1.0 PURPOSE AND NEED

The Federal Highway Administration (FHWA) in conjunction with the District Department of Transportation (DDOT) are proposing improvements to the Pennsylvania Avenue and Minnesota Avenue Southeast (SE) intersection that would include the transfer of land jurisdiction from National Park Service (NPS) to DDOT. The land transfer would facilitate the proposed reconfiguration of this intersection, also known as the "Twining Square" area in Southeast Washington, DC. This Environmental Assessment (EA) is being prepared by DDOT and the FHWA, in cooperation with the NPS, to fulfill the requirements of the National Environmental Policy Act of 1969 (NEPA). Specifically, this EA covers the proposed improvements to the intersection as initially identified by the District of Columbia's Great Streets Initiative for improvements to Pennsylvania Avenue, SE as set forth in the 2007 *Great Streets Framework Plan* and the 2007 *Revitalization of Pennsylvania Avenue, SE for the Great Streets Initiative Concepts Design Final Report (Great Streets Design Final Report)*. This EA examines the potential impacts of the Proposed Action to this intersection and the surrounding environs.

This EA has been prepared in accordance with NEPA and implementing regulations, the Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), the FHWA's *Environmental Impact and Related Procedures* (23 CFR 771), FHWA *Technical Advisory Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (T6640.8A), NPS *Director's Order #12: Conservation Planning, Environmental Impact Analysis, and Decision-making (DO-12)* and the *DO-12 Handbook* , and DDOT's *Environmental Policy and Process Manual*. If it is determined that there are no significant impacts to resources within the Study Area and an Environmental Impact Statement (EIS) would not be required, decision documents would be prepared by both the FHWA and the NPS that summarize the findings of the EA and provides a concise rationale on how each agency made their final decision.

As shown in **Figure 1-1**, the proposed project is located at the western end of the Pennsylvania Avenue, SE Great Streets corridor at the intersection of Pennsylvania Avenue, SE and Minnesota Avenue, SE, in the immediate vicinity of Twining Square, also referred to as L'Enfant Square in DDOT's *Great Streets Framework Plan and Great Streets Design Final Report* (2007) for Pennsylvania Avenue, SE. As illustrated in **Figure 1-2,** the Study Area is a complex and congested intersection and actually consists of two separate signalized intersections that are separated by approximately 250 feet. The project intersection carries traffic to and from the bridges that cross the Anacostia River, as well as Minnesota Avenue, SE. The Proposed Action includes modifications to the intersection to improve safety, mobility, and connectivity for pedestrians and motorists. A land exchange between NPS and DDOT would be necessary, pending National Capital Planning Commission (NCPC) approval, to carry out the proposed intersection improvements. Proposed improvements would not impact any private right-of-way.

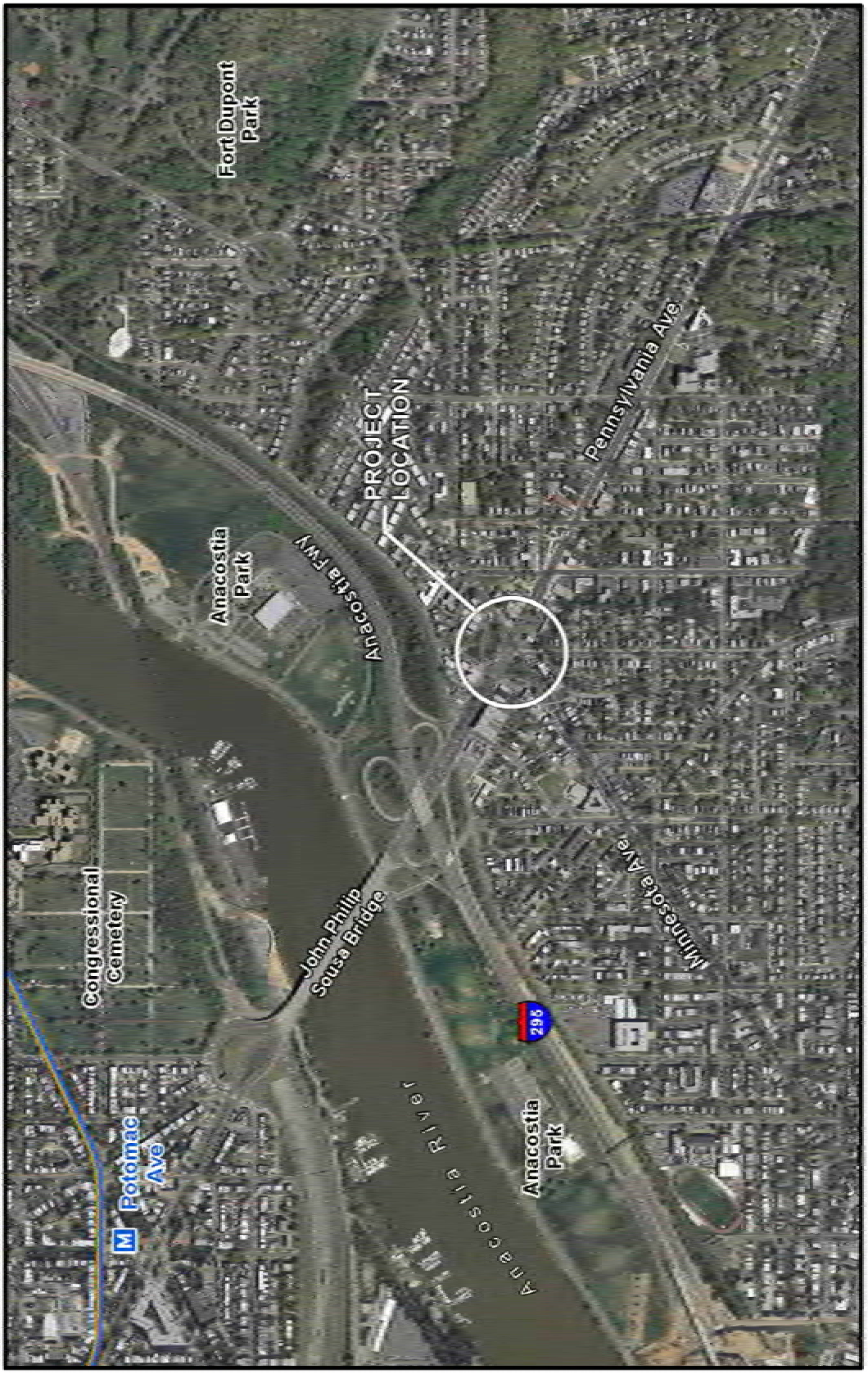


Figure 1-1
Project Location
Environmental Assessment

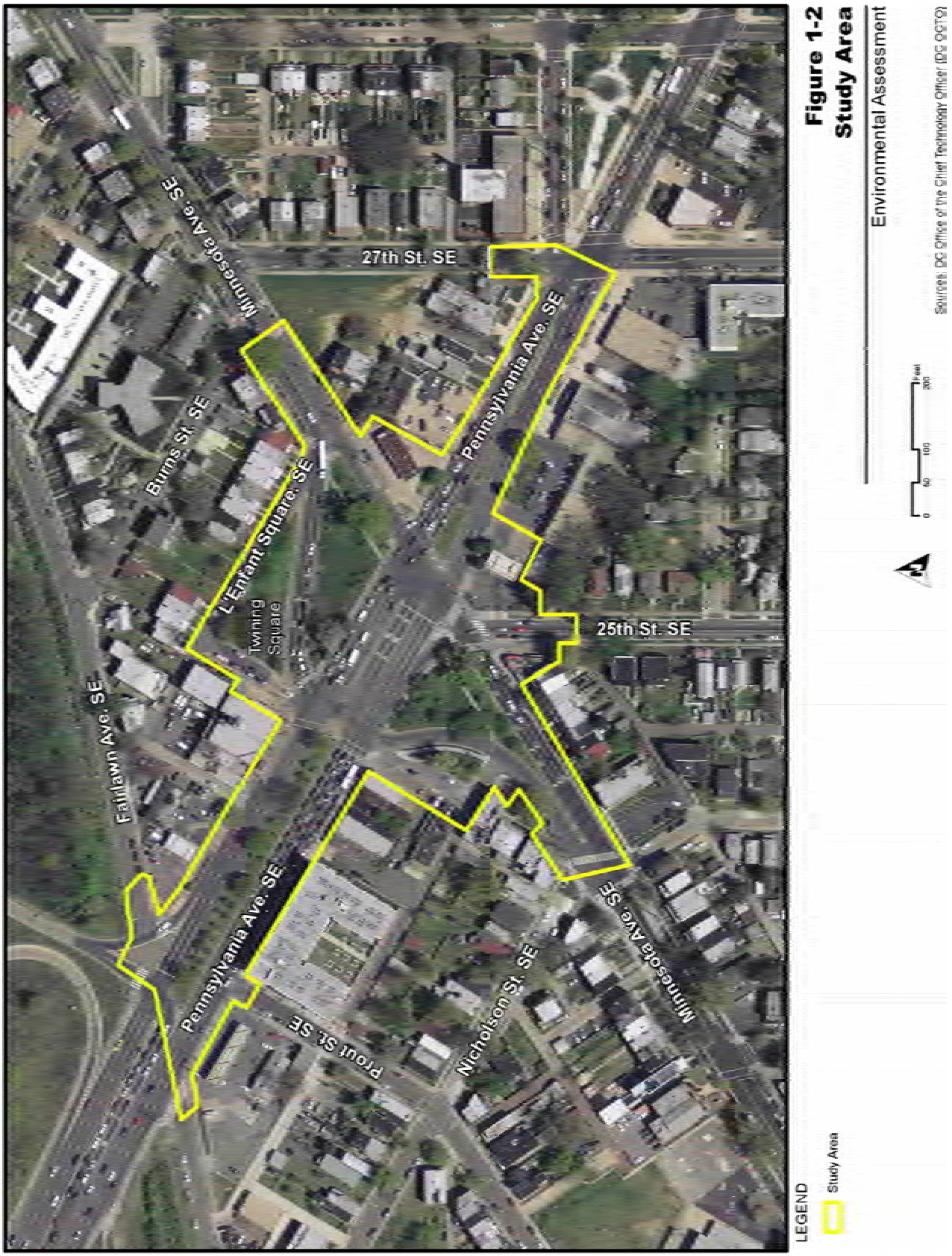


Figure 1-2
Study Area
Environmental Assessment

1.1 Purpose of the Proposed Action

The purpose of the Proposed Action is to provide transportation improvements to the Pennsylvania and Minnesota Avenues, SE intersection in keeping with the District of Columbia's Great Streets Initiative as set forth in the 2007 *Great Streets Framework Plan* and the 2007 *Revitalization of Pennsylvania Avenue, SE for the Great Streets Initiative Concepts Design Final Report (Great Streets Design Final Report).*

For additional information on the Great Streets Initiative principles, program goals, and applicability to the Study Area, see *Section 1.3, Project Overview* and ***Appendix A, Great Streets Design Final Report***.

1.2 Needs for the Proposed Action

The need for the Proposed Action consists of the following:

- Improve pedestrian and vehicular safety;
- Create a consolidated, usable park space;
- Improve multimodal connectivity and access; and
- Support land use and community needs.

1.2.1 Improve Pedestrian and Vehicular Safety

The primary need for the Proposed Action is to improve safety for pedestrians and motorists using this intersection. The Pennsylvania and Minnesota Avenues/25th Street, SE intersection is a complex and congested intersection, which makes it difficult and dangerous to navigate for vehicles and pedestrians. The Study Area intersection consists of two separate signalized intersections that are separated by approximately 250 feet. The western intersection is Pennsylvania Avenue, SE and southbound Minnesota Avenue, SE and the eastern intersection is Pennsylvania Avenue, SE and northbound Minnesota Avenue/25th Street, SE. The intersections have a large number of pedestrian and vehicle "conflict points" under the existing configuration and there is not adequate vehicle storage space to accommodate the eastbound left turns. Compounding the safety issues at this intersection is the fact that motorists cut through the neighborhood streets in the communities surrounding this intersection in order to bypass the traffic congestion.

Vehicular Safety

The Pennsylvania and Minnesota Avenues, SE intersection has a high volume of accidents and injuries, as shown in **Table 1.1**, with a total of 123 reported crashes and 60 reported injuries during the most recent 3-year reporting period (2009-2011). As shown in **Table 1.2**, the majority of accidents (36%) occurred in the evening and overnight hours, between 6:30 PM and 7:30 AM, followed by the morning rush hour between 7:30 AM and 9:30 AM, which made up 18% of accidents. Seventy-six percent (76%) of accidents involved passenger cars while 11% involved trucks and 8% involved buses.[1]

Table 1.1

Accidents and Injuries -
Pennsylvania Ave. and Minnesota Ave, SE.

	2009	2010	2011
Accidents	38	39	46
Injuries	18	15	27

Source: DDOT Accident Summary Report, 2009-2011.

Table 1.2

Accidents Time of Day -
Pennsylvania Ave. and Minnesota Ave, SE.

Time of Day	Accident	Percent
07:30 – 09:30	22	17.9%
09:30 – 11:30	10	8.1%
11:30 – 13:30	12	9.8%
13:30 – 16:00	19	15.4%
16:00 – 18:30	16	13.0%
18:30 – 07:30	44	35.8%

Source: DDOT Accident Summary Report, 2009-2011.

Along Pennsylvania Avenue, SE, crash data collected between 2009 and 2011 indicate that side swipes (31%), right-angle (20%), and rear-end collisions (18%) are the prevalent accident types.[2] As indicated from the accident summaries, the number of accidents can largely be attributed to the congestion of the roadway in the weekday-evening hours. In addition, the rear-end accidents are also a result of stop-and-go conditions. The side-swipe accidents can be attributed to vehicles changing lanes and aggressive driving, while the right-angle accidents largely occur due to congestion and frustration resulting in motorists taking chances to clear the intersection.[3]

Existing intersection geometries and signal phasing are factors contributing to crash occurrences at the intersection. Congested conditions during peak periods and excessively high vehicle speeds during off-peak periods are also contributing factors.[4] Additionally, problems at the intersection are exacerbated by the lack of an interchange movement for motorists traveling from the Anacostia Freeway (I-295) southbound to Pennsylvania Avenue, SE westbound. This causes motorists to make frequent illegal traffic movements at this intersection. In order to reach Pennsylvania Avenue, SE westbound, motorists make illegal U-turns, or make a left turn on Minnesota Avenue, SE northbound followed by a left turn onto Minnesota Avenue southbound.[5]

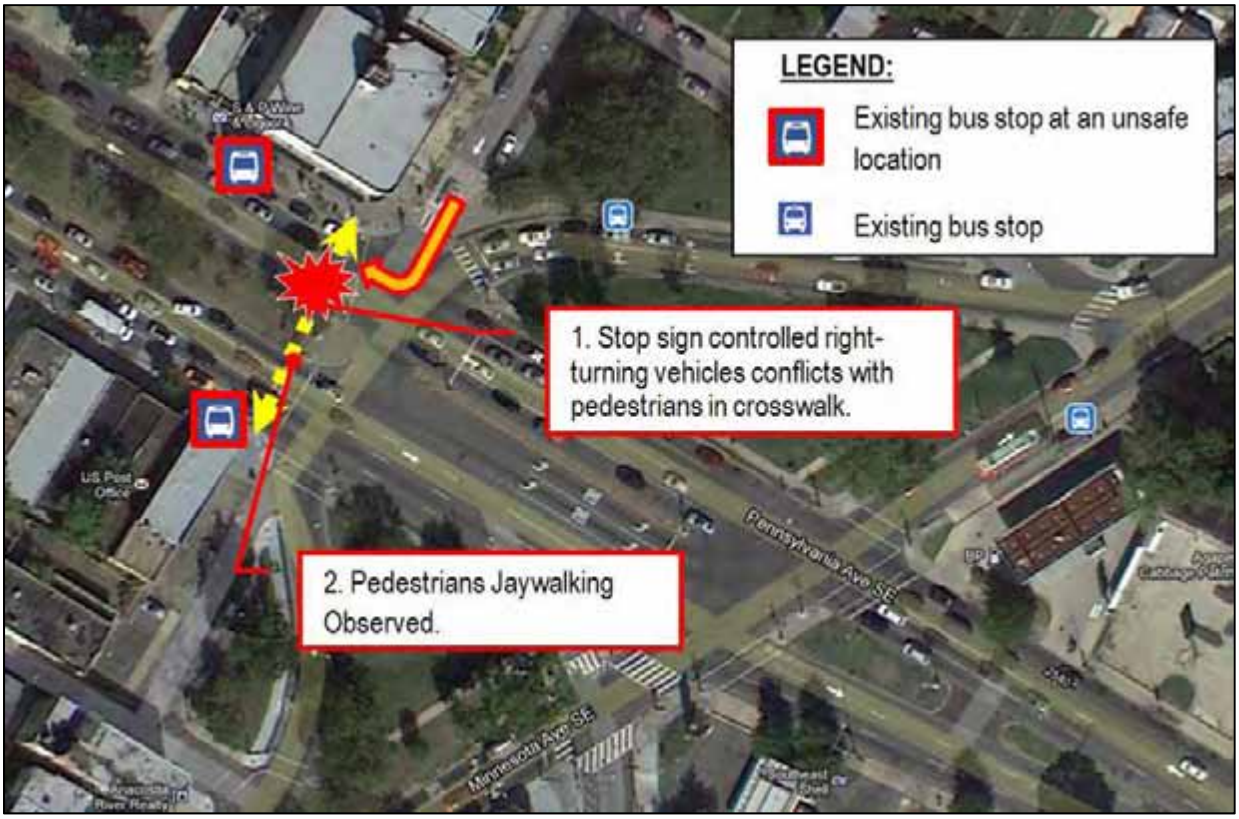
Pedestrian Safety

The intersection is heavily used by pedestrians commuting to and from work or using the bus stops at the intersection. During mid-week field observations January 8th through 10th, 2013, over 150 pedestrians were observed crossing Pennsylvania Avenue, SE. Pedestrians were observed using the west side crosswalk alone to access two heavily used bus stops on Pennsylvania Avenue, SE just west of Twining

Square during both the AM and PM peak hours. Many of the existing crosswalks at the intersection are inconvenient to use due to their locations and long crossing lengths. This discourages pedestrian use, and instead of using the signalized crosswalks provided, pedestrians crossing to and from bus stops and commercial properties choose an unmarked, but more direct route across the medians and lanes of traffic.

Additionally, although an Exclusive Pedestrian Walk Phase is provided in the signal timing to stop all vehicles and only allow pedestrians to cross Pennsylvania Avenue, SE, the vehicles from the unsignalized local driveway still attempt to make abrupt right turns between gaps of pedestrians. Pedestrians frequently jaywalk at this intersection and cross Pennsylvania Avenue, SE without waiting for a Walk indication in order to get to bus stops across the street. A review of the police crash records indicated that five pedestrians were injured at this intersection in the past three years (2010 to 2012); however during field observations during a one-hour AM peak period in March of 2013, three minor pedestrian/vehicle incidents were observed and dismissed without being reporting to the police. See **Figure 1-3** for two of the major safety concerns involving pedestrians at the intersection.

Figure 1-3
Existing Safety Concerns for Pedestrians



Source: Google Maps (background aerial), 2013 and HNTB, 2013.

The District has seen an increasing trend in pedestrian-related crashes in recent years. On average, more than 670 pedestrian injuries occurred annually between 2000 and 2006 in the District. The existing intersection does not conform to the *District of Columbia Pedestrian Master Plan (PMP)* vision and goals for Washington, DC, which states, "Washington, DC will be a city where any trip can be taken on foot safely and comfortably, and where roadways equally serve pedestrians, bicyclists, transit users and

motorists." The primary goals for the PMP include (1) reducing the number of pedestrians killed and injured in crashes with motor vehicles; and (2) to increase pedestrian activity by making walking a comfortable and accessible mode of travel throughout all parts of the District.[6]

The highest pedestrian accident locations along Pennsylvania Avenue, SE were evaluated for the *Great Streets Framework Plan* in 2007. 2002-2004 data showed that the highest number of pedestrian accidents (42 per year) occurred at the Pennsylvania and Minnesota Avenues, SE intersection, whereas other intersections averaged less than 16 pedestrian accidents per year.[7] The same study determined that the highest concentration of people walking to the bus (over 1,500 per day) were in the blocks immediately adjacent to Minnesota Avenue, SE. Additionally, westbound bus pull-offs at Twining Square create considerable blockage of the travel lanes that lead to dangerous motorist and pedestrian movements.[8] Between 2010 and 2012, the subject intersection ranked #45 out of 1,453 intersections with reported pedestrian/bicycle accidents in the District. (See **Table 1.3**).

Table 1.3
Pennsylvania and Minnesota Avenues, SE Intersection Statistics, 2010-2012

	Number
Total # of Intersections with Accidents Reported	1,453
Pennsylvania/Minnesota Ave, SE Intersection Ranking	**#45**
Number of Pedestrian/Cyclist Accidents	4
Number of Pedestrians Injured	5
Number of Cyclists Injured	--

Source: DDOT Correspondence, 2013.

This improvement coincides with Guiding Principle #3 of the Great Streets Program, to "Move – Create a sustainable transportation network, with many travel options." The goal further defines the challenge to "Change the existing 'corridors' function from major vehicular arterials into streets that sustain healthy pedestrian and transit based activities..."[9]

1.2.2 Create a Consolidated, Usable Open Space

Currently, Twining Square (also referred to as L'Enfant Square in the *Great Streets Framework Plan*) is under the jurisdiction of the NPS. The park is fragmented by turn lanes and overburdened bus stops, rendering pedestrian circulation and use both difficult and dangerous. Roadways split the park space into traffic islands or pedestrian refuge areas, and available "green space" is disconnected between busy lanes of traffic. **Figure 1-4** provides an illustration of the project intersection with associated acreages of each of the NPS reservations in Twining Square that would be transferred to DDOT under the Proposed Action. The reservations consist of (clock-wise from top left): 0.27 acres, 0.49 acres, 0.34 acre and 0.06 acres of grassed area, totaling approximately 1.2 acres of park. Additionally, the roadway medians to the east and west of the intersection (Lot Numbers 0809, 0810 and 0816) total approximately 0.2 acres. These medians would also transfer to DDOT to accommodate the proposed design improvements.

Figure 1-4
Approximate Park Area Acreage
Environmental Assessment

Given the availability of these fragments of green space at the intersection, the opportunity to consolidate the green space in the vicinity of the intersection is needed in order to make this land usable to the community. According to the *Great Streets Concept Design Report*, improvements that would consolidate the parkland in this intersection present great potential to create a "village green."[10]

In order to meet Great Streets Program goals along Pennsylvania Avenues, SE, proposed improvements at this intersection would integrate the park resources that exist today and would create *valuable* open space for the community that does not exist there today. This coincides with Guiding Principle #2 of the Great Streets Program, to "Refresh – Integrate and conserve natural resources, and create valuable open spaces."

1.2.3 Improve Multimodal Connectivity and Access

The street geometry and topography in this area make multimodal connectivity to and through Pennsylvania Avenue, SE difficult. The intersection is heavily used by buses. There are five bus stops that utilize this intersection, and there are twelve bus routes (32, 34, 36, 39, A11, B2, J13, K11, M6, V7, V8 and V9) using Pennsylvania Avenue, SE, five routes (B2, U2, V7, V8 and V9) on Minnesota Avenue, SE, and two (32 and 34) on 25th Street, SE. The nearest Metro train station, Potomac Avenue Station, is located one mile away to the west of the Study Area.

Access to bus stops at the subject intersection is difficult and dangerous for many pedestrians and bicyclists. The amount of transfers at the intersection leads to pedestrians and bicyclists traversing the intersection by the quickest route possible, often without attention to crosswalks or adherence to walk signals. Currently, the U2 route provides north-south service through the intersection. This service, however, operates at a low frequency. Transit users can effectively make the same trips as the U2 by transferring to and from the B2 route and the V7, V8 andV9 routes. Service is more frequent on these routes than the U2 so transit riders are more attracted to transferring than using the U2. It was noted in field observations that frequent transfers occur between the B2 route and V7, V8, V9 route. Bus stops for these routes are located on opposite sides of Pennsylvania Avenue, SE. Improvements are needed at the intersection to accommodate transit users' needs and to increase their ability to reach their destinations safely and easily.

Although sidewalks and crosswalks are present on both sides of Pennsylvania Avenue, SE near Minnesota Avenue, SE, bicyclists prefer to ride on the sidewalks rather than the roadway due to heavy vehicular traffic. The *District of Columbia Bicycle Master Plan* determined the roadways at the Study Area intersection to have a Bicycle Level of Service (LOS) E along Pennsylvania Avenue, SE and LOS D on Minnesota Avenue, SE and 25th Street, SE within the Study Area. The Plan also recommended Multi-Use Trail or Multi-Use Trail Connection and a Signed Bicycle Route on Pennsylvania Avenue at this intersection.[11] Shared-use pathways (multi-use trails) provide a high quality walking and bicycling experience in an environment that provides separation from traffic. The Plan also identifies Twining Square (referred to as L'Enfant Square in the Study/Pennsylvania and Minnesota Avenues, SE) as one of five key intersections in the District with complicated traffic patterns that need improved bicycle access.[12] The Study Area does not have any bicycle lanes and is not a signed bicycle route. The Pennsylvania and Minnesota Avenues, SE intersection is along the proposed route planned for Phase 3 of the D.C. Streetcar. The Study Area is along the Streetcar Line proposed to run along Minnesota Avenue from around Bolling Air Force Base (AFB) to the Benning Road area.[13] D.C. Streetcar in this area would connect

neighborhoods to Minnesota Avenue/Benning Road, Twining Square, and Historic Anacostia commercial nodes. It would also connect to the Anacostia Waterfront Initiative (AWI) redevelopment areas and connect economically distressed neighborhoods not well served by Metro to the Minnesota Avenue Metro Station. Long range planning is ongoing for D.C. Streetcar with a broad, 30-year vision for the completion of the entire system. Needed improvements proposed in this EA to increase and improve connectivity and access for transit users and commuters would work in tandem with the D.C. Streetcar to further promote mobility for all modes of transportation and particularly for transit users and commuters. When combined with the D.C. Streetcar, improvements at this intersection would offer connections to and through the Study Area for a large number of transit users and commuters.

In order to meet Great Streets Program goals along Pennsylvania Avenue, SE, proposed improvements at this intersection would create opportunities to enhance connectivity along Pennsylvania Avenue, SE to other parts of the District and Maryland, along with greater access for pedestrians and transit users. This improvement also coincides with Guiding Principle #3 of the Great Streets Program, to "Move – Create a sustainable transportation network, with many travel options."

1.2.4 Support Land Use and Community Needs

Land use at the Pennsylvania-Minnesota Avenue, SE intersection is dominated by commercial land use and zoning with areas of low- and medium-density residential. The commercial establishments are automobile-oriented in nature with large building setbacks and no continuous building line. There are underutilized and vacant properties that contribute to the lack of aesthetic appeal and visual quality. Two gas stations dominate the northeast and southeast corners of the intersection; other commercial establishments provide a limited amount of retail goods and services. The primary function of the intersection as it exists today is to serve the significant volumes of traffic traveling through the corridor to and from employment cores to the northwest.

This intersection was identified in the *Great Streets Framework Plan* as one of the intersections having the greatest interaction between households and employment.[14] Given this balance and the existing assets at the intersection, there is great potential to redevelop the area with higher-quality, neighborhood-serving retail, mixed with local-serving office space, and medium and high-density residential development. The reconfiguration of the intersection with significant attention to pedestrian comfort and safety would aid in improved pedestrian mobility along the corridor, allowing residents to walk to retail nodes with services that residents desire, such as coffee, drycleaners and boutique shops. The *Pennsylvania Avenue, SE Corridor Land Development Plan* suggests that developing two parks at Twining Square north and south of Pennsylvania Avenue (instead of the fragmented pieces of park land that exist currently) would act as green pockets intended to function as gathering spaces for surrounding communities. Enhancements would be targeted to increase pedestrian and bicycle use, and would be a driving factor in discouraging automobile-oriented retail pockets which are prolific in areas east of the Anacostia River. The availability of park land at this intersection provides an opportunity to create a significant Public Plaza (in the L'Enfant tradition), an attractant for retail and housing development.[15]

The area around Twining Square has great potential for redevelopment. Both the DC Office of Planning and the Office of the Deputy Mayor for Planning and Economic Development (DMPED) have identified this intersection for revitalization and growth. In order to facilitate redevelopment along the 2300 block of Pennsylvania Avenue, SE, DMPED has already acquired 2337 Pennsylvania Avenue, SE, which

borders the intersection to the west. Redevelopment in this area is intended to eliminate blight and provide quality neighborhood-serving retail for residents. DMPED intends to continue negotiations with private land owners to develop targeted properties. One of the outcomes of this DMPED investment is the potential to create jobs in the area and to increase retail options for the under-served corridor. [16]

In order to meet Great Streets Program goals along Pennsylvania Avenue, proposed improvements at this intersection would create opportunities to change the public and market perceptions of the area through streetscape, aesthetics and transportation improvements. The action is needed in order to create an environment capable of supporting and attracting community needs and creating an environment where residents and visitors want to live, work and play. This improvement corresponds with several of the Great Streets' guiding principles, including: Guiding Principle #1 of the Great Streets Program, "Energize – Strengthen businesses and other local institutions and services;" Guiding Principle #4, "Distinguish – Create streets with vibrant places that reflect local character;" and Guiding Principle #5, "Care – Increase community ownership and stewardship."[17]

1.3 Project Overview

1.3.1 Background

The need to improve the Pennsylvania and Minnesota Avenues, SE intersection has been reiterated through multiple studies, beginning with DDOT's 2003 *Pennsylvania Avenue, SE Transportation Study*. The original proposed plan called for bridging one road over the other and the construction of on and off ramps, most likely with the creation of a single point urban interchange (SPUI). While this modification would have increased the capacity of the intersection and enhanced circulation, there would have been visual impact due to the elevated road, which would have also divided the community. This plan was ultimately determined to be cost prohibitive.[18]

Following the *Pennsylvania Avenue, SE Transportation Study*, discussion of improvement to the intersection continued with the District's Great Streets Initiative. The Great Streets Initiative was kicked off in 2005 as a multi-agency program that strategically uses public investments to improve local quality of life and attract private investments to communities. Several corridors were chosen to be a part of the Great Streets Initiative, including Pennsylvania Avenue, SE. Proposed solutions to improve the Pennsylvania and Minnesota Avenues intersection (L'Enfant Square / Twining Square) were developed as part of the *Great Streets Framework Plan: Pennsylvania Avenue SE* (2007) and the *Great Streets Design Final Report* (2007) (see *Appendix A*).

The program goals of the Great Streets Initiative are as follows:

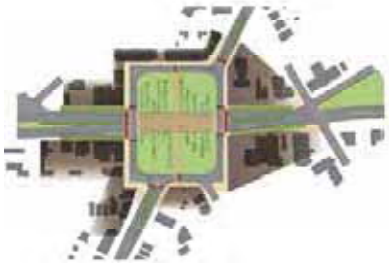
1. Improve the quality of life in neighborhoods along the corridors, including public safety, physical appearance and personal opportunity;
2. Support local demand for goods and services through economic development;
3. Expand mobility choices and improve safety and efficiency of all modes of travel; and
4. Attract private investment through the demonstration of a public commitment to Great Street communities.

The principles of the Great Streets Initiative include the following:

1. Energize – Strengthen businesses and other local services;
2. Refresh – Integrate nature and create valuable open spaces;
3. Move – Choices in how to travel;
4. Distinguish – Safe, vibrant places that reflect local character; and
5. Care – Increase community ownership and participation.

Pennsylvania and Minnesota Aves SE Improvement Preliminary Concepts

1) Modified Traffic Square



2) Ellipse Design

3) Conventional Intersection

Source: DDOT, 2006.

The entire Great Streets revitalization effort along Pennsylvania Avenue, SE covers two miles of construction, from 200 feet west of 27th Street (near the foot of the Sousa Bridge) to Southern Avenue, SE on the Maryland border and is focused on improvements to the public right of way and infrastructure. Located to the east of the Anacostia River, this section of Pennsylvania Avenue provides a gateway to the City's core. Its heavy use as a throughway for vehicle traffic has hindered the Avenue's ability to function as a node of activity or as a ceremonial gateway. Neighborhoods in the vicinity of this part of Pennsylvania Avenue include Hillcrest, Randle Heights, Anacostia, and Fort DuPont Park. Retail pockets are auto-oriented in character, and offer limited services. The corridor has several major parks (Fort Davis, Fort DuPont and Fort Stanton) and smaller pocket parks; however pedestrian access to the parks is hindered or restricted due to the heavily traveled, automobile-oriented Pennsylvania Avenue.

The concept design developed in the *Great Streets Concept Design Report* took into account previous studies, plans, and the efforts of the local community in developing the proposed concept designs. A four-day design charrette held in July 2006 resulted in the development of several alternatives, which were then evaluated and subsequently condensed down to three viable options for the Pennsylvania and Minnesota Avenues, SE intersection (concepts shown adjacent): (1) Modified Traffic Square, (2) Ellipse Design, and (3) Conventional Intersection. The three options were evaluated based on the detailed evaluation criteria set forth in the *Great Streets Framework Plan* and on input derived from the design charrette. The three options were then developed to a concept level, traffic analysis was performed, and urban design concepts were developed. Of the three alternatives considered in the report, the Modified Traffic Square Alternative was selected as the preferred option in the *Great Streets Framework Plan* because of its conformance with the Great Streets Initiative goals.

The Modified Traffic Square selected by the *Great Streets Framework Plan* would have impacted private right-of-way (three buildings) in the project vicinity and potentially required extensive environmental remediation due to the uses of the private properties (gas stations). Therefore, the Revised Square design was developed in order to avoid impacting private property, while maintaining the general concept of the Modified Traffic Square configuration, and carried forward as an alternative in this EA (see Section 2.2). The Conventional Intersection design developed as part of the *Great Streets Framework Plan* is also being carried forward as an alternative in this EA.

Agency Relationships

The proposed project concept was a result of iterations of plans and studies conducted by the District and DDOT, along with other partnering agencies of the Great Streets Initiative. FHWA is the lead federal agency because FHWA funds will be contributed to this project. NPS and NCPC are cooperating agencies due to the Proposed Action, which necessitates an exchange of land jurisdiction between DDOT and NPS.

1.3.2 Description of Study Area

The Study Area is located at the western end of the Pennsylvania Avenue, SE Great Streets corridor at the intersection of Pennsylvania Avenue with Minnesota Avenue, SE, in the immediate vicinity of Twining Square, also referred to as L'Enfant Square in the *Great Streets Framework Plan*. Refer to Figure 1-2 for an illustration of the Study Area.

Roadway

The Pennsylvania and Minnesota Avenues, SE intersection is dominated by busy lanes of traffic, rendering pedestrian circulation both difficult and dangerous. The Study Area is located on a major commuter route, Pennsylvania Avenue, SE, in an urban environment, at its crossing with the local travel route of Minnesota Avenue, SE. The Proposed Action intersection carries traffic to and from the bridges that cross the Anacostia River, as well as Minnesota Avenue, SE.

The streets in the Proposed Action intersection are described below:

- Pennsylvania Avenue, SE is a median-separated Principle Arterial according to the DDOT Roadway Functional Classification and presently carries approximately 42,500 vehicles per day. It is one of the few major gateways used by motorists to reach downtown Washington, DC from the southeast region of DC east of the Anacostia River and Maryland.
- Minnesota Avenue, SE is as a Minor Arterial with average annual daily traffic (AADT) of 10,200 vehicles per day.
- 25th Street is a Minor Arterial with AADT of 5,800 vehicles per day. It is a one-way street going southbound within the Study Area.

The Study Area consists of two intersections:

- L'Enfant Square, SE at Pennsylvania Avenue, SE
    - Operates at a level of service (LOS) D during the AM and PM peak hours.

- Pennsylvania and Minnesota Avenues, SE
    - Operates at LOS B during the AM peak hour and LOS C in the PM peak hour.

Although the overall intersections currently operate with an acceptable level of service (A through D), approaches to the intersections range from LOS A to F. Currently the traffic signal configuration is confusing and there are left-turn traffic conflicts. See *Section 3.4,Transportation* for more detailed information about existing traffic conditions.

NPS Property

The Study Area includes NPS property, U.S. Reservation 487 (Twining Square), which includes four small park reservations fragmented by roadway. North of Pennsylvania Avenue, a cut-through roadway connects Minnesota Avenue southbound to Pennsylvania Avenue westbound, which bisects the northern part of the reservation. South of Pennsylvania Avenue, the southern reservation is also bisected by roadway that connects Pennsylvania Avenue eastbound to Minnesota Avenue southbound. Due to the intersection configuration, the four reservation parcels effectively function as traffic islands for pedestrians while crossing the street; the pieces of parkland are too small to function as true open space or green space as currently configured. Twining Square lacks aesthetic appeal and is underutilized urban space.

The grassed medians that bisect the Pennsylvania Avenue roadway in the Study Area to the east and west of the intersection are also NPS property. The medians are functional, as they separate opposing traffic along Pennsylvania Avenue and serve as refuge areas for pedestrians crossing the street. Figure 1-4 provides an illustration of the NPS park reservations, the roadway medians and the approximate acreages of the individual parcels in the Study Area.

Purpose and Significance of the Park

Twining Square at the Proposed Action intersection is one of the Capitol Hill Parks, a collection of 59 triangles and squares owned by the NPS. As noted previously, Twining Square at this intersection is U.S. Reservation 487. (U.S. Reservation 336A is also known as "Twining Square" by some and lies a few blocks east of the Proposed Action intersection on Pennsylvania Avenue between 27th and 28th Streets, SE). Many of the avenues and streets east of the Anacostia River, including Pennsylvania Avenue east of the river, did not exist as of the 1901 City of Washington Southeast Quadrant map. The confusion as to what the official name of the park is occurred because during the 1920s and early 1930s, Twining Square was known as L'Enfant Square. In 1929, the Office of Public Buildings and Public Parks of the National Capital assumed jurisdiction over Reservations 487 A, B, C and D (Twining Square and the adjacent medians) at the intersection of Pennsylvania and Minnesota Avenues, SE via the March 29, 1929 request of the Commissioners of the District. In 1933, in accordance with the recommendation of the National Capital Park and Planning Commissions, U.S. Reservation 487 officially became "Twining Square" instead of "L'Enfant Square." The name Twining Square was selected to honor the first military member of the District Commissioners, Major William Johnson Twining who served from 1878-1882.

The street along the northeast side of Twining Square is still known as L'Enfant Square, SE even though the park's name was officially changed to Twining Square in 1933. The neighborhood to the north of Pennsylvania Avenue at the intersection is referred to as "Twining."

Adjacent Land Uses

The land use adjacent to the intersection is a combination of medium-density residential (rowhouses) with a limited amount of retail services, occupying one- and two-story buildings, and park land (Twining Square). The predominant use of the intersection is small- to medium-size commercial, and includes two gas stations that occupy the high-profile corner locations at the northeast and southeast corners of the intersection. Many properties in the Study Area are underutilized or vacant. The intersection primarily functions to serve the significant volumes of traffic traveling through the corridor to and from employment cores to the northwest.

1.4 Project Objectives

To help develop the design concepts presented in this EA, the project team utilized the Great Streets Program principles while also taking into consideration agency and public comments, and the Study Area constraints. These objectives guided the project team throughout the planning and preliminary design to identify the most viable alternatives that best satisfy the Proposed Action's purpose and need. The objectives for the Proposed Action are in line with the Great Streets Initiative Program Goals, as previously stated:

- Improve the quality of life in neighborhoods along the corridors, including public safety, physical appearance, and personal opportunity;
- Support local demand for goods and services through economic development;
- Expand mobility choices and improve safety, and efficiency of all modes of travel; and
- Attract private investment through the demonstration of a public commitment to Great Streets communities.

1.5 Design Considerations

Based on data collection and study, the project team considered a number of factors while refining the alternatives and options for the Pennsylvania and Minnesota Avenues, SE Intersection Improvements EA. A *Design Criteria Report* detailed such considerations leading to the formation of concepts that were either incorporated into the alternatives and options carried forward for detailed study or dismissed (See ***Appendix B, Design Criteria Report***). The primary guidelines and standards used in preparing the alternative design concepts include the *DDOT Design and Engineering Manual* (2009), *AASHTO – A Policy on Geometric Design of Highways and Street* (2004 and 2011) and the *AASHTO Roadside Design Guide* (2011).

1.6 Relationship to Other Plans and Studies

The Proposed Action is consistent with the District's planning documents and projects, including the following:

1.6.1 Comprehensive Plan for the National Capital

The *Comprehensive Plan of the National Capital*, which was first adopted in 1984 and 1985 and is updated periodically, is a general policy document that provides overall guidance for future planning and

development of the District. The plan is comprised of two parts, the District Elements and the Federal Elements, which are adopted by the DC Council and the NCPC, respectively.

The *Comprehensive Plan of the National Capital: District Elements* contains 11 citywide elements that provide goals, objectives and policies for land use issues that impact the whole city, e.g. transportation, environment, parks and open space, arts and culture. The Parks, Recreation and Open Space Element in the *District Comprehensive Plan* addresses the importance of open space for recreation, aesthetics, neighborhood character, and environmental quality and includes language on the creation of trails to better connect the city's open spaces and neighborhood. These include:

- Coordination between the District and the Federal government on park and open space planning and management;
- Providing additional recreational land and facilities in areas of the city that are currently underserved and in newly developing areas; and
- Maintaining, upgrading, and improving existing parks and recreation facilities as key features of successful neighborhoods in the District.

The NCPC adopted the *Comprehensive Plan for the National Capital: Federal Elements* on August 5, 2004. The Federal Parks and Open Space Element establishes policies to protect, enhance, and expand the region's parks and open space system, including trails.

1.6.2 Pennsylvania Avenue, SE Transportation Study

The *Pennsylvania Avenue, SE Transportation Study* was undertaken by DDOT with the intent to evaluate existing conditions on the major roadways in Southeast Washington, DC. These roadways include Pennsylvania Avenue, SE, Anacostia Freeway (I-295), Minnesota Avenue, Branch Avenue, Alabama Avenue, and Southern Avenue. The study evaluated the existing conditions of transportation in the Study Area and provided short-term and long-term recommendations, including options to improve the subject intersection.[19]

1.6.3 Middle Anacostia River Crossing Transportation Study

The *Middle Anacostia River Crossings Transportation Study* (MAC Study) was completed in 2005 by DDOT and the Anacostia Waterfront Initiative (AWI) to assess current and future needs regarding vehicular, transit, pedestrian, and bicycle mobility and safety. The study was developed from the Anacostia Waterfront Framework Plan (2003), and covered the area southeast of M Street and South Capitol Street, between Historic Anacostia and Pennsylvania Avenue and along Minnesota Avenue. The MAC Study recommends both near-term and mid-term improvements at the subject intersection due to the failing level of service and high accident rate.[20]

1.6.4 Great Streets Framework Plan: Pennsylvania Avenue, SE

The *Great Streets Framework Plan: Pennsylvania Avenue SE* was developed by the District and DDOT in 2005. The Great Streets multi-agency program identified corridors that are vital to local neighborhoods and are key to enhancing the District's diversity and prosperity. Pennsylvania Avenue, SE was one of the identified corridors, and Twining Square (called L'Enfant Square in the Study) is named as one of three

significant activity nodes along the corridor. The Plan recommends Minnesota Avenue be restored as a two-way street, consequently creating two softscape parks on either side of Pennsylvania Avenue, edged by retail and mixed use facilities. The Plan envisions that the parks would become major gathering spaces for the community, and that the Square would be furnished with benches and street lighting. Public art, dense tree cover, and landscape elements would reinforce the "green" boulevard feel visualized by the Plan.

1.6.5 District of Columbia Bicycle Master Plan

The *District of Columbia Bicycle Master Plan* was developed as a guide to establish high-quality bicycle facilities and programs in the District over the next 10 years. With anticipated population growth and little room to accommodate future growth in automobile lanes, the District's transportation system must respond via other transportation modes, namely bicycling. In 2005, the District had 17 miles of bike lanes, 50 miles of bike paths, and 64 miles of bicycle routes. The Plan provides goals and recommendations based on an inventory of the District's bicycle facilities.

The *Bicycle Master Plan* conducted a comprehensive roadway inventory to determine a Bicycle Level of Service (LOS) on many of DC's streets. These results were used to help plan the bicycle route network. Routes with a LOS D or above, or with potential to be improved to this level, were selected. The Bicycle LOS model and associated roadway inventory were used to prioritize street improvements and identify potential for striping bike lanes and making other bicycle improvements. The Bicycle LOS in the Study Area is E (80 miles) along Pennsylvania Avenue, SE and D (188 miles) along Minnesota Avenue, SE and 25th Street, SE. Routes with a Level of Service D or above, or with the potential to be improved to this level, were selected. The Study Area does not have any bicycle lanes and is not a signed bicycle route.

Pennsylvania Avenue, SE in the Study Area is recommended for Proposed Multi-Use Trail or Multi-Use Trail Connection and as a Signed Bicycle Route.[21] Shared-use pathways (multi-use trails) provide a high quality walking and bicycling experience in an environment that provides separation from traffic. The Plan identifies Twining Square (referred to as L'Enfant Square in the Study/Pennsylvania and Minnesota Avenues, SE) as one of five key intersections with complicated traffic patterns that need improved bicycle access.[22]

1.6.6 Revitalization of Pennsylvania Avenue, SE for the Great Street Initiative Concept Design

The *Revitalization of Pennsylvania Avenue, SE for the Great Street Initiative Concept Design* was developed as part of the District's Great Streets Initiative to remake Pennsylvania Avenue, SE into a "Signature Boulevard." This report took into account all of the studies and planning that had been performed on Pennsylvania Avenue, SE prior, and presented specific design concepts for improvements to the Avenue, including to the intersection of Pennsylvania and Minnesota Avenues, SE at Twining Square. This Concept Design developed a comprehensive plan based on community input and sound engineering study to satisfy the principles of the Great Streets Initiative. The *Revitalization of Pennsylvania Avenue, SE for the Great Street Initiative Concept Design* also involved numerous community meetings and charrettes, which ultimately resulted in the three alternatives for Twining Square that laid the groundwork for the alternatives being considered in this EA.

1.6.7 Pennsylvania Avenue, SE Corridor Land Development Plan

The *Pennsylvania Avenue SE Corridor Land Development Plan* was developed in 2008 by the District of Columbia Office of Planning (DCOP) to provide a framework and foundation to guide redevelopment of key sites along the corridor. The 2300 and 2500-2600 blocks of Pennsylvania Avenue, SE (referred to as "L'Enfant Square" in the Plan, but known here as Twining Square) were identified in the Plan as having unmet retail potential. Twining Square was identified as a sub-area, ripe for redevelopment by the 2008 Plan.

1.6.8 District of Columbia Pedestrian Master Plan

The District of Columbia Pedestrian Master Plan was developed in 2009 by DDOT to address pedestrian needs and issues in regards to pedestrian safety throughout the District. The vision of the Pedestrian Master Plan is to create "a city where any trip can be taken on foot safely and comfortably, and where roadways equally serve pedestrians, bicyclists, transit users and motorists."[23] An objective includes ensuring that all transportation development projects provide safe and convenient pedestrian facilities, including: new sidewalks, and improved access and safety at crossings, intersections and bus stops.

1.6.9 Pennsylvania and Potomac Avenues, SE Intersection Improvements

As part of the District's Anacostia Waterfront Initiative (AWI) Program, DDOT is conducting an EA for proposed improvements at the Pennsylvania and Potomac Avenues, SE intersection to enhance safety at these street intersections for neighborhood pedestrians and transit users of the Potomac Avenue Metrorail Station and the numerous area bus stops. This project was originally proposed in the 2005 Middle Anacostia Crossings (MAC) Transportation Study as a mid-term improvement for enhancing the transportation network in the Middle Anacostia River region. The Pennsylvania and Potomac Avenues intersection is located approximately one mile west of the Study Area.

1.6.10 Barney Circle and Southeast Boulevard Transportation Study

Also part of the AWI Program, DDOT is conducting an EA for proposed improvements at Barney Circle-Southeast Boulevard to evaluate updated concept alternatives that were previously developed in the 2005 MAC Transportation Study and is including new alternatives for the project to ensure that pedestrian safety and multi-modal transportation needs are included, as well as new or planned residential and economic development within the surrounding AWI Program area. Barney Circle is located less than a mile west of the Study Area.

1.7 Impact Topics Dismissed from Further Analysis

1.7.1 Geology and Topography

Geology

The Study Area is located entirely within the Coastal Plain physiographic province. The Coastal Plain is characterized by unconsolidated interleaved deposits of gravel, sand, silt, and clay, with the surface soils of the specific Study Area vicinity formed in reworked river terrace deposits from the Pliocene and Pleistocene. [24] It is not expected that geology would be disrupted because of the minor grading involved under the Build Alternatives. Therefore, this impact topic was dismissed from further analysis.

Geologic Hazards

There are no known geologic hazards in the Study Area; therefore, this topic was dismissed from further analysis.

Topography

The Study Area is located directly southeast of the Anacostia River on land characterized by a folding landscape of ridges and valleys. Topography in the Study Area is generally gradually sloped. Elevations in the Study Area range from a few feet above water level at the end of the Sousa Bridge to approximately 44 feet above mean sea level (msl) along Pennsylvania Avenue, SE, 200 feet west of its intersection with 27th Street, SE. The topography of the project site is gradually sloped, with elevations between approximately 28 to 38 feet above msl. The land adjacent to the south edge of the site slopes upward more rapidly to 80 feet above msl, forming the base of a ridge characteristic of the surrounding landscape. The land within the immediate Study Area where construction would occur is generally flat.

It is not expected that topography would be disrupted because of the minor grading involved under the Build Alternatives. Therefore, this impact topic was dismissed from further analysis.

Agricultural Lands, Prime, and Unique Farmland Soils

Federal agencies, as required by CEQ Guidance, must assess the effects of proposed actions on soils which are classified as prime or unique farmlands by the Natural Resources Conservation Service (NRCS). The soils mapped within the Study Area are not prime or unique farmland as defined by the U.S. Department of Agriculture and are not regulated by the Farmland Protection Policy Act. Similar to the Study Area, the majority of the soils surrounding the Study Area are mapped as Urban Land soils, which are not classified as prime farmland soil. In addition, the soils in the Study Area have been subjected to prior disturbances. Therefore, these topics were dismissed from further analysis.

1.7.2 Surface Water

The District is within the larger Middle Potomac-Anacostia-Occoquan Watershed.[25] Within this watershed, the Study Area drains to the Anacostia River (Waterbody ID DCANA00E_01 and DCANA00E_02). According to the EPA Watershed Assessment, the Anacostia River watershed is an impaired tidal freshwater estuary which drains an approximately 0.8 square mile area. The drainage area consists of national and city park land, urban areas of residential and commercial, RFK Stadium and marinas.

While there are no surface waters within the Study Area, stormwater runoff from the Study Area ultimately enters tributaries which flow into the nearby Anacostia River. There would no noticeable impacts on surface waters as a result of the Alternatives; therefore, this impact topic was dismissed from further analysis. Impacts to surface waters as a result of construction and hazard of erosion are addressed under Water Quality.

1.7.3 Navigable Waters

There are no Waters of the U.S. in the Study Area. However, the Anacostia River is a Water of the U.S. within the vicinity of the Study Area. During storm events, runoff from the Study Area is transported into storm sewers, and ultimately into the tributaries and sewers which empty into the Anacostia River. There would no noticeable impacts on Navigable Waters as a result of the Alternatives; therefore, this impact topic was dismissed from further analysis. Impacts to the Anacostia River as a result of construction and hazard of erosion are addressed under Water Quality.

1.7.4 Coastal Zone

The District is not within a designated Coastal Zone and they have not developed a Coastal Zone Management Plan under the Coastal Zone Management Act. However, the District participates in the EPA's Chesapeake Bay Program, as well as operates its own District Bay Program. The District Bay Program focuses on the Anacostia and Potomac Rivers and Rock Creek, as they all drain into the Chesapeake Bay. The District implements a Watershed Implementation Plan (WIP), which outlines how the District will meet the requirements of the EPA issued Total Maximum Daily Loads (TMDLs).

Because the District, and thus the Study Area, is not within a Coastal Zone, this impact topic was dismissed from further analysis. Additionally, the Alternatives would not disrupt the progress of the Bay Program in cleaning up the District's waterways.

1.7.5 Floodplains

Executive Order No. 11988, "Floodplain Management" was issued in order to avoid, to the extent possible, the long and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practical alternative. The order was issued in furtherance of NEPA, the National Flood Insurance Act of 1968, and the Flood Disaster Protection Act of 1973.

The Study Area is not located within either a 100- or 500-year floodplain, as indicted by the Flood Insurance Rate Maps (FIRM), Community Panel Number 1100010030B(FEMA, 1985). The Study Area is located in Zone C, which indicates "Areas of minimal flooding."[26] Because the Study Area is not located within a floodplain, this topic was dismissed from further analysis.

1.7.6 Wetlands

In accordance with the 1987 U.S. Army Corps of Engineers (USACE) Wetlands Delineation Manual, wetlands are defined as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Wetlands generally include swamps, marshes, bogs, and similar areas.

A review of the District Department of the Environment (DDOE) map showing known wetlands within the District indicates that there are no wetlands within the Study Area;[27] therefore, this topic was dismissed from further analysis.

1.7.7 Wild and Scenic Rivers

In 1968, Congress created the National Wild and Scenic Rivers System to preserve rivers with outstanding scenic, recreational, geologic, fish and wildlife, historic, cultural, or other values in a free flowing condition.[28] Based on the National Wild and Scenic River Inventory, there are no surface waters within the vicinity of the Study Area that are designated as scenic rivers. Therefore, this topic was dismissed from further analysis.

1.7.8 Aquatic Organisms

The Study Area does not include waterways, and therefore does not include habitat which supports aquatic organisms. However, the Study Area is located approximately 0.3 miles to the east of the Anacostia River. Storm water runoff from the site flows into the Anacostia River, and thus the project site could indirectly impact aquatic organisms in the river and nearby streams/tributaries. Indirect impacts to aquatic organisms as a result of construction and hazard of erosion are addressed under Water Quality. Because the Study Area does not include habitat which supports aquatic organism, this impact topic was dismissed from further analysis.

1.7.9 Threatened and Endangered Species

In August 2012, a formal request was submitted to FWS via their Information, Planning, and Conservation System (IPaC) planning tool to request a list of threatened and endangered species in the project vicinity. Correspondence with FWS was received and there are no endangered or threatened species found within the vicinity of the Study Area. Additionally, FWS and DDOE were invited to an Interagency Meeting for this project and submitted no formal comments or concerns. Therefore, this topic was dismissed from further analysis. See ***Appendix C, Agency Coordination and Public Involvement*** for agency correspondence.

1.7.10 Paleontological Resources

The Study Area is located within the Coastal Plain physiographic province, although the Fall Line marking the transition into the Piedmont province is located in the western portion of the District. The Coastal Plain is characterized by unconsolidated interleaved deposits of gravel, sand, silt, and clay, with the surface soils of the specific Study Area vicinity formed in reworked river terrace deposits from the Pliocene and Pleistocene. [29]

Soils within the area of potential effect (APE) have been recorded primarily as Urban land-Galestown complex, which is found in the western, central, and part of the northern sections of the APE. [30] The northern and eastern edges of the APE are reported as Keyport-Urban land complex. Small segments of Sassafras-Urban land complex and Christiana-Urban land complex are found along the southern edge of the APE. The overlying gravel stratum of the Coastal Plain which dates to the Cretaceous period could potentially contain fossils such as dinosaur bones and petrified trees; however no known paleontological resources exist within the Study Area. Therefore, this topic was dismissed from further analysis. However, if such resources were uncovered during construction, work would be halted and a study conducted.

1.7.11 Indian Trust Resources

Secretarial Order 3175, *Departmental Responsibilities for Indian Trust Resources* (established by the U.S. Department of the Interior) requires consultation with the recognized tribal government, with jurisdiction over the trust property, to which a proposed action may potentially impact. The federal Indian Trust responsibility is a legal obligation by the United States to protect tribal lands, assets, resources and treaty rights. It also represents a duty to carry out the mandates of federal law with respect to American Indian and Alaskan Native tribes. There are no known Indian Trust Resources within the vicinity of the Study Area, nor are there lands held in trust by the Secretary of the Interior for the benefit of American Indians or Alaskan Tribes. Therefore, this topic was dismissed from further analysis.

1.7.12 Sacred Sites

Secretarial Order 3206, *American Indian Tribal Rights, Federal-Tribal Trust Responsibilities and the Endangered Species Act*, was issued by the Secretaries of the Interior and Commerce pursuant to the Endangered Species Act of 1973 (ESA), the Federal-tribal trust relationship and other Federal laws. This Order clarifies the responsibilities of agencies when actions taken under authority of the ESA, and associated implementing regulations, affect, or may affect, Indian lands, tribal trust resources, or the exercise of American Indian tribal rights. This Order further recognizes the trust responsibility and treaty obligations of the United States toward Indian tribes and tribal members and its government-to-government relationship in dealing with tribes. No American Indian sacred sites are known to exist within the Study Area. Therefore, this topic was dismissed from further analysis.

1.7.13 Ethnographic Resources

An ethnographic resource, as defined by the NPS, is any "site, structure, object, landscape or natural resource feature assigned traditional legendary, religious, subsistence or other significance in the cultural system of a group traditionally associated with it."[31] No known ethnographic resources exist within the Study Area. Therefore, this topic was dismissed from further analysis.

1.7.14 Hazardous Waste/Materials

Hazardous wastes and materials are regulated by the Resource Conservation and Recovery Act (RCRA) and by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly known as Superfund. Based on an EPA review of District superfund sites, there are no superfund sites within the Study Area or the vicinity of the Study Area.

Based on a review of the EPA EnviroMapper for Envirofacts Data Warehouse, properties within or adjacent to the Study Area which are listed as having waste discharge include: Highland Cleaners, Earl Scheib, Inc., Williams Garage, Otis Auto Repair, and Sunoco Service Station (adjacent to west end of the Study Area at the intersection of Pennsylvania and Prout Streets, SE). There are two gas stations, a BP and a Shell, located across the street from each other at the east side of the intersection of Pennsylvania and Minnesota Avenues, SE. All gas stations within and adjacent to the Study Area are listed as having underground storage tanks.

The proposed land transfer and reconfiguration of the intersection would not result in disturbance to any of the known existing waste discharge facilities or underground storage tanks. Therefore there are no anticipated impacts to hazardous waste or materials and this topic was dismissed from further analysis. In the event that suspected hazardous materials or potentially contaminated materials are encountered during construction activities, contractors would be directed to stop work until further assessment occurs.

1.7.15 Energy Conservation

The energy currently consumed at the intersection is generally electric power and gas from the residential and commercial uses in the area, as well as energy to power street lights and traffic lights. The proposed development would incorporate Low-Impact-Design (LID) Principles wherever possible to create a more sustainable and integrated environment. Energy can be conserved at the project intersection by attempting to reduce the heat island effect associated with urban areas. This would be accomplished by maximizing plantings in the open space areas and roadway medians and by using light colored paving surfaces where possible. Light colored concrete or asphalt can be used in areas such as pedestrian walkways through intersections and bikeways. Therefore, there are no anticipated impacts to energy consumption and this topic was dismissed from further analysis.

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