0
Prop In Lane				0.31	0.27	
Lane Grp Cap(c), veh/h			0	1662	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1662	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			796			442
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.6
Green Ext Time (p_c), s				8.8				8.8

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	283	6	13	276	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	314	7	14	307	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	452	10	38	456	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1810	40	2	1059	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	321	321	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1850	1061	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.7	12.3	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.7	12.3	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.02	0.04		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	42.4	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			321			321	
Approach Delay, s/veh		23.3			14.2			42.4			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.7		2.5		14.3
Green Ext Time (p_c), s		2.8		0.7		3.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	175	1331	0	0	663	136	0	0	0	238	0	185
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	208	1585	0	0	789	162	0	0	0	283	0	220
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	2276	0	0	2237	955	0	2	0	270	0	210
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	422	3752	0	0	3632	1539	0	1863	0	941	0	731
Grp Volume(v), veh/h	441	1352	0	0	789	162	0	0	0	503	0	0
Grp Sat Flow(s),veh/h/ln	937	1543	0	0	1770	1539	0	1863	0	1672	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.56		0.44
Lane Grp Cap(c), veh/h	642	1950	0	0	2237	955	0	2	0	480	0	0
V/C Ratio(X)	0.69	0.69	0.00	0.00	0.35	0.17	0.00	0.00	0.00	1.05	0.00	0.00
Avail Cap(c_a), veh/h	642	1950	0	0	2237	955	0	193	0	480	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.95	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.4	1.2	0.0	0.0	0.4	0.3	0.0	0.0	0.0	52.9	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.5	0.0	0.0
LnGrp Delay(d),s/veh	3.4	1.2	0.0	0.0	0.4	0.3	0.0	0.0	0.0	83.4	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1793			951			0			503	
Approach Delay, s/veh		1.7			0.4			0.0			83.4	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		28.8		0.0		28.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1463	27	11	557	22	241	16	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1626	30	12	619	24	268	18	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	136	2118	39	47	1533	59	679	46	91			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	201	4507	83	22	3261	125	1445	97	194			
Grp Volume(v), veh/h	578	559	607	337	0	318	322	0	0			
Grp Sat Flow(s),veh/h/ln	1572	1543	1675	1749	0	1659	1736	0	0			
Q Serve(g_s), s	19.3	26.2	26.3	0.0	0.0	1.9	12.1	0.0	0.0			
Cycle Q Clear(g_c), s	25.7	26.2	26.3	1.7	0.0	1.9	12.1	0.0	0.0			
Prop In Lane	0.15		0.05	0.04		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	781	725	787	842	0	780	816	0	0			
V/C Ratio(X)	0.74	0.77	0.77	0.40	0.00	0.41	0.39	0.00	0.00			
Avail Cap(c_a), veh/h	781	725	787	842	0	780	816	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.4	14.8	14.9	1.7	0.0	1.7	17.3	0.0	0.0			
Incr Delay (d2), s/veh	6.2	7.8	7.2	1.4	0.0	1.6	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	12.5	13.5	1.1	0.0	1.1	6.1	0.0	0.0			
LnGrp Delay(d),s/veh	20.6	22.6	22.1	3.1	0.0	3.3	18.8	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1744			655			322				
Approach Delay, s/veh		21.8			3.2			18.8				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		28.3		14.1		3.9		
Green Ext Time (p_c), s		10.9		0.0		17.6		

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	30	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1028	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1175	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2351	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1028	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1116	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1650			1190						350	
Approach Delay, s/veh		124.7			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	16	37	733	13	236	0	317	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	23	53	1047	19	337	0	453	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	2715	34	74	1823	33	333	0	530	136	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4721	59	3	3171	58	1153	0	1583	934	0	1583
Grp Volume(v), veh/h	644	597	652	53	509	557	337	0	453	117	0	223
Grp Sat Flow(s),veh/h/ln	1641	1543	1685	3	1543	1685	1153	0	1583	934	0	1583
Q Serve(g_s), s	7.9	26.8	26.9	26.4	0.0	0.0	22.6	0.0	26.7	6.8	0.0	10.9
Cycle Q Clear(g_c), s	24.5	26.8	26.9	26.4	0.0	0.0	33.5	0.0	26.7	33.5	0.0	10.9
Prop In Lane	0.08		0.04	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	982	887	969	0	887	969	333	0	530	136	0	530
V/C Ratio(X)	0.66	0.67	0.67	0.00	0.57	0.57	1.01	0.00	0.85	0.86	0.00	0.42
Avail Cap(c_a), veh/h	982	887	969	0	887	969	333	0	530	136	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	14.7	14.7	0.0	0.0	0.0	41.1	0.0	31.0	48.1	0.0	25.7
Incr Delay (d2), s/veh	3.4	4.1	3.7	0.0	2.5	2.3	52.7	0.0	12.8	39.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	12.3	13.3	0.0	0.6	0.6	14.0	0.0	13.5	4.7	0.0	4.8
LnGrp Delay(d),s/veh	17.3	18.8	18.5	0.0	2.5	2.3	94.0	0.0	43.8	87.4	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	F		C
Approach Vol, veh/h		1893			1119			790			340	
Approach Delay, s/veh		18.2			2.3			65.2			47.3	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.9		35.5		28.4		35.5
Green Ext Time (p_c), s		13.5		0.0		25.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	206	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	229	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.6
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.327	-	-	-	-	-	0.263
HCM Control Delay (s)	12.6	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1375	917
Stage 1	917	917	-
Stage 2	0	458	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	145	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	0	330
Mov Cap-2 Maneuver	203	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	129	43	268	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	143	48	298	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	124	738	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	168	1506	0	0	1266	478
Grp Volume(v), veh/h				551	482	143	346	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1674	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	5.9	0.3	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	5.9	13.7	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	861	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.40	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	861	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.3	16.0	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.3	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.4	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1176			346			361	
Approach Delay, s/veh					24.2			17.4			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.7		25.5		15.4
Green Ext Time (p_c), s				3.3		0.0		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	312	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			347	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1376	325	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1449	342	14	166
Grp Volume(v), veh/h			0	429	415	0
Grp Sat Flow(s),veh/h/ln			0	1791	180	0
Q Serve(g_s), s			0.0	17.9	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.9	1.1	0.0
Prop In Lane				0.19	0.24	
Lane Grp Cap(c), veh/h			0	1702	0	0
V/C Ratio(X)			0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h			0	1702	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	9.0	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.2	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			429			415
Approach Delay, s/veh			8.2			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.9				3.1
Green Ext Time (p_c), s				4.3				4.3

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	166	34	371	8	0	8	0	212	8	6	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	184	38	412	9	0	9	0	236	9	7	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	871	33	37	625	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	600	0	1779	68	1	1275	0
Grp Volume(v), veh/h	184	38	412	18	0	0	0	0	245	316	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1201	0	0	0	0	1846	1276	0	0
Q Serve(g_s), s	9.0	1.2	20.9	0.0	0.0	0.0	0.0	0.0	11.6	10.6	0.0	0.0
Cycle Q Clear(g_c), s	9.6	1.2	20.9	0.6	0.0	0.0	0.0	0.0	11.6	10.6	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.04	0.02		0.00
Lane Grp Cap(c), veh/h	637	764	645	546	0	0	0	0	905	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	546	0	0	0	0	905	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.6	17.6	0.0	0.0	0.0	0.0	26.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.1	4.8	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.9	0.3	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.6	17.9	28.4	17.7	0.0	0.0	0.0	0.0	27.0	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		634			18			245			316	
Approach Delay, s/veh		25.8			17.7			27.0			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.9		13.6		2.6		12.6
Green Ext Time (p_c), s		2.8		2.0		3.2		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	66	700	0	0	915	50	0	0	0	495	0	107
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	73	778	0	0	1017	56	0	0	0	550	0	119
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	2256	0	0	2034	864	0	2	0	491	0	106
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	285	4079	0	0	3632	1534	0	1863	0	1424	0	308
Grp Volume(v), veh/h	243	608	0	0	1017	56	0	0	0	669	0	0
Grp Sat Flow(s),veh/h/ln	1126	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.30		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	688	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.35	0.34	0.00	0.00	0.50	0.06	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	688	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.54	0.54	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	73.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.4	0.0	0.0
LnGrp Delay(d),s/veh	1.2	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	101.1	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		851			1073			0			669	
Approach Delay, s/veh		0.7			0.5			0.0			101.1	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.8		0.0		14.8		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.5
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	372	37	934	22	27	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	413	41	1038	24	30	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1426	657	75	1536	35	297	69	356			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2911	1340	75	3135	72	660	154	792			
Grp Volume(v), veh/h	432	475	424	542	0	561	73	0	0			
Grp Sat Flow(s),veh/h/ln	1395	1543	1375	1607	0	1675	1605	0	0			
Q Serve(g_s), s	10.6	1.6	3.1	7.4	0.0	25.7	2.7	0.0	0.0			
Cycle Q Clear(g_c), s	36.3	1.6	3.1	23.3	0.0	25.7	2.7	0.0	0.0			
Prop In Lane	0.08		0.97	0.08		0.04	0.41		0.49			
Lane Grp Cap(c), veh/h	722	756	674	810	0	821	722	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.68	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	722	756	674	810	0	821	722	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.89	0.89	0.89	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.1	0.5	1.1	18.6	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.2	3.5	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	1.0	1.4	11.8	0.0	12.3	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.3	4.0	5.0	20.5	0.0	21.7	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1330			1103			73				
Approach Delay, s/veh		4.8			21.1			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.3		4.7		27.7		
Green Ext Time (p_c), s		6.8		0.0		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	751	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	834	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	395	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2205	861				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	577				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	395	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	395	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.3	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1590						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	25	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	28	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	28	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.6	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.7	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.3	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.6	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.6	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	27.9	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			134			604	
Approach Delay, s/veh					20.8			17.6			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.7		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	204	312	858	56	16	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	314	480	1320	86	25	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1915	667	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2297	800	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	606	610	480	676	730	25	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1554	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.4	10.0	100.0	0.0	0.0	1.5	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.4	10.0	100.0	0.0	0.0	3.1	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1296	0	1286	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.13	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1296	0	1286	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.79	0.79	0.79	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.6	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.1	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1531			1886			59			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		11.6		88.4		11.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.1		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	308	50
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	342	56
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	151	694	0	0	820	134
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	206	1309	0	0	1548	253
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	398
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1515	0	0	0	0	1801
Q Serve(g_s), s				11.3	10.1	5.9	15.7	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				11.3	10.1	5.9	29.1	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.14
Lane Grp Cap(c), veh/h				751	726	596	845	0	0	0	0	955
V/C Ratio(X)				0.39	0.36	0.22	0.65	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				751	726	596	845	0	0	0	0	955
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	18.0	0.0	0.0	0.0	0.0	14.2
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.8	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.3	0.0	0.0	0.0	0.0	7.0
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.8	0.0	0.0	0.0	0.0	15.6
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			398	
Approach Delay, s/veh					21.8			21.8			15.6	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				31.1		13.3		15.4
Green Ext Time (p_c), s				4.4		0.0		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	222	109	289
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	247	121	321
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1146	516	61	139
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1207	543	16	143
Grp Volume(v), veh/h			0	796	442	0
Grp Sat Flow(s),veh/h/ln			0	1749	159	0
Q Serve(g_s), s			0.0	0.0	1.6	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.6	0.0
Prop In Lane				0.31	0.27	
Lane Grp Cap(c), veh/h			0	1662	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1662	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			796			442
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.6
Green Ext Time (p_c), s				8.8				8.8

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	283	6	19	269	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	314	7	21	299	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	452	10	40	394	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1810	40	3	916	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	321	320	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1850	919	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.7	12.5	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.7	12.5	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.02	0.07		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	9.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	42.4	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			321			320	
Approach Delay, s/veh		23.3			14.2			42.4			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.7		2.5		14.5
Green Ext Time (p_c), s		2.8		0.7		3.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1329	0	0	663	136	0	0	0	244	0	172
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	211	1621	0	0	809	166	0	0	0	298	0	210
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	2269	0	0	2237	955	0	2	0	283	0	199
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	416	3742	0	0	3632	1539	0	1863	0	984	0	693
Grp Volume(v), veh/h	447	1385	0	0	809	166	0	0	0	508	0	0
Grp Sat Flow(s),veh/h/ln	920	1543	0	0	1770	1539	0	1863	0	1677	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.59		0.41
Lane Grp Cap(c), veh/h	632	1950	0	0	2237	955	0	2	0	482	0	0
V/C Ratio(X)	0.71	0.71	0.00	0.00	0.36	0.17	0.00	0.00	0.00	1.05	0.00	0.00
Avail Cap(c_a), veh/h	632	1950	0	0	2237	955	0	193	0	482	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.95	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	55.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.9	0.0	0.0
LnGrp Delay(d),s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	85.5	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1832			975			0			508	
Approach Delay, s/veh		1.9			0.4			0.0			85.5	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		29.9		0.0		29.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1467	27	11	557	22	241	16	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1630	30	12	619	24	268	18	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	136	2119	39	47	1533	59	679	46	91			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	200	4508	83	22	3261	125	1445	97	194			
Grp Volume(v), veh/h	579	560	608	337	0	318	322	0	0			
Grp Sat Flow(s),veh/h/ln	1573	1543	1675	1749	0	1659	1736	0	0			
Q Serve(g_s), s	19.4	26.3	26.4	0.0	0.0	1.9	12.1	0.0	0.0			
Cycle Q Clear(g_c), s	25.9	26.3	26.4	1.7	0.0	1.9	12.1	0.0	0.0			
Prop In Lane	0.15		0.05	0.04		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	781	725	787	842	0	780	816	0	0			
V/C Ratio(X)	0.74	0.77	0.77	0.40	0.00	0.41	0.39	0.00	0.00			
Avail Cap(c_a), veh/h	781	725	787	842	0	780	816	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.4	14.9	14.9	1.7	0.0	1.7	17.3	0.0	0.0			
Incr Delay (d2), s/veh	6.3	7.8	7.3	1.4	0.0	1.6	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	12.6	13.6	1.1	0.0	1.1	6.1	0.0	0.0			
LnGrp Delay(d),s/veh	20.7	22.7	22.2	3.1	0.0	3.3	18.8	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1748			655			322				
Approach Delay, s/veh		21.9			3.2			18.8				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		28.4		14.1		3.9		
Green Ext Time (p_c), s		10.8		0.0		17.7		

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	30	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1028	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1175	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2351	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1028	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1116	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1650			1190						350	
Approach Delay, s/veh		124.7			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary			
HCM 2010 Ctrl Delay			19.1
HCM 2010 LOS			B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	16	37	733	13	236	0	313	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	23	53	1047	19	337	0	447	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	2715	34	74	1823	33	333	0	530	141	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4721	59	3	3171	58	1153	0	1583	939	0	1583
Grp Volume(v), veh/h	644	597	652	53	509	557	337	0	447	117	0	223
Grp Sat Flow(s),veh/h/ln	1641	1543	1685	3	1543	1685	1153	0	1583	939	0	1583
Q Serve(g_s), s	7.9	26.8	26.9	26.4	0.0	0.0	22.6	0.0	26.2	7.3	0.0	10.9
Cycle Q Clear(g_c), s	24.5	26.8	26.9	26.4	0.0	0.0	33.5	0.0	26.2	33.5	0.0	10.9
Prop In Lane	0.08		0.04	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
V/C Ratio(X)	0.66	0.67	0.67	0.00	0.57	0.57	1.01	0.00	0.84	0.83	0.00	0.42
Avail Cap(c_a), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	14.7	14.7	0.0	0.0	0.0	41.1	0.0	30.8	47.8	0.0	25.7
Incr Delay (d2), s/veh	3.4	4.1	3.7	0.0	2.5	2.3	52.7	0.0	11.8	32.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	12.3	13.3	0.0	0.6	0.6	14.0	0.0	13.2	4.5	0.0	4.8
LnGrp Delay(d),s/veh	17.3	18.8	18.5	0.0	2.5	2.3	94.0	0.0	42.6	80.0	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	F		C
Approach Vol, veh/h		1893			1119			784			340	
Approach Delay, s/veh		18.2			2.2			64.7			44.8	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.9		35.5		28.4		35.5
Green Ext Time (p_c), s		13.5		0.0		25.3		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			24.9
HCM 2010 LOS			C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	206	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	229	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.6
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.327	-	-	-	-	-	0.263
HCM Control Delay (s)	12.6	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1375	917
Stage 1	917	917	-
Stage 2	0	458	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	145	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	0	330
Mov Cap-2 Maneuver	203	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	129	43	268	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	143	48	298	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	124	738	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	168	1506	0	0	1266	478
Grp Volume(v), veh/h				551	482	143	346	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1674	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	5.9	0.3	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	5.9	13.7	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	861	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.40	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	861	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.3	16.0	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.3	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.4	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1176			346			361	
Approach Delay, s/veh					24.2			17.4			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.7		25.5		15.4
Green Ext Time (p_c), s				3.3		0.0		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	312	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			347	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1376	325	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1449	342	14	166
Grp Volume(v), veh/h			0	429	415	0
Grp Sat Flow(s),veh/h/ln			0	1791	180	0
Q Serve(g_s), s			0.0	17.9	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.9	1.1	0.0
Prop In Lane				0.19	0.24	
Lane Grp Cap(c), veh/h			0	1702	0	0
V/C Ratio(X)			0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h			0	1702	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	9.0	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.2	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			429			415
Approach Delay, s/veh			8.2			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.9				3.1
Green Ext Time (p_c), s				4.3				4.3

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	166	36	369	8	0	8	0	212	8	6	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	184	40	410	9	0	9	0	236	9	7	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	871	33	37	625	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	600	0	1779	68	1	1275	0
Grp Volume(v), veh/h	184	40	410	18	0	0	0	0	245	316	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1201	0	0	0	0	1846	1276	0	0
Q Serve(g_s), s	9.0	1.3	20.8	0.0	0.0	0.0	0.0	0.0	11.6	10.6	0.0	0.0
Cycle Q Clear(g_c), s	9.6	1.3	20.8	0.6	0.0	0.0	0.0	0.0	11.6	10.6	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.04	0.02		0.00
Lane Grp Cap(c), veh/h	637	764	645	546	0	0	0	0	905	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	546	0	0	0	0	905	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.5	17.6	0.0	0.0	0.0	0.0	26.3	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.1	4.7	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.8	0.3	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.6	17.9	28.3	17.7	0.0	0.0	0.0	0.0	27.0	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		634			18			245			316	
Approach Delay, s/veh		25.7			17.7			27.0			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.8		13.6		2.6		12.6
Green Ext Time (p_c), s		2.8		2.0		3.2		2.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	700	0	0	913	56	0	0	0	495	0	105
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	59	778	0	0	1014	62	0	0	0	550	0	117
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2363	0	0	2034	864	0	2	0	493	0	105
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	233	4264	0	0	3632	1534	0	1863	0	1429	0	304
Grp Volume(v), veh/h	255	582	0	0	1014	62	0	0	0	667	0	0
Grp Sat Flow(s),veh/h/ln	1260	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.23		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	760	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.50	0.07	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	760	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.54	0.54	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	71.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.2	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	99.7	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		837			1076			0			667	
Approach Delay, s/veh		0.6			0.5			0.0			99.7	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.4		0.0		14.4		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	372	37	938	22	27	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	413	41	1042	24	30	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1425	656	75	1537	35	297	69	356			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2908	1339	75	3136	71	660	154	792			
Grp Volume(v), veh/h	431	475	424	544	0	563	73	0	0			
Grp Sat Flow(s),veh/h/ln	1390	1543	1375	1607	0	1675	1605	0	0			
Q Serve(g_s), s	10.7	1.6	3.1	7.6	0.0	25.9	2.7	0.0	0.0			
Cycle Q Clear(g_c), s	36.5	1.6	3.1	23.4	0.0	25.9	2.7	0.0	0.0			
Prop In Lane	0.08		0.97	0.08		0.04	0.41		0.49			
Lane Grp Cap(c), veh/h	720	756	674	810	0	821	722	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.69	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	720	756	674	810	0	821	722	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.1	0.5	1.1	18.6	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.3	3.6	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	1.0	1.5	11.9	0.0	12.4	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.4	4.1	5.1	20.6	0.0	21.7	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1330			1107			73				
Approach Delay, s/veh		4.9			21.2			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.5		4.7		27.9		
Green Ext Time (p_c), s		6.6		0.0		12.4		

Intersection Summary	
HCM 2010 Ctrl Delay	12.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	751	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	834	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	395	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2205	861				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	577				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	395	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	395	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.3	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1590						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	25	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	28	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	28	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.6	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.7	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.3	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.6	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.6	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	27.9	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			134			604	
Approach Delay, s/veh					20.8			17.6			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.7		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	204	308	858	56	16	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	314	474	1320	86	25	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1915	667	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2297	800	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	606	610	474	677	729	25	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1554	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.4	10.0	100.0	0.0	0.0	1.5	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.4	10.0	100.0	0.0	0.0	3.1	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1296	0	1286	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.13	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1296	0	1286	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.6	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.1	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1531			1880			59			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		11.6		88.4		11.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.1		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	308	50
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	342	56
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	151	694	0	0	820	134
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	206	1309	0	0	1548	253
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	398
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1515	0	0	0	0	1801
Q Serve(g_s), s				11.3	10.1	5.9	15.7	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				11.3	10.1	5.9	29.1	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.14
Lane Grp Cap(c), veh/h				751	726	596	845	0	0	0	0	955
V/C Ratio(X)				0.39	0.36	0.22	0.65	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				751	726	596	845	0	0	0	0	955
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	18.0	0.0	0.0	0.0	0.0	14.2
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.8	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.3	0.0	0.0	0.0	0.0	7.0
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.8	0.0	0.0	0.0	0.0	15.6
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			398	
Approach Delay, s/veh					21.8			21.8			15.6	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				31.1		13.3		15.4
Green Ext Time (p_c), s				4.4		0.0		4.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.3
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	222	109	289
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	247	121	321
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1146	516	61	139
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1207	543	16	143
Grp Volume(v), veh/h			0	796	442	0
Grp Sat Flow(s),veh/h/ln			0	1749	159	0
Q Serve(g_s), s			0.0	0.0	1.6	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.6	0.0
Prop In Lane				0.31	0.27	
Lane Grp Cap(c), veh/h			0	1662	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1662	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			796			442
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.6
Green Ext Time (p_c), s				8.8				8.8

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	283	1	8	276	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	314	1	9	307	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	464	1	38	514	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1855	6	1	1195	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	315	316	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1861	1196	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.3	11.9	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.3	11.9	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.00	0.03		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	465	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	465	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	33.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	41.6	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			315			316	
Approach Delay, s/veh		23.3			14.2			41.6			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.3		2.5		13.9
Green Ext Time (p_c), s		2.8		0.7		3.3		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1329	0	0	663	136	0	0	0	240	0	172
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	211	1621	0	0	809	166	0	0	0	293	0	210
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	2269	0	0	2237	955	0	2	0	281	0	201
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	416	3742	0	0	3632	1539	0	1863	0	976	0	700
Grp Volume(v), veh/h	447	1385	0	0	809	166	0	0	0	503	0	0
Grp Sat Flow(s),veh/h/ln	920	1543	0	0	1770	1539	0	1863	0	1676	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.58		0.42
Lane Grp Cap(c), veh/h	632	1950	0	0	2237	955	0	2	0	482	0	0
V/C Ratio(X)	0.71	0.71	0.00	0.00	0.36	0.17	0.00	0.00	0.00	1.04	0.00	0.00
Avail Cap(c_a), veh/h	632	1950	0	0	2237	955	0	193	0	482	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.95	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	52.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.5	0.0	0.0
LnGrp Delay(d),s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	82.6	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1832			975			0			503	
Approach Delay, s/veh		1.9			0.4			0.0			82.6	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		29.9		0.0		29.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1463	27	11	557	22	241	16	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1626	30	12	619	24	268	18	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	136	2118	39	47	1533	59	679	46	91			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	201	4507	83	22	3261	125	1445	97	194			
Grp Volume(v), veh/h	578	559	607	337	0	318	322	0	0			
Grp Sat Flow(s),veh/h/ln	1572	1543	1675	1749	0	1659	1736	0	0			
Q Serve(g_s), s	19.3	26.2	26.3	0.0	0.0	1.9	12.1	0.0	0.0			
Cycle Q Clear(g_c), s	25.7	26.2	26.3	1.7	0.0	1.9	12.1	0.0	0.0			
Prop In Lane	0.15		0.05	0.04		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	781	725	787	842	0	780	816	0	0			
V/C Ratio(X)	0.74	0.77	0.77	0.40	0.00	0.41	0.39	0.00	0.00			
Avail Cap(c_a), veh/h	781	725	787	842	0	780	816	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.4	14.8	14.9	1.7	0.0	1.7	17.3	0.0	0.0			
Incr Delay (d2), s/veh	6.2	7.8	7.2	1.4	0.0	1.6	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	12.5	13.5	1.1	0.0	1.1	6.1	0.0	0.0			
LnGrp Delay(d),s/veh	20.6	22.6	22.1	3.1	0.0	3.3	18.8	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1744			655			322				
Approach Delay, s/veh		21.8			3.2			18.8				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		28.3		14.1		3.9		
Green Ext Time (p_c), s		10.9		0.0		17.6		

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	30	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1028	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1175	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2351	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1028	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1116	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1650			1190						350	
Approach Delay, s/veh		124.7			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	16	37	733	13	236	0	313	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	23	53	1047	19	337	0	447	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	2715	34	74	1823	33	333	0	530	141	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4721	59	3	3171	58	1153	0	1583	939	0	1583
Grp Volume(v), veh/h	644	597	652	53	509	557	337	0	447	117	0	223
Grp Sat Flow(s),veh/h/ln	1641	1543	1685	3	1543	1685	1153	0	1583	939	0	1583
Q Serve(g_s), s	7.9	26.8	26.9	26.4	0.0	0.0	22.6	0.0	26.2	7.3	0.0	10.9
Cycle Q Clear(g_c), s	24.5	26.8	26.9	26.4	0.0	0.0	33.5	0.0	26.2	33.5	0.0	10.9
Prop In Lane	0.08		0.04	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
V/C Ratio(X)	0.66	0.67	0.67	0.00	0.57	0.57	1.01	0.00	0.84	0.83	0.00	0.42
Avail Cap(c_a), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	14.7	14.7	0.0	0.0	0.0	41.1	0.0	30.8	47.8	0.0	25.7
Incr Delay (d2), s/veh	3.4	4.1	3.7	0.0	2.5	2.3	52.7	0.0	11.8	32.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	12.3	13.3	0.0	0.6	0.6	14.0	0.0	13.2	4.5	0.0	4.8
LnGrp Delay(d),s/veh	17.3	18.8	18.5	0.0	2.5	2.3	94.0	0.0	42.6	80.0	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	F		C
Approach Vol, veh/h		1893			1119			784			340	
Approach Delay, s/veh		18.2			2.2			64.7			44.8	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.9		35.5		28.4		35.5
Green Ext Time (p_c), s		13.5		0.0		25.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	206	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	229	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.6
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.327	-	-	-	-	-	0.263
HCM Control Delay (s)	12.6	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1375	917
Stage 1	917	917	-
Stage 2	0	458	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	145	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	203	0	330
Mov Cap-2 Maneuver	203	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	129	43	268	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	143	48	298	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	124	738	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	168	1506	0	0	1266	478
Grp Volume(v), veh/h				551	482	143	346	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1674	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	5.9	0.3	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	5.9	13.7	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	861	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.40	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	861	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.3	16.0	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.3	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.4	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1176			346			361	
Approach Delay, s/veh					24.2			17.4			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.7		25.5		15.4
Green Ext Time (p_c), s				3.3		0.0		3.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	312	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			347	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1376	325	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1449	342	14	166
Grp Volume(v), veh/h			0	429	415	0
Grp Sat Flow(s),veh/h/ln			0	1791	180	0
Q Serve(g_s), s			0.0	17.9	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.9	1.1	0.0
Prop In Lane				0.19	0.24	
Lane Grp Cap(c), veh/h			0	1702	0	0
V/C Ratio(X)			0.00	0.25	0.00	0.00
Avail Cap(c_a), veh/h			0	1702	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.8	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.4	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	9.0	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.2	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			429			415
Approach Delay, s/veh			8.2			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.9				3.1
Green Ext Time (p_c), s				4.3				4.3

Intersection Summary	
HCM 2010 Ctrl Delay	4.2
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	166	34	371	8	0	8	0	212	3	1	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	184	38	412	9	0	9	0	236	3	1	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	899	11	36	781	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	600	0	1834	23	0	1594	0
Grp Volume(v), veh/h	184	38	412	18	0	0	0	0	239	310	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1201	0	0	0	0	1857	1594	0	0
Q Serve(g_s), s	9.0	1.2	20.9	0.0	0.0	0.0	0.0	0.0	11.3	10.2	0.0	0.0
Cycle Q Clear(g_c), s	9.6	1.2	20.9	0.6	0.0	0.0	0.0	0.0	11.3	10.2	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.01	0.00		0.00
Lane Grp Cap(c), veh/h	637	764	645	546	0	0	0	0	910	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.26	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	546	0	0	0	0	910	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.6	17.6	0.0	0.0	0.0	0.0	26.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.1	0.1	4.8	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.9	0.3	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.6	17.9	28.4	17.7	0.0	0.0	0.0	0.0	26.8	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		634			18			239			310	
Approach Delay, s/veh		25.8			17.7			26.8			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.9		13.3		2.6		12.2
Green Ext Time (p_c), s		2.8		1.9		3.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	700	0	0	913	52	0	0	0	495	0	105
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	59	778	0	0	1014	58	0	0	0	550	0	117
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2365	0	0	2034	864	0	2	0	493	0	105
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	233	4267	0	0	3632	1534	0	1863	0	1429	0	304
Grp Volume(v), veh/h	256	581	0	0	1014	58	0	0	0	667	0	0
Grp Sat Flow(s),veh/h/ln	1262	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.23		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	762	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.50	0.07	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	762	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.54	0.54	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	71.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.2	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	99.7	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		837			1072			0			667	
Approach Delay, s/veh		0.6			0.5			0.0			99.7	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.3		0.0		14.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	372	37	934	22	27	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	413	41	1038	24	30	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1426	657	75	1536	35	297	69	356			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2911	1340	75	3135	72	660	154	792			
Grp Volume(v), veh/h	432	475	424	542	0	561	73	0	0			
Grp Sat Flow(s),veh/h/ln	1395	1543	1375	1607	0	1675	1605	0	0			
Q Serve(g_s), s	10.6	1.6	3.1	7.4	0.0	25.7	2.7	0.0	0.0			
Cycle Q Clear(g_c), s	36.3	1.6	3.1	23.3	0.0	25.7	2.7	0.0	0.0			
Prop In Lane	0.08		0.97	0.08		0.04	0.41		0.49			
Lane Grp Cap(c), veh/h	722	756	674	810	0	821	722	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.68	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	722	756	674	810	0	821	722	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.1	0.5	1.1	18.6	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.3	3.6	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.7	1.0	1.4	11.8	0.0	12.3	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.4	4.1	5.1	20.5	0.0	21.7	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1330			1103			73				
Approach Delay, s/veh		4.8			21.1			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.3		4.7		27.7		
Green Ext Time (p_c), s		6.8		0.0		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	751	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	834	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	395	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2205	861				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	577				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	395	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	395	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.3	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1590						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	25	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	28	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	28	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.6	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.7	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.3	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.6	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.6	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	27.9	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			134			604	
Approach Delay, s/veh					20.8			17.6			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.7		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	204	308	858	56	16	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	314	474	1320	86	25	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1915	667	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2297	800	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	606	610	474	677	729	25	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1554	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.4	10.0	100.0	0.0	0.0	1.5	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.4	10.0	100.0	0.0	0.0	3.1	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1296	0	1286	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.13	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1296	0	1286	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.6	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.1	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1531			1880			59			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		11.6		88.4		11.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.1		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	354	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	393	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	538	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	1030	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	1030	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	9.5
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1030	-	-	-	-	-	597
HCM Lane V/C Ratio	0.224	-	-	-	-	-	0.097
HCM Control Delay (s)	9.5	-	-	0	-	-	11.7
HCM Lane LOS	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.9	-	-	-	-	-	0.3

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	52
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	58

Major/Minor	Minor2		
Conflicting Flow All	466	928	466
Stage 1	466	466	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	555	268	597
Stage 1	632	562	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	431	0	597
Mov Cap-2 Maneuver	431	0	-
Stage 1	632	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	11.7
HCM LOS	B

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	89	408	121	84	409	0	0	297	52
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.94	1.00		1.00	1.00		0.95
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				99	453	134	93	454	0	0	330	58
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				253	1224	596	152	700	0	0	810	142
Arrive On Green				0.41	0.41	0.40	0.53	0.53	0.00	0.00	0.53	0.52
Sat Flow, veh/h				617	2985	1490	208	1322	0	0	1529	269
Grp Volume(v), veh/h				294	258	134	547	0	0	0	0	388
Grp Sat Flow(s),veh/h/ln				1832	1770	1490	1530	0	0	0	0	1798
Q Serve(g_s), s				11.3	10.1	5.9	15.5	0.0	0.0	0.0	0.0	13.0
Cycle Q Clear(g_c), s				11.3	10.1	5.9	28.4	0.0	0.0	0.0	0.0	13.0
Prop In Lane				0.34		1.00	0.17		0.00	0.00		0.15
Lane Grp Cap(c), veh/h				751	726	596	853	0	0	0	0	953
V/C Ratio(X)				0.39	0.36	0.22	0.64	0.00	0.00	0.00	0.00	0.41
Avail Cap(c_a), veh/h				751	726	596	853	0	0	0	0	953
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				20.7	20.4	19.8	17.8	0.0	0.0	0.0	0.0	14.1
Incr Delay (d2), s/veh				1.5	1.4	0.9	3.7	0.0	0.0	0.0	0.0	1.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.0	5.1	2.6	12.1	0.0	0.0	0.0	0.0	6.7
LnGrp Delay(d),s/veh				22.3	21.7	20.7	21.5	0.0	0.0	0.0	0.0	15.4
LnGrp LOS				C	C	C	C					B
Approach Vol, veh/h					686			547			388	
Approach Delay, s/veh					21.8			21.5			15.4	
Approach LOS					C			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				56.0		44.0		56.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				51.0		39.0		51.0
Max Q Clear Time (g_c+I1), s				30.4		13.3		15.0
Green Ext Time (p_c), s				4.4		0.0		4.8

Intersection Summary	
HCM 2010 Ctrl Delay	20.1
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	494	220	111	276
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			549	244	123	307
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1151	512	62	132
Arrive On Green			1.00	1.00	1.00	1.00
Sat Flow, veh/h			1212	539	16	136
Grp Volume(v), veh/h			0	793	430	0
Grp Sat Flow(s),veh/h/ln			0	1750	153	0
Q Serve(g_s), s			0.0	0.0	1.5	0.0
Cycle Q Clear(g_c), s			0.0	0.0	1.5	0.0
Prop In Lane				0.31	0.29	
Lane Grp Cap(c), veh/h			0	1663	0	0
V/C Ratio(X)			0.00	0.48	0.00	0.00
Avail Cap(c_a), veh/h			0	1663	0	0
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh			0.0	1.0	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	0.5	0.0	0.0
LnGrp Delay(d),s/veh			0.0	1.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			793			430
Approach Delay, s/veh			1.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				2.0				3.5
Green Ext Time (p_c), s				8.6				8.7

Intersection Summary	
HCM 2010 Ctrl Delay	0.6
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	426	14	166	7	0	7	0	281	6	13	263	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	473	16	184	8	0	8	0	312	7	14	292	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	724	875	740	357	17	320	0	452	10	38	456	0
Arrive On Green	0.47	0.47	0.47	0.47	0.00	0.47	0.00	0.25	0.25	0.43	0.43	0.00
Sat Flow, veh/h	1402	1863	1575	645	36	682	0	1810	41	2	1059	0
Grp Volume(v), veh/h	473	16	184	16	0	0	0	0	319	306	0	0
Grp Sat Flow(s),veh/h/ln	1402	1863	1575	1363	0	0	0	0	1850	1061	0	0
Q Serve(g_s), s	27.3	0.5	7.0	0.0	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Cycle Q Clear(g_c), s	27.8	0.5	7.0	0.5	0.0	0.0	0.0	0.0	15.6	11.7	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.02	0.05		0.00
Lane Grp Cap(c), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
V/C Ratio(X)	0.65	0.02	0.25	0.02	0.00	0.00	0.00	0.00	0.69	0.00	0.00	0.00
Avail Cap(c_a), veh/h	724	875	740	695	0	0	0	0	463	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	21.6	14.2	15.9	14.2	0.0	0.0	0.0	0.0	34.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.0	0.8	0.1	0.0	0.0	0.0	0.0	8.2	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.2	3.2	0.2	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
LnGrp Delay(d),s/veh	26.2	14.2	16.7	14.2	0.0	0.0	0.0	0.0	42.2	0.0	0.0	0.0
LnGrp LOS	C	B	B	B					D			
Approach Vol, veh/h		673			16			319			306	
Approach Delay, s/veh		23.3			14.2			42.2			0.0	
Approach LOS		C			B			D			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		52.0		28.0		52.0		48.0
Change Period (Y+Rc), s		6.0		* 4		6.0		6.0
Max Green Setting (Gmax), s		46.0		* 24		46.0		42.0
Max Q Clear Time (g_c+I1), s		29.8		17.6		2.5		13.7
Green Ext Time (p_c), s		2.8		0.7		3.3		1.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	1329	0	0	663	136	0	0	0	238	0	172
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	211	1621	0	0	809	166	0	0	0	290	0	210
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	324	2269	0	0	2237	955	0	2	0	279	0	202
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.30	0.00	0.30
Sat Flow, veh/h	416	3742	0	0	3632	1539	0	1863	0	972	0	704
Grp Volume(v), veh/h	447	1385	0	0	809	166	0	0	0	500	0	0
Grp Sat Flow(s),veh/h/ln	920	1543	0	0	1770	1539	0	1863	0	1676	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.0	0.0	0.0
Prop In Lane	0.47		0.00	0.00		1.00	0.00		0.00	0.58		0.42
Lane Grp Cap(c), veh/h	632	1950	0	0	2237	955	0	2	0	481	0	0
V/C Ratio(X)	0.71	0.71	0.00	0.00	0.36	0.17	0.00	0.00	0.00	1.04	0.00	0.00
Avail Cap(c_a), veh/h	632	1950	0	0	2237	955	0	193	0	481	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.00	0.00	0.90	0.90	0.00	0.00	0.00	0.96	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.5	0.0	0.0
Incr Delay (d2), s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	50.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.3	0.0	0.0	0.1	0.1	0.0	0.0	0.0	18.2	0.0	0.0
LnGrp Delay(d),s/veh	3.8	1.3	0.0	0.0	0.4	0.4	0.0	0.0	0.0	80.9	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		1832			975			0			500	
Approach Delay, s/veh		1.9			0.4			0.0			80.9	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.0		0.0		71.0		29.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		53.0		8.0		53.0		24.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		27.0
Green Ext Time (p_c), s		29.9		0.0		29.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1461	27	11	557	22	241	16	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	0.97		0.95	1.00		0.91	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	88	1623	30	12	619	24	268	18	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	136	2118	39	48	1533	59	679	46	91			
Arrive On Green	0.63	0.63	0.61	0.92	0.94	0.92	0.47	0.47	0.45			
Sat Flow, veh/h	201	4506	83	22	3262	125	1445	97	194			
Grp Volume(v), veh/h	577	558	606	337	0	318	322	0	0			
Grp Sat Flow(s),veh/h/ln	1572	1543	1675	1750	0	1659	1736	0	0			
Q Serve(g_s), s	19.2	26.1	26.2	0.0	0.0	1.9	12.1	0.0	0.0			
Cycle Q Clear(g_c), s	25.6	26.1	26.2	1.7	0.0	1.9	12.1	0.0	0.0			
Prop In Lane	0.15		0.05	0.04		0.08	0.83		0.11			
Lane Grp Cap(c), veh/h	780	725	787	842	0	780	816	0	0			
V/C Ratio(X)	0.74	0.77	0.77	0.40	0.00	0.41	0.39	0.00	0.00			
Avail Cap(c_a), veh/h	780	725	787	842	0	780	816	0	0			
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00			
Uniform Delay (d), s/veh	14.4	14.8	14.9	1.7	0.0	1.7	17.3	0.0	0.0			
Incr Delay (d2), s/veh	6.2	7.7	7.2	1.4	0.0	1.6	1.4	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	12.5	12.5	13.5	1.1	0.0	1.1	6.1	0.0	0.0			
LnGrp Delay(d),s/veh	20.6	22.6	22.0	3.1	0.0	3.3	18.8	0.0	0.0			
LnGrp LOS	C	C	C	A		A	B					
Approach Vol, veh/h		1741			655			322				
Approach Delay, s/veh		21.7			3.2			18.8				
Approach LOS		C			A			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		50.0		50.0		50.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		45.0		44.0		45.0		
Max Q Clear Time (g_c+I1), s		28.2		14.1		3.9		
Green Ext Time (p_c), s		10.9		0.0		17.6		

Intersection Summary	
HCM 2010 Ctrl Delay	16.9
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	29	905	79	495	497	0	0	0	6	215	94
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	622	0	1027	88	550	552				7	239	104
Adj No. of Lanes	1	0	2	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	392	0	2092	202	1176	707				479	503	405
Arrive On Green	0.14	0.00	0.67	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	0	3122	308	2352	1413				1774	1863	1558
Grp Volume(v), veh/h	622	0	1027	274	364	552				7	239	104
Grp Sat Flow(s),veh/h/ln	1774	0	1561	1117	1543	1413				1774	1863	1558
Q Serve(g_s), s	14.0	0.0	16.2	9.0	15.4	32.0				0.3	10.7	5.3
Cycle Q Clear(g_c), s	14.0	0.0	16.2	13.3	15.4	32.0				0.3	10.7	5.3
Prop In Lane	1.00		1.00	0.32		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	392	0	2092	606	771	707				479	503	405
V/C Ratio(X)	1.59	0.00	0.49	0.45	0.47	0.78				0.01	0.48	0.26
Avail Cap(c_a), veh/h	392	0	2092	606	771	707				479	503	405
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	0.0	8.1	15.2	16.4	20.5				26.8	30.6	29.3
Incr Delay (d2), s/veh	276.8	0.0	0.8	2.4	2.1	8.4				0.1	3.2	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	40.9	0.0	7.1	5.1	7.0	14.1				0.1	6.0	2.5
LnGrp Delay(d),s/veh	316.0	0.0	8.9	17.7	18.4	28.9				26.8	33.8	30.9
LnGrp LOS	F		A	B	B	C				C	C	C
Approach Vol, veh/h		1649			1190						350	
Approach Delay, s/veh		124.8			23.1						32.8	
Approach LOS		F			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	16.0	34.0				18.2		12.7
Green Ext Time (p_c), s	0.0	5.5				12.7		1.1

Intersection Summary	
HCM 2010 Ctrl Delay	76.7
HCM 2010 LOS	E

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	141	131	12	28	282	0	0	360	73
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				157	146	13	31	313	0	0	400	81
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	351	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	910	1863	0	0	1863	1583
Grp Volume(v), veh/h				157	146	13	31	313	0	0	400	81
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	910	1863	0	0	1863	1583
Q Serve(g_s), s				5.4	4.7	0.5	2.4	11.0	0.0	0.0	14.9	2.9
Cycle Q Clear(g_c), s				5.4	4.7	0.5	17.4	11.0	0.0	0.0	14.9	2.9
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	351	848	0	0	848	720
V/C Ratio(X)				0.20	0.18	0.02	0.09	0.37	0.00	0.00	0.47	0.11
Avail Cap(c_a), veh/h				789	829	705	351	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.9	16.7	15.5	24.9	17.9	0.0	0.0	18.9	15.7
Incr Delay (d2), s/veh				0.6	0.5	0.0	0.5	1.2	0.0	0.0	1.9	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.7	2.5	0.2	0.7	5.9	0.0	0.0	8.1	1.3
LnGrp Delay(d),s/veh				17.5	17.2	15.6	25.4	19.1	0.0	0.0	20.8	16.0
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					316			344			481	
Approach Delay, s/veh					17.3			19.7			20.0	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				19.4		7.4		16.9
Green Ext Time (p_c), s				5.3		0.9		5.4

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	1273	16	37	733	13	236	0	313	82	0	156
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	51	1819	23	53	1047	19	337	0	447	117	0	223
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	89	2715	34	74	1823	33	333	0	530	141	0	530
Arrive On Green	0.57	0.57	0.57	1.00	1.00	1.00	0.34	0.00	0.34	0.34	0.00	0.34
Sat Flow, veh/h	88	4721	59	3	3171	58	1153	0	1583	939	0	1583
Grp Volume(v), veh/h	644	597	652	53	509	557	337	0	447	117	0	223
Grp Sat Flow(s),veh/h/ln	1641	1543	1685	3	1543	1685	1153	0	1583	939	0	1583
Q Serve(g_s), s	7.9	26.8	26.9	26.4	0.0	0.0	22.6	0.0	26.2	7.3	0.0	10.9
Cycle Q Clear(g_c), s	24.5	26.8	26.9	26.4	0.0	0.0	33.5	0.0	26.2	33.5	0.0	10.9
Prop In Lane	0.08		0.04	1.00		0.03	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
V/C Ratio(X)	0.66	0.67	0.67	0.00	0.57	0.57	1.01	0.00	0.84	0.83	0.00	0.42
Avail Cap(c_a), veh/h	982	887	969	0	887	969	333	0	530	141	0	530
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.91	0.91	0.91	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.9	14.7	14.7	0.0	0.0	0.0	41.1	0.0	30.8	47.8	0.0	25.7
Incr Delay (d2), s/veh	3.4	4.1	3.7	0.0	2.5	2.3	52.7	0.0	11.8	32.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	12.3	13.3	0.0	0.6	0.6	14.0	0.0	13.2	4.5	0.0	4.8
LnGrp Delay(d),s/veh	17.3	18.8	18.5	0.0	2.5	2.3	94.0	0.0	42.6	80.0	0.0	26.3
LnGrp LOS	B	B	B		A	A	F		D	F		C
Approach Vol, veh/h		1893			1119			784			340	
Approach Delay, s/veh		18.2			2.2			64.7			44.8	
Approach LOS		B			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		62.0		38.0		62.0		38.0
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		43.5		33.5		57.5		33.5
Max Q Clear Time (g_c+I1), s		28.9		35.5		28.4		35.5
Green Ext Time (p_c), s		13.5		0.0		25.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR
Vol, veh/h	0	0	0	0	760	130	208	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	844	144	231	0	0

Major/Minor	Major2			Major1		
Conflicting Flow All	0	0	0	989	0	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-
Pot Cap-1 Maneuver	-	-	-	699	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Platoon blocked, %		-	-		-	-
Mov Cap-1 Maneuver	-	-	-	699	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB
HCM Control Delay, s	0	12.7
HCM LOS		

Minor Lane/Major Mvmt	NBL	NBT	NBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	699	-	-	-	-	-	330
HCM Lane V/C Ratio	0.331	-	-	-	-	-	0.263
HCM Control Delay (s)	12.7	-	-	0	-	-	19.8
HCM Lane LOS	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	-	-	-	-	-	1

Intersection	
Int Delay, s/veh	

Movement	SBL	SBT	SBR
Vol, veh/h	0	0	78
Conflicting Peds, #/hr	0	0	0
Sign Control	Stop	Stop	Stop
RT Channelized	-	-	None
Storage Length	-	-	0
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	90	90	90
Heavy Vehicles, %	2	2	2
Mvmt Flow	0	0	87

Major/Minor	Minor2		
Conflicting Flow All	917	1379	917
Stage 1	917	917	-
Stage 2	0	462	-
Critical Hdwy	6.42	6.52	6.22
Critical Hdwy Stg 1	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	3.518	4.018	3.318
Pot Cap-1 Maneuver	302	144	330
Stage 1	390	351	-
Stage 2	-	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	202	0	330
Mov Cap-2 Maneuver	202	0	-
Stage 1	390	0	-
Stage 2	-	0	-

Approach	SB
HCM Control Delay, s	19.8
HCM LOS	C

Minor Lane/Major Mvmt

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	794	131	43	257	0	0	236	89
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		0.95	1.00		1.00	1.00		0.94
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				190.0	186.3	186.3	190.0	186.3	0.0	0.0	186.3	190.0
Adj Flow Rate, veh/h				151	882	146	48	286	0	0	262	99
Adj No. of Lanes				0	2	1	0	1	0	0	1	0
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				227	1396	659	126	725	0	0	620	234
Arrive On Green				0.45	0.45	0.44	0.49	0.49	0.00	0.00	0.49	0.48
Sat Flow, veh/h				504	3103	1499	174	1479	0	0	1266	478
Grp Volume(v), veh/h				551	482	146	334	0	0	0	0	361
Grp Sat Flow(s),veh/h/ln				1838	1770	1499	1653	0	0	0	0	1744
Q Serve(g_s), s				23.5	20.6	6.0	0.4	0.0	0.0	0.0	0.0	13.4
Cycle Q Clear(g_c), s				23.5	20.6	6.0	13.8	0.0	0.0	0.0	0.0	13.4
Prop In Lane				0.27		1.00	0.14		0.00	0.00		0.27
Lane Grp Cap(c), veh/h				827	796	659	851	0	0	0	0	855
V/C Ratio(X)				0.67	0.61	0.22	0.39	0.00	0.00	0.00	0.00	0.42
Avail Cap(c_a), veh/h				827	796	659	851	0	0	0	0	855
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00
Uniform Delay (d), s/veh				21.6	20.8	17.4	15.9	0.0	0.0	0.0	0.0	16.5
Incr Delay (d2), s/veh				4.2	3.4	0.8	1.4	0.0	0.0	0.0	0.0	1.5
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				12.9	10.8	2.6	6.0	0.0	0.0	0.0	0.0	6.8
LnGrp Delay(d),s/veh				25.8	24.2	18.1	17.2	0.0	0.0	0.0	0.0	18.0
LnGrp LOS				C	C	B	B					B
Approach Vol, veh/h					1179			334			361	
Approach Delay, s/veh					24.2			17.2			18.0	
Approach LOS					C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				52.0		48.0		52.0
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				47.0		43.0		47.0
Max Q Clear Time (g_c+I1), s				15.8		25.5		15.4
Green Ext Time (p_c), s				3.2		0.0		3.2

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	0	0	301	74	89	284
Number			4	14	3	8
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				0.97	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			186.3	190.0	190.0	186.3
Adj Flow Rate, veh/h			334	82	99	316
Adj No. of Lanes			1	0	0	1
Peak Hour Factor			0.90	0.90	0.90	0.90
Percent Heavy Veh, %			2	2	2	2
Cap, veh/h			1365	335	58	161
Arrive On Green			0.31	0.31	1.00	1.00
Sat Flow, veh/h			1436	353	14	166
Grp Volume(v), veh/h			0	416	415	0
Grp Sat Flow(s),veh/h/ln			0	1789	180	0
Q Serve(g_s), s			0.0	17.3	1.1	0.0
Cycle Q Clear(g_c), s			0.0	17.3	1.1	0.0
Prop In Lane				0.20	0.24	
Lane Grp Cap(c), veh/h			0	1700	0	0
V/C Ratio(X)			0.00	0.24	0.00	0.00
Avail Cap(c_a), veh/h			0	1700	0	0
HCM Platoon Ratio			0.33	0.33	2.00	2.00
Upstream Filter(I)			0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh			0.0	7.7	0.0	0.0
Incr Delay (d2), s/veh			0.0	0.3	0.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.0	8.7	0.0	0.0
LnGrp Delay(d),s/veh			0.0	8.0	0.0	0.0
LnGrp LOS				A		
Approach Vol, veh/h			416			415
Approach Delay, s/veh			8.0			0.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4				8
Phs Duration (G+Y+Rc), s				100.0				100.0
Change Period (Y+Rc), s				* 6				6.0
Max Green Setting (Gmax), s				* 74				94.0
Max Q Clear Time (g_c+I1), s				19.3				3.1
Green Ext Time (p_c), s				4.2				4.2

Intersection Summary	
HCM 2010 Ctrl Delay	4.0
HCM 2010 LOS	A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	168	34	369	8	0	8	0	199	8	6	278	0
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0	0.0	186.3	190.0	190.0	186.3	0.0
Adj Flow Rate, veh/h	187	38	410	9	0	9	0	221	9	7	309	0
Adj No. of Lanes	1	1	1	0	1	0	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	0
Cap, veh/h	637	764	645	283	17	246	0	869	35	37	625	0
Arrive On Green	0.41	0.41	0.41	0.41	0.00	0.41	0.00	0.16	0.16	0.49	0.49	0.00
Sat Flow, veh/h	1400	1863	1574	559	42	601	0	1773	72	1	1275	0
Grp Volume(v), veh/h	187	38	410	18	0	0	0	0	230	316	0	0
Grp Sat Flow(s),veh/h/ln	1400	1863	1574	1202	0	0	0	0	1845	1276	0	0
Q Serve(g_s), s	9.2	1.2	20.8	0.0	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Cycle Q Clear(g_c), s	9.8	1.2	20.8	0.6	0.0	0.0	0.0	0.0	10.9	10.6	0.0	0.0
Prop In Lane	1.00		1.00	0.50		0.50	0.00		0.04	0.02		0.00
Lane Grp Cap(c), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
V/C Ratio(X)	0.29	0.05	0.64	0.03	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00
Avail Cap(c_a), veh/h	637	764	645	547	0	0	0	0	904	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	20.5	17.8	23.5	17.6	0.0	0.0	0.0	0.0	25.9	0.0	0.0	0.0
Incr Delay (d2), s/veh	1.2	0.1	4.7	0.1	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.7	9.8	0.3	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0
LnGrp Delay(d),s/veh	21.7	17.9	28.3	17.7	0.0	0.0	0.0	0.0	26.6	0.0	0.0	0.0
LnGrp LOS	C	B	C	B					C			
Approach Vol, veh/h		635			18			230			316	
Approach Delay, s/veh		25.7			17.7			26.6			0.0	
Approach LOS		C			B			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		46.0		54.0		46.0		54.0
Change Period (Y+Rc), s		6.0		* 6		6.0		6.0
Max Green Setting (Gmax), s		40.0		* 28		40.0		48.0
Max Q Clear Time (g_c+I1), s		22.8		12.9		2.6		12.6
Green Ext Time (p_c), s		2.8		2.0		3.2		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	53	700	0	0	913	50	0	0	0	495	0	105
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.97	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	186.3	190.0	186.3	190.0	190.0	186.3	190.0
Adj Flow Rate, veh/h	59	778	0	0	1014	56	0	0	0	550	0	117
Adj No. of Lanes	0	3	0	0	2	1	0	1	0	0	1	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	185	2365	0	0	2034	864	0	2	0	493	0	105
Arrive On Green	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.36	0.00	0.36
Sat Flow, veh/h	233	4268	0	0	3632	1534	0	1863	0	1429	0	304
Grp Volume(v), veh/h	256	581	0	0	1014	56	0	0	0	667	0	0
Grp Sat Flow(s),veh/h/ln	1263	1543	0	0	1770	1534	0	1863	0	1732	0	0
Q Serve(g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
Prop In Lane	0.23		0.00	0.00		1.00	0.00		0.00	0.82		0.18
Lane Grp Cap(c), veh/h	762	1773	0	0	2034	864	0	2	0	597	0	0
V/C Ratio(X)	0.34	0.33	0.00	0.00	0.50	0.06	0.00	0.00	0.00	1.12	0.00	0.00
Avail Cap(c_a), veh/h	762	1773	0	0	2034	864	0	193	0	597	0	0
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.00	0.00	0.55	0.55	0.00	0.00	0.00	0.91	0.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.0	0.0	0.0
Incr Delay (d2), s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	71.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	26.2	0.0	0.0
LnGrp Delay(d),s/veh	1.0	0.4	0.0	0.0	0.5	0.1	0.0	0.0	0.0	99.7	0.0	0.0
LnGrp LOS	A	A			A	A				F		
Approach Vol, veh/h		837			1070			0			667	
Approach Delay, s/veh		0.6			0.5			0.0			99.7	
Approach LOS		A			A						F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		66.0		0.0		66.0		34.0
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		48.0		8.0		48.0		29.0
Max Q Clear Time (g_c+I1), s		2.0		0.0		2.0		32.0
Green Ext Time (p_c), s		14.3		0.0		14.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	26.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	793	372	37	932	22	27	6	32	0	0	0
Number	5	2	12	1	6	16	7	4	14			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		0.95	0.99		0.92	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	190.0	186.3	190.0			
Adj Flow Rate, veh/h	36	881	413	41	1036	24	30	7	36			
Adj No. of Lanes	0	3	0	0	2	0	0	1	0			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90			
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	0			
Cap, veh/h	69	1427	657	76	1536	35	297	69	356			
Arrive On Green	0.98	0.98	0.96	0.48	0.49	0.48	0.45	0.45	0.43			
Sat Flow, veh/h	61	2912	1341	75	3134	72	660	154	792			
Grp Volume(v), veh/h	432	474	423	541	0	560	73	0	0			
Grp Sat Flow(s),veh/h/ln	1397	1543	1374	1606	0	1675	1605	0	0			
Q Serve(g_s), s	10.5	1.6	3.1	7.3	0.0	25.7	2.7	0.0	0.0			
Cycle Q Clear(g_c), s	36.1	1.6	3.1	23.2	0.0	25.7	2.7	0.0	0.0			
Prop In Lane	0.08		0.98	0.08		0.04	0.41		0.49			
Lane Grp Cap(c), veh/h	724	756	673	810	0	821	722	0	0			
V/C Ratio(X)	0.60	0.63	0.63	0.67	0.00	0.68	0.10	0.00	0.00			
Avail Cap(c_a), veh/h	724	756	673	810	0	821	722	0	0			
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.91	0.91	0.91	0.45	0.00	0.45	1.00	0.00	0.00			
Uniform Delay (d), s/veh	2.1	0.5	1.1	18.5	0.0	19.6	16.1	0.0	0.0			
Incr Delay (d2), s/veh	3.3	3.6	4.0	2.0	0.0	2.1	0.3	0.0	0.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.5	1.0	1.4	11.8	0.0	12.3	1.2	0.0	0.0			
LnGrp Delay(d),s/veh	5.3	4.1	5.1	20.5	0.0	21.6	16.4	0.0	0.0			
LnGrp LOS	A	A	A	C		C	B					
Approach Vol, veh/h		1330			1101			73				
Approach Delay, s/veh		4.8			21.1			16.4				
Approach LOS		A			C			B				

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		52.0		48.0		52.0		
Change Period (Y+Rc), s		5.0		6.0		5.0		
Max Green Setting (Gmax), s		47.0		42.0		47.0		
Max Q Clear Time (g_c+I1), s		38.1		4.7		27.7		
Green Ext Time (p_c), s		6.9		0.0		12.5		

Intersection Summary	
HCM 2010 Ctrl Delay	12.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	138	152	541	387	750	293	0	0	0	42	303	241
Number	1	6	16	5	2	12				3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.98				1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	190.0	186.3	190.0				186.3	186.3	186.3
Adj Flow Rate, veh/h	153	493	385	430	833	326				47	337	268
Adj No. of Lanes	1	1	1	0	3	0				1	1	1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90				0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2				2	2	2
Cap, veh/h	396	1248	1046	385	1102	431				479	503	405
Arrive On Green	0.23	1.00	1.00	0.50	0.50	0.50				0.27	0.27	0.26
Sat Flow, veh/h	1774	1863	1561	626	2204	862				1774	1863	1558
Grp Volume(v), veh/h	153	493	385	430	583	576				47	337	268
Grp Sat Flow(s),veh/h/ln	1774	1863	1561	626	1543	1523				1774	1863	1558
Q Serve(g_s), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Cycle Q Clear(g_c), s	0.0	0.0	0.0	50.0	30.4	30.4				2.0	16.1	15.4
Prop In Lane	1.00		1.00	1.00		0.57				1.00		1.00
Lane Grp Cap(c), veh/h	396	1248	1046	385	771	762				479	503	405
V/C Ratio(X)	0.39	0.40	0.37	1.12	0.76	0.76				0.10	0.67	0.66
Avail Cap(c_a), veh/h	396	1248	1046	385	771	762				479	503	405
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	29.1	0.0	0.0	29.7	20.1	20.1				27.4	32.5	33.1
Incr Delay (d2), s/veh	2.8	0.9	1.0	81.6	6.8	6.9				0.4	6.9	8.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.3	19.3	14.2	14.1				1.0	9.2	7.6
LnGrp Delay(d),s/veh	32.0	0.9	1.0	111.3	26.9	27.0				27.8	39.5	41.3
LnGrp LOS	C	A	A	F	C	C				C	D	D
Approach Vol, veh/h		1031			1589						652	
Approach Delay, s/veh		5.6			49.8						39.4	
Approach LOS		A			D						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	17.0	53.0				70.0		30.0
Change Period (Y+Rc), s	5.0	5.0				5.0		5.0
Max Green Setting (Gmax), s	12.0	48.0				65.0		25.0
Max Q Clear Time (g_c+I1), s	2.0	52.0				2.0		18.1
Green Ext Time (p_c), s	3.5	0.0				5.4		1.7

Intersection Summary	
HCM 2010 Ctrl Delay	33.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	367	407	13	25	95	0	0	464	79
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				408	452	14	28	106	0	0	516	88
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				825	866	720	294	885	0	0	885	736
Arrive On Green				0.47	0.47	0.46	0.47	0.47	0.00	0.00	0.47	0.47
Sat Flow, veh/h				1774	1863	1583	812	1863	0	0	1863	1583
Grp Volume(v), veh/h				408	452	14	28	106	0	0	516	88
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	812	1863	0	0	1863	1583
Q Serve(g_s), s				16.0	17.1	0.5	2.6	3.2	0.0	0.0	20.1	3.1
Cycle Q Clear(g_c), s				16.0	17.1	0.5	22.7	3.2	0.0	0.0	20.1	3.1
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				825	866	720	294	885	0	0	885	736
V/C Ratio(X)				0.49	0.52	0.02	0.10	0.12	0.00	0.00	0.58	0.12
Avail Cap(c_a), veh/h				825	866	720	294	885	0	0	885	736
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				18.6	18.9	15.0	27.3	14.6	0.0	0.0	19.1	15.2
Incr Delay (d2), s/veh				2.1	2.2	0.0	0.6	0.3	0.0	0.0	2.8	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				8.3	9.3	0.2	0.6	1.7	0.0	0.0	11.0	1.4
LnGrp Delay(d),s/veh				20.7	21.1	15.0	27.9	14.9	0.0	0.0	21.9	15.5
LnGrp LOS				C	C	B	C	B			C	B
Approach Vol, veh/h					874			134			604	
Approach Delay, s/veh					20.8			17.6			20.9	
Approach LOS					C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				24.7		19.1		22.1
Green Ext Time (p_c), s				4.5		2.8		4.6

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	205	586	204	308	858	56	16	0	22	15	0	20
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	186.3	190.0	190.0	186.3	190.0	186.3	186.3	190.0	186.3	186.3	190.0
Adj Flow Rate, veh/h	315	902	314	474	1320	86	25	0	34	23	0	31
Adj No. of Lanes	0	3	0	0	3	0	1	1	0	1	1	0
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	1915	667	84	2508	163	191	0	118	157	0	118
Arrive On Green	0.81	0.83	0.81	1.00	1.00	1.00	0.10	0.00	0.09	0.07	0.00	0.07
Sat Flow, veh/h	381	2297	800	2	3008	196	1373	0	1583	1369	0	1583
Grp Volume(v), veh/h	315	606	610	474	677	729	25	0	34	23	0	31
Grp Sat Flow(s),veh/h/ln	381	1543	1554	2	1543	1661	1373	0	1583	1369	0	1583
Q Serve(g_s), s	71.0	9.4	10.0	100.0	0.0	0.0	1.5	0.0	1.8	1.4	0.0	1.6
Cycle Q Clear(g_c), s	71.0	9.4	10.0	100.0	0.0	0.0	3.1	0.0	1.8	3.2	0.0	1.6
Prop In Lane	1.00		0.51	1.00		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	392	1286	1296	0	1286	1385	191	0	118	157	0	118
V/C Ratio(X)	0.80	0.47	0.47	0.00	0.53	0.53	0.13	0.00	0.29	0.15	0.00	0.26
Avail Cap(c_a), veh/h	392	1286	1296	0	1286	1385	386	0	344	352	0	344
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.80	0.80	0.80	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.7	2.0	2.2	0.0	0.0	0.0	37.8	0.0	37.8	39.8	0.0	38.2
Incr Delay (d2), s/veh	16.0	1.2	1.2	0.0	1.2	1.1	0.3	0.0	1.3	0.4	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.6	4.3	4.5	0.0	0.4	0.4	0.6	0.0	0.8	0.6	0.0	0.7
LnGrp Delay(d),s/veh	24.7	3.2	3.4	0.0	1.2	1.1	38.1	0.0	39.1	40.2	0.0	39.4
LnGrp LOS	C	A	A		A	A	D		D	D		D
Approach Vol, veh/h		1531			1880			59			54	
Approach Delay, s/veh		7.7			0.9			38.7			39.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		88.4		11.6		88.4		11.6
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0
Max Green Setting (Gmax), s		45.0		19.0		71.0		19.0
Max Q Clear Time (g_c+I1), s		73.0		5.1		102.0		5.2
Green Ext Time (p_c), s		0.0		0.4		0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	5.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	0	540	125	0	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	600	139	0	56

Major/Minor	Major2		Minor2	
Conflicting Flow All	-	0	669	669
Stage 1	-	-	669	-
Stage 2	-	-	0	-
Critical Hdwy	-	-	7.12	6.22
Critical Hdwy Stg 1	-	-	6.12	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	-	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	371	458
Stage 1	-	-	447	-
Stage 2	-	-	-	-
Platoon blocked, %	-	-		
Mov Cap-1 Maneuver	-	-	371	458
Mov Cap-2 Maneuver	-	-	371	-
Stage 1	-	-	447	-
Stage 2	-	-	-	-

Approach	WB	SB
HCM Control Delay, s	0	13.9
HCM LOS		B

Minor Lane/Major Mvmt	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	458
HCM Lane V/C Ratio	-	-	0.121
HCM Control Delay (s)	-	-	13.9
HCM Lane LOS	-	-	B
HCM 95th %tile Q(veh)	-	-	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	136	126	12	27	271	0	0	346	70
Number				1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				186.3	186.3	186.3	186.3	186.3	0.0	0.0	186.3	186.3
Adj Flow Rate, veh/h				151	140	13	30	301	0	0	384	78
Adj No. of Lanes				1	1	1	1	1	0	0	1	1
Peak Hour Factor				0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %				2	2	2	2	2	0	0	2	2
Cap, veh/h				789	829	705	362	848	0	0	848	720
Arrive On Green				0.44	0.44	0.44	0.46	0.46	0.00	0.00	0.46	0.46
Sat Flow, veh/h				1774	1863	1583	926	1863	0	0	1863	1583
Grp Volume(v), veh/h				151	140	13	30	301	0	0	384	78
Grp Sat Flow(s),veh/h/ln				1774	1863	1583	926	1863	0	0	1863	1583
Q Serve(g_s), s				5.2	4.5	0.5	2.3	10.5	0.0	0.0	14.2	2.8
Cycle Q Clear(g_c), s				5.2	4.5	0.5	16.5	10.5	0.0	0.0	14.2	2.8
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				789	829	705	362	848	0	0	848	720
V/C Ratio(X)				0.19	0.17	0.02	0.08	0.36	0.00	0.00	0.45	0.11
Avail Cap(c_a), veh/h				789	829	705	362	848	0	0	848	720
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	1.00
Uniform Delay (d), s/veh				16.8	16.7	15.5	24.4	17.7	0.0	0.0	18.7	15.6
Incr Delay (d2), s/veh				0.5	0.4	0.0	0.4	1.2	0.0	0.0	1.7	0.3
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.6	2.4	0.2	0.6	5.6	0.0	0.0	7.7	1.3
LnGrp Delay(d),s/veh				17.4	17.1	15.6	24.8	18.9	0.0	0.0	20.5	15.9
LnGrp LOS				B	B	B	C	B			C	B
Approach Vol, veh/h					304			331			462	
Approach Delay, s/veh					17.2			19.4			19.7	
Approach LOS					B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6		8
Phs Duration (G+Y+Rc), s				50.5		49.5		50.5
Change Period (Y+Rc), s				5.0		5.0		5.0
Max Green Setting (Gmax), s				45.5		44.5		45.5
Max Q Clear Time (g_c+I1), s				18.5		7.2		16.2
Green Ext Time (p_c), s				5.0		0.9		5.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.9
HCM 2010 LOS	B

APPENDIX D

AIR QUALITY CALCULATIONS

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CONSTRUCTION EMISSIONS - ALTERNATIVE 1

Table 1. Building Demolition - Alternative 1

124,460 SF 6,223 Estimated CY of debris based on 20 SF/CY

				VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2
				g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb	lb	kg
Hydraulic excavator	1,037	86	0.59	0.23	2.57	2.68	0.11	0.40	0.39	595.46	26.56	298.16	310.94	13.19	46.74	45.34	31,332
Loader / Backhoe	1,037	87	0.23	1.07	6.13	5.02	0.14	0.95	0.92	692.77	48.81	280.33	229.71	6.47	43.40	42.10	14,375
air compressor	1,037	49	0.59	0.26	1.41	3.51	0.11	0.23	0.22	536.20	17.35	93.12	231.87	7.13	15.33	14.87	16,075
On-road Equipment	**Cumulative Hours**	**Engine HP**	**Speed (mph)**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
				lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb	lb	lb	lb	lb	lb	kg
Dump Truck (12 CY)	570	230	27	1.66E-03	8.58E-03	3.92E-02	0	1.69E-03	1.64E-03	3	25.54	132.04	603.60	0.28	26.02	25.27	23,612
										Subtotal (lbs):	**118.26**	**803.64**	**1,376.13**	**27.07**	**131.50**	**127.58**	
										Subtotal (kgs):							**85,394**

Table 2. Pavement Demolition - Alternative 1

22,802 SF 467 CY

				VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2
				g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb	lb	kg
Crawler Dozer	55	125	0.58	0.34	1.21	4.08	0.12	0.23	0.22	535.79	3.02	10.61	35.87	1.01	1.99	1.93	2,136
air compressor	55	49	0.59	0.33	2.54	4.53	0.13	0.54	0.53	595.16	1.15	8.91	15.87	0.45	1.90	1.84	946
excavator	13	380	0.59	0.31	2.50	4.51	0.13	0.55	0.54	595.21	2.01	16.04	28.96	0.82	3.55	3.44	3,825
On-road Equipment	**Cumulative Hours**	**Engine HP**	**Speed (mph)**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**
				lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb	lb	lb	lb	lb	lb	kg
Dump Truck	43	230	27	1.66E-03	8.58E-03	3.92E-02	0	1.69E-03	1.64E-03	3	1.93	9.96	45.53	0.02	1.96	1.91	1,781
										Subtotal (lbs):	**8.10**	**35.57**	**80.70**	**2.28**	**7.43**	**7.21**	
										Subtotal (kgs):							**8,689**

Table 3. Site Prep for Alternative 1 170,628 CY excavation 52,165 SY grading

				VOC[1]	CO[1]	NOx[1]	SO_2[1]	PM10[1]	PM2.5[1]	CO_2[1]	VOC	CO	NOx	SO2	PM	PM2.5	CO_2
Off-road Equipment	**Cumulative Hours**	**Engine HP**	**Load Factor**	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	g/hp-hr	lb	lb	lb	lb	lb	lb	kg
Excavator	569	243	0.59	0.34	1.21	4.03	0.12	0.22	0.22	536	61.85	217.48	724.70	20.73	40.07	38.87	43,708
Skid Steer Loader	683	160	0.23	0.38	1.47	4.34	0.12	0.31	0.30	536	21.24	81.45	240.40	6.38	16.92	16.41	13,464
Dozer (Rubber Tired)	618	145	0.59	0.38	1.41	4.17	0.12	0.30	0.29	536	43.90	164.85	486.46	13.43	34.50	33.46	28,322
Scraper Hauler Excavator	556	365	0.58	0.38	1.42	4.19	0.12	0.30	0.29	536	97.90	368.31	1,086.49	29.90	76.95	74.64	63,053
Grader	20	285	0.58	0.34	1.21	4.07	0.12	0.23	0.22	536	2.51	8.80	29.66	0.84	1.64	1.59	1,771
On-road Equipment	**Cumulative Hours**	**Engine HP**	**Speed (mph)**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**CO_2**	**VOC**	**CO**	**NOx**	**SO2**	**PM**	**PM2.5**	**CO_2**
				lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb	lb	lb	lb	lb	lb	kg
Dump Truck (12 CY)	2,713	230	16	1.66E-03	8.58E-03	3.92E-02	0	1.69E-03	1.64E-03	3	73.01	377.45	1,725.49	0.80	74.40	72.25	67,499
										Subtotal (lbs):	**300**	**1,218**	**4,293**	**72**	**244**	**237**	
										Subtotal (kgs):							**217,817**

Table 4. Gravel Work for Alternative 1

1,932 CY

Off-road Equipment	Cumulative Hours	Engine HP	Load Factor	VOC[1] g/hp-hr	CO[1] g/hp-hr	NOx[1] g/hp-hr	SO_2[1] g/hp-hr	PM10[1] g/hp-hr	PM2.5[1] g/hp-hr	CO_2[1] g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM10 lb	PM2.5 lb	CO_2 kg
Dozer	25	185	0.59	0.34	1.21	4.08	0.12	0.23	0.22	536	2.07	7.26	24.55	0.69	1.36	1.32	1,462
Wheel Loader for Spreading	32	87	0.59	0.35	1.25	4.23	0.12	0.24	0.23	536	1	5	15	0	1	1	880
Compactor	98	103	0.43	0.36	1.34	4.45	0.12	0.26	0.25	536	3	13	43	1	2	2	2,325
On-road Equipment	**Cumulative Hours**	**Engine HP**	**Speed (mph)**	**VOC[2]** lb/mile	**CO[2]** lb/mile	**NOx[2]** lb/mile	**SO_2[2]** lb/mile	**PM10[2]** lb/mile	**PM2.5[2]** lb/mile	**CO_2[2]** lb/mile	**VOC** lb	**CO** lb	**NOx** lb	**SO2** lb	**PM10** lb	**PM2.5** lb	**CO_2** kg
Dump Truck	326	230	26	1.66E-03	8.58E-03	3.92E-02	1.82E-05	1.69E-03	1.64E-03	3	14.07	72.72	332.43	0.15	14.33	13.92	13,004
										Subtotal (lbs):	**21**	**97**	**415**	**2**	**19**	**18**	
										Subtotal (kgs):							**17,672**

Table 5. Concrete Work for Alternative 1

Foundation Work	56,717	CY
Sidewalks, etc.	18	CY
Total	56,735	CY

Note: Assume all excavated soil is accounted for in Excavate/Fill and Trenching

Equipment	Cumulative Hours	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CO_2 kg
Concrete Mixer (3 to 1 truck)	3,019	3.5	0.43	0.69	3.04	6.17	0.13	0.54	0.52	588	6.89	30.49	61.82	1.27	5.41	5.25	2,673
Concrete Truck	2,730	300	0.43	0.38	1.75	6.18	0.11	0.27	0.26	530	294.70	1,355.41	4,800.07	88.50	208.62	202.36	186,612
										Subtotal (lbs):	**302**	**1,386**	**4,862**	**90**	**214**	**208**	
										Subtotal (kgs):							**189,285**

Table 6. Structure Construction- Alternative 1

191,405 SF new construction + renovation to bldgs 7 & 8

Equipment	Cumulative Hours	Engine HP	Load Factor	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO_2 g/hp-hr	PM10 g/hp-hr	PM2.5 g/hp-hr	CO_2 g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CO_2 kg
Crane	957	330	0.58	0.25	1.22	5.26	0.11	0.21	0.20	530	99.22	492.46	2124.02	46.07	83.88	81.37	97,135
Concrete truck	957	300	0.43	0.19	1.45	4.32	0.12	0.21	0.20	536	51.06	395.88	1175.96	31.40	57.17	55.46	66,203
Diesel Generators	766	40	0.43	0.26	1.41	3.51	0.11	0.23	0.22	536	7.62	40.92	101.90	3.13	6.74	6.53	7,064
Telehandler	1,971	99	0.59	0.51	3.94	4.93	0.13	0.52	0.51	595	129.33	999.95	1251.03	32.46	132.27	128.30	68,456
Scissors Lift	2,297	83	0.59	0.51	3.94	4.93	0.13	0.52	0.51	595	126.33	976.79	1222.05	31.71	129.20	125.33	66,870
Skid steer loader	1,845	67	0.59	1.69	7.97	6.70	0.15	1.19	1.15	691	272.12	1281.13	1076.96	23.89	191.20	185.47	50,387
forklift	570	84	0.59	0.51	3.94	4.93	0.13	0.52	0.51	595	31.73	245.36	306.97	7.97	32.45	31.48	16,797

Table 6. Continued Structure Construction- Alternative 1

On-road Equipment	Cumulative Hours	Engine HP	Speed (mph)	VOC lb/mile	CO lb/mile	NOx lb/mile	SO_2 lb/mile	PM10 lb/mile	PM2.5 lb/mile	CO_2 lb/mile	VOC lb	CO lb	NOx lb	SO2 lb	PM lb	PM2.5 lb	CO_2 kg
Pickup Truck	1,230	400	30	0.00119	0.03467	0.00486	0.00001	0.00020	0.00018	0.40	43.73	1279.47	179.45	0.48	7.26	6.70	6,716
Delivery Truck	615	265	60	1.66E-03	8.58E-03	3.92E-02	0.00002	1.69E-03	1.64E-03	3	61.24	316.58	1447.23	0.67	62.40	60.60	56,614
										Subtotal (lbs):	**822.38**	**6028.54**	**8885.58**	**177.78**	**702.58**	**681.22**	
										Subtotal (kgs):							**436,242**

Table 7. Fugitive Dust Emissions for Alternative 1

Implementation Year	PM_{10} tons/acre/mo	acres	days of disturbance	PM_{10} Total	PM2.5/ PM_{10} Ratio	$PM_{2.5}$ Total
Year 1	0.42	3.35	240	16.9	0.1	1.7
Year 2	0.42	3.35	240	16.9	0.1	1.7
Year 3	0.42	3.35	120	8.5	0.1	0.8

Table 8. Total Construction Emissions for Alternative 1

Year	VOC Tons/yr	CO Tons/yr	NOx Tons/yr	SO_2 Tons/yr	PM10 Tons/yr	PM2.5 Tons/yr	CO_2 M Tons/yr
Year 1	0.3	1.9	4.0	0.1	17.2	1.9	208
Year 2	0.3	1.9	4.0	0.1	17.2	1.9	208
Year 3	0.2	1.0	2.0	0.0	8.6	1.0	104

Sources:

2010 National Estimator, Craftsman Book Company.

Ohio Emergency Management Agency. Appendix F Debris Estimating Guides; pg 2. http://ema.ohio.gov/Documents/DRB/Sample_Plan/APPENDIX_F.doc

EPA NONROAD2008a Model

MOVES (Motor Vehicle Emission Simulator) 2010

WRAP Fugitive Dust Handbook, WGA, 2006

Analysis of the Fine Fraction of Particulate Matter in Fugitive Dust, Final Report, WGA 2005

CONSTRUCTION DETAILS

Project Name	FootPrint (AC)	Clearing (AC)	Grading (sf)	Site Prep - Excavate/Fill (CY)	Building Construction - Total Size (sf)	Building Construction- foundation footprint (sf)	# Stories	Sidewalks (sf)	Gravel Work (CY)	Concrete Work - sidewalks, etc (CY)	Concrete Work - foundation (CY)
BEQ and support facilities (8 story)	2.07	0.00	14,513	16,411	116,101	14,513	8	1,451	538	18	15,856
Parking Garage	0.86	0.00	37,652	42,256	75,304	37,652	2	NA	1,395	NA	40,862
Bldg 8				111,960					592		592
TOTALS			**52,165**	**170,628**	**191,405**	**52,165**	**10**	**1,451**	**2,524**	**18**	**57,310**

	Location	SF	Stories	Demo Bldgs (SF)	Demo asphalt/ concrete (SF)
Demolition - Alternative 1	810 L Street SE	439	3	1,317	
	808 L Street SE	419	3	1,257	
	811 Virginia Ave SE	396	2	792	
	809 Virginia Ave SE	435	2	870	
	821 Virginia Ave SE	6059			6,059
	801 Virginia Ave SE	7648			7,648
	1100 8th St SE	2900	1	2,900	
	Potomac Ave SE	1245			1,245
	815 L St	1711	3	5,133	
	813 L St	73	1	73	
	817 L St	1043	2	2,086	
	L St	25			25
	Potomac Ave SE	1245			1,245
	819 L St	1687	2	3,374	
	1103 9th St SE	630			630
	819 L St	91			91
	Potomac Ave SE	1991			1,991
	811 L St	1550	1	1,550	
	816 Potomac Ave	6396	5	31,980	
	1105 9th St SE	630			630
	823-825 L St	964			964
	9th St SE	2274			2,274
	810-1120 Potomac Ave SE	8598	3	25,794	
	1102-1104 8th St SE	6306	2	12,612	
	TOTALS	**54,755**		**89,738**	**22,802**
		1.26		34,722	
				124,460	