APPENDIX D: SECTION 106 ASSESSMENT OF EFFECTS

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Reconstruction and Rehabilitation of Rock Creek and Potomac Parkway Southbound at Waterside Drive

Rock Creek Park
Washington, D.C.

Assessment of Effects
Under Section 106, National Historic Preservation Act

July 2012

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INTRODUCTION

PROJECT BACKGROUND

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), proposes the undertaking that involves a combination of road safety improvements located where the southbound ramp from Waterside Drive, NW merges onto Rock Creek and Potomac Parkway (the parkway), in Washington, D.C.

In 2006, the NPS prepared an environmental assessment (EA) that examined safety improvements for the parkway, including proposed safety improvements at Waterside Drive, NW. Soon after construction began on the Waterside Drive, NW section of the project in July of 2011, the NPS determined that the project design was not following the preferred alternative contained in the 2006 EA. A cofferdam had been placed within Rock Creek and the stream bank prepared for the construction of a retaining wall to support an additional merge lane and road improvements. Fourteen large trees had been removed from the area adjacent to the stream bank. The NPS stopped construction at the Waterside Drive, NW section of the overall parkway project in order to reinitiate the planning and compliance for this specific component of the overall project. Construction on the larger improvement project, including Cathedral Avenue, NW, Shoreham Drive, NW and Beach Drive, NW sections are consistent with the 2006 EA and continued as scheduled.

In August of 2011, severe erosion took place in the section of Rock Creek in the project area as a result of the flooding that occurred after Hurricane Irene and Tropical Storm Lee moved through the area in consecutive weeks. The erosion of the stream banks was exacerbated by the cofferdam that was still in Rock Creek from the construction of the retaining wall. This erosion, which was affecting the stability of the Rock Creek Park Multi-use Trail, has been temporarily stabilized with gabion baskets pending a more permanent solution.

The purpose of the undertaking is to improve traffic flow and to minimize the number of vehicle accidents along the parkway in the vicinity of Waterside Drive, NW using a combination of improvements to include a new acceleration lane along the parkway where the southbound ramp from Waterside Drive, NW merges. The proposed action would also address severe erosion that occurred along the stream banks of Rock Creek in the vicinity of Waterside Drive, NW as a result of flooding after Hurricane Irene and Tropical Storm Lee moved through the Washington, D.C. area during consecutive weeks in August and September of 2011.

Action is needed at this time to improve traffic flow and to minimize the number of vehicle accidents where the southbound ramp from Waterside Drive, NW merges with the parkway. A small merge area and poor sight distances have resulted in numerous vehicle accidents and backups of cars waiting to merge at the intersection of Waterside Drive, NW and the southbound parkway. As a result, the NPS needs to increase sight distances and lengthen the merge area to improve motor vehicle visibility and traffic safety. In addition, action is needed to address the erosion that has occurred, which is affecting the stability of the Rock Creek Park Multi-use Trail.

PROJECT LOCATION

Rock Creek Park is an administrative unit of the NPS that includes Rock Creek Park proper (Reservation 339) and Rock Creek and Potomac Parkway (Reservation 360). It is located in the Northwest quadrant of Washington, D.C. The park is 2,896 acres located in Washington D.C, extending from the Maryland border to the Potomac River. It consists primarily of an undeveloped, wooded valley, with some associated tributaries and uplands. The major landscape feature is Rock Creek, a perennially flowing stream that bisects the length of the park before flowing into the Potomac River south of the park. The park is completely surrounded by the heavily urbanized metropolitan area of Washington, D.C.

The parkway is a travel corridor between Beach Drive, NW to the north and the Lincoln Memorial to the south. The parkway runs north to south along Rock Creek and has two lanes in both directions.

Figure 1 depicts the project area at Waterside Drive, NW within the larger context of Rock Creek Park. Figure 2 depicts a zoomed-in aerial view of the project area[1]. In addition, riparian areas along Rock Creek between Sherrill Drive, NW and Bingham Drive, NW are proposed for revegetation to mitigate for approximately 0.3 acres of riparian area that was impacted by the previous roadway construction in 2011 (figure 3).

PURPOSE

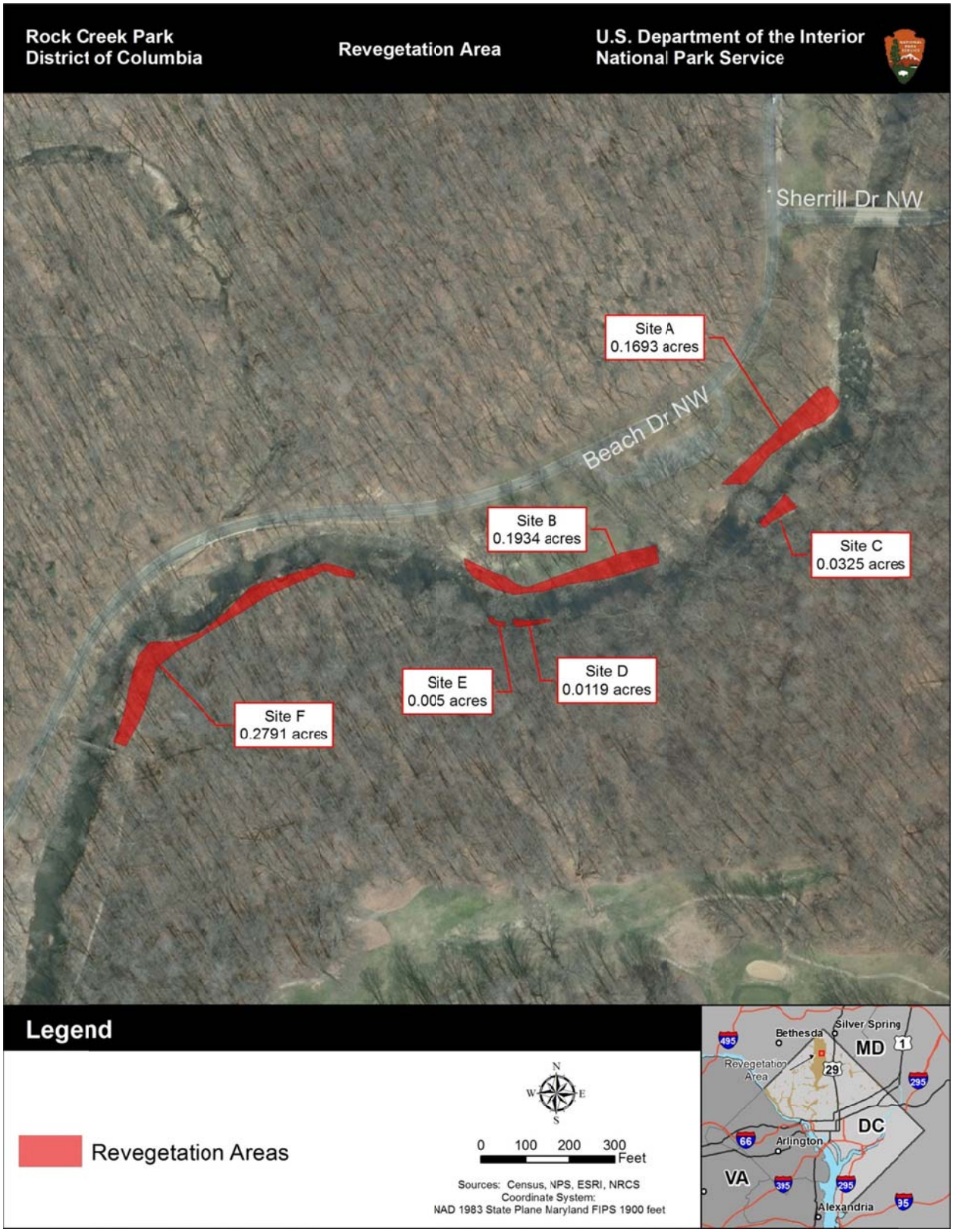
The purpose of this report is to provide an assessment of the potential effects of the proposed alternatives for the Reconstruction and Rehabilitation of Rock Creek and Potomac Parkway Southbound at Waterside Drive, NW on cultural resources (also known as historic properties). Following the Section 106 process outlined in the Federal regulations providing for the Protection of Historic Properties (36 CFR 800), this report first identifies cultural resources within the project's Area of Potential Effects (APE). For the purposes of this assessment, a property is considered historic if it is listed or is eligible for listing in the National Register of Historic Places (NRHP), the nation's official list of cultural resources worthy of preservation. Following the identification of historic properties, this report applies the Criteria of Adverse Effects as provided in 36 CFR 800.5 to determine if the proposed undertaking may alter, directly or indirectly, any characteristics of a historic property in a manner that would diminish its integrity. The information contained in this report has been incorporated into the EA for the Reconstruction and Rehabilitation of Rock Creek and Potomac Parkway Southbound at Waterside Drive, NW project. This report will also be submitted to FHWA and District of Columbia Historic Preservation Officer (DCHPO) in coordination with the preparation of the EA. It will be used as a basis for consultation between the agencies concerning the possible effects of the proposed undertaking on cultural resources.

[1] Both the segment of Rock Creek and Potomac Parkway and the surrounding park land shown on Figures 1 and 2 (the Project Area) are technically part of District of Columbia Reservation 360, Rock Creek and Potomac Parkway, not District of Columbia Reservation 339, Rock Creek Park. However, the area is administered by the Rock Creek Park unit of the NPS and is widely known to the public as part of Rock Creek Park.

FIGURE 1: ROCK CREEK PARK

FIGURE 2: PROJECT SITE AT WATERSIDE DRIVE, NW

FIGURE 3: RIPARIAN REVEGETATION AREA



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SUMMARY OF ALTERNATIVES

Four alternatives were considered – the no action alternative (alternative 1) and three action alternatives that address the rehabilitation and reconstruction of the parkway southbound at Waterside Drive, NW. The three action alternatives include the following:

- Alternative 2: Restore to Original Condition (which would restore the road to the pre–July 2011 alignment)
- Alternative 3: Add Merge Lane by Widening the Road toward the Creek
- Alternative 4: Add Merge Lane by Widening the Road toward the Median

ALTERNATIVE 1: NO ACTION

The no action alternative provides a basis for comparison with the action alternatives and the respective environmental consequences. Should the no action alternative be selected, the NPS would respond to future needs and conditions without major actions or changes in the present course of management.

Under the no action alternative, there would be no road improvements (including road realignment) on the southbound parkway at Waterside Drive, NW. The current condition at the intersection of the southbound parkway and Waterside Drive, NW would remain, with vehicles merging onto the parkway from Waterside Drive, NW coming to a full stop at a stop sign before merging from the left. A limited sight distance of 180 feet for merging vehicles would continue to contribute to safety concerns. No trees would be removed under the no action alternative.

In addition to retaining the road configuration, under the no action alternative the condition of Rock Creek would remain as it is currently. Temporary remedial work was conducted as a result of two storm events in August and September of 2011 that created erosion damage in and around the surrounding area. The temporary remedial work at the site consisted of installation of temporary gabion baskets. The gabion baskets are wire-enclosed baskets filled with riprap intended to provide slope stabilization. Under the no action alternative, erosion would continue to be addressed with the current gabion baskets. No trees would be removed and the impacts on the creek banks would not be addressed. Jersey barriers that were erected along the shoulder of the creek side southbound lane in late 2011 would remain.

Figures 4, 5, and 6 depict the current conditions at Waterside Drive, NW. A schematic of the no action alternative is shown in figure 7.

FIGURE 4: CURRENT CONDITION OF MERGE AREA OF ROCK CREEK AND POTOMAC PARKWAY AND WATERSIDE DRIVE, NW

FIGURE 5: CONDITION OF ROCK CREEK (WEST BANK)

FIGURE 6: 2011 CONDITION OF ROCK CREEK (EAST BANK)

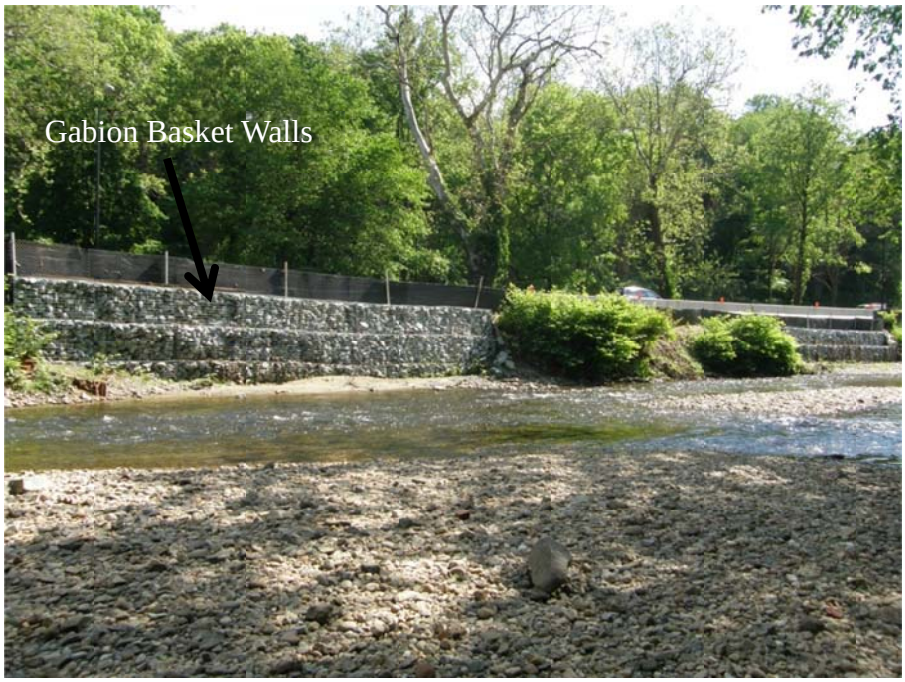

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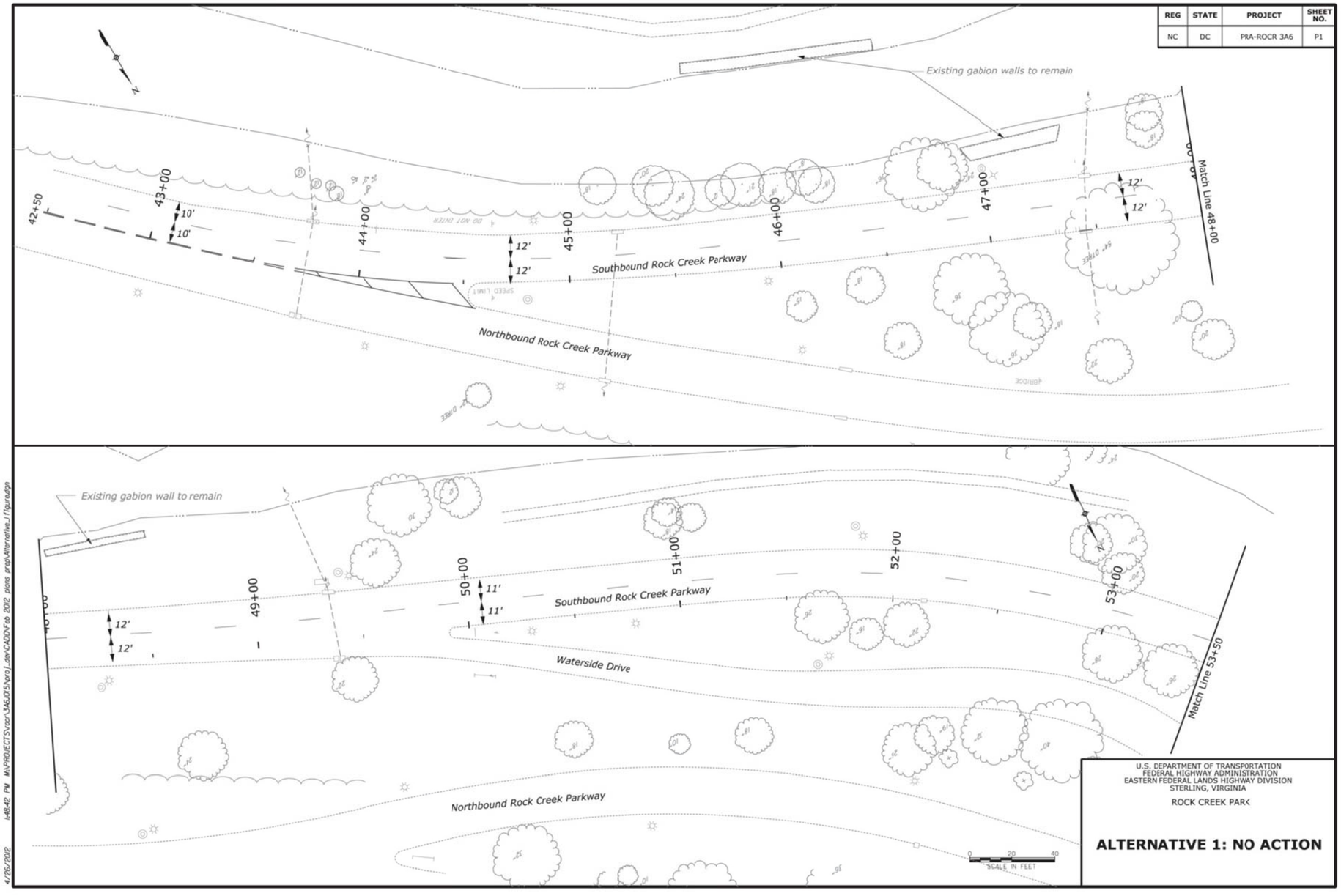
FIGURE 7: NO ACTION



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ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

RIPARIAN AREA REVEGETATION

During the course of road construction in 2011 (as part of the 2006 EA that looked at safety improvements for the parkway, including proposed safety improvements at Waterside Drive, NW) construction of a retaining wall to support an additional lane caused impacts to the riparian areas along the stream bank of Rock Creek near Waterside Drive, NW by 1) removal of 14 trees that provided ecological functions to Rock Creek; 2) removal of soil and vegetation along the roadside bank; and 3) exacerbating the trail-side bank erosion by the placement of a coffer dam within Rock Creek.

As a response to these riparian zone impacts, the NPS conducted an assessment to determine appropriate compensation for the unavoidable wetland impacts as required by the U.S. Army Corps of Engineers (USACE) for Section 404 permits and by the NPS for compliance with Director's Order #77-1 (DO 77-1): Wetland Protection. The findings of the impact assessment concluded that 0.3 acres of riparian area was impacted by the construction.

To mitigate the 0.3 acres of disturbed riparian area, it is required that no less than 0.6 acre of riparian area be planted within the boundary of Rock Creek Park. The increased acreage for mitigating the disturbance is based on a 2:1 ratio intended to offset the temporal loss of mature riparian vegetation. To ensure that the mitigation requirements are met the NPS has prepared a *Revegetation Plan for the Rock Creek Park Riparian Area* (NPS 2012), which currently entails the revegetation of 0.69 acres of riparian areas; however, the acreage could increase. Below is a summary of the elements of the revegetation plan; refer to the plan for complete details

> The revegetation area is composed of six riparian sites (A-F) along the banks of Rock Creek, east of Beach Drive, NW between Bingham Drive, NW and Sherrill Drive, NW. Vegetative plantings would include species that would be selected and planted based on elevation and/or landscape position in relationship to the stream and stream bank. Proposed species would be representative of species assemblages historically common to surrounding riparian and palustrine habitats and are consistent with native vegetative species found near the project sites. Species to be planted would include red maple (*Acer rubrum*), river birch (*Betula nigra*), and sycamore (*Platanus occidentalis*) in the upland areas and boxelder (*Acer negundo*) and black willow (*Salix nigra*) along the stream bank. Seedlings would be planted for an initial density of 100 trees per acres. Native shrubs, vines, perennials, ferns, and grasses would also be planted. Site preparation would include minor grading to prepare the area for planting, which would be done by hand.

STAGING AREA AND CONSTRUCTION ACCESS

Construction staging for all elements of each alternative (road rehabilitation, stream bank restoration, and riparian area revegetation) would be located at Cathedral Avenue, NW in a previously disturbed and paved area. This staging area is one of three staging areas currently being used for the projects under the *Reconstruction and Rehabilitation of Beach Drive and Rock Creek and Potomac Parkway from P Street to Calvert Street Environmental Assessment / Assessment of Effect* (NPS 2006). Additional land at Cathedral Avenue, NW would be allowed to support additional construction equipment and materials, if needed.

ALTERNATIVE 2: RESTORE TO ORIGINAL ALIGNMENT

ROAD REALIGNMENT

Under alternative 2, the southbound parkway at Waterside Drive, NW would be restored to its pre–July 2011 alignment, resulting in the reduction of the current road width. The road width of the southbound

lanes would be restored to its original 11-foot lanes plus two 1-foot gutters, for a total road width of 24 feet. Restoration of the road alignment would involve altering approximately 350 linear feet of road, including the removal of the widened areas and reinstallation of curbs and inlets. No additional pavement or impervious surfaces would be added; instead, impervious surface would decrease and return to the original, pre–July 2011 conditions. The total amount of area disturbed as part of the removal of the widened areas and reinstallation of curbs and inlets would be approximately 7,400 square feet (0.17 acre). No trees would be removed under alternative 2; however, trees that were removed during construction activities in 2011 would be replaced with the largest trees possible for the current site.

Sight lines would remain at approximately 180 feet for vehicles merging from Waterside Drive, NW. However, proposed traffic calming measures could slightly improve road safety conditions.

A schematic showing the locations where the road is to be restored to its original conditions, the proposed location of stream bank restoration (discussed below), and traffic calming measures under alternative 2 is shown on figure 8.

STREAM BANK RESTORATION

Under alternative 2, the gabion baskets that are currently stabilizing sections of Rock Creek would be replaced with a permanently bioengineered slope. Stream bank soil bioengineering is a broad category of treatments that is often used to include any stabilization technique that includes some plant material. The treatments that fall under this broad definition generally include the use of living, riparian plants as part of the design (Fripp, Hoag, and Moody 2008). Soil bioengineering components would be used to recreate the natural stream bank conditions in the impacted bank areas. Several bioengineering alternatives were considered, but during the value analysis it was determined that vegetated reinforced soil slope (VRSS) would be the most effective and therefore the most appropriate bioengineering approach (CDM Smith 2012).

A VRSS is a soil bioengineering technique that combines the use of woody, living vegetation purposefully embedded into a slope to help stabilize the soil, prevent erosion, and bind together the installed reinforcements. Heavy geotextile material would be used as the primary reinforcement to stabilize the slope. A shorter secondary reinforcement wrap with a special mixture of soil and organic materials that help to promote the establishment of vegetation and growth would be used on the face of the overall system. Approximately 250 feet of the east bank and 100 feet of the west bank would receive this treatment. The width of the VRSS on both banks would be approximately 25 feet each, for a total of 6,250 square feet disturbed on the east bank and 2,500 square feet disturbed on the west bank. Photographs showing a VRSS system used in a similar application at a different site are also shown in figures 9 and 10.

TRAFFIC CALMING

The following traffic calming measures would be implemented under alternative 2:

- Installation of two signs to read “No Merge” along Waterside Drive, NW near the merge with the southbound parkway.
- Installation of two signs to read “Stay in Lane” along the southbound parkway approaching the merge with Waterside Drive, NW.
- Solid striping and rumble strips along the southbound parkway approaching the merge with Waterside Drive, NW.

FIGURE 8: RESTORE TO ORIGINAL CONDITIONS

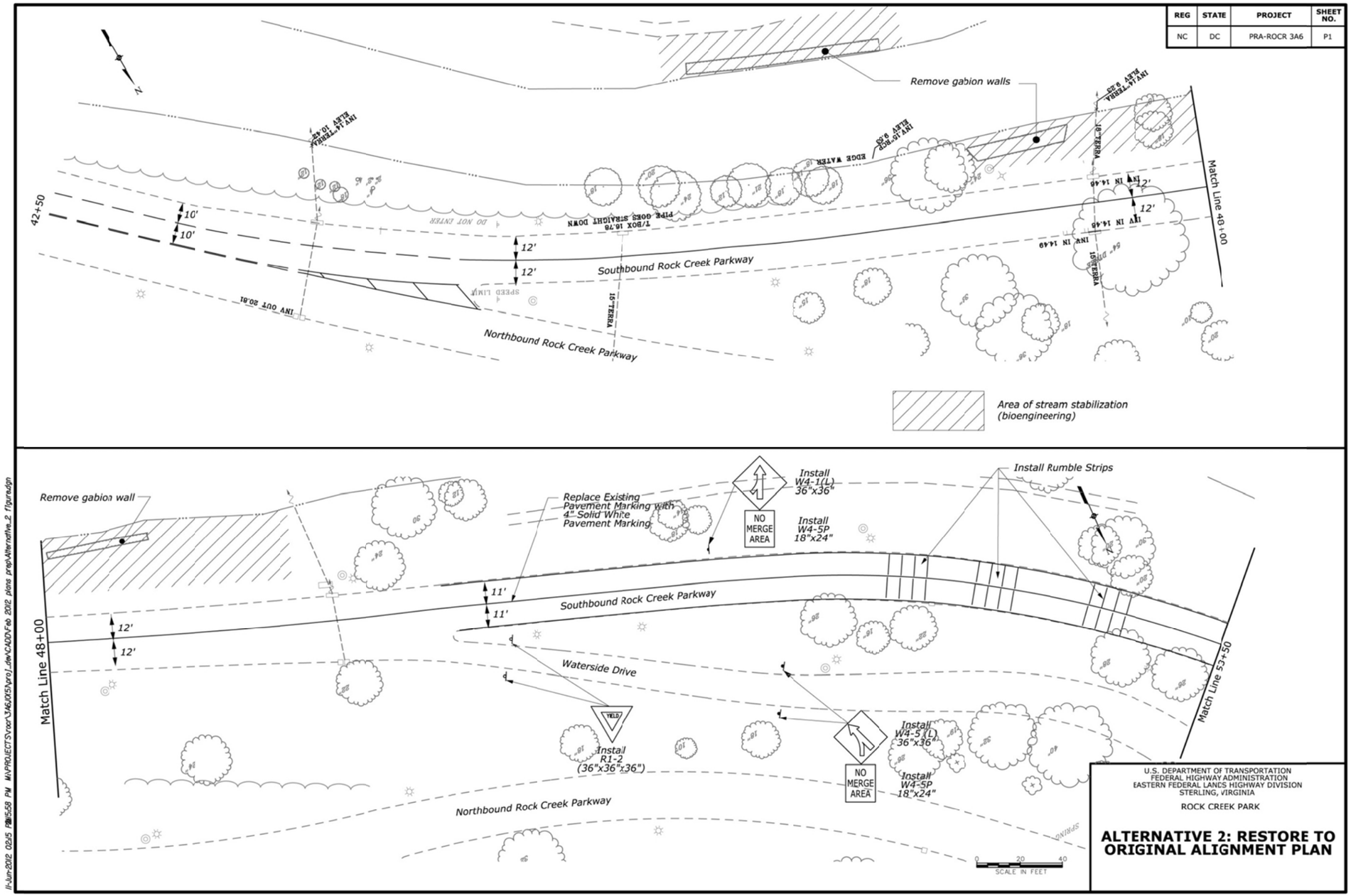

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FIGURE 9: EXAMPLE OF VRSS AFTER CONSTRUCTION

Source: Robin B. Sotir & Associates 2012.

FIGURE 10: EXAMPLE OF VRSS AFTER VEGETATION ESTABLISHMENT

Source: Robin B. Sotir & Associates 2012.

ALTERNATIVE 3: ADD MERGE LANE BY WIDENING ROAD TOWARD THE CREEK

ROAD REALIGNMENT

The road realignment toward Rock Creek would necessitate the construction of an approximately 350-foot retaining wall between the road and the creek. The retaining wall would be required to support the newly widened pavement and embankment that would be created as a result of the new acceleration lane. The widened pavement would result in steepened bank slopes toward the creek that would become unstable unless a retaining wall is constructed. Construction of the retaining wall would entail installing drilled shafts into the roadside soil in order to support the new structure. The retaining wall would be constructed of natural stone veneer with a concrete, steel reinforced core. In addition to stabilizing the road, the wall would serve as a roadside barrier between the creek and vehicles on the parkway (the ends of the retaining wall would also have steel-backed timber guardrails attached to them to ensure the motorist safety).

Road widening (from the original, pre–July 2011 conditions) toward the creek and construction of a retaining wall would disturb approximately 16,800 square feet (0.39 acre), 9,600 square feet (0.22 acre) of which would be in previously undisturbed areas. Approximately 5,500 square feet (0.12 acre) of new impervious surface would be added by the footprint of the retaining wall and the asphalt added for road realignment and merge lane. No trees would be removed under alternative 3.

Under alternative 3, safety would be improved by the addition of an acceleration lane and taper for merging traffic from Waterside Drive, NW. Merging vehicles would have a dedicated merge lane where they would be able to accelerate to minimize accidents with through traffic and on Waterside Drive, NW. As a result of the new acceleration lane and road realignment, the sight distance for merging traffic from Waterside Drive, NW would be increased from 180 feet to 420 feet, a 240-foot increase. Through traffic on the southbound parkway would be able to see the merging traffic from farther away and would potentially have enough time to switch lanes or stop to avoid merging vehicles. The merging motorists would be better able to see the through traffic from farther away and would have enough time to find a sufficient gap to safely merge. A schematic showing the locations where the road is to be realigned, the proposed location of stream bank restoration (discussed below), and traffic calming measures under alternative 3 is shown on figure 11.

STREAM BANK RESTORATION

Under alternative 3, the eroded sections of the stream bank would be permanently stabilized. The VRSS approach described in alternative 2 would be used to recreate the natural stream bank conditions in the previously impacted bank areas. Approximately 540 linear feet of the east bank and 100 linear feet of the west bank would receive this treatment. The VRSS on the east bank would be placed at the toe of the proposed retaining wall. The width of the VRSS on both banks would be approximately 25 feet each, for a total of 13,500 square feet disturbed on the east bank and 2,500 square feet disturbed on the west bank.

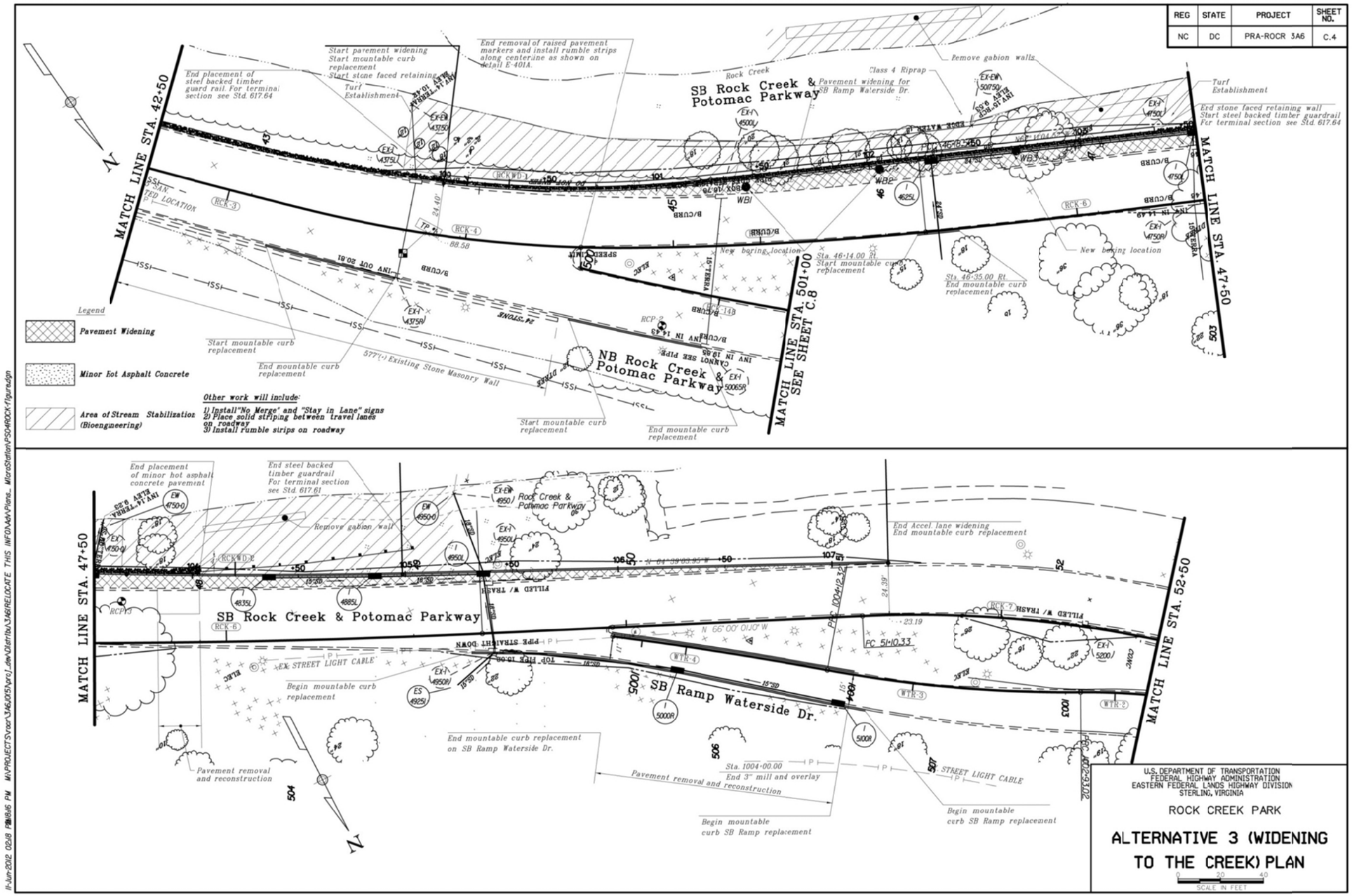
TRAFFIC CALMING

The following traffic calming measures would be implemented under alternative 3:

- Installation of two warning signs showing merging traffic along the southbound parkway approaching the merge with Waterside Drive, NW.
- Installation of two “Yield” signs along Waterside Drive, NW ramp approaching the merge onto the southbound parkway.

  Solid striping and rumble strips along the southbound parkway approaching the merge with Waterside Drive, NW.

FIGURE 11: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE CREEK



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ALTERNATIVE 4: ADD MERGE LANE BY WIDENING ROAD TOWARD THE MEDIAN

ROAD REALIGNMENT

Under alternative 4, approximately 350 feet of southbound parkway at Waterside Drive, NW would be realigned approximately 12 feet (from the original, pre–2011 alignment) toward the median between the northbound and southbound parkway and a merge lane of approximately 150 feet (150 feet plus 270 feet of taper) would be added. As a result of the road realignment, seven trees, five with diameter at breast height (dbh) between 33.5 and 59.8 inches, would be removed. The largest caliper trees for the site would be replanted wherever possible. A steel-backed timber guardrail, similar to others found along the parkway, would be constructed along the length of the newly realigned road between the road and the creek to serve as a roadside barrier.

Road widening (from pre–July 2011 conditions) toward the median side would result in the disturbance of approximately 17,500 square feet (0.40 acre), of which approximately 10,100 square feet (0.23 acre) are previously undisturbed areas. Approximately 4,600 square feet (0.11 acre) of new impervious surface would be added by the footprint of the asphalt concrete added for road realignment and merge lane.

Two light poles in the median would be relocated and would require trenching of an area approximately 2.5 feet long (30 inches) by 2.5 feet wide and no more than seven feet deep. In addition, new inlets and a pipe for drainage would be installed, requiring the disturbance of an area approximately six feet long by 3.5 feet wide by four feet deep for the inlets, and approximately 90 feet long by three feet wide and three feet deep for the pipe.

Under alternative 4, safety would be improved by the addition of an acceleration lane and taper for merging traffic from Waterside Drive, NW. The merging vehicles would have a dedicated merging lane and would be able to sufficiently accelerate and potentially avoid traffic accidents with through traffic. As a result of the new acceleration lane and road realignment, the sight distance for merging traffic from Waterside Drive, NW would be increased from 180 feet to 410 feet, a 230-foot increase. Through traffic on the southbound parkway would be able to see the merging traffic from farther away and would potentially have enough time to switch lanes or stop to avoid merging vehicles. The merging traffic would see through traffic from farther away better and would have enough time to find a sufficient gap to safely merge.

A schematic showing the locations where the road is to be realigned, the proposed location of stream bank restoration (discussed below), and traffic calming measures under alternative 4 is shown on figure 12.

STREAM BANK RESTORATION

Stream banks on both sides of Rock Creek would be fully restored using bioengineering, specifically VRSS, with the same linear and square footage as described under alternative 2. Approximately 250 feet of the east bank and 100 feet of the west bank would receive this treatment. The width of the VRSS on both banks would be approximately 25 feet each, for a total of 6,250 square feet disturbed on the east bank and 2,500 square feet disturbed on the west bank.

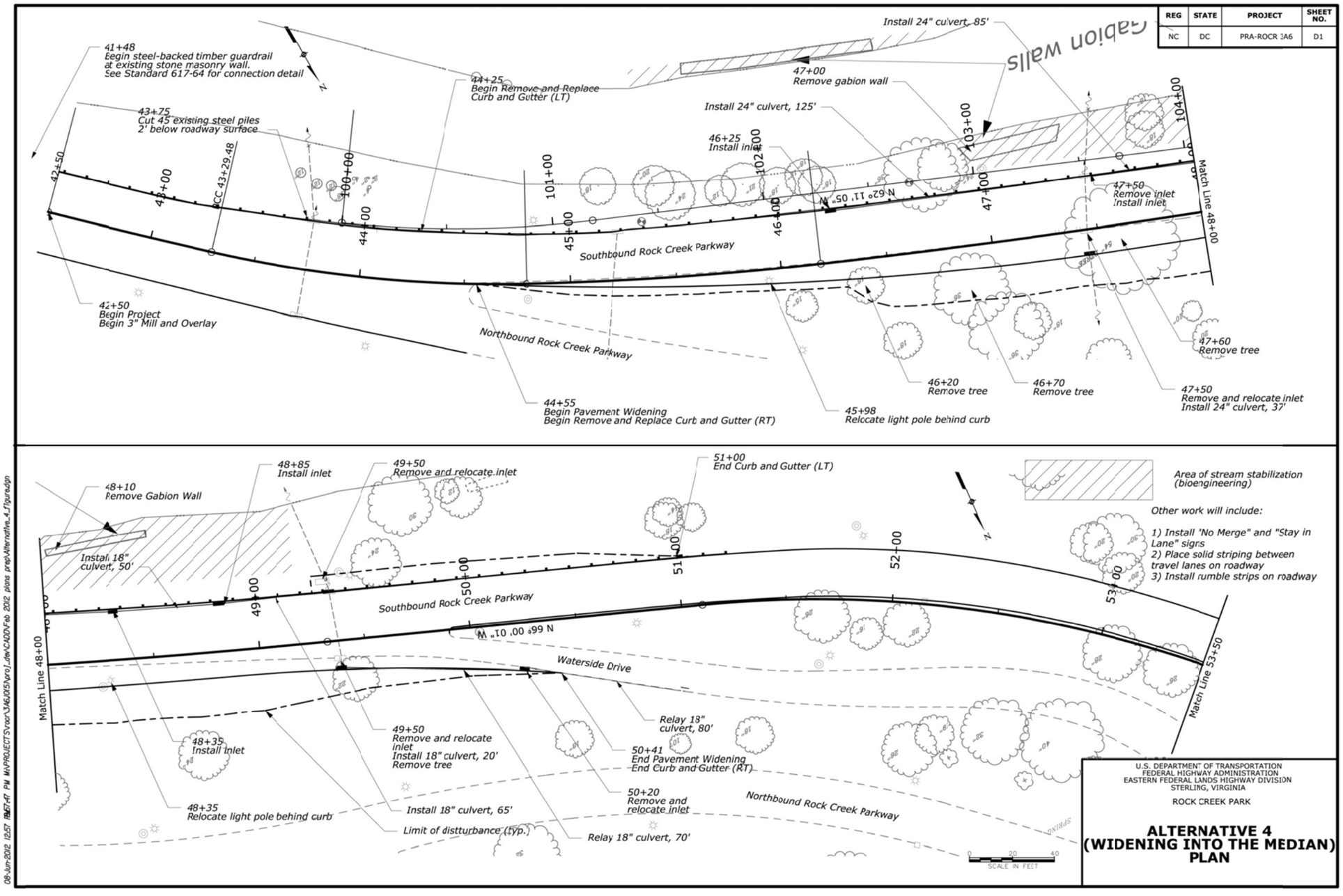
TRAFFIC CALMING

The following traffic calming measures would also be implemented under alternative 4:

- Installation of two warning signs showing merging traffic along the southbound parkway approaching the merge with Waterside Drive, NW.
- Installation of two “Yield” signs along Waterside Drive, NW ramp approaching the merge onto the southbound parkway.

Solid striping and rumble strips along the southbound parkway approaching the merge with Waterside Drive, NW.

FIGURE 12: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE MEDIAN



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IDENTIFICATION OF CULTURAL RESOURCES

AREAS OF POTENTIAL EFFECT

According to the Section 106 regulations (36 CFR 800), an APE is defined as the geographic area or areas in which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

Due to the scale and nature of the road realignment alternatives under analysis, the APEs have been designated. The first is the area of roadway reconstruction or limit of disturbance, which is appropriate for potential archeological resources, notably the area where the remains of the historic Lyons Mill might be impacted by construction (figure 13). The second is the APE for historic structures and cultural landscapes based upon an approximately 400 foot buffer around the roadway reconstruction limit of disturbance and modified by considerations of visibility to and from significant above ground historic properties (figure 14). The third APE is area where riparian revegetation is proposed to mitigation impacts from construction activities conducted in 2011 (figure 15). The area for riparian revegetation is located near Sherrill Drive, NW, approximately five miles upstream of Rock Creek from Waterside Drive, NW (and in a different historic district). The revegetation area APE is a 100 foot buffer on either side of Rock Creek from Sherrill Drive, NW to Bingham Drive, NW. This APE does not address archeological resources because the scouring of the creek side as well as the limited ground disturbance anticipated from tree planting would render impacts to archeological resources extremely unlikely. Furthermore, a four year archeological investigation of Rock Creek Park carried out by the Louis Berger Group on behalf of the NPS in 2004 through 2008 did not identify any sites within this APE. (Berger 2008)

FIGURE 13: AREA OF POTENTIAL EFFECT – ARCHEOLOGICAL RESOURCES (PROJECT AREA)

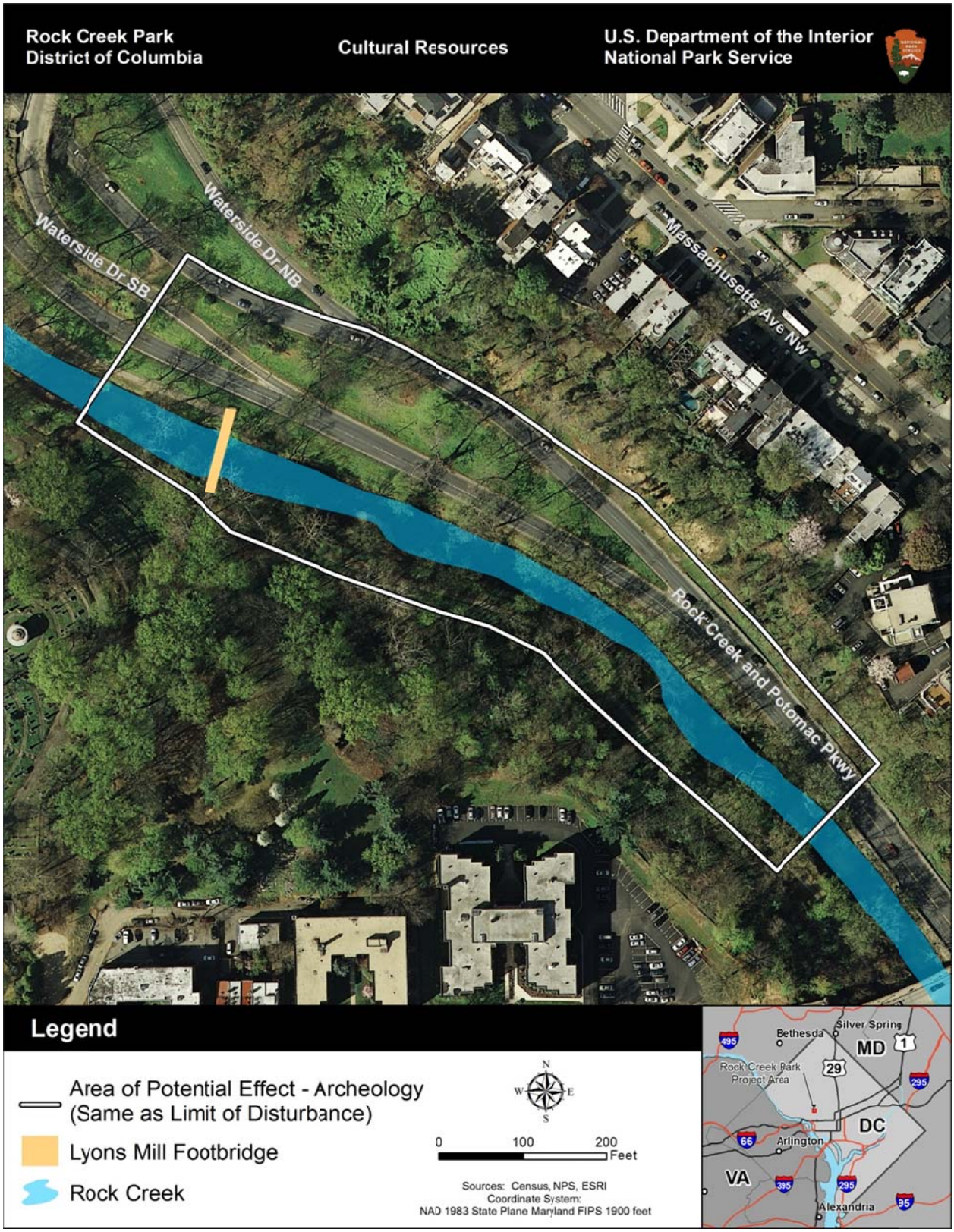
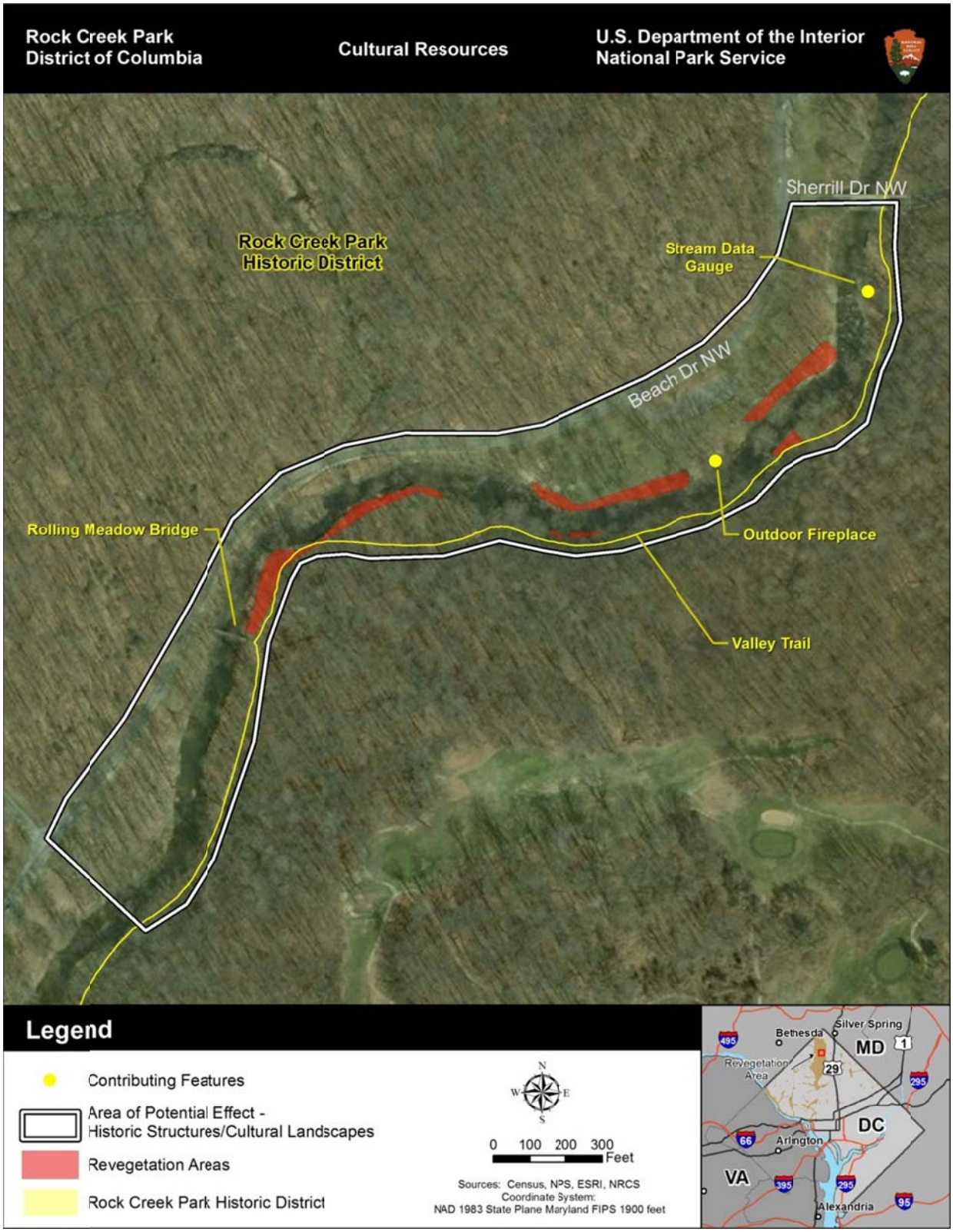


FIGURE 14 AREA OF POTENTIAL EFFECT – CULTURAL LANDSCAPE AND HISTORIC STRUCTURES (PROJECT AREA)

FIGURE 15: AREA OF POTENTIAL EFFECT – CULTURAL LANDSCAPE AND HISTORIC STRUCTURES (RIPARIAN REVEGETATION AREA)



HISTORIC CONTEXT FOR ROCK CREEK PARK

The earliest patents were granted for estates in the Rock Creek Valley area toward the close of the 17th century. The first established settler near the mouth of the creek was Ninian Beall, who patented his "Rock of Dumbarton" tract in 1703. This tract was subsequently incorporated into Georgetown, which was created in 1751 as a tobacco export center. By the late 1720s, most of the lands adjoining Rock Creek had been patented and settled by tobacco farmers. However, no maps exist to show the locations of the earliest farms. Gristmills and sawmills began to be built along the creek by the 1740s; the mills proliferated through the late 1700s and into the 1800s. The Peirce Mill, built in the 1820s, still stands as the sole remnant of this former industry. During the Civil War, Fort DeRussy functioned as part of the ring of forts constructed to defend the capital from Confederate attacks. The fort's guns helped to repel an assault by Jubal Early's troops in July 1864, known as the battle of Fort Stevens.

After the war, farming and milling continued as before in the Rock Creek valley, which retained a largely rural character. Suburban land development began to encroach on the area, however, even as the federal government considered the creation of a public park. In 1889, Congress authorized the purchase of lands for a park along Rock Creek, and the acquisition of over 1,600 acres was completed by 1895 (Bushong 1990).

Among the early improvements to the park were new access roads and trails, which included Beach Drive, NW (1897–1900), Glover Road, NW (1899–1901), Ross Drive, NW (1902–1903), and Morrow Road, NW (1911). The engineers who built these roads were criticized because their construction damaged the scenic beauty of the park. The construction of Beach Drive, NW, in particular, obliterated many features along the creek banks. The structural remains of many early Rock Creek mills, including White's Mill and Blagden Mill, were removed during the construction of this road (Bushong 1990).

The inauguration of Franklin D, Roosevelt as President in 1933 led to the launching of many new public works projects intended to counteract the economic hardships of the Great Depression. Among them were the Civilian Conservation Corps (CCC) and the Public Works Administration (PWA). These programs were to have a major impact on Rock Creek Park. An administrative change placed Rock Creek Park under the overall direction of the NPS and with funding from Title II of the National Industrial Recovery Act, general up-grades to the road system, new bridges and buildings, restoration of Peirce Mill, and the completion of the Piney Branch Parkway were accomplished. A park design manual provided the basis for the uniform "rustic" style of park infrastructure. The CCC participation was so great that a CCC camp to house workers was established in 1938 north of Fort DeRuss (Bushong 1990). The last major overhaul of Rock Creek Park's visitor facilities and roads and trail system came about due to the NPS' ten-year "Mission 66" program to prepare for the 50th anniversary of the agency in 1966.

IDENTIFICATION OF HISTORIC DISTRICTS, STRUCTURES, AND SITES WITHIN THE APES

All of the NRHP historic resources within the APEs discussed in this section are listed in table 1.

IDENTIFICATION OF HISTORIC DISTRICTS

Rock Creek and Potomac Parkway Historic District

The principal historic district, in which road construction activities would take place under the action alternatives, is the Rock Creek and Potomac Parkway (RCPP) Historic District, which was listed in the NRHP by the NPS under the multiple property listing "Parkways of the National Capital Region, 1913–1965." Conceived in 1902 by the Senate Park or McMillan Commission, the parkway is a major component of the District of Columbia's comprehensive park system developed following City Beautiful ideals during the early 1900s. Originally built for horse-drawn carriages, horseback riders, pedestrians, and the occasional automobile, Rock Creek and Potomac Parkway was one of the earliest parkways in the

nation and was the first federally funded park road. The parkway experienced numerous design changes to facilitate growing automobile use during the early 1900s, and as the oldest parkway in the metropolitan Washington area, it features numerous layers of American parkway design. The parkway's long-term evolution resulted in contributions from several landscape architects, including James G. Langdon and Irving W. Payne. However, Frederick Law Olmsted, Jr. asserted perhaps the most influence on the parkway's construction and evolution, beginning during his time as a member of the Commission of Fine Arts and later as a member of the National Capital Park and Planning Commission. Rock Creek and Potomac Parkway is significant under Criteria A and C in the areas of community planning and development, landscape architecture, architecture, and recreation during the period 1791 to 1951 (Barsoum 2005).

The RCPP Historic District contains approximately 173 acres of land encompassing areas historically functioning as the parkway established by the Senate Park Commission to link the Mall and Potomac Park with the National Zoo and Rock Creek Park. Contributing resources within the boundaries of the parkway district include the road, including all stone and stone-faced retaining walls built in conjunction with the road; a remnant road extending from beneath the Connecticut Avenue Bridge to the Zoo Ford; the median between Q Street, NW and Massachusetts Avenue, NW; the P Street, NW Road Bridge; the South Waterside Drive, NW Overpass; the Shoreham Hill Road, NW Bridge; the P Street, NW Beach; culverts including all structures with masonry headwalls; Shoreham Hill; and Rock Creek with all retaining walls and riprap along the banks (Berger 2004).

There are several contributing features to the district within the project area APE for historic resources. A contributing feature represents a building, structure, site, or object that is associated with one or more of the themes under which the district is significant and that retains a high degree of integrity. One of the most important is the median. In the median, south of the Waterside Drive Overpass, is the site of the historic Lyons' Mill. Adjacent to the site, stand three large sycamores which appear to predate parkway construction. Today, numerous mature deciduous trees, probably indigenous specimens dating from before parkway construction, are scattered across the median and along the western side of the parkway in the area of the par course. Trees standing on extensive lawns give this section the appearance of a picturesque landscape. (Barsoum 2005)

Georgetown Historic District

Georgetown was founded by an Act of the Maryland Assembly in 1751 and became part of the District of Columbia upon its establishment in 1791 although it remained a separate jurisdictional entity within the District until 1871.

The Georgetown Historic District is a remarkably intact example of a historic port town and encompasses the area originally laid out in 1751. Its narrow grid streets contrast from the wide, planned streets of L'Enfant's city and its collection of buildings and structures are among the city's oldest, demonstrating a rich variety of residential, commercial, institutional, and industrial examples. From the modest to the grandiose, the historic district's dwellings exhibit styles and forms of all social levels and include Federal, Greek Revival, Italianate, Queen Anne, Romanesque, and Classical Revival styles amid the vernacular.

The Georgetown Historic District contains approximately 4,000 primary buildings; however, no contributing elements have been officially determined. The district was first established by the Old Georgetown Act in 1950 and listed in the DC Inventory of Historic Sites in 1964. In 1967 the Georgetown Historic District was designated a National Historic Landmark and was listed in the NRHP. The period of significance for the Georgetown Historic District spans from 1751 to 1950. The district is roughly bounded by Reservoir Road, NW and Dumbarton Oaks Park on the north, Rock Creek Park on the east, the Potomac River on the south, and Glover-Archbold Parkway on the west (NPS 2003).

Massachusetts Avenue Historic District

The Massachusetts Avenue Historic District extends roughly on either side of Massachusetts Ave, N.W. from Scott Circle to Observatory Hill. It is lined with the grand mansions built for wealthy and prominent Washingtonians in a variety of Revival styles from 1890 to 1930. Many of these palatial urban residences, now serving as embassies, are individually listed on the NRHP. It is the rear yards, parking lots, and gardens of these houses and buildings along the southwest side of the avenue which back up onto Rock Creek Park within the Project Area historical resources APE. (Beauchamp 1967)

Rock Creek Park Historic District

The Rock Creek Park (RCP) Historic District's National Register boundaries are roughly defined as 16th Street, NW to the east, Oregon Avenue, NW and Broad Branch Road, NW to the west, Klingle Road, NW to the south, and the District line and Parkside Drive, NW to the north. The historic district contains 1,754.62 acres of land dominated by picturesque landscapes including forested areas, streams, valleys, meadows, and sloping hills. The park meets National Register Criteria A, B, and C under the themes of architecture, community planning and development, conservation, entertainment/recreation, industry, landscape architecture, military, and horticulture. Significant persons associated with the history of the park include Joshua Peirce and landscape architects Frederick Law Olmsted, Jr., and John C. Olmsted. The park as a whole retains a high degree of integrity of design, workmanship, location, feeling, association, and setting. The riparian revegetation APE is entirely within the RCP historic district.

Based on an inventory of above-ground resources located within the National Register boundaries there are 31 contributing resources and 59 non-contributing resources (NPS 1991).

IDENTIFICATION OF HISTORIC BUILDINGS, STRUCTURES AND SITES

Within the Georgetown Historic District, two historic sites included in the historic resources APE for the Project Area are individually significant: the Oak Hill Cemetery and the Mount Zion Cemetery. The Oak Hill Cemetery, adjacent to Rock Creek Park at 30th and R Street, NWs N.W. was founded by prominent Washington banker W.W. Corcoran and designed according to the landscape precepts of Early Romantic naturalism. Although not NRHP-eligible, it is a D.C. landmark and incorporates James Renwick's Gothic Revival Oak Hill Chapel (which is listed on the NRHP) at its highest point. The 1809 Mount Zion Cemetery combines the Old Methodist Burying Ground and the Female Union Band Society Graveyard. From 1842 on, it was a burial ground for free blacks. It is listed on the NRHP.

TABLE 1: HISTORIC DISTRICTS AND STRUCTURES: PROJECT AREA AT WATERSIDE DRIVE, NW AND RIPARIAN REVEGETATION AREA APES

Historic District/Structures	Type	NRHP Status
Rock Creek and Potomac Parkway Historic District		
• South Waterside Drive Overpass	Structure	Contributing
• Lyon's Mill Footbridge	Structure	Contributing
• Rock Creek and Potomac Parkway Road	Structure	Contributing
• Multi-use Trail Network	Structure	Contributing
• Culverts	Structure	Contributing
• Rock Creek	Site	Contributing
• Median (between Q Street, NW and Massachusetts Avenue, NW)	Site	Contributing
Georgetown Historic District		
• Oak Hill Cemetery	Site	DC Landmark
• Oak Hill Chapel	Building	NRHP
• Mt. Zion Cemetery	Site	NRHP
Massachusetts Avenue Historic District		

Historic District/Structures	Type	NRHP Status
Rock Creek Park Historic District		
• Rolling Meadow Pedestrian Bridge	Structure	Contributing
• Outdoor fireplace	Structure	Contributing
• Beach Drive Road and Happy Valley Trail	Structure	Contributing
• Stream Data Gauge	Structure	Contributing

IDENTIFICATION OF CULTURAL LANDSCAPES IN THE APES

Cultural landscapes, as defined by The *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*, consist of "a geographic area (including both cultural and natural resources and the wildlife or domestic animals therein) associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values" (Birnbaum 1996). Created by an act of Congress in 1890, Rock Creek Park encompasses the last major natural landscape in the District. The area composing the park was little modified by human interaction prior to its creation as a park. Since that time, the park has balanced the preservation and maintenance of the valley's natural and cultural resources with the recreational and transportation requirements of modern Washington while incorporating the highest cultural and aesthetic values. As such, Rock Creek Park is considered a significant cultural and historic landscape.

It should be noted that Rock Creek Park, as a cultural landscape, is defined by the boundaries of the entire park within the District of Columbia; therefore, it includes all of the area in the RCP Historic District and most of the RCPP Historic District discussed above. Both of these historic districts, unlike the Georgetown or Massachusetts Avenue Historic Districts, are primarily important as cultural landscapes but were initially documented as historic districts for the NRHP before the recent emphasis on cultural landscapes as a unique class of cultural resource.

Within the Rock Creek Park's overall cultural landscape are certain component cultural landscapes that have been documented in detail such as Linnaean Hill and Peirce Mill, but they are not within the APEs.

Recently, five trees (out of the seven proposed to be removed or impacted by construction) located in the median of the parkway and in the APE at the project area at Waterside Drive, NW have been identified as particularly significant and have been documented to the Historic American Landscape Survey (HALS) standards. Avoidance of impacts on these trees by road construction would be desirable; however, it has not yet been determined whether they are healthy enough for long-term survival.

Revegetation of riparian areas along Rock Creek, as indicated above, impact an area of the cultural landscape that is more authentically wild and not closely flanked by urban development. However, the elements of rustic-appearing stone park infrastructure such as trails, fire pits, and a pedestrian bridge represent aspects of a designed historic landscape. The palette of trees, shrubs, and plants already present in the riparian revegetation area are characteristic of a natural riparian environment in this climatic and soil zone.

IDENTIFICATION OF ARCHEOLOGICAL RESOURCES IN THE APES

Archeological resources consist of buried and aboveground prehistoric and historic remains and artifacts significant to the study of prehistory and history. Because these resources exist primarily in subsurface contexts, potential impacts to archeological resources are assessed according to the extent to which the proposed alternatives would involve ground-disturbing activities such as excavation or grading. The analysis of possible impacts to archeological resources was based on a review of previous archeological studies, consideration of the proposed alternatives, and other information provided by the NPS. The analysis of potential impacts to archeological resources begins with the identification and evaluation of archeological sites in the project area. Information concerning site location, type, age, and NRHP

eligibility provides an essential understanding not only of known sites, but also, based on certain environmental factors such as proximity to water and slope of ground, of where potential undocumented archeological resources sites may be found (based on certain environmental factors such as proximity to water and slope of ground). NRHP–listed and eligible archeological sites are then assessed for potential impacts from the proposed alternatives.

One potentially significant historic archeological resource is presumed to lie within the APE. The reconstruction and rehabilitation of Rock Creek and Potomac Parkway at Waterside Drive, NW may impact the median between the southbound and northbound lanes of Rock Creek and Potomac Parkway at and below the merge ramps from Waterside Drive, NW. It is believed that the ruins of the 1700s Lyons Mill may be preserved in the median area, although archeological remains of Lyons Mill have not yet been formally identified. Other resources associated with Lyons Mill may be located beyond the median, particularly in the area between the road and the creek at the "Lyons Mill Footbridge." During the planning and design for the Rock Creek and Potomac Parkway, the road was purposefully designed to avoid the mill by creation of an enlarged median between the inbound and outbound traffic lanes in the vicinity of Waterside Drive, NW.

Lyons Mill, also historically known as "Pigman and Crow" and "Federal Mill," was established in the 1780s and was one of several mills that took advantage of the water power afforded by Rock Creek. Lyons Mill operated until the 1870s. During the planning for Rock Creek and Potomac Parkway, specific attention was given to Lyons Mill, as the designers intended the mill to be preserved as a scenic reminder of the past. Accordingly, the inbound and outbound lanes were split around the mill, leaving it standing in a wide median. However, the mill collapsed in 1913, so by the time the parkway was built the mill had been falling into ruin for over a decade. The road still avoided the surviving foundations, leaving the mill site "undisturbed in its present quiet and restful state, merely adapting necessary walks and drive to fit natural conditions" (*Washington Post* 1916). The mill was leveled and buried during later landscaping of the park. The NPS has commissioned a phase 1B archeological investigation to determine the exact location of the mill's foundation. The investigation will determine if indeed the mill's foundation survives and ascertain if the proposed roadway improvements will have any impact to potentially significant archeological features or deposits. Specific research questions will be developed to guide the archeological investigation to provide an interpretive framework for significant finds (LeeDecker et. al. 2012).

The reconstruction and rehabilitation of Rock Creek and Potomac Parkway at Waterside Drive, NW will otherwise impact land that has already been extensively disturbed for the construction of Rock Creek and Potomac Parkway and is not considered sensitive for prehistoric archeological resources (LeeDecker, et al. 2012).

As indicated in the discussion of APEs, the riparian revegetation zone is also not considered sensitive for archeological resources as because the scouring of the sides of Rock Creek as well as the limited ground disturbance anticipated from tree planting would render impacts to archeological resources extremely unlikely.

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ASSESSMENT OF EFFECTS

METHODOLOGY

To assess the potential effects of the proposed "Reconstruction and Rehabilitation of Rock Creek and Potomac Parkway Southbound at Waterside Drive Project" as an undertaking with the potential to effect historic properties this report applies the Criteria of Adverse Effect, as defined in 36 CFR 800.5, to each historic property within the APEs. The Criteria of Adverse Effect states, "An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the property's location, design, setting, materials, workmanship, feeling, or association." Additionally, "adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative." Examples of adverse effects include:

- Physical destruction of or damage to all or part of the property;
- Alteration of a property that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Resources (36 CFR 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property's use or physical features within the property's setting that contribute to its historic significance;
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features;
- Neglect of a property which causes its deterioration; and
- Transfer, lease, or sale of the property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance.

EFFECTS ON HISTORIC DISTRICTS, STRUCTURES AND SITES WITHIN THE APES

EFFECTS OF ALTERNATIVE 1: NO ACTION

The banks of Rock Creek and the multi-use trail network, contributing features of the RCPP Historic District suffered serious damage as a result of the storms of 2011. The eroded stream banks of Rock Creek are now protected by stone gabion baskets, intended as temporary remediation. If no further action is taken the segment of the multi-use trail along the western shore of Rock Creek could continue to be threatened by erosion. The integrity of the bucolic setting of this portion of the historic district would continue to be diminished in terms of design, setting, materials, workmanship, feeling, and association. There would, however, be no impact on the Lyons Mill Footbridge, the stone retaining walls, the present road, the median or the culverts from inaction.

The NPS would not be obligated by the provisions of the National Historic Preservation Act of 1966, as Amended (NHPA) to restore aspects of the integrity of a historic property that had been damaged by an act of nature, nor is the no action alternative strictly speaking an "undertaking" unless it rises to the level of "demolition of neglect." Nonetheless, the installation of the stone gabion baskets, a past action taken on an emergency basis, has, due to (a) the gabions' visual intrusiveness within the naturalistic and picturesque setting and (b) nonconformance with the palette of appropriate parkway infrastructure, has had an adverse effect upon the RCPP historic district.

The setting and other character defining aspects of the Massachusetts Avenue Historic District would not be affected by the no action alternative because the primary historic quality of this district is the linear parade of grand houses facing toward the avenue from both sides, not the intermittent views from the backyards and rear elevations of individual houses on the southern side. The Georgetown Historic District does extend to the western stream bank of Rock Creek, but the existing condition of the stream bank, i.e. gabions as a temporary fix for erosion, is negligible in the context of the scale and historic context of Georgetown. Currently the vegetation and trees along the western shore of this segment of Rock Creek provide a visual buffer between the Oak Hill and Mount Zion cemeteries, as well as the Oak Hill Chapel. The no action alternative, if considered an undertaking under Section 106, would still have *no adverse effect* on these resources.

Under the no action alternative, revegetation of riparian areas would not occur. Therefore, there would be no undertaking with regard to any of the historic structures along the upper reach of Rock Creek that are contributing features of the RCP Historic District. In summary, the no action alternative, within the context and scale of the historic structures and districts potentially impacted, is not demolition by neglect and *does not constitute an undertaking*.

EFFECTS OF ALTERNATIVE 2: RESTORE TO ORIGINAL CONDITION

The restoration of the section of Rock Creek and Potomac Parkway to its original pre-2011 alignment in conjunction with the restoration of the stream bank by means of the VRSS method and restoration of riparian areas would restore the integrity of certain contributing features of the RCPP Historic District. The original dimensions of the road, particularly the southbound lanes of the parkway would be restored. The installation of the VRSS would protect the stream banks of Rock Creek and the segment of the trail network along the western shore from further erosion and replace the visually obtrusive and historically inappropriate gabion baskets with a more appropriate vegetative solution. The masonry-faced culvert on the eastern stream bank is upstream from the area where the VRSS would be installed so it would not be impacted. Alternative 2 would have *no adverse effect* on the RCPP Historic District.

The setting and other character defining aspects of the Massachusetts Avenue Historic District would not be affected because the primary historic quality of this district is the linear parade of mansions with imposing front elevations facing toward the avenue from both sides, not the intermittent views from the backyards and rear elevations of houses on the southern side. The Georgetown Historic District, which extends to the western stream bank of Rock Creek, along with its component historic properties, the Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to historic structures due to the replacement of the visually intrusive gabion erosion control fix by the VRSS. The VRSS would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. There would be *no adverse effect* to either historic district or to the Mount Zion Cemetery and Oak Hill Cemetery or its chapel.

In the riparian revegetation area, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. The contributing elements of the RCP Historic District within the APE (which are all structures associated with park infrastructure) – an outdoor fireplace, the Rolling Meadow pedestrian bridge, stream gauge, and historic trails and roads – would be protected. This component of the project would be the same for all action alternatives. There would be *no adverse effects* to these contributing features of the RCP historic district.

EFFECTS OF ALTERNATIVE 3: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE CREEK

The road, as a contributing element of the RCPP Historic District, represents not only the main road, Rock Creek and Potomac Parkway in this location, but two specifically identified subcomponents. They are North Waterside Drive, NW and what is termed in the NRHP nomination the “South Waterside Drive

Overpass." The description in the NRHP nomination emphasizes the architectural character, materials, and picturesque character of the bridge structure. It is not clear whether the "at grade" segments of South Waterside Drive, NW at either end of the overpass are included. In general, the history of conflicts between the aesthetic goal of maintaining the configuration of the roads as winding, scenic, low-speed parkways and their later function as commuter arteries is a major theme in the narrative of the NRHP nomination (Barsoum 2005). For the road as a contributing feature to the historic district, adding the merge lane would alter the historic configuration of one contributing feature due to the change to southbound Waterside Drive, NW and the southbound parkway at their confluence, but not substantially enough to adversely affect the integrity of this resource.

No other contributing features of the historic district on the east side of Rock Creek would be impacted. The addition of a natural-stone-faced concrete retaining wall and steel-backed timber guardrails is in keeping with the existing palette of hardscape features in the historic district. The installation of the VRSS would protect all stream banks of Rock Creek and the segment of the trail network along the western shore from further erosion. The masonry-faced culvert on the eastern stream bank is upstream from the area where the VRSS would be installed so it would not be impacted. The mature trees of the median would be protected. On balance, alternative 3 would have *no adverse effect* on the RCPP Historic District.

The setting and other character defining aspects of the Massachusetts Avenue district would not be affected because the primary historic quality of this district is the linear parade of mansions with imposing front elevations facing toward the avenue from both sides, not the intermittent views from the backyards and rear elevations of houses on the southern side. The Georgetown Historic District, which extends to the western stream bank of Rock Creek, along with its component historic properties, the Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to historic structures due to the replacement of the visually disruptive gabion erosion control fix by the VRSS which would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. There would be *no adverse effect* to either historic district or to the Mount Zion Cemetery and Oak Hill Cemetery or its chapel.

In the riparian revegetation zone, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. The contributing elements of the RCP Historic District within the APE (which are all structures associated with park infrastructure) – an outdoor fireplace, the Rolling Meadow pedestrian bridge, stream gauge, and historic trails and roads – would be protected. There would be *no adverse effect to* these contributing features of the RCP historic district.

EFFECTS OF ALTERNATIVE 4: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE MEDIAN

The analysis of the impact to the road as a contributing feature of the RCPP Historic District and the characterization of altering the configuration of southbound Waterside Drive, NW and the southbound parkway as a minor impact which does not alter the overall integrity of the roadway as a contributing feature in alternative 3 applies to alternative 4 as well. Alternative 4, however, would also widen the roadway into the median by 12 feet from the original pre-July 2011 alignment toward the median and thus narrow it from its historic shape. The NRHP nomination's description of the median as a contributing feature begins, "At the northern end of the 1935 stone retaining wall, the road separates and becomes more curvilinear, establishing a grassy, irregular shaped median planted with specimen trees." It mentions the role of the remains of Lyons Mill, built in 1780 and collapsed in 1913, as a picturesque ruin in the median and that it was valued by park designer Frederick Law Olmsted, Jr." (Barsoum 2005). The question with regard to the median as a contributing element of the RCPP historic district, i.e., as a site or type of historic structure, is "Would it be so altered by a marginal reconfiguration of this scale that its integrity would be diminished?" There would be a minor change to median's design and location but not to its setting, feeling, or association.

No other contributing features of the historic district on the east side of Rock Creek would be impacted. The addition of steel-backed timber guardrails is in keeping with the existing palette of hardscape features in the historic district. The installation of the VRSS would protect all stream banks of Rock Creek and the segment of the trail network along the western shore from further erosion. The masonry-faced culvert on the eastern stream bank is upstream from the area where the VRSS would be installed so it would not be impacted. On balance, alternative 4 would have *no adverse effect* under Section 106 on the RCPP Historic District. The setting and other character defining aspects of the Massachusetts Avenue Historic District would not be affected because the primary historic quality of this district is the linear parade of mansions with imposing front elevations facing toward the avenue from both sides, not the intermittent views from the backyards and rear elevations of houses on the southern side. The Georgetown Historic District, which extends to the western stream bank of Rock Creek, along with its component historic properties, the Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to historic structures due to the replacement of the visually disruptive gabion erosion control fix by the VRSS which would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. There would be *no adverse effect* to either historic district or to the Mount Zion Cemetery and Oak Hill Cemetery or its chapel.

In the riparian revegetation zone, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. The contributing elements of the RCP Historic District within the APE (which are all structures associated with park infrastructure) – an outdoor fireplaces, the Rolling Meadow pedestrian bridge, stream gauge, and historic trails and roads – would be protected. There would be *no adverse effects* to these contributing features of the RCP historic district.

EFFECTS ON CULTURAL LANDSCAPES (RCPP AND RCP)

The recognition of both the Rock Creek and Potomac Parkway and Rock Creek Park as cultural landscapes has grown out of the designations of significance in the NRHP nominations of the two properties as historic districts. Although they have different boundaries, the two historic properties obviously share many similar natural and historic characteristics. No Cultural landscape Report (CLR) per se has been done for either property as a whole, although Cultural Landscape Inventories (CLIs) have been done for Peirce Mill (as well as a CLR) and Linnaean Hill; none of which are within any APE for this undertaking[2]. Therefore the analysis of the Section 106 effects on cultural landscapes is very similar to that on the RCPP and RCP historic districts.

The territory of Rock Creek Park and Potomac Parkway, listed on the NRHP in 2005, has also been recognized as a historic designed landscape, i.e., a type of cultural landscape. The parkway's cultural landscape is related to but differs somewhat from the Rock Creek Park cultural landscape to the north, also nominated as a historic district and cultural landscape. The parkway's cultural landscape is primarily based on the parkway and its intended design as a picturesque American parkway linking the formal zone of the Lincoln Memorial on the Mall to the wooded, naturalistic environment of Rock Creek Park. Only in its more northerly half, between the P Street Bridge and Klingle Road, NW, is it surrounded by lush and seemingly randomly spaced trees and vegetation as it snakes along the valley of Rock Creek. At this northern stretch of the parkway, the corridor of surrounding parkland is still comparatively narrow, at least in comparison with the wider Rock Creek Park further north. The wild aspect of the landscape of the upper Rock Creek and Potomac Parkway is somewhat contrived because it depends on the historical removal of row houses and industrial facilities not deemed in accordance with the plan, as well as the sunken topography. Rock Creek Park has these elements too, but it contains more authentically natural woodland.

Rustic-appearing stone bridges (vehicular and pedestrian), retaining walls, and culverts are the structural and hardscape features that are associated with the American parkway movement. Because the impacts of

2 A Rock Creek Park Historic Trails CLR will be published in the summer of 2012

the project alternatives on these features have already been analyzed in the "Historic Structures" section above, the discussion here will focus on the landscape design aspects, also documented in the 2005 nomination of the RCPP Historic District to the NRHP.

The only specific discussion in the NRHP nomination's landscape section about an area corresponding roughly to the project's APE indicates, "In the median south of Waterside Drive Overpass is the site of the historic Lyons Mill. Adjacent to the site stand three large sycamores that appear to predate the parkway construction. Today numerous mature deciduous trees, probably indigenous specimens dating before parkway construction, are scattered across the median and along the western side of the parkway in the area of the par course. Trees standing on extensive lawns give this section the appearance of a picturesque landscape" (Barsoum 2005). It should, however, not be assumed that the mature trees described constitute only a natural resource, as the parkway designers made the conscious choice to expand the median around them and preserve the Lyons Mill site.

The NPS has identified five significant trees within the median that would be impacted within the APE. These trees have been documented to HALS standards (Kuhn and Plakorus 2012).

EFFECTS OF ALTERNATIVE 1: NO ACTION

The banks of Rock Creek, the roadway itself, and the multi-use trail network, contributing features of the RCPP Historic District suffered serious damage as a result of the storms of 2011. The eroded stream banks of Rock Creek are now protected by gabion baskets, intended as temporary remediation. If no further action is taken the segment of the multi-use trail along the western shore of Rock Creek could continue to be threatened by erosion. The integrity of the bucolic setting of this portion of the historic district would continue to be diminished in terms of design, setting, materials, workmanship, feeling, and association.

The NPS would not be obligated by the provisions of NHPA to restore aspects of the integrity of a historic property that had been damaged by an act of nature, nor is the no action alternative strictly speaking an "undertaking" unless it rises to the level of "demolition of neglect. Nonetheless, the installation of the stone gabion baskets, a past action taken on an emergency basis, has, due to (a) the gabions' visual intrusiveness within the naturalistic and picturesque setting of this stretch of Rock Creek and (b) nonconformance with the palette of appropriate parkway infrastructure, has had an adverse impact upon the RCPP historic district as a cultural landscape.

Currently the vegetation and trees along the western shore of this segment of Rock Creek provide a visual buffer between the Oak Hill and Mount Zion cemeteries as well as the Oak Hill Chapel. The no action alternative, if considered an undertaking under Section 106, would still have no adverse effect on these resources.

Under the no action alternative, revegetation of riparian areas would not occur. Therefore there would be no undertaking with regard to the RCP historic district as a cultural landscape. In summary, the no action alternative with regard to cultural landscapes is not demolition by neglect and *does not constitute an undertaking*.

EFFECTS OF ALTERNATIVE 2: RESTORE TO ORIGINAL CONDITION

The restoration of the section of Rock Creek and Potomac Parkway to its original pre-2011 alignment, in conjunction with the restoration of the stream bank by means of the VRSS method and restoration of riparian areas, would restore the integrity of certain contributing features of the RCPP Historic District and its character as a cultural landscape. The original dimensions of the road, particularly the southbound lanes of Rock Creek and Potomac Parkway, would be restored. The plantings and tree placement would be allowed to grow back over time and more closely match the landscape as it was pre-2011. The installation of the VRSS would protect the stream banks of Rock Creek and the segment of the trail

network along the western shore from further erosion and replace the visually obtrusive and historically inappropriate gabion baskets with a more appropriate vegetative solution. The Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to their integrity as cultural landscapes due to the replacement of the visually disruptive gabion erosion control fix by the VRSS. It would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. Alternative 2 would have *no adverse effect* on the RCPP historic district as a cultural landscape. In addition, the NPS has written to the DCHPO to propose the following measures to avoid any potential adverse effects to cultural landscapes:

- As the loss of vegetation resulting from the proposed undertaking, including within the median, would be limited relative to the size of the Rock Creek and Potomac Parkway (approximately 173 acres) and its extensive landscaping throughout the valley, the replanting of native tree species and vegetation following construction would eliminate potential adverse effects on the setting of the parkway. Planting within the median will focus on replanting within close proximity to the original location of the current trees to continue the visual demarcation of the former Lyons Mill site. This will be planned in consultation with the NPS Regional Archeologist to avoid potential archeological resources associated with the Lyons Mill.
- Historic American Landscape Survey (HALS) documentation of five trees (three sycamores and two white ashes) within the median has been undertaken by the NPS. This documentation will be submitted to the Library of Congress for inclusion in the Historic American Building Survey/Historic American Engineering Record/HALS collection.
- As part of the NPS's on-going Section 110 responsibilities, documentation and an inventory of the cultural landscape for the RCPP will be conducted within the next five years.

In the riparian revegetation area, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. This component of the project would be the same for all action alternatives. There would be *no adverse effects* to the RCP historic district as a cultural landscape.

EFFECTS OF ALTERNATIVE 3: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE CREEK

The addition of a natural stone-faced concrete retaining wall and steel-backed timber guardrails is in keeping with the existing palette of hardscape features in throughout Rock Creek Park. The installation of the VRSS would protect all stream banks of Rock Creek and the segment of the trail network along the western shore from further erosion. The mature trees of the median would be protected. Alternative 3 would have *no adverse effect* on the RCPP historic district as a cultural landscape. In addition, the NPS has written to the DCHPO to propose the following measures to avoid any potential adverse effects to cultural landscapes:

- As the loss of vegetation resulting from the proposed undertaking, including within the median, would be limited relative to the size of the Rock Creek and Potomac Parkway (approximately 173 acres) and its extensive landscaping throughout the valley, the replanting of native tree species and vegetation following construction would eliminate potential adverse effects on the setting of the parkway. Planting within the median will focus on replanting within close proximity to the original location of the current trees to continue the visual demarcation of the former Lyons Mill site. This will be planned in consultation with the NPS Regional Archeologist to avoid potential archeological resources associated with the Lyons Mill.
- Historic American Landscape Survey (HALS) documentation of five trees (three sycamores and two white ashes) within the median has been undertaken by the NPS. This documentation will be submitted to the Library of Congress for inclusion in the Historic American Building Survey/Historic American Engineering Record/HALS collection.

- As part of the NPS's on-going Section 110 responsibilities, documentation and an inventory of the cultural landscape for the RCPP will be conducted within the next five years.

The Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to the integrity of their cultural landscapes due to the replacement of the visually disruptive gabion erosion control fix by the VRSS. It would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. Alternative 3 would have *no adverse effect* on these resources.

In the riparian revegetation area, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. This component of the project would be the same for all action alternatives. There would be *no adverse effects* to the RCP historic district as a cultural landscape.

EFFECTS OF ALTERNATIVE 4: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE MEDIAN

Alternative 4 would widen the roadway into the median by 12 feet from the original pre-July 2011 alignment and would result in the loss of seven trees within the median (including the five trees that have been documented by the HALS documentation). The NRHP nomination's description of the median as a contributing feature begins, "At the northern end of the 1935 stone retaining wall, the road separates and becomes more curvilinear, establishing a grassy, irregular shaped median planted with specimen trees." It mentions the role of the remains of Lyons Mill, built in 1780 and collapsed in 1913, as a picturesque ruin in the median and that it was valued by park designer Frederick Law Olmsted, Jr. The description ends, "Three majestic sycamores mark the mill site" (Barsoum 2005). The combination of impacts on the median and the trees would slightly diminish the property's location, design, setting, feeling, and association. It would, however, be partially mitigated by a tree replanting plan for the median designed to restore the picturesque landscape and lessen any perception of loss of open space in the median.

No other contributing features of the historic district on the east side of Rock Creek would be impacted. The addition of steel-backed timber guardrails is in keeping with the existing palette of hardscape features in the historic district. The installation of the VRSS would protect all stream banks of Rock Creek and the segment of the trail network along the western shore from further erosion. This would be a beneficial impact. On balance, alternative 4 would have *no adverse effect* under Section 106 on the RCPP historic district as a cultural landscape. In addition, the NPS has written to the DCHPO to propose the following measures to avoid any potential adverse effects to cultural landscapes:

- As the loss of vegetation resulting from the proposed undertaking, including within the median, would be limited relative to the size of the Rock Creek and Potomac Parkway (approximately 173 acres) and its extensive landscaping throughout the valley, the replanting of native tree species and vegetation following construction would eliminate potential adverse effects on the setting of the parkway. Planting within the median will focus on replanting within close proximity to the original location of the current trees to continue the visual demarcation of the former Lyons Mill site. This will be planned in consultation with the NPS Regional Archeologist to avoid potential archeological resources associated with the Lyons Mill.
- Historic American Landscape Survey (HALS) documentation of five trees (three sycamores and two white ashes) within the median has been undertaken by the NPS. This documentation will be submitted to the Library of Congress for inclusion in the Historic American Building Survey/Historic American Engineering Record/HALS collection.
- As part of the NPS's on-going Section 110 responsibilities, documentation and an inventory of the cultural landscape for the RCPP will be conducted within the next five years.

The Oak Hill Cemetery and Mount Zion Cemetery would experience beneficial effects to their cultural landscapes due to the replacement of the visually disruptive gabion erosion control fix by the VRSS. It

would enhance the graceful transition from the natural riparian, wooded appearance of the west bank of Rock Creek to the picturesque landscape design of the two cemeteries. Alternative 4 would *no adverse effect* on these resources.

In the riparian revegetation area, several areas would be planted with native species appropriate to the natural riparian environment of Rock Creek. This component of the project would be the same for all action alternatives. There would be *no adverse effect* to the RCP historic district as a cultural landscape.

EFFECTS ON ARCHEOLOGICAL RESOURCES

EFFECTS OF ALTERNATIVE 1: NO ACTION

The no action alternative does not constitute an undertaking under Section 106 of the NHPA. No archeological resource would suffer deterioration by neglect.

EFFECTS OF ALTERNATIVE 2: RESTORE TO ORIGINAL CONDITION

This analysis and determination of effect for archeology is the same for all action alternatives. To address potential impacts on potential archeological resources, particularly those associated with Lyons Mill, the NPS has taken two measures: (a) a Phase 1A archeological study to develop answers to relevant questions, such as the probable location of Lyons Mill in relation to the current parkway, and (b) a Phase 1B Investigation to be conducted prior to construction, which will define the exact location of the mill's foundation and associated resources and evaluate their eligibility for the NRHP. Resources associated with Lyons Mill may potentially exist anywhere from the median to the "Lyons Mill" footbridge over Rock Creek.

To ensure the avoidance of adverse effects to archeology at the project area, the NPS has written to the DCHPO to propose the following measures:

- As a result of the findings of the Phase 1A archeological investigation of the median in the vicinity of Waterside Drive, there is the potential for intact archeological resources related to Lyons Mill. The mill, which collapsed in 1913, occupied the area that now includes the median in the vicinity of Waterside Drive at the RCPP. A Phase 1B archeological investigation to determine if archeological resources are extant within the Limits of Disturbance at the median will be undertaken prior to ground-disturbing activities. Ground-disturbing activities are limited to what is required for the installation of lamp poles and inlets within the median. Such an investigation would be used to determine if intact archeological resources are extant and will provide the FHWA and the NPS information that will guide any design changes necessary to avoid such resources. Consultation will continue with the DCHPO on measures to avoid potential adverse effects to these resources.

With regard to the riparian revegetation area, the scouring of the creek side as well as the limited ground disturbance anticipated from tree planting would render impacts to archeological resources extremely unlikely. Furthermore, a four year archeological investigation of Rock Creek Park carried out by the Louis Berger Group on behalf of the NPS in 2004 through 2008 did not identify any sites within this APE (Berger 2008).

Therefore, alternative 2 *would have no adverse effect* to archeological resources.

EFFECTS OF ALTERNATIVE 3: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE CREEK

This analysis and determination of effect for archeology is the same for all action alternatives. To address potential impacts on potential archeological resources, particularly those associated with Lyons Mill, the NPS has taken two measures: (a) a Phase 1A archeological study to develop answers to relevant

questions, such as the probable location of Lyons Mill in relation to the current parkway, and (b) a Phase 1B Investigation to be conducted prior to construction, which will define the exact location of the mill's foundation and associated resources and evaluate their eligibility for the NRHP. Resources associated with Lyons Mill may potentially exist anywhere from the median to the "Lyons Mill" footbridge over Rock Creek.

To ensure the avoidance of adverse effects to archeology at the project area, the NPS has written to the DC SHPO to propose the following measures:

- As a result of the findings of the Phase 1A archeological investigation of the median in the vicinity of Waterside Drive, there is the potential for intact archeological resources related to Lyons Mill. The mill, which collapsed in 1913, occupied the area that now includes the median in the vicinity of Waterside Drive at the RCPP. A Phase 1B archeological investigation to determine if archeological resources are extant within the Limits of Disturbance at the median will be undertaken prior to ground-disturbing activities. Ground-disturbing activities are limited to what is required for the installation of lamp poles and inlets within the median. Such an investigation would be used to determine if intact archeological resources are extant and will provide the FHWA and the NPS information that will guide any design changes necessary to avoid such resources. Consultation will continue with the DCHPO on measures to avoid potential adverse effects to these resources.

With regard to the riparian revegetation area, the scouring of the creek side as well as the limited ground disturbance anticipated from tree planting would render impacts to archeological resources extremely unlikely. Furthermore, a four year archeological investigation of Rock Creek Park carried out by the Louis Berger Group on behalf of the NPS in 2004 through 2008 did not identify any sites within this APE (Berger 2008).

Therefore, alternative 3 *would have no adverse effect* to archeological resources.

EFFECTS OF ALTERNATIVE 4: ADD MERGE LANE BY WIDENING THE ROAD TOWARD THE MEDIAN

This analysis and determination of effect for archeology is the same for all action alternatives. To address potential impacts on potential archeological resources, particularly those associated with Lyons Mill, the NPS has taken two measures: (a) a Phase 1A archeological study to develop answers to relevant questions, such as the probable location of Lyons Mill in relation to the current parkway, and (b) a Phase 1B Investigation to be conducted prior to construction, which will define the exact location of the mill's foundation and associated resources and evaluate their eligibility for the NRHP. Resources associated with Lyons Mill may potentially exist anywhere from the median to the "Lyons Mill" footbridge over Rock Creek.

To ensure the avoidance of adverse effects to archeology at the project area, the NPS has written to the DC SHPO to propose the following measures:

- As a result of the findings of the Phase 1A archeological investigation of the median in the vicinity of Waterside Drive, there is the potential for intact archeological resources related to Lyons Mill. The mill, which collapsed in 1913, occupied the area that now includes the median in the vicinity of Waterside Drive at the RCPP. A Phase 1B archeological investigation to determine if archeological resources are extant within the Limits of Disturbance at the median will be undertaken prior to ground-disturbing activities. Ground-disturbing activities are limited to what is required for the installation of lamp poles and inlets within the median. Such an investigation would be used to determine if intact archeological resources are extant and will provide the FHWA and the NPS information that will guide any design changes necessary to avoid such

resources. Consultation will continue with the DCHPO on measures to avoid potential adverse effects to these resources.

With regard to the riparian revegetation area, the scouring of the creek side as well as the limited ground disturbance anticipated from tree planting would render impacts to archeological resources extremely unlikely. Furthermore, a four year archeological investigation of Rock Creek Park carried out by the Louis Berger Group on behalf of the NPS in 2004 through 2008 did not identify any sites within this APE (Berger 2008).

Therefore, alternative 4 *would have no adverse effect* to archeological resources.

CONCLUSION

The Assessment of Effects for the Reconstruction and Rehabilitation of Rock Creek and Potomac Parkway Southbound at Waterside Drive, NW as an undertaking in accordance with regulations implementing Section 106 of the National Historic Preservation Act are summarized in table 2.

TABLE 2: SECTION 106 ASSESSMENT OF EFFECTS

.	Type	Category	Alt 1	Alt 2	Alt 3	Alt 4
Rock Creek and Potomac Parkway Historic District	District	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• South Waterside Drive Overpass (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Lyon's Mill Footbridge (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Rock Creek and Potomac Parkway Road (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Multi-use Trail Network (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Culverts (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Rock Creek	Site	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Median (Q Street, NW to Mass. Ave.) (contributor)	Site	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Georgetown Historic District NHL, NRHP	District	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Oak Hill Cemetery DC Landmark	Site	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Oak Hill Chapel NRHP	Building	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Mt. Zion Cemetery NRHP	Site	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Massachusetts Avenue Historic District NRHP	District	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Rock Creek Park Historic District NRHP	District	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Rolling Meadow Pedestrian Bridge (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Outdoor fireplace (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Beach Drive Road and Trail (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
• Stream Data Gauge (contributor)	Structure	Historical	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Rock Creek and Potomac Parkway Cultural Landscape		Landscape	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Rock Creek Park Cultural Landscape		Landscape	-	No Adverse Effect	No Adverse Effect	No Adverse Effect
Known Archeological Sites		Archeological	-	-	-	-
Presumed Archeological Sites (Lyons Mill)		Archeological	-	No Adverse Effect	No Adverse Effect	No Adverse Effect

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