National Park Service
U.S. Department of the Interior

Rock Creek Park
Washington, DC

Upper Beach Drive Management Plan
Environmental Assessment

July 2022

Note to reviewers and respondents: Comments on this environmental assessment (EA) may be submitted electronically at the NPS Planning, Environment, and Public Comment (PEPC) website http://parkplanning.nps.gov/beachdrive or you may mail comments by August 11, 2022, to:

Attn: Upper Beach Drive Management
Plan Office of the Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW Washington,
DC, 20008

Before including personal identifying information in your comment, you should be aware that your entire comment – including your personal identifying information – may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

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PURPOSE AND NEED

INTRODUCTION

The National Park Service is developing an Upper Beach Drive Management Plan for Rock Creek Park (the park). This plan will examine the management of the northern portion of Beach Drive and several adjacent roadways to improve recreational opportunities and minimize impacts on the natural, archeological, and historic resources of the Rock Creek Valley and areas of northwestern Washington, DC. (All streets referenced in this document are in northwest Washington, DC, unless specified).

The plan will also amend the 2007 Rock Creek Park and the Rock Creek and Potomac Parkway Final General Management Plan. While general management plans are a critical piece of a park's planning framework, the National Park Service now relies on a "planning portfolio" approach consisting of individual plans, studies, and inventories that together guide park decision-making. The planning portfolio enables the use of targeted planning products such as this one to meet a range of park planning needs, a change from the previous NPS focus on standalone general management plans.

PURPOSE AND NEED FOR THE ACTION

The purpose of the plan is to develop a comprehensive management approach for upper Beach Drive and adjacent roadways to improve recreational opportunities, address needs of motorized and nonmotorized users, and minimize resource impacts. If park management strategies change, this plan would also serve to amend the 2007 General Management Plan regarding management of these park roadways.

This plan is needed to evaluate possible long-term changes in the use of upper Beach Drive and adjacent roadways and to determine if park management strategies need to change as a result.

BACKGROUND AND PROJECT AREA

Beach Drive is the park's primary north-south route. It forms the backbone of the park's northern road network. Beach Drive extends about 6.6 miles from the Maryland state line at the park's northwestern boundary to its intersection with the Rock Creek and Potomac Parkway south of the National Zoo. The project area is within in Rock Creek Park. The portion of Beach Drive and additional roads considered in this plan (5.05 miles) are from the Maryland state line to Broad Branch Road. Specifically:

- Beach Drive between Broad Branch Road and Joyce Road
- Beach Drive between Joyce Road and Wise Road
- Beach Drive between West Beach Drive and the Maryland boundary
- Bingham Drive
- Sherrill Drive

Figure 1: Project area

The nearly 1,800-acre Rock Creek Park in Washington, DC, is one of the oldest and largest natural urban parks of the national park system. It came about as a result of the 19th-century conservation movement to preserve natural scenic areas. Established by Congress on September 27, 1890 (26 Stat 492), Rock Creek Park's location makes it highly accessible for city residents and visitors to experience a tranquil natural setting or pursue many recreational activities. As stated in the enabling legislation, Rock Creek Park is "perpetually dedicated and set apart as a public park or pleasure ground for the benefit and enjoyment of the people of the United States," The enabling legislation provided for the construction of driving roads and trails for horses and pedestrians while preserving the park's "timber, animals, and curiosities in their natural condition, as nearly as possible." Driving in 1890 would have encompassed few motor vehicles and presumably would have been horse-drawn carriages and bicycles. In addition, while the road development was called out, the legislation required roadway development to be consistent with the conservation mandate of the park. This legislation forms the basis for planning and management of park resources.

Rock Creek Park attracts a variety of visitor use, owing to the diversity of recreational opportunities and attractions available in the park. Visitors arrive by automobile or on foot, via bicycles, in-line skates, scooters, or horseback from the surrounding areas and across the nation. People come to the park to watch athletic, musical, or theater performances; exercise on the playing fields, tennis courts, and trails; socialize and eat in the picnic areas; relax and cool off in the creek-side shade; and learn about the natural environment and history of the park. Others simply enjoy the scenic views as they pass through the park on their way to work or play elsewhere. Park trails, picnic areas, and other visitor attractions are open for use during daylight hours. Traffic is permitted on park roads 24 hours a day, although commercial vehicles, trucks weighing more than 0.25 ton, and buses are prohibited. (See https://www.nps.gov/rocr/learn/management/rock-creek-park-superintendent-compendium.htm).

Approximately 2.4 million recreational visitors per year (National Park Service, 2019) come to the park to enjoy a variety of recreational opportunities. More than 12.3 million non-recreational visitors per year (National Park Service, 2019) come to the park to travel along the roadways. Traffic volumes on upper Beach Drive are lower than on the southern portions of Beach Drive near the National Zoo. Traffic volume along Beach Drive, according to data collected before the COVID-19 pandemic (National Park Service, 2019) varies depending on the roadway section. Average daily traffic volumes range from approximately 5,500 vehicles per day between Broad Branch Road and Joyce Road to more than 12,000 vehicles per day on the section from Wise Road to West Beach Drive. North of Joyce Road, most sections carry about 7,000 to 8,000 vehicles per day except for in the area between Wise Road and West Beach Drive. Traffic volumes during AM and PM peak hours are higher north of Joyce Road versus south of Joyce Road (see page 11, Appendix B).

Beach Drive, which bisects the length of the park from the Maryland state line to the Rock Creek and Potomac Parkway, was originally designed as an internal park road to provide recreational access to the valley. In the 1918 master plan for the park, the Olmsted brothers warned against bringing the "noise and tangle" of trucks and other city traffic into the heart of the park. At the same time, they recognized a need to accommodate urban traffic in the park while ensuring that any roadways were constructed so "that the essential qualities of the park are impaired to the least possible degree." With the construction of the roadway tunnel by the National Zoo in 1966, Beach Drive was permanently connected with Rock Creek and Potomac Parkway, creating a through route from Maryland to downtown Washington, DC, and a natural motor vehicle commuter corridor.

In 1966, the National Park Service set motorized access limits to Beach Drive to allow pedestrians and bicyclists to use it for the first time. The closure was on Sundays only along the section of Beach Drive between Joyce Road and Broad Branch Road. In the early 1980s,

the National Park Service expanded motorized access limits to include Saturdays and federal holidays and extended the closure north to the Maryland Line.

The 2007 General Management Plan for Rock Creek Park and the Rock Creek and Potomac Parkway considered several management scenarios for Beach Drive. It concluded that the park roadway system would be retained and non-recreational through traffic would be accommodated. Weekday motorized vehicle travel throughout the park was accommodated; however, traffic-calming and speed-enforcement measures were required to reduce traffic speeds and volumes and improve visitor safety through the park. Speed tables and additional traffic signs were to be installed on Beach Drive in the gorge area. However, except for speed tables installed at the Harvard Street ramp area and just south of Blagden Avenue, none of these changes were made. Traffic volumes and speeds are consistently high and do not allow safe use of the roadways by nonmotorized users.

Prior to the COVID-19 pandemic, road closures were from 7 AM on Saturday until 7 PM on Sunday. The roads affected were:

- Beach Drive from Broad Branch Road to Joyce Road
- Beach Drive from Picnic Area 10 to Wise Road
- Beach Drive north of West Beach Drive
- Bingham Drive
- Sherrill Drive

Between Joyce Road and Picnic Area 10, Beach Drive was open to vehicles only to provide access to group picnic areas and parking lots. All the closures served to make Beach Drive available as a recreational facility. The road closures were achieved using gates. This closure affected approximately 5.05 miles of the 20 miles of roadway in the park.

In April 2020, at the beginning of the COVID-19 pandemic, the National Park Service temporarily extended the weekend/holiday closures to weekdays and included Ross Drive and, for a period, Morrow Drive; Bingham Drive was already closed for repairs. The purpose of extending the closure was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, park staff observed significant weekday recreational use on the closed roadways. The temporary closure was to be concluded with the Washington, DC mayor's COVID-19 pandemic reopening plan on June 11, 2021. However, the National Park Service extended these temporary closures through September 5, 2022, except for Morrow Drive, which has been fully reopened to allow for US Park Police to access park areas more quickly.

ISSUES AND IMPACT TOPICS RETAINED FOR DETAILED ANALYSIS

The National Park Service, participating agencies and stakeholders, and the public identified issues and impact topics for detailed analysis during the internal and public scoping processes. These issues and concerns are included in the impact topics that are discussed in the "Affected Environment and Environmental Consequences" section of this environmental assessment (EA).

Potential for the project to impact visitor use and experience. Approximately 2.4 million recreational visitors per year come to the park to enjoy the variety of recreational opportunities the park offers (National Park Service, 2019). More than 12.3 million non-recreational visitors per year come to Rock Creek Park to travel along the roadways (National Park Service, 2019).

The closure of sections of Beach Drive has the potential to offer a nearly car-free park experience to visitors. Partial or full closure of the upper portions of Beach Drive and adjacent roadways to through traffic would restrict or eliminate the visitor experience of motorized access along the length of the park where the closure would occur. Conversely, the elimination of motorized vehicles would improve the ability of visitors to participate in nonmotorized recreation in the park along Beach Drive throughout the week. Recreational visitors would experience reduced noise because of a lack of motorized vehicles. However, while some visitors with physical disabilities could have improved access to areas along Beach Drive, others who do not use mobility-assistance devices and who rely on motor vehicles may be unable to reach certain areas of the park. Therefore, because changes to the management of upper Beach Drive would change how visitors would use the park seasonally or year-round, this impact topic will be analyzed in this document.

Potential for the project to impact transportation operations and safety. Partial or full closure of the upper portions of Beach Drive and adjacent roadways to through traffic would hinder local and regional traffic flow, particularly for commuters who use the roadway as a north-south connection to access downtown and other areas of Washington, DC, by car. The closure of upper Beach Drive through the park from Broad Branch Road to the Maryland line would shift the approximately 5,500–8,500 vehicles daily from upper Beach Drive to adjacent roads, depending on the section. The closures would also increase travel times or routes for most park visitors, as accessing certain park destinations would require detours around the closures.

Access to nonmotorized travel to and through the park would be improved, particularly on sections of Beach Drive and Sherrill Drive without separate multi-use trails. Partial or full road closures for recreational use would lower the risk of conflicts between motor vehicles and recreational users. Any closures would be expected to increase the volume of walkers and bicyclists in the area between Joyce Road and picnic area 10, and the open section of Beach Drive between Wise Road and West Beach Drive, which could increase the potential for user conflicts in these areas.

Access for emergency vehicles would also be hindered by partial or full closure for recreation. Access by US Park Police, DC Fire and other emergency vehicles into the closure zones would be restricted by the need to open gates and proceed safely to the emergency site on roadways shared by pedestrians and recreational users. Therefore, because any changes to the management of upper Beach Drive would change the routes followed by motorized vehicles inside and outside of the park and result in safety and access issues that require mitigation, this impact topic will be analyzed in this document.

Potential for the project to impact historic districts and cultural landscapes. The partial or full closure of upper portions of Beach Drive to through traffic would affect up to approximately 25 percent of the park's roadways. While this management plan does not propose any physical changes to the historic alignment of roadways that would physically or visually affect cultural resources in the project area, the essence of the historic use for which the roads were designed and intended to be used could be affected by total or partial full-time closures. However, circulation routes and structures of the roadways themselves would remain unchanged. The roadways would still be accessible to the public. No changes would occur to other key district or landscape characteristics, including vegetation and land use. However, changes to the management of upper Beach Drive would require the addition of noncontributing elements to the historic district such as new signage, gates, and roadway markings. Other locations in the park offer roadways where scenic driving can occur. Therefore, because of the potential for changes to the use of historic roadways and the addition of small-scale changes in the historic district and cultural landscape, these impact topics will be analyzed in this document.

Potential for the project to impact wildlife and wildlife habitat. Park staff have observed that temporary closure of upper portions of Beach Drive during the COVID-19 pandemic led to an

increased number of visitors to the park. Partial or full closures of upper Beach Drive to through traffic could result in an increase in recreational visitors using sections of Beach Drive and associated roadways. This includes incursions of persons on foot into natural areas that previously were not easily reached because of the presence of motor vehicle traffic. Therefore, because of these impacts (including increased use of and damage to the surrounding forest) combined with related impacts such as increases in the number of dogs off-leash in wildlife habitat areas, this impact topic will be analyzed in this document.

ISSUES AND IMPACT TOPICS DISMISSED FROM DETAILED ANALYSIS

Some issues and concerns identified during scoping were considered by the National Park Service but were ultimately dismissed from detailed analysis because they were determined as not central to the proposal, not of critical importance, or for other reasons. This section will provide brief descriptions of the issues and concerns determined to not warrant further consideration, with a brief justification for the dismissal of each issue.

Potential for the project to impact air quality. Implementation of this plan would neither increase nor decrease motorized use in upper northwest Washington, DC. If upper Beach Drive Road closures are partly or fully implemented, vehicles may use side streets that run parallel and generally close to Beach Drive. However, while ground-level air quality in the park may improve under those scenarios, the total amount of air pollutants created by vehicles would not change in the local airshed. As a result, this impact topic is dismissed from further analysis in this EA.

Potential for the project to impact water resources. There are no physical changes associated with this plan that would directly affect Rock Creek, its tributaries, or wetlands. Partial or full roadway closures may slightly improve water quality in Rock Creek, as there would be less petroleum products, ice- and snow-treatment chemicals and materials, and other pollutants generated from cars and roadway maintenance along adjoining roadways. However, this possible improvement in water quality may be undetectable in the Rock Creek watershed, given the amount of paved and developed areas throughout the Washington, DC, and Maryland portions of the Rock Creek watershed and its many tributaries. In addition, vehicles that are rerouted as part of any potential closure would generate pollutants that likely would end up in the watershed of Rock Creek and its tributaries. As a result, this impact topic is dismissed from further analysis in this EA.

Potential for the project to impact rare, threatened, and endangered species. In accordance with Section 7 of the Endangered Species Act, the National Park Service consulted with the US Fish and Wildlife Service (USFWS) to determine the potential for federally listed protected species to be present in the park. This consultation showed the potential for the federally threatened northern long-eared bat (*Myotis septentrionalis*) and federally endangered Hay's Spring amphipod *(Stygobromus hayi)* and Indiana bat (*Myotis sodalis*) to be present in the park.

Continuation of or changes to management of upper Beach Drive would not involve any physical changes to the built and natural landscapes—except for possible minor changes to the roadways and their infrastructure—that would directly impact vegetation on which the northern long-eared bat and Indiana bat rely.

The primary threats and stressors for Hays Spring amphipods are related to water quality degradation (USFWS, 2021). Other threats to the species include impacts on forest habitats and from the creation or use of unauthorized informal or "social" trails. Forest cover provides shade and likely contributes to maintaining water quality and quantity by buffering non-point source pollutants from stormwater runoff, maintaining lower temperatures and higher dissolved oxygen and precipitation infiltration. Forest cover also provides food via decaying leaves and organic matter, which individual amphipods need in order to grow. The shallow groundwater of the habitat

is underlain by a clay layer, which we believe is used by the amphipod for food and shelter when water quantity is limited (Gilbert et al., 2018, p. 22).

The creation or use of unauthorized informal or "social" trails adjacent to Beach Drive may harm the species via increased soil compaction, soil erosion, defoliation, increased trash and local pollution, and potential habitat disturbance. The effects of increased recreational access along Beach Drive would be more severe seasonally (late fall/winter/early spring) when there is a lack of vegetation allows unobstructed views and less-impeded access into the forest, putting the Hays Spring amphipod and its habitat at risk.

The USFWS has developed a draft recovery plan for the amphipod that has identified conservation measures that aim to improve resiliency and reduce anthropogenic treats. (Hays spring amphipod Recovery Plan draft_2022-02-02 (1).pdf (fws.gov)).

The conservation measures that the National Park Service has committed to implementing to reduce visitor impacts from disturbance, social trails, and erosion may include:

- Prioritizing informal trails by degree of potential harm to Hays Spring amphipod to help the park implement management actions to conserve and protect the habitat and species
- In the areas around the springs, monitoring vegetation and soils for recreational impacts
- Closure and removal of unauthorized informal trails in all recharge areas and areas surrounding the springs
- More patrols and visible law enforcement presence, park rangers, and park volunteers to reinforce messaging to protect resources
- Better information and signage about the location of formal park trails
- Installation and maintenance of boot brushes for removing invasive plant seeds at strategic locations near official trailheads.
- Extensive reminders such as signs and enforcement actions that dogs must remain on leash and consequences such as ticketing and fines for dogs that are off-leash.
- Engaging the public via a visitor use management plan that develops measures to address social trails and other visitor use issues in a comprehensive manner
- Periodic monitoring and remapping of the social trails.

In a letter dated May 3, 2022, the USFWS determined that because no additional tree clearing is anticipated to take place as part of this project and because standard time-of-year restrictions for pruning or clearing are in place, the proposed project is "not likely to adversely affect the bat species. In the same letter, the USFWS determined that if the proposed conservation measures along with periodic monitoring and remapping of the social trails are implemented, the project is "not likely to adversely affect the Hay's Spring amphipod.

Implementation of Hays Spring amphipod conservation measures should protect the amphipod from potential visitor impacts associated with social trails, and no physical changes are associated with this plan that are likely to affect the two bat species. As a result, this impact topic is dismissed from further analysis in this EA.

Potential for the project to impact archeological resources. The seasonal or full closure of upper Beach Drive to motorized users involves no ground disturbance beyond potential installation of signs and gates. As a result, this impact topic is dismissed from further analysis in this EA.

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ALTERNATIVES

This EA analyzes the potential environmental consequences of three alternatives:

1. No action (pre-COVID-19 pandemic management)
2. Full-time closure for recreation, and
3. Seasonal closure for recreation

The elements of these alternatives are described in this chapter. Impacts associated with each alternative are outlined in the Affected Environment and Environmental Consequences chapter of this EA. Several other approaches were dismissed from further consideration; rationales for their dismissal are described in this chapter under Alternatives Considered but Dismissed.

ALTERNATIVE 1: No-Action Alternative PRE-COVID-19 PANDEMIC MANAGEMENT

Under the no-action alternative, management of Beach Drive, Bingham Drive, and Sherrill Drive would return to the pre-COVID-19 pandemic weekend and holiday closures schedule. The closures would be in effect on weekends from 7 AM on Saturdays until 7 PM on Sundays and on federal holidays. The roads affected would include Beach Drive from Broad Branch Road to Joyce Road, Beach Drive from Picnic Area 10 to Wise Road, Beach Drive north of West Beach Drive to the park boundary, Bingham Drive, and Sherrill Drive. Beach Drive between Joyce Road and picnic areas 6-10 would be open to vehicles only for to provide access to group picnic areas and parking lots. Ross Drive would be always open to vehicles.

ALTERNATIVE 2: FULL-TIME CLOSURE FOR RECREATION

Under alternative 2, the upper portion of Beach Drive and associated roadways would be closed to motor vehicle use and open for nonmotorized recreational use 7 days a week, 365 days a year. Affected areas would include Bingham Drive (0.43 miles), Sherrill Drive (0.34 miles), and Beach Drive (4.28 miles) in three sections: from Broad Branch Road to Joyce Road, from Picnic Area 10 to Wise Road, and from West Beach Drive to the Maryland boundary. Between Joyce Road and picnic areas 6-10, Beach Drive would remain open to vehicles only to provide access to group picnic areas and parking lots. Ross Drive would always remain open to vehicles.

ALTERNATIVE 3: SEASONAL CLOSURE FOR RECREATION (NPS PREFERRED)

Under alternative 3, the upper portions of Beach Drive, Bingham Drive and Sherrill Drive would be closed to motor vehicle use, and open for nonmotorized recreational use seven days a week from the Tuesday after Memorial Day to the Friday before Labor Day (see Figure 3). From the Tuesday after Labor Day to the Friday before Memorial Day, the upper portions of Beach Drive, Bingham Drive and Sherrill Drive would be open to motor vehicles on weekdays and closed to motor vehicles on weekends and holidays to allow for nonmotorized recreational purposes as defined in alternative 1 (see Figure 2). Affected areas would include Bingham Drive (0.43 miles), Sherrill Drive (0.34 miles), and Beach Drive (4.28 miles) in three sections: from Broad Branch Road to Joyce Road, from picnic area 10 to Wise Road, and from West Beach Drive to the Maryland boundary. Between Joyce Road and picnic area 10, Beach Drive would remain open to vehicles only to provide access to group picnic areas and parking lots. Ross Drive would always remain open to vehicles. Closed areas would be the same as in alternative 2, with different timing and length of the closure.

Figure 2: Alternative 1 – no-action alternative

Figure 3: Alternative 2 – full-time closure for recreation

RATIONALE FOR THE PREFERRED ALTERNATIVE

The preferred alternative is the alternative that "would best accomplish the purpose and need of the proposed action while fulfilling [the NPS] statutory mission and responsibilities, giving consideration to economic, environmental, technical, and other factors" (46.420(d)).

Following extensive public input, coordination with the District of Columbia Department of Transportation (DDOT), and internal NPS deliberation and analysis, the National Park Service has identified alternative 3: seasonal closure for recreation as the preferred alternative. This decision is a compromise for those who use the roads for recreational and other purposes and those who travel through the park for commuting and scenic pleasure driving.

The closure to motor vehicles during the Memorial Day to Labor Day holiday periods would allow for greater park access by active recreational users including walkers, runners, and cyclists and passive recreational users such as wildlife observers and those seeking respite in natural areas during summer months when people are on vacation and when visitation is generally highest. It would also create safer conditions for all park visitors during the summer by reducing conflicts between motor vehicles, bicyclists, and pedestrians, and provide routes for cyclists, largely free of motor vehicles, between the north end of the Rock Creek Park Multi-Use Trail and the Maryland state line. This alternative would also provide nonmotorized access for persons with disabilities to areas of the park that lack separated pathways and accessible trails.

Allowing for motorized vehicle access during the Labor Day to Memorial Day period when traffic is highest will provide for decreased effects to the local transportation network during the period when traffic volumes are highest. This will allow for 5,500 to 8,500 motorists daily to traverse the park during weekdays. While a seasonal closure for recreation could delay motorists and increase travel times to key park sites or through the park, including during peak weekday travel times, these impacts would not be substantial, based on traffic analysis performed with DDOT. Traffic delays and impacts would be minor and largely could be mitigated via timing of traffic lights, new signals and stop signs, and traffic-calming measures). The traffic and safety mitigation measures needed for a seasonal closure are similar under full and seasonal closures.

In addition to increased opportunity for recreation, reduced traffic in the closed section during the warmer months when forest vegetation is densest provides protection and preservation of wildlife and habitat for several park species because dense vegetation prohibits visitors' desire and ability to create and use unofficial trails that impact forest habitat.

After observing the wide-ranging beneficial impacts associated with the temporary closure for recreation during the pandemic and recognizing that a large portion of the park's visitors use the road for commuting and scenic pleasure driving, alternative 3: seasonal closure of upper Beach Drive is the National Park Service's preferred alternative.

The National Park Service will monitor implementation of the preferred alternative. The selection of the preferred alternative does not prevent the superintendent from altering the management of upper Beach Drive in the future, based on changes to the condition of park resources and visitor experience.

ALTERNATIVES DISMISSED FROM FURTHER CONSIDERATION

The National Park Service considered multiple alternatives for the management of upper Beach Drive that were ultimately dismissed from further consideration. Alternative management approaches studied included different configurations and timings of road closures during weekdays.

Examples of different roadway closure configurations that were considered but dismissed include:

- Valley closure (Broad Branch Road to Joyce Road)
- Middle closure (Joyce Road to Wise Road) to include Sherrill Drive and Bingham Drive
- Upper closure (West Beach Drive to Maryland Boundary)
- Ross Drive, from Joyce Road to Ridge Road
- A combination of these options

The National Park Service dismissed these roadway closure configurations because they would be difficult to communicate and distinguish from weekend/holiday closures. These closures would not provide safe, continuous nonmotorized access between Broad Branch Road and the Maryland boundary. Therefore, they have the potential to introduce more nonmotorized users on roadways without safe accommodation for these users.

Examples of timing closures that were considered but dismissed include:

- Time of day (post- and pre-rush hour; during non-peak times)
- Additional day of week (Mondays and Fridays) closures

The National Park Service dismissed these configurations because they would present considerable operational and communication challenges for park staff. While the National Park Service routinely closes Beach Drive on weekends and holidays, regularly changing the operations of a roadway on weekdays with significant peak traffic volumes would not be feasible and could create safety issues. The different roadway configuration and timing closures considered would also preclude safety countermeasures such as eliminating automobile turn movements onto Beach Drive.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter describes environmental conditions in and around the project area. The discussion is focused on resources that could be affected by implementation of the proposed project and provides a baseline for understanding the condition of the resources. This section also includes an analysis of the environmental consequences, or "impacts," of the no-action and action alternatives.

The affected environment description is followed by the environmental consequences analysis for each resource topic. The resource topics analyzed here correspond to the planning issues and concerns described in the purpose and need section of this EA.

In accordance with Council on Environmental Quality regulations, the environmental consequences analysis includes the direct, indirect, and cumulative impacts potentially resulting from the proposed alternatives (40 CFR 1508.1(g)). Impacts are assessed in the context of the park's purpose and significance and any resource-specific context that may be applicable. Where appropriate, mitigating measures for adverse impacts are described and their effect on the severity of the impact is noted. The methods used to assess impacts vary depending on the resource being considered but are generally based on a review of pertinent literature and park studies, information provided by onsite experts and other agencies, professional judgment, and park staff knowledge and insight.

VISITOR USE AND EXPERIENCE

Affected Environment

Rock Creek Park provides a respite from urban surroundings and offers a variety of natural, historical, and recreational opportunities such as extensive hiking trails, biking, horseback riding, bird watching and wildlife viewing, picnicking, golf and other sports activities, nature walks, and educational activities, many of which are accessible from Beach Drive and adjacent roadways. Resources include:

- Approximately 20 miles of unpaved trails and paved, multi-use trails
- The Rock Creek Horse Center for public horseback riding and horse boarding (concession-operated), and horseback riding trails
- The Rock Creek Park Golf Course, which is leased to National Links Trust
- Tennis courts, including 21 soft-surface courts and 10 hard-surface courts (most concession-operated)
- Approximately 20 miles of scenic roads
- 29 picnic areas, including 21 unrestricted picnic areas and 8 permitted picnic areas
- Two athletic fields suitable for soccer, football, volleyball, field hockey, lacrosse, and rugby
- The Carter Barron Amphitheater (currently closed for rehabilitation), a 4,200-seat outdoor theater that traditionally offers summer musical and theatrical performances
- A community garden with 128 garden plots
- The Rock Creek Park Nature Center, which houses the National Park Service's only planetarium
- Peirce Mill, a historic, functioning 19th-century grist mill
- Fort DeRussy and Civil War-era earthworks

A popular way to experience the park is from Beach Drive. Prior to the pandemic, the upper section of Beach Drive from Joyce Road to Broad Branch Road, as well as Bingham Drive and Sherrill Drive, were closed to through traffic on weekends and holidays to allow recreational activities such as walking, running, enjoying nature, and bicycling. On weekdays, commuters and others used this section of Beach Drive to traverse the city in a north-south direction, even if they did not leave their cars for more direct contact with the outdoors. On weekdays, nonmotorized recreational use of upper Beach Drive was limited because of motor vehicle traffic.

In late April 2020, at the beginning of the pandemic, the National Park Service temporarily expanded the closure of upper portion Beach Drive to seven days a week. This closure included Ross Drive and Sherrill Drive and, for a time, Morrow Drive (Bingham Drive was already closed for repairs). This reflected similar roadway closures for recreation that occurred in the Washington, DC, region. For example, Montgomery Parks closed portions of Beach Drive in Maryland from Fridays through Sundays, although those sections are not contiguous with the section of Beach Drive that is the subject of this plan.

The extended closure in the park was intended as a temporary means to provide park visitors with increased opportunities for outdoor recreation while maintaining social distancing. During this closure, NPS staff observed significant increased weekday recreational use of this section of roadway. This full closure is still in place pending completion of this plan.

The park and its roadway network are bordered by established urban neighborhoods such as Hawthorn, Chevy Chase, Forest Hills, Cleveland Park, Mount Pleasant, Crestwood, 16th Street Heights, Brightwood, Shepard Park, and Colonial Village. Given its unique setting in northern Washington, DC, and the extensive road network that runs through the park, Rock Creek Park has become a popular commuter route for people in the surrounding areas, including Maryland.

About the Analysis

The National Park Service analyzed potential impacts on visitor use and experience from changes in management of the upper portion of Beach Drive by considering current visitor uses, activities, and circulation; the proposed elements included in the alternatives; the estimated increase in visitors that could result from implementation of each alternative; and professional knowledge and judgment of the NPS staff and subject matter experts.

The purpose of this impact analysis is to determine if changes to the management of the upper portion of Beach Drive are compatible or in conflict with the purpose of the park, park management policies and plans, visitor experience goals, and direction provided by NPS management policies (National Park Service, 2006). National Park Service staff considered the different impacts that would result from changes in how visitors would use the upper portion of Beach Drive and the adjacent roads to access significant park resources and recreational sites.

How visitors perceive these changes depends on the individual. For example, a visitor who used the upper portion of Beach Drive as a commuter route before the pandemic may be annoyed and inconvenienced by the road closure and the thought of further closure. However, another visitor may view further closures of upper portion of Beach Drive as an opportunity for expanded recreational opportunities.

Impacts of Alternative 1: No-Action Alternative

Under alternative 1, nonmotorized users would continue to be impacted by motorized use of the upper portion of Beach Drive, Bingham Drive and Sherrill Drive. Opportunities for recreation during weekdays would be restricted to adjacent unpaved and paved trails north of Military Road, part of which parallels Beach Drive and Bingham Drive, or sharing the road with motorized vehicles. Motorized vehicle noise would be prominent in this area.

The return of motorized access during weekdays on the upper portions of Beach Drive would limit recreational opportunities for persons with physical disabilities to other sections of the park and weekends and holidays on the upper portion of Beach Drive, but would increase access to scenic driving for visitors with mobility impairments who cannot visit by wheelchair.

Potential conflicts between cars and bicycles would be greater on weekdays because of the shared use of roadways. In addition, noise from motorized vehicles would continue to be part of the visitor experience. Traffic volumes on upper portions of Beach Drive and adjacent roadways would return to 5,500-8,500 vehicles per weekday, depending on the section. Motorized vehicle users would not experience new impacts under alternative 1.

Impacts of Alternative 2: Full-Time Closure for Recreation

Under alternative 2, nonmotorized users would have increased access in the upper portion of Beach Drive. Recreational opportunities would be similar to those described in the no-action alternative but extended to 7 days a week, 365 days a year instead of just weekends and holidays. The closure of the road creates a protected space for recreational users with different speeds or abilities separate from motorized traffic and would likely result in more bicycle use. The continued closure of Sherrill Drive and Bingham Drive provides a new opportunity for nonmotorized visitors to access the park.

Traffic noise would be eliminated along the upper portion of Beach Drive, except for that from cross-park traffic using Wise Road, West Beach Drive connection, and Joyce Road/picnic area 10 to access picnic areas. Natural sounds and the sounds of people recreating would be dominant in many areas, as would background noise from the surrounding urban environment, such as the conditions occurring on weekends.

Persons with physical disabilities would experience increased access for recreational use by driving to parking lots at picnic areas 6-10 to access the portions of upper Beach Drive to the north that are closed to motorized vehicles. While access would increase, some persons with physical disabilities who rely on motor vehicles for access would be unable to reach certain areas of the park that are closed. To assist with access, the park would develop electronic and printed materials that inform the public about closures, how the closures impact access to park areas, and alternatives for access to various park areas.

Full closure of the upper portion of Beach Drive would provide a largely car-free space for safe outdoor recreation except for the section between Joyce Road and picnic area 10 and between Wise Road and West Beach Drive, which would be shared with motorists. The narrow, winding nature of upper Beach Drive is incompatible with these uses when sharing the road with vehicles. By eliminating cars and other motorized vehicles in the upper portions of Beach Drive and adjacent roadways, the number and severity of collisions between automobiles and pedestrians, runners, and cyclists in the park along this section would be greatly reduced. Some crashes involving bicyclists, pedestrians, and other nonmotorized recreational users could occur in these segments of upper Beach Drive and adjacent closed roadways, but the severity of crashes would be less than a collision with a car.

Alternative 2 would eliminate motorized access through the length of the park. However, motorized vehicle access would be available to key parking areas and park destinations on weekdays without substantially increasing travel times or routes for most park visitors. Visitor-use facilities, including most picnic grounds and trailheads, would continue to be accessible via motorized vehicle. Additional signage and communications would be needed to ensure that visitors understand how to access the park without access to Sherrill Drive, Bingham Drive, and sections of Beach Drive. The continued closure of Sherrill Drive and Bingham Drive provides a new opportunity for nonmotorized visitors to access the park. Visitors would continue to have access to traditional

activities that were described in the Affected Environment section. Motorized vehicle access to other portions of the park outside the closed section would still be available to all visitors. While motorized access for pleasure driving along the upper portion of Beach Drive would be eliminated, access for pleasure driving would remain along other Park roads such as Ross Drive.

Impacts of Alternative 3: Seasonal Closure for Recreation (NPS Preferred)

Under alternative 3, those impacts associated with the full-time closure of upper Beach Drive to motor vehicles from Memorial Day weekend through Labor Day weekend would be the same as those described for alternative 2. Impacts in keeping the road open to motor vehicles on weekdays and closed on weekends and holidays from Labor Day weekend through Memorial Day weekend would be the same as those described in alternative 1.

TRANSPORTATION OPERATIONS AND SAFETY

Affected Environment

The upper portion of Beach Drive is the primary north-south route through this section of the park, extending approximately 6 miles from the Maryland state line at the park's northern boundary to Broad Branch Road. Prior to the pandemic, traffic on these sections of Beach Drive was about 5,500-8,500 vehicles per weekday. Beach Drive is a two-lane, 25-mile-per-hour paved road with a 9-foot lane width and no shoulders. The road generally parallels Rock Creek and there are parking and picnic areas along the route that serve as park access points. There are several pedestrian crosswalks and some horse-crossing locations along this road. At some locations along upper Beach Drive, there is an adjacent bike/pedestrian trail separated from Beach Drive, and at other locations bicyclists must share the road with motorized traffic. There are nine entry routes to this section of Beach Drive that provide park access. Most of these east-west approaches to Beach Drive are stop-controlled, at-grade crossings. There is a grade-separated crossing over Beach Drive at Military Road with access to the park via on- and off-ramps at these locations.

Prior to the pandemic, the National Park Service closed portions of this section of Beach Drive to motorized traffic on weekends and federal holidays. Bingham Drive (0.5 miles) and Sherrill Drive (0.3 miles) were also closed. These closures were from 7 AM on Saturdays until 7 PM on Sundays. Between Joyce Road and picnic area 10, Beach Drive was open to vehicles only to provide access to group picnic areas and parking lots. Beach Drive between Wise Road and West Beach Drive remained open to vehicles. All the closures serve to make Beach Drive available as a recreational facility. The road closures are achieved using gates.

During the pandemic, closure of upper Beach Drive, the combination of changing travel patterns during the pandemic, construction projects on Oregon Avenue and 16th Street, and the NPS road closures caused varying impacts across adjacent residential streets. Some residents are concerned that eased restrictions would further exacerbate traffic in residential neighborhoods. However, over time these increases in traffic could likely level off as construction projects conclude and as commuters become accustomed to the closure and adjust travel routes. Furthermore, traffic and safety mitigations implemented by DDOT and the National Park Service (i.e., signage, new and adjusted traffic signals, and traffic calming) should minimize travel delays and improve safety for all road users.

About the Analysis

Potential impact on transportation operations and safety were analyzed via a traffic study performed in collaboration with the DDOT (Appendix B). Because of the impacts on traffic because of the pandemic, the traffic study used traffic counts performed when the National Park Service reconstructed Beach Drive, before pandemic turning movement counts in 2019, and counts when upper Beach Drive was open. Travel demand forecasts were performed for the year 2045 based on

the Metropolitan Washington Council of Governments travel demand model to estimate growth and diversions. Traffic analysis was performed for the years 2019 and 2045 for upper Beach Drive – open, closed, and closed with mitigations – for AM and PM peak periods.

Impacts of Alternative 1: No-Action Alternative

Under alternative 1, no new impacts on transportation would occur.

Impacts of Alternative 2: Full-Time Closure for Recreation

Under alternative 2, weekday traffic patterns would change. Several roadways would have increased volume, including Blagden Avenue, Broad Branch Road, 16th Street, and Oregon Avenue. Several other roadways would encounter minor increases in volumes, including Pinehurst Parkway, Connecticut Avenue, Utah Avenue, and 23rd Street. Waze, Google Maps, and other navigational apps would vary routes from one day to the next. Increased volume would reduce slower travel times and increase delays at most intersections in the study area. Along 16th Street, travel time would increase 2.5 to 4.5 minutes in peak-hour directions. Besides intersections along 16th Street, the intersection of Military Road and Oregon Avenue would be most impacted by the closure.

On the east side of the park, most shifted traffic would use 16th Street to Blagden Avenue/Colorado Avenue. On the west side of the park, most shifted traffic would use Oregon Avenue/Glover Road/Grant Road or Utah Avenue/27th Street to Broad Branch Road. Other roadways such as Military Road, Connecticut Avenue, Maryland 186 (Brookville Road) and several lower-volume roadways would have minor increases. Some small roadways and residential streets would have decreased traffic. With Bingham Drive and Sherrill Drive closed, residents in the immediate area would need to divert to Military Road or Wise Road to get across the park. Depending on the origin and destination and time of day, this translates to 1-5 minutes of travel delay.

Several traffic-mitigation measures could be implemented to mitigate delays during peak travel periods, improve safety, and discourage cut-through traffic and speeding in residential neighborhoods. These include new and adjusted traffic signals, safety improvements, and traffic calming inside and outside the park. Specific measures could include:

- Signalize the intersection of 16th Street and Blagden Avenue
- Modify signal timings on 16th Street
- Provide left turn phasing for Military Road westbound to Glover Road southbound (only AM peak period)
- Modify signal offsets at 16th Street at Missouri Avenue/Military Road ramp intersections
- Provide a three-way stop at Beach Drive and Blagden Avenue
- Re-sign and re-mark the intersections of Beach Drive/Broad Branch Road, Beach Drive/Wise Road, and Beach Drive/West Beach Drive

Other mitigations could be implemented with available funding and neighborhood approval. It is also recommended that the National Park Service continue to monitor Ross Drive. Ross Drive is not designed for high traffic volumes and could become a major diversion route through the park. The National Park Service would work closely with DDOT to implement traffic mitigation measures at affected intersections and roadways inside and outside the park.

If traffic mitigations are implemented, increased delays caused by the closure are expected to be modest during peak travel periods. Under conservative post-pandemic traffic assumptions, travel

times on 16th Street NW would increase 2.5 to 4.5 minutes during peak periods and speeds would reduce up to 6 mph between the Maryland state line and Broad Branch Road. Assuming increases in traffic over time, the delay is projected to increase an additional 1.5 minutes by 2045. (See Executive Summary and page 39 – Appendix B) The study recommends several traffic mitigations inside and outside the park. Mitigations inside the park include changing the Blagden Avenue and Beach Drive intersection from a one-way to a three-way stop. The study also recommends re-signing and re-marking the Beach Drive/Blagden Avenue/Broad Branch and Beach Drive/Wise Road/ West Beach Drive intersections to clarify vehicle turn movements and provide safe spaces for pedestrians and bicyclists. These changes would help address pedestrian and bicyclist safety issues where the Beach Drive closure ends and visitors traverse cross streets with significant traffic. Mitigations outside the park include changing signal timing at several intersections (primarily on 16th Street), signalizing 16th Street and Blagden Avenue, and implementing traffic calming on residential streets. Traffic calming would require coordination and engagement with neighborhoods.

Weekday nonmotorized travel and access to and through the park would significantly improve, particularly along roadways where separated multi-use trails do not exist and are not feasible. Road closures reduce the risk of motorist-involved crashes and conflicts between vehicles and recreational users. The closure would be expected to increase the volume of walkers and bicyclists on sections of closed road, which could increase the potential for user conflicts where motor vehicles are present, including the intersection of Broad Branch and Beach Drive, the portion of Beach Drive between picnic areas 6 and 10, and the section of Beach Drive between Wise Road and upper Beach Drive. These conflict points could largely be mitigated via traffic calming and other safety countermeasures.

Impacts of Alternative 3: Seasonal Closure for Recreation (NPS Preferred)

Under alternative 3, impacts associated with full closure of upper Beach Drive to motor vehicles from Memorial Day weekend through Labor Day weekend would be the same as those described for alternative 2. Impacts in keeping the road open to motor vehicles on weekdays and closed on weekends and holidays from Labor Day to Memorial Day would be the same as those described in alternative 1.

Alternative 3 would require the same traffic and safety mitigations as alternative 2. However, the variable operation of the roadway would preclude implementation of some of the safety countermeasures mentioned above. The seasonal change would require public outreach and temporary law-enforcement presence at the onset and conclusion of the closure to ensure public safety.

HISTORIC DISTRICTS

Affected Environment

Historic districts are geographically definable areas, urban or rural, that have a significant concentration, link, or continuity of sites, buildings, structures, or objects united by past events or aesthetically by plan or physical development. They consist of properties that are listed in or are eligible for listing in the National Register of Historic Places.

Beach Drive, Bingham Drive, Sherrill Drive, and Ross Drive are all in the Rock Creek Park Historic District, which was listed as a historic district in the National Register of Historic Places in 1991 (National Park Service, 1990). The district, which includes all of Rock Creek Park (US Reservation 339) from the Washington, DC, border with Maryland south to Klingle Road, is historically significant under national register criteria A, B, and C for architecture, community planning and development, conservation, entertainment/recreation, industry, landscape architecture, military, and horticulture. The period of significance for the district spans from 1791 (Andrew Ellicott's

survey of the Washington, DC, boundary) to 1941 (the end of Depression-era park improvements). The circulation system of roads and trails throughout the park contributes to the district's historic significance, as it was developed to provide the public with a way to access the park's recreational and scenic resources.

Following the establishment of the park by Congress, the Board of Control of Rock Creek Park sought to develop a parkwide road system to provide access into and in the new park. Beach Drive, Glover Road, Morrow Drive, Ross Drive, and Wise Road are some of the earliest park roads, having been constructed between 1897 and 1912 (Davis, 1996:5). Construction of Beach Drive occurred between 1897 and 1900 under the direction of Captain Lansing H. Beach of the US Army Corps of Engineers and incorporated previous roadways along the creek. A resolution passed by the Board of Control on November 20, 1901, named the roadway along Rock Creek in honor of Beach (Mackintosh, 1985:22). Beach Drive was intended to be the main roadway to access the park, while other roads such as Ross Drive and Sherrill Drive served as secondary roadways. Originally built for horse-drawn carriages, horseback riders, and pedestrians, these early roads were later improved to accommodate automobile traffic. The 1918 Olmsted Report for management improvements discussed the need to preserve the park's natural and scenic qualities while providing access in the park, along with compatible recreational amenities (National Park Service, 1990). Additional roadway improvement took place following the Olmsted Report, including a major rehabilitation of Beach Drive and other roads in the late 1950s. Beach Drive underwent another major rehabilitation between 2015 and 2019.

The roadway system has been relatively well-preserved and retains a high degree of historic integrity despite various rehabilitation projects over the years. Beach Drive, Bingham Drive, Ross Drive, and Sherrill Drive still convey their historic design principles and characteristics that speak to the early development of Rock Creek Park in the urban landscape of Washington, DC, during the late 19th and early 20th centuries.

About the Analysis

Potential impacts on the historic district affect the integrity of the historic district and its contributing resources. Integrity is the ability of a property or district to convey its historical significance. The seven aspects of historical integrity used to evaluate historic properties are location, setting, design, materials, workmanship, feeling, and association. Information from the park's cultural resources baseline documentation such as national register nominations and administrative histories and other historical studies informed these analyses.

The impacts, whether adverse or beneficial, are analyzed in consideration of additional regulations and guidance provided by the National Environmental Policy Act (NEPA), Section 106 of the National Historic Preservation Act, The Secretary of the Interior's Standards for the Treatment of Historic Properties, NPS Management Policies 2006, and Director's Order 28.

Impacts of the Alternative 1: No-Action Alternative

Under alternative 1 there would be no impacts on the historic district, as no physical changes would occur to roadways, their related features, and other contributing resources.

Impacts of Alternative 2: Full-Time Closure for Recreation

Under alternative 2, impacts on the historic district would be minimal because of small-scale changes such as the addition of new signage, gate, and roadway markings—all of which would be designed to be reversible and compatible with the historic district. No changes would occur to the roadways' design, location, setting, association, workmanship, materials, or feeling. Likewise, no changes would occur to the natural or scenic resources of the park. The roadways themselves would continue to be preserved as they are under alternative 1.

Impacts of Alternative 3: Seasonal Closure for Recreation (NPS Preferred)

Under alternative 3, impacts on the historic district would be the same as in alternatives 1 and 2.

CULTURAL LANDSCAPES

Affected Environment

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 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." Within the affected environment is the Rock Creek Park cultural landscape.

Before the park was established in the 1890s, this land had been inhabited for thousands of years. American Indians quarried rock outcroppings to make tools, fished in Rock Creek, and hunted wild game in the woodlands. With the arrival of Europeans in the 1600s, the area that became the park was colonized and turned largely into farmland, with grain and grist mills established along the creek. When it was created by an act of Congress in 1890, Rock Creek Park encompassed these farmlands and several homesteads and has since become the largest natural landscape in the District of Columbia. Since that time, the park has balanced the preservation and maintenance of the Rock Creek Valley's natural and cultural resources with the recreational and transportation requirements of modern Washington, DC, while incorporating the highest cultural and aesthetic values. As such, Rock Creek Park is considered a significant cultural and historic landscape.

In 1997, the National Park Service began a cultural landscape inventory of Rock Creek Park to document and manage the qualities and attributes of the park's component landscapes and cultural features that make them significant and worthy of preservation. This process concluded that Rock Creek Park met the criteria for listing in the national register as a historic designed landscape. The process also determined that two component landscapes of the park, Linnaean Hill (including the Peirce-Klingle Mansion) and Peirce Mill contribute to the significance of the Rock Creek Park cultural landscape and thus are individually eligible landscape elements (National Park Service, 1998).

About the Analysis

Potential impacts on cultural landscapes affect the integrity of the landscape and its contributing resources. Cultural landscapes are places in national parks that have significance in American history and authenticity to a historic time period. The components of park cultural landscapes include human-modified ecosystems such as forests, prairies, rivers and shores, and constructed works such as mounds, terraces, structures, and gardens.

Impacts of Alternative 1: No-Action Alternative

Under alternative 1, there would be no new impacts on the cultural landscape. No changes would occur to key circulation features, which consist of the roadways and their related features. Additionally, no other key landscape characteristics, such as vegetation and land use, would change under this alternative, thus preserving the integrity of the cultural landscape.

Impacts of Alternative 2: Full-Time Closure for Recreation

Under alternative 2, impacts on the cultural landscape would be minimal because of small-scale changes such as the addition of new signage, gates, and roadway markings—all of which would be designed to be reversable and compatible with the historic district. The roadways themselves would continue to be preserved as they are under the no-action alternative. These circulation features would see a change in how the roadways are used, in that automobile traffic would no longer be permitted on these roads. However, the circulation routes and structures of the roadways

themselves would remain unchanged. The roadways would still be open to the public but allow only nonmotorized access to park destinations and amenities. No changes would occur to other key landscape characteristics, including vegetation, land use, and natural systems. These small-scale changes are not expected to negatively impact the cultural landscape, provided that they are designed in such a way to be compatible and harmonious with their surroundings.

Impacts of Alternative 3: Seasonal Closure for Recreation (NPS Preferred)

Under alternative 3, impacts on the cultural landscape would be the same as in alternative 1 and 2.

WILDLIFE AND WILDLIFE HABITAT

Affected Environment

Rock Creek Park, one of the largest natural parks in an urban center, is 81 percent forested. The park provides a wealth of natural resource values, largely resulting from the maintenance of forest and wetland habitats. The secondary growth forest, dominated by mixed beech and oak communities, functions as a refuge for forest-dwelling bird species that have shown regional declines. The large forest area also adds value to remnant forest patches surrounding the park, allowing for ecological connectivity between these fragments. Seep and spring habitats have been almost eliminated regionally with increased development, so these water resources in the park provides increasingly important habitat for native fauna and flora.

The project area is rich with wildlife and wildlife habitat. It is part of a flyway that is visited by migratory birds during spring and fall. Bird species commonly seen in the project area include northern cardinal (*Cardinalis cardinalis*), American robin (*Turdus migratorius*), Carolina chickadee (*Poecile carolinensis*), red-bellied woodpecker (*Melanerpes carolinus*), downy woodpecker (*Picoides pubescens*), red-tailed hawk (*Buteo jamaicensis*), tufted titmouse (*Baeolophus bicolor*), white-breasted nuthatch (*Sitta carolinensis*), and barred owl (*Strix varia*). Mammals and other animals present include eastern chipmunk (*Tamias striatus*), eastern gray squirrel (*Sciurus caolinensis*), short-tailed shrew (*Blarina brevicauda*), white-footed mouse (*Peromyscus leucopus*), raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), and eastern box turtle (*Terrapene carolina*).

Rock Creek and its tributaries support at least 39 species of fish. The park also contains approximately 40 seeps and springs that provide subterranean habitat to rare, threatened, and endangered species. The park's aquatic resources are affected by upstream activities. Watershed-wide urbanization and development result in challenges to water quality and quantity. From the mouth of Piney Branch south to the Potomac River, Rock Creek is vulnerable to sewer overflows and increasing and damaging stormwater flows. Increased nutrients, pollutants, and flashiness of river flow impact wetland flora and fauna and streambank erosion. Wetland habitats in Rock Creek Park are challenged by elevated nutrient concentrations and salinity, hindering stream flora and fauna with potential reduction of visitor experience quality.

Additional environmental stresses to terrestrial wildlife have been present for some time. According to the DC Wildlife Action Plan (2006), the top-five threats to terrestrial habitats citywide are: 1) non-native invasive species, 2) fragmentation, 3)recreation, 4) dumping, and 5) contaminants. (District Department of the Environment, 2006)

Disturbances from increased recreational use could impact wildlife and wildlife habitat. During the pandemic, when Beach Drive and other roadways were closed to motor vehicles, park staff observed increases in recreational users in the project area. Documented impacts in the project area include:

- Substantial incursions by persons on foot into natural areas that were previously not easily reached because of motor vehicle traffic.
- Significant increases in the number of unleashed dogs in the park.
- Significant increased use of habitat material (downed tree branches and intentionally cut saplings and tree branches) to create recreational "lean-to" structures and shelters around trees, in natural areas, and along floodplains.
- Substantial increase in off-road illegal parking in areas near closed roadway sections.
- Increased numbers of visitors in the park at night when the park is closed, disturbing wildlife via noise and fires in and out of designated fire structures.

In October 2020, park staff collected GPS data to study official and unofficial trails in the park. Prior to the pandemic Beach Drive closure, park staff documented 20 miles of official trails and 21.5 miles of unofficial trails in the upper portion of Beach Drive. Data collected two years later showed a marked increase in miles of unofficial trails from 21.5 miles to 30 miles, 8.3 miles more than previously observed (Figure 4).

Unofficial or social trails are informal trails created by foot traffic from people and dogs. They are not part of the park's official trail network and are an indication of human disturbance. They are created by people who desire to access a portion of the park not served by an official park trail, or as a shortcut from one place to another. Social trails can fragment wildlife habitat, kill plants, and increase in size as more people use them. The increased number of unofficial trails and their length can cause habitat fragmentation and reduced breeding success among some animals, reducing genetic diversity among plants and animals. This is especially the case when the trails are used by visitors with off-leash dogs, which can disturb and kill wildlife. Social trails also cause increased spread of invasive non-native plants. These trails also cause direct damage to park plant populations due to trampling, which renders the tread surface uninhabitable to plants. Many unofficial trails access Beach Drive and the other closed roadways at steep angles, increasing trail surface erosion and sedimentation on roadways, official trails, and waterways. Compacted trail tread surfaces can be difficult for plant roots and germinating seeds to penetrate, causing forest rehabilitation to take longer than on undisturbed forest floor.

There would be no change in the management of wildlife or of wildlife habitat under any of the proposed alternatives. Changes to the use of the upper portion of Beach Drive would affect the way the forested area is accessed and used by visitors because of changes in the ability to access certain areas in the park.

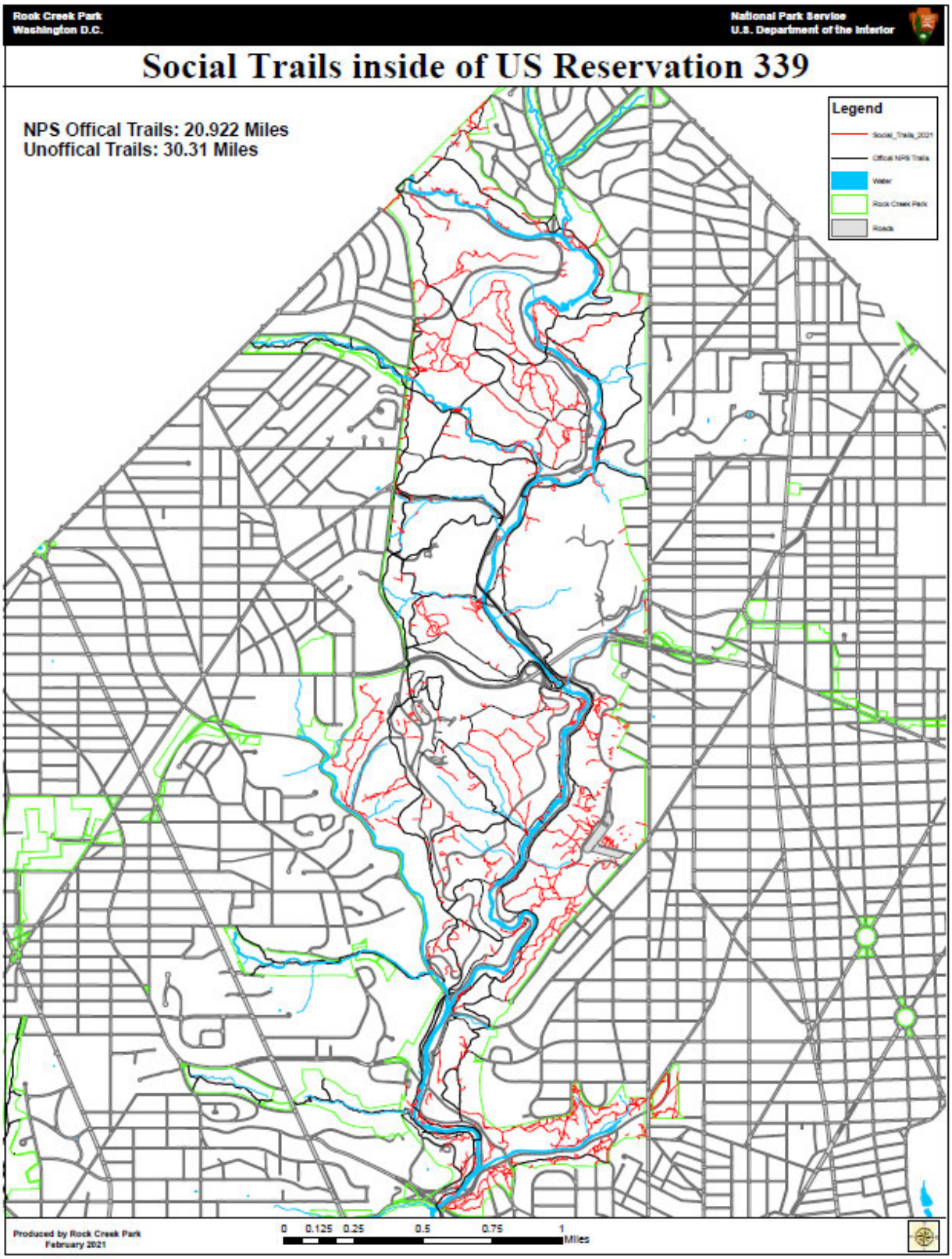

Figure 4: Map illustrating results of October 2020 social trails study

About the Analysis

NPS resource management specialists examined the project area, comparing pre-pandemic management policy impacts from motorized and recreational use in and around Beach Drive, Bingham Drive and Sherrill Drive with potential impacts from changes to these policies. They considered park-specific resource management plans and policies, recent surveys of official and unofficial trails, animal road-strike data, and staff observations and professional knowledge. Evaluations was made whether physical environmental changes associated with each alternative were likely to displace some or all members of a species present in the park or result in the substantial loss or creation of habitat conditions needed for continued species survival and welfare. The potential for attracting and supporting new wildlife species also was considered.

Impacts of Alternative 1: No-Action Alternative

Under alternative 1, impacts would be consistent with those observed during the last half-century of Beach Drive management. Animal strikes by vehicles would likely continue; affected species would likely include white-tailed deer, raccoon, opossum, and box turtle. Wildlife would continue to be affected by vehicle noise, which has been found to impact the calls that certain bird species use to communicate (Gentry, 2018). Motor vehicle-related roadway pollution, including petroleum and tire products and road salt and other snow and ice treatment chemicals, would continue to flow into Rock Creek and its tributaries, impacting aquatic species and aquatic habitat. The extent of social trails would likely remain stable under this alternative, as use of the area by visitors would decrease as the return of motor vehicle traffic during the weekdays would make this section less accessible, reducing visitor impacts such as the creation of social trails, compacting soils, and damaging vegetation) to wildlife habitat adjacent to roadways.

Impacts of Alternative 2: Full-Time Closure for Recreation

Under alternative 2, there would be beneficial impacts from the removal of motor vehicle access. Vehicle animal strikes would be reduced in closed sections. Closure of portions of Beach Drive to motorized traffic during mid-weekdays would reduce the number of wildlife strikes, especially for species that are active during the day. Vehicle noise would also be reduced, which could reduce impacts on avian communication.

Impacts on aquatic systems from motor vehicle-related pollutants such as motor oils and snow and ice treatment chemicals would be reduced in tributaries that flow into Rock Creek such as Bingham Run and Deer Print Run. Inputs of petroleum and snow/ice treatment chemicals in Rock Creek would likely be reduced since the road would be closed to motorized vehicles and snow removal would not occur. However, these reductions might be minor because of the location of Rock Creek and its tributaries in the watershed.

Increases in the number of unleashed dogs in the park, the use of habitat material to create recreational "lean-to" structures and shelters, off-road illegal parking in areas near closed roadway sections, and the number of visitors in the park at night when the park is closed are expected to continue to expand under this alternative. To mitigate impacts from social trails, the National Park Service would need to conduct a visitor use management plan and develop methods and measures to address visitor behaviors related to development of social trails. The National Park Service would also need to develop a strategy to address the closure of social trails and the rehabilitation of the areas to allow the habitat to recover.

Impacts of Alternative 3: Seasonal Closure for Recreation (NPS Preferred)

Under alternative 3, impacts on wildlife would be the same as for alternative 1 during the period after Labor Day weekend to the start of Memorial Day weekend and the same as alternative 2 from the start of Memorial Day weekend to the start of Labor Day weekend. Disturbances from

increased recreational use could lead to wildlife and wildlife habitat impacts similar to alternative 2 but not to the severity that could be experienced under alternative 2.

It is expected that there would continue to be incursions by persons on foot into forested areas that were previously not easily reached because of motor vehicle traffic, an increase in the number of unleashed dogs in the park, increased creation of recreational "lean-to" structures, increases in off-road illegal parking in areas near closed roadway sections, and a continued increase in the number of visitors in the park at night when the park is closed. Impacts from unofficial trails would also likely continue, though not to as great a degree as in alternative 2. However, these impacts could be reduced by the time-of-year restrictions associated with this alternative. During warmer months, deciduous trees and shrubs in the park's forest leaf out, creating an understory that is more difficult to enter and walk through than in late fall, winter, and early spring. This is anticipated to discourage visitors from creating unofficial trails. In addition, the park's white-tailed deer management plan is anticipated to reduce impacts of deer eating forest vegetation. This should lead to an increase in forest ground cover and understory, which would further thicken vegetation and act as a barrier to visitors creating and using unofficial trails. Further, with increased vegetation, mitigations to these impacts could be less difficult to implement and maintain successfully than in alternative 2.

CONSULTATION AND COORDINATION

The National Park Service involved the public during the NEPA process to provide an opportunity for the public to comment on proposed management changes. Consultation and coordination with federal and District of Columbia agencies, American Indian tribes, and other interested parties were also conducted to identify issues related to natural and cultural resources and concerns of park neighbors. This section summarizes the public involvement and agency consultation and coordination that occurred during preparation of the EA. A full comment summary can be found at https://parkplanning.nps.gov/beachdrive.

PUBLIC INVOLVEMENT

As part of the NEPA process, the National Park Service involved the public in project scoping by holding a 45-day public comment period from July 8 to August 22, 2021. A virtual public meeting was also held on July 8. Resources related to the meetings are available at http://parkplanning.nps.gov/beachdrive.

During the public scoping period, the National Park Service received more than 2,400 pieces of correspondence, equating to more than 4,100 individual comments on a variety of topics. The highest number of comments (1,838) expressed support for alternative 2: full closure for recreation. Many commenters (343 comments) expressed support for alternative 1, citing interest in returning the roadway to vehicle use. A full comment summary is available at http://parkplanning.nps.gov/beachdrive. Stakeholders provided comments in several general topic areas related to the impact of the proposal and alternatives on visitor use, safety of recreational users, physical and mental health, natural and cultural resources including wildlife and wildlife habitat, and transportation studies and impacts.

Visitor use comments ranged from considerations for visitors with mobility impairments, access for all, number of users by user group, impact of the pandemic on work schedules, and the many types and frequencies of activities that visitors enjoy at the park. Many commenters questioned the appropriate use of parkland. Many commenters recognized the increased safety benefits the closure had on nonmotorized users allowing for differing skill levels to utilize the park. Motorized and nonmotorized users commented about mental health benefits of traversing the scenic parkland. Other commenters noted the physical benefits of utilizing the closed section. Commenters noted the environmental benefits to the closure such as allowing animals a more natural habitat experience while others noted that air pollution has moved from the park to other city areas.

Commenters noted impacts of alternative 2: full closure for recreation on the surrounding neighborhood streets and main arterial roads and the resulting safety implications. Concept impacts on emergency response were also noted. Many commenters mentioned the uncertainty of a post-pandemic world on work schedules and commuting patterns. Overall, the comments covered the following general themes:

- Flat ground allows those with mobility devices, wheelchairs, or strollers to use the closed portion safely and in a way that natural trails cannot accommodate.
- Post-pandemic work schedules will allow for more telecommuting, less commuting, and more opportunity to enjoy midday weekday recreation.
- Permanent closure would limit access for those with mobility impairments or those lacking stamina.
- The number of drivers outweighs the number of recreational users.

- Weekend/holiday recreation use is an appropriate compromise.
- Road users are commuters and residents driving for childcare, medical appointments, etc.
- People of all ages, races, and abilities recreate on Beach Drive every day.
- The road is already relatively empty of recreational users during weekday commute times.
- Driving through the park is an important park use.
- Driving Beach Drive is a wonderful activity and a fun time for out-of-town visitors.
- Walkers and bikers have existing trails, so they do not need two paved road lanes for weekday use.
- People returning to work means less recreational use on weekdays.
- Beach Drive rehabilitation was for cars: a huge taxpayer investment for vehicle usage.
- Parks should be for people, not cars.
- Accessibility and access for people with disabilities is important.
- Continued closure will benefit a small number of privileged users and discriminate against those who are elderly or disabled.
- If the park is intended for the enjoyment of all, it should be recognized that not everyone owns a bike, nor can everyone walk or run. Other considerations should include the physically challenged who may prefer to come to the park in the afternoons in a car, or seniors who would prefer to drive rather than walk along Beach Drive.
- Closure provides opportunities for healthful exercise with scenic beauty.

AGENCY CONSULTATION AND COORDINATION

Section 106 of the National Historic Preservation Act

Pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR Part 800), the National Park Service initiated consultations with the Washington, DC, and Maryland state historic preservation offices (SHPOs) in a letter dated June 14, 2021. The letter briefly described the project and invited comments. On June 21, 2021, the Washington, DC, SHPO provided preliminary comments and the Maryland SHPO replied on July 12, 2021. Correspondence can be found in Appendix A.

Tribal Consultation

Tribal consultation initiation letters were sent to the Delaware Nation, the Delaware Tribe of Indians, the Pamunkey Indian Tribe, the Eastern Shawnee of Oklahoma, and the Catawba Indian Nation on June 14, 2021. A response was received from the Catawba Indian Nation on July 27, 2021, that stated that the Tribe had no comments but asked to be consulted in the event of inadvertent discovery of remains or sites of potential cultural significance. This correspondence is in Appendix A. Responses have not been received from the Delaware Nation, the Delaware Tribe of Indians, the Eastern Shawnee of Oklahoma, or the Pamunkey Indian Tribe.

The following agencies and stakeholder organizations were contacted to request input on the plan as part of the NEPA and Section 106 of the National Historic Preservation Act compliance processes:

- DC Historic Preservation Office (SHPO)
- Maryland Historic Trust (SHPO)
- Catawba Indian Tribe
- Delaware Nation
- Eastern Shawnee of Oklahoma
- Delaware Tribe of Indians
- Pamunkey Indian Tribe
- DC Office of Planning
- DC Department of Transportation
- National Capital Planning Commission
- District of Columbia Council
- US Fish and Wildlife Service

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APPENDIX A: CORRESPONDENCE

COUNCIL OF THE DISTRICT OF COLUMBIA
THE JOHN A. WILSON BUILDING
1350 PENNSYLVANIA AVENUE, N.W.
WASHINGTON, D.C. 20004

JUN 10 2021

Ms. Julia Washburn
Superintendent
National Park Service of Rock Creek Park
2545 Williamsburg Lane, N.W.
Washington, D.C. 20008-1207

Dear Ms. Washburn:

Enclosed is a copy of Council Resolution 24-119, the "Sense of the Council Requesting the National Park Service Permanently Close Beach Drive to Cars Resolution of 2021", adopted by the Council at the June 1, 2021 Legislative Meeting.

If you have any questions regarding this resolution, please contact Nyasha Smith, Secretary to the Council, at 202-724-8080 or nsmith@dccouncil.us.

Sincerely,

Phil Mendelson
Chairman of the Council

enc.

RECEIVED
AUG 02 2021
By

ENROLLED ORIGINAL

A RESOLUTION

24-119

IN THE COUNCIL OF THE DISTRICT OF COLUMBIA

June 1, 2021

To declare the sense of the Council that the National Park Service should close upper Beach Drive to cars on a permanent basis.

RESOLVED, BY THE COUNCIL OF THE DISTRICT OF COLUMBIA, That this resolution may be cited as the "Sense of the Council Requesting the National Park Service Permanently Close Beach Drive to Cars Resolution of 2021".

Sec. 2. The Council finds that:

(1) In June 2003, the Council passed the Sense of the Council on the National Park Service's Draft General Management Plan for Rock Creek Park Emergency Resolution of 2003, effective June 3, 2003 (Res. 15-122; 50 DCR 4906), in which the Council expressed a preference that Rock Creek Park's roadways stay open to vehicular traffic in order to decrease congestion on other major North-South routes in the District.

(2) The People's Alliance for Rock Creek ("PARC") looked at the District Department of Transportation's Traffic Volume Maps prior to and during the 2017 to 2019 closure of Beach Drive for reconstruction to determine the closure's effect on traffic. Data collected by DDOT found that when upper Beach Drive was closed for reconstruction, forcing commuters to make alternative travel choices, traffic volumes on the main alternative streets declined from pre-closure levels. From 2015 to 2018, on 16th Street, the average daily traffic count went from 34,600 to 29,300, and on Broad Branch Road, it went from 4,400 to 3,000. Traffic on Connecticut Avenue also decreased, although by negligible amounts.

(3) The upper portion of Beach Drive, N.W., was closed to cars by the Superintendent of Rock Creek Park on April 11, 2020, with the intention of leaving it closed to cars until April 30, 2020, in order to allow District residents to use the road for socially distanced recreation during the COVID-19 pandemic.

(4) Later in April, the National Park Service determined to leave upper Beach Drive closed to cars until October 11, 2020.

(5) On July 14, 2020, at the request of a letter signed by 3 Councilmembers, the Superintendent of Rock Creek Park decided to keep upper Beach Drive closed to cars for the duration of the public health emergency and into the District's recovery period.

(6) Many District residents have found the closure of upper Beach Drive to cars to be a safe and pleasant space for biking, walking, and enjoying the serenity of Rock Creek Park.

(7) For 12 days over a 4-week period of the closure, PARC counted 28,741 non-motor vehicle users of Beach Drive, averaging 529 per hour.

(8) The pandemic has given cities across the world a once in a lifetime chance to rethink how public spaces are used and how they may be repurposed to best benefit residents.

(9) The return of cars on upper Beach Drive would eliminate the ability for residents to use the space for biking and walking.

(10) In a public roundtable held on March 23, 2021, by the Council's Committee on Transportation and the Environment, the vast majority of District residents who testified supported closing upper Beach Drive to cars on a permanent basis.

(11) The District Department of Transportation stated at the March 23, 2021, roundtable that, should the National Park Service decide to close upper Beach Drive to cars on a permanent basis, it could ensure alternative routes to Beach Drive were sufficiently able to absorb the resulting increase in traffic.

(12) District residents would be best served by the permanent closure of upper Beach Drive to cars.

Sec. 3. It is the sense of the Council that the National Park Service should close upper Beach Drive to cars on a permanent basis and if it decides to close upper Beach Drive to cars on a permanent basis, ensure access remains for disabled persons.

Sec. 4. The Council shall transmit a copy of this resolution, upon its adoption, to the Mayor, the Delegate to the House of Representatives from the District of Columbia, and the National Park Service Superintendent of Rock Creek Park.

Sec. 5. This resolution shall take effect immediately.

COUNCIL OF THE DISTRICT OF COLUMBIA

WASHINGTON, DC, 20004

Docket No. **PR24-0212**

Resolution No. **R24-0119**

[ ] ITEM ON CONSENT CALENDAR

[X] ACTION — **Final Reading**

[X] VOTE DATE — **June 1, 2021**

[ ] VOICE VOTE

RECORDED VOTE ON REQUEST

ABSENT

[X] ROLL CALL VOTE – Result — **Passed**

Council Member	Aye	Nay	NV	AB	Rec	Council Member	Aye	Nay	NV	AB	Rec	Council Member	Aye	Nay	NV	AB	Rec
Chairman Mendelson		X				Henderson	X					R. White	X				
Allen	X					Lewis George		X				Silverman	X				
Bonds	X					McDuffie		X				T. White		X			
Cheh	X					Nadeau	X										
Gray	X					Pinto	X										

X - Indicate Vote **AB – Absent** **NV - Present, Not Voting** **Rec - Recused**

CERTIFICATION RECORD

Secretary to the Council

6.2.21
Date

Montgomery County Council

Committee: Directly to Council
Staff: Glenn Orlin, Senior Analyst
Purpose: Final action – vote expected
Keywords: #OpenStreets, transportation

AGENDA ITEM #3P
June 15, 2021
Action

SUBJECT

Resolution to support continuation of the Open Streets Program

EXPECTED ATTENDEES

None

BACKGROUND

All nine Councilmembers sponsor this resolution that expresses support for continuing the Open Streets Program on certain County streets, Park Roads, and Beach Drive in the District of Columbia.

This report contains:

Alternative format requests for people with disabilities. If you need assistance accessing this report you may submit alternative format requests to the ADA Compliance Manager. The ADA Compliance Manager can also be reached at 240-777-6197 (TTY 240-777-6196) or at adacompliance@montgomerycountymd.gov

Resolution No.: _____
Introduced: May 27, 2021
Adopted: _____

COUNTY COUNCIL
FOR MONTGOMERY COUNTY, MARYLAND

Sponsor: County Council

SUBJECT: Support for Continuing Open Streets

Background

1. At the start of the COVID-19 pandemic, Montgomery Parks launched the Open Parkways program, closing portions of Sligo Creek Parkway, Little Falls Parkway, and Beach Drive to vehicle traffic on weekends to allow pedestrians and bicyclists to use these facilities in a safe and socially-distanced manner.

2. As of April 2021, Montgomery Parks reported 624,000 pedestrian and bicyclist trips during the Open Parkways periods.

3. At the start of the COVID-19 pandemic, the Montgomery County Department of Transportation began the Shared Streets program to close select County roadways to vehicle traffic to allow residents and businesses to engage in safe and socially-distanced in-street activities such as walking, biking, outdoor dining, and retail activity.

4. The Shared Streets effort includes partnerships with the Bethesda Urban Partnership, Urban Districts, Regional Services Centers, the State Highway Administration and other entities to set up outdoor dining spaces in roadways to support curbside and carryout dining at local restaurants facing indoor capacity restrictions due to the pandemic.

5. Outdoor dining and activity areas in roadways include the Bethesda Streetery, Wheaton Streetery, Silver Spring Streetdine, and Newell Street Temporary Neighborhood Park Expansion as well as spaces supported by other jurisdictions including Gibbs Street in the City of Rockville, the Takoma Park Streetery in the City of Takoma Park, and the Germantown Streetery at BlackRock.

6. Shared Streets included at least eight Temporary Neighborhood Greenways that welcomed pedestrians and bicyclists while limiting vehicles to local traffic only so residents have more space for outdoor activity and physical distancing.

7. At the start of the COVID-19 pandemic, the National Park Service closed the portion of Beach Drive in Washington, D.C., near the Montgomery County border to vehicle traffic to allow residents from the Montgomery County and the District to use the road for socially-distanced recreation.

8. The COVID-19 pandemic has provided jurisdictions around the world a chance to rethink how public spaces are best used and how they may be repurposed to better promote community health and vibrancy.

9. The County Council has strongly supported the various aforementioned Open Streets efforts by advocating for them, communicating them to the public, and through direct financial aid such as Resolution 19-690 – a $1.25 million special appropriation to assist with the purchase of equipment to winterize the Steeteries and other outdoor dining areas.

10. The return of vehicles to Open Streets would eliminate the ability for residents to use the spaces for walking, biking, and supporting local businesses.

Action

The County Council for Montgomery County, Maryland approves the following resolution:

The Council supports the continuation of Open Streets – including but not limited to Open Parkways, Shared Streets, Streeteries, Temporary Neighborhood Greenways, and the Beach Drive closure in Washington, D.C. – and will support efforts by County and non-County agencies or organizations to enhance these programs as appropriate.

This is a correct copy of Council action.

Selena Mendy Singleton, Esq.
Clerk of the Council

United States Department of the Interior

NATIONAL PARK SERVICE
National Capital Region
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, DC 20008-1207

April 15, 2022

Genevieve LaRouche, Field Supervisor
Chesapeake Bay Field Office
U.S. Fish & Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

CONSULTATION CODE: 05E2CB00-2022-SLI-0432

RE: Informal Section 7 Consultation for the Endangered Hay's Spring amphipod (*Stygobromus hayi*) and Northern Long-Eared Bat (*Myotis septentrionalis*) and Indiana bat (*Myotis sodalis*) in Rock Creek Park for the Upper Beach Drive NW Management Plan

Dear Ms. LaRouche:

Rock Creek Park has initiated Endangered Species Act (ESA) informal Section 7 consultation for the endangered Hay's Spring amphipod (*Stygobromus hayi*), threatened northern long-eared bat (*Myotis septentrionalis*, NLEB), and endangered Indiana bat (*Myotis sodalis*) for carrying out the proposed Upper Beach Drive NW Management Plan as described below. All three species are found within the action area for the proposed project, which could potentially change the long-term management of upper Beach Drive NW and nearby roadways, extending from Broad Branch Road NW north to the Maryland state line. There is no designated critical habitat for these species in Rock Creek Park.

We have made the determination that the proposed activity may affect, but is not likely to adversely affect, any species listed as threatened or endangered under the ESA of 1973, as amended 1982. Our supporting analysis is provided below.

Project Description and Action Area

Rock Creek Park is developing a comprehensive management approach for upper Beach Drive NW and adjacent roadways to improve recreational opportunities and minimize resource impacts. This effort is an outgrowth of a decision in April 2020 by the park Superintendent to close to motor vehicle through traffic Beach Drive NW and adjacent roadways, extending from Broad Branch Road NW north approximately five miles to the Maryland state line. The purpose of these closures, which currently remain in place, was to allow for expanded outdoor recreational opportunities during the COVID-19 pandemic.

The Environmental Assessment for this management plan is underway; we anticipate completing the plan during 2022 and implementing the selected alternative. The park's preferred alternative is to close the upper Beach Drive NW and adjacent roadways to through traffic during the summer months (likely Memorial Day through Labor Day), and also close the road to through traffic on weekends and holidays from Labor Day to Memorial Day. This will alter existing park management by changing vehicle and pedestrian flow and access and will cause long-term changes in visitor use of resources with possible impacts to federally listed species.

Beach Drive NW is the park's primary north-south route through the riparian valley and forms the backbone of the northern park road network. The entire project area is within the boundaries of Rock Creek Park. The action area is from Broad Branch Road NW north to the Maryland state line and is formed by potential temporal closures of three sections of Beach Drive NW to vehicles (Figure 1). Figure 2 shows the overlap of the Beach Drive NW action area and the protected 500-foot buffers around the springs where Hay's Spring amphipod is found.

Specifically, the project limits are:

- Beach Drive NW between Broad Branch Road NW and Joyce Road NW; this stretch is most important because it encompasses six Hay's Spring amphipod sites and previously known roost and maternity trees for northern long-eared bat (Deeley et al. 2021).
- Beach Drive NW between Joyce Road NW and Wise Road NW.
- Beach Drive NW between West Beach Drive NW and the Maryland boundary; northern long-eared bat has been captured with mist-nets along this area.
- The full length of Bingham Drive NW.
- The full length of Sherrill Drive NW. (Note that Hay's Spring amphipod has not been found recently but was previously found for over 10 years in the Sherrill Drive NW site.)

The federal discretionary action will close these sections of Beach Drive NW and adjacent roadways to some degree to through motor vehicle traffic. Alternative 2 is park preferred: Seasonal closure for recreation. As noted previously, this would involve a closure during the summer months – to coincide with favorable summer recreational weather conditions -- while also continuing the weekend closures and federal holiday closures throughout the year.

Listed Species in the Action Area

Surveys from 2016 to 2018 for the threatened NLEB and endangered Indiana bat found that both are present in ROCR (Deeley et al. 2021). White-Nose Syndrome (WNS) is a primary threat to both bat species. The consultation issues are also around the loss of habitat and hibernacula, which are similar for both species. The conservation actions will be similar to protect both species. There are no identified hibernacula in the park.

We used the NLEB determination key within the Information for Planning and Consultation (IPaC) system. Additional NLEB studies began in 2019 but stopped during 2020 due to COVID-19 pandemic. The studies began again in 2021 with the installation of bat houses and further research to better understand NLEB demographics (W. Ford et al. personal communication

2021). We know that NLEB use the park throughout the active period from 1 April through 31 October for foraging and 1 June to 31 July for reproducing.

The draft Recovery Plan (USFWS 2021b) for the Hay's Spring amphipod adopted from the biological report (USFWS 2021a) 500-foot buffers around all the springs where Hay's Spring amphipod is present (Figure 2). These buffered areas are within this project's action area.

Anticipated Threats and Stressors to Hay's Spring amphipod—Existing Environmental Baseline

Because Hay's Spring amphipod is subterranean, we cannot easily count individuals or determine harm to essential functions like reproduction. The biological study (USFWS 2020) and draft Recovery Plan (USFWS 2021) established a causal link between changes in habitat quantity, quality, and availability, and Hay's Spring amphipod response. We will consider impacts to the habitat for this analysis.

As noted on Page 5 of the draft Recovery Plan, the primary threats and stressors were identified as related to water quality degradation (USFWS 2021). However, other threats include impacts to forests and impacts from recreation. The draft Recovery Plan states that "increased recreation (primarily through the creation or use of unauthorized social trails) can potentially harm the species through increased soil compaction, soil erosion, defoliation, increased trash and localized pollution, and potential disturbance to habitat."

The forest found at the springs, in their vicinity, and their drainage or recharge areas provides protection to the spring wetlands by buffering stormwater, surface runoff, and preventing erosion. The park recognizes that protecting the forest habitat protects the Hay's Spring amphipod.

Off-trail recreation within the 500-foot buffers around springs and wetlands will potentially harm the Hay's Spring amphipod. Rock Creek Park staff were concerned about seeing the increased creation of social trails and visitor use of the informal trails to include dogs off leash (N. Bartolomeo personal communication 2021). In October 2020, staff completed a field review and mapped the social trails in the park. This effort was updated in December 2021 for those sections of Beach Drive NW within the action area (Figure 2). Figure 2 is the existing baseline, showing the number of current informal or social trails. It is assumed that the closing of Beach Drive NW and associated roadways to vehicles will increase the use of the roadways and adjacent forested areas by pedestrians. It is reasonable to expect an increase in the use of unauthorized informal trails leading from the roads, as well as the creation of new social trails.

The habitat and species are most vulnerable to disturbance when soils are saturated. Visitors create a high risk to the Hay's Spring amphipod when they use the social trails within the 500 foot buffers and the soil is wet, groundwater is high, and the springs are flowing. This project may result in:

- Direct and Indirect habitat degradation: Increased creation of social used by increased levels of park visitors and unleashed dogs trails in the 500 foot buffers that overlap Beach Drive NW and other roadways.

- Interrelated habitat degradation: Increased transport of nonnative invasive propagules by people and dogs into the 500-foot buffer.

Conservation Measures to Protect Hay's Spring Amphipod

As identified in the draft Recovery Plan, page 9, as Priority 1 actions, Rock Creek Park will coordinate with USFWS and other entities to protect recharge areas from recreational and construction activities (e.g., new trails, increases in impervious surface, tree removals, stream restoration), and other activities adversely affecting water quality and quantity (i.e., application of harmful pesticides, changes in surface or subsurface flows). The park is committed to reducing negative impacts to Hay's Spring amphipod from visitor recreation activities.

Four of the six buffer areas in the park currently have substantial numbers of informal trails (Figure 2, baseline). As noted in the 20 January 2022 letter (Pavek personal communication) from FWS to NPS, "Soil compaction and erosion destroys the network of wet areas that constitute habitat for this species." The current project cannot increase the creation, and/or increase the use, of informal trails in this habitat.

1. The park needs to assess the urgency, quantify the extent, and address the threats posed by number, proximity, and condition of the unauthorized informal trails to the springs, within the 500 foot buffers, and through the wetlands. Specifically, the park will:

- Prioritize the informal trails by degree of potential harm to Hay's Spring amphipod, which will help implement management actions (slope stabilization, avoid landslides, revegetation, trail blockage, etc.) to conserve and protect the habitat and species.
- Establish monitoring of vegetation and soils covering the entire 500-foot buffers for recreation impacts; methods and frequency of habitat monitoring to be determined.
- Close and remove unauthorized informal trails within all recharge areas and the 500-foot buffers. This may require a coordinated volunteer effort and increased park FTEs. The scientific literature has analyses of park visitor use of unauthorized informal trails and of park visitor use interventions (e.g., Marion 2019). Other parks who have had recreation impacts assessed, social trails mapped, and interventions implemented will be contacted, such as C&O Canal and Harpers Ferry National Historical Parks, and George Washington Memorial Parkway.

2. To further help protect the 500-foot buffers and recharge areas, Rock Creek Park will engage in public educational campaigns using social media, the park website, the Superintendent's compendium of law and regulation, and frequent in-park signage to inform visitors of the importance of resource protection and how their actions can help further the park's conservation efforts while protecting the location of threatened and endangered species. In addition, other options for consideration may include:

- More patrols and visible law enforcement presence, park rangers, and park volunteers to reinforce this messaging and protect the resources.
- Better information and signage about the location of formal park trails.
- The installation and maintenance of boot brushes (for removing invasive plant seeds) at strategic locations near official trail heads.

- Extensive reminders (signs, enforcement actions) that dogs must remain on leash and the consequences (ticketing, fines) for dogs off leash.

3. Another Priority 1 action listed in the draft Recovery Plan, page 9, is to have an interagency USFWS and NPS long-term (20 years) agreement to protect the 500-foot buffers of occupied and drainage areas of unoccupied springs from disturbance and erosion following the release of the Recovery Plan. This will provide technical assistance for the park.

4. Continued implementation of the Rock Creek Park white-tailed deer management plan will increase tree and vegetation seedling stocking rates, restoring the forest and protecting Hay's Spring amphipod.

Effects Determination

When this project is implemented, the park does not anticipate removal of trees and other vegetation, although pruning (observing time-of-year restrictions for the listed bat species) and removal of hazardous trees along Beach Drive NW and nearby roadways will continue.

This project will open Beach Drive NW and nearby roadways to long-term, full-time pedestrian recreational use, which will likely increase social trail use and creation above the environmental baseline conditions (Figure 2). This would cause reductions in habitat quantity and quality.

Further, the direct and indirect effects of long-term increased recreational access along Beach Drive NW will be most severe when the 500-foot buffers have saturated soils, putting the Hay's Spring amphipod and wetland spring habitat at risk.

However, implementation Conservation Measures 1 through 4 above by the park will avoid or minimize impacts and exposure by addressing, reducing, and removing the listed threats and protecting the 500-foot buffers around the springs and recharge areas and the Hay's Spring amphipod. The short-term consequences will immediately remove visitor access to the social trails within the 500-foot buffers. The long-term consequences will have vegetation recovery and eroded slopes and spring sites stabilized. The wetland habitat will be enhanced and Hay's Spring amphipod will be protected.

Conclusions

Based on the analysis with the conservation measure in place, we determined that the proposed action may affect but is not likely to adversely affect the two bats and the Hay's Spring amphipod. We certify that we have used the best scientific and commercial data available to complete this analysis. We request your concurrence with this determination.

Sincerely,

Julia Washburn
Superintendent

Figure 1. Project action area in Rock Creek Park is highlighted in yellow.

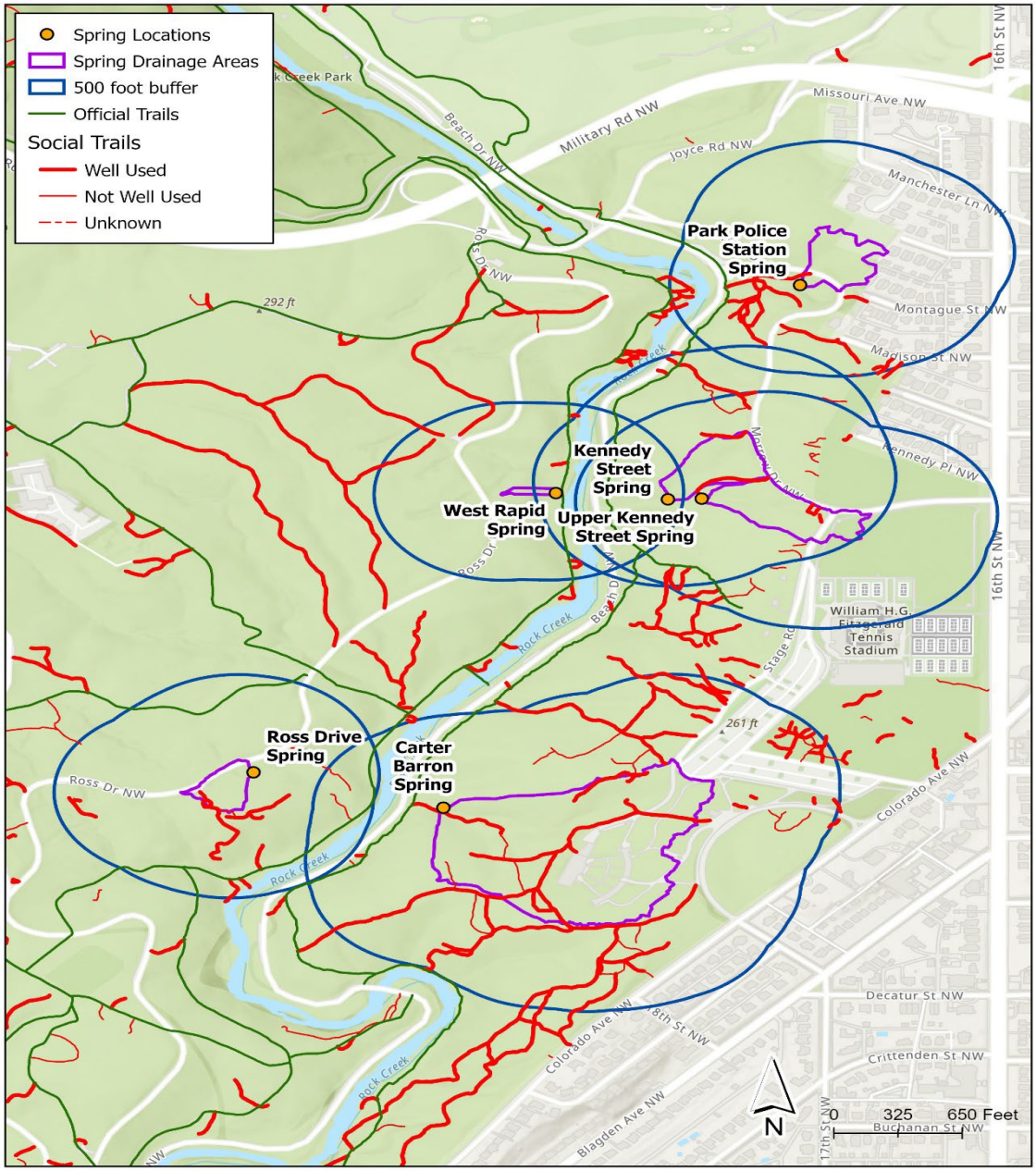

Figure 2. Social trails along Beach Drive NW and proximity to springs (orange dots) where Hay's Spring amphipod is located. The circular (blue) 500-foot buffers around the springs overlaps Beach Drive NW. The purple outlines are spring recharge areas that must be protected along with the buffers.

Literature Cited

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United States Department of the Interior

FISH AND WILDLIFE SERVICE

Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, Maryland 21401
http://www.fws.gov/chesapeakebay

May 3, 2022

Julia Washburn
Superintendent, Rock Creek Park
National Park Service
5200 Glover Rd, NW
Washington, DC 20015

RE: Section 7 determination for the Hay's Spring amphipod (Stygobromus hayi), Indiana bat (Myotis sodalis), and Northern long-eared bat (Myotis septentrionalis) for the Preferred Alternative for the Rock Creek Park Upper Beach Drive NW Management Plan

Dear Ms. Washburn:

The U.S. Fish and Wildlife Service (Service) has reviewed your April 15, 2022 letter regarding the preferred alternative for the Upper Beach Drive NW Management Plan. Information on the project was also provided in your email sent April 18, 2022, as well as from previous emails and discussions. The comments provided below are in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

The purpose of this project is to update the management plan for Beach Drive NW and adjacent roadways at Rock Creek Park located in Washington DC. The Environmental Assessment will outline possible alternatives for road closures on Beach Drive; the plan is anticipated to be completed in 2022 and an alternative will be selected and implemented at that time. The current preferred alternative is to close Beach Drive NW to traffic during the summer months (Memorial Day through Labor Day) and on weekends and holidays throughout the year. While we are aware that there are other alternatives being explored by the National Park Service, we have only received information regarding this one. If another alternative is selected and there is additional information that we have not received to date, additional consultation will be necessary. The federally threatened Northern long-eared bat (*Myotis septentrionalis*), and federally endangered Indiana bat (*Myotis sodalis*), and Hay's Spring amphipod (*Stygobromus hayi*) are likely to be present within the action area.

Because no additional tree clearing is anticipated to take place as part of this project for all of the alternatives, and the standard time of year restrictions for any pruning or clearing are in place, we concur that any of the alternatives selected are "not likely to adversely affect" the bat species. We agree with your assessment of potential impacts to Hay's spring amphipod that are likely to

occur as part of this project. We also agree that the conservation measures you provided will be helpful at mitigating harm to the Hay's Spring amphipod, and that these measures will be necessary regardless of the alternative selected.

In addition to the conservation measures you provided, we suggest including a conservation measure for periodic monitoring and re-mapping of the social trails after the new management plan is implemented. This would allow us to determine how the measures to reduce social trail use are working, which will provide additional information on the impacts to the habitat. The method of trail monitoring can be determined by the park. As long as these conservation measures are implemented, we concur that is project is "not likely to adversely affect" the Hay's Spring amphipod.

If additional information becomes available, or a different alternative is selected, please notify our office and we can provide an updated determination. We appreciate the opportunity to provide information relative to fish and wildlife issues. Thank you for your interest in these resources. If you have any questions or need further assistance, please contact Kathleen Cullen of my staff at 410/573-4579 or kathleen_cullen@fws.gov.

Sincerely,

Genevieve LaRouche
Field Supervisor

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 14, 2021

Mr. David Maloney
State Historic Preservation Officer
Attn: Mr. Andrew Lewis
DC Historic Preservation Office
Office of Planning
1100 4th Street, SW, Suite E650
Washington, DC 20024

Subject: Initiation of Section 106 Consultation, Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Mr. Maloney:

The National Park Service (NPS) is requesting to formally initiate Section 106 consultation with the DC Historic Preservation Office regarding the preparation of an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

In accordance with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C. 306108), and the Advisory Council on Historic Preservation's implementing regulations (36 CFR Part 800), the NPS will consider the effects of this undertaking to historic properties that are listed in or eligible for listing in the National Register of Historic Places.

The Area of Potential Effect (APE) has not yet been determined, as the specifics for this undertaking are still under consideration. Once the undertaking has been finalized, we will share a map of the APE with your office. In the meantime, please find enclosed a map showing the current closures of Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW (Figures 1 and 2).

The NPS will conduct the appropriate consultation in accordance with Section 106, including consultation with the Maryland State Historic Preservation Office and Federally recognized tribes. The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800. At this time, the NPS invites you to provide any initial comments regarding the proposed undertaking.

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov.

Thank you for your continued assistance.

Sincerely,

JULIA WASHBURN

Digitally signed by JULIA WASHBURN
Date: 2021.06.14 16:09:16 -04'00'

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021

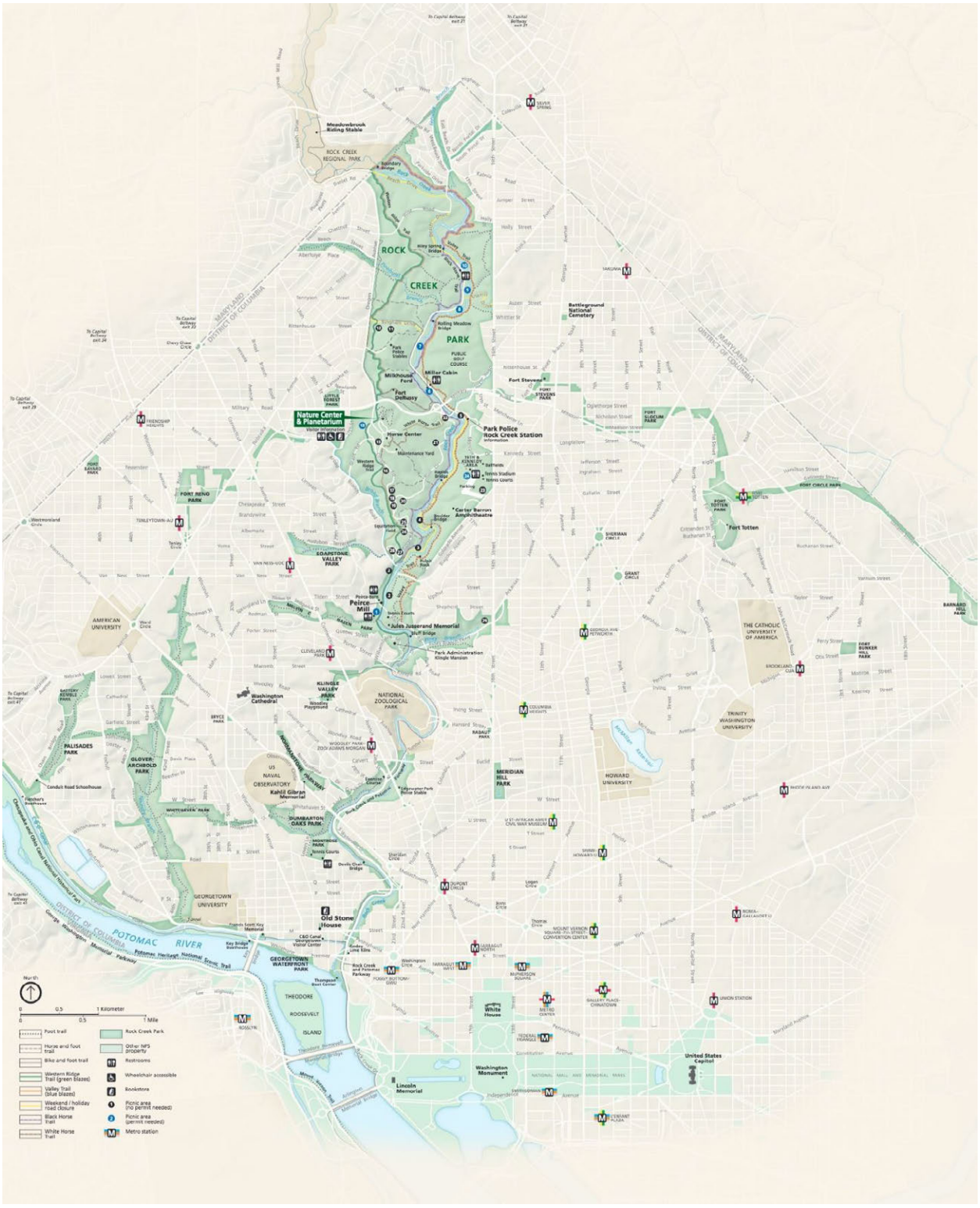


Figure 1. General map of Rock Creek Park in Washington, D.C.
(available online at https://www.nps.gov/rocr/planyourvisit/maps.htm)

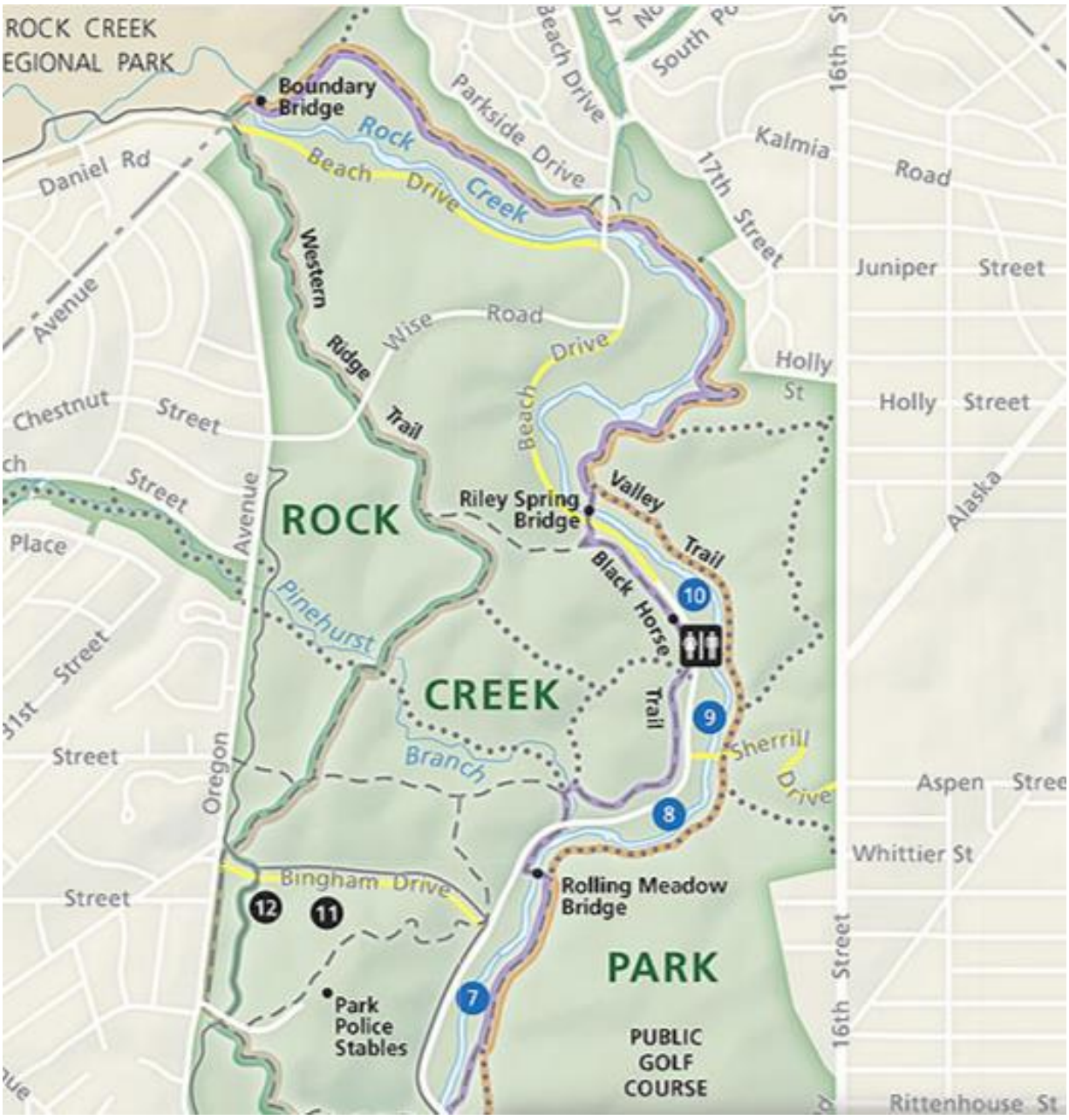


Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

District of Columbia Office of Planning

June 21, 2021

Mr. Bradley Krueger, Cultural Resources Program Manager
National Park Service
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, DC 20407-0001

RE: Initiation of Section 106 Consultation for Management of Upper Beach Drive, NW, and Adjacent Streets, Rock Creek Park

Dear Mr. Krueger:

Thank you for initiating consultation with the District of Columbia State Historic Preservation Officer (SHPO) regarding the above-referenced undertaking. We have reviewed the project submittal and are writing to provide our initial comments in accordance with Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR Part 800.

We understand that the National Park Service (NPS) is considering extending the temporary, covid-related, weekday, automobile closures of Beach Drive, NW and adjacent streets, specifically Sherrill and Bingham Drives, NW (see attached map). Prior to the health emergency, these roadways were closed only on weekends and holidays, but the NPS noted "increased recreational use" as a result of the weekday closures and will be conducting a study to determine the benefits and other effects of extending the closures beyond the currently proposed end date of December, 2021.

At this early stage in the process, the Area of Potential Effect (APE) remains undefined and no preliminary statements about potential effects have been provided so we are unable to offer any detailed comments. However, it seems that the potential for "adverse effects" on historic properties should be relatively low if little to no visible changes would be required to implement the extended closures. We look forward to consulting further on this topic and will provide more meaningful comments once additional information has been provided for our consideration.

If you should have any questions or comments regarding the historic built environment, please contact me at andrew.lewis@dc.gov or 202-442-8841. Questions or comments related to archaeology should be directed to Ruth Trocolli at ruth.trocolli@dc.gov or 202-442-8836.

Sincerely,

C. Andrew Lewis
Senior Historic Preservation Officer
DC State Historic Preservation Office

21-0609

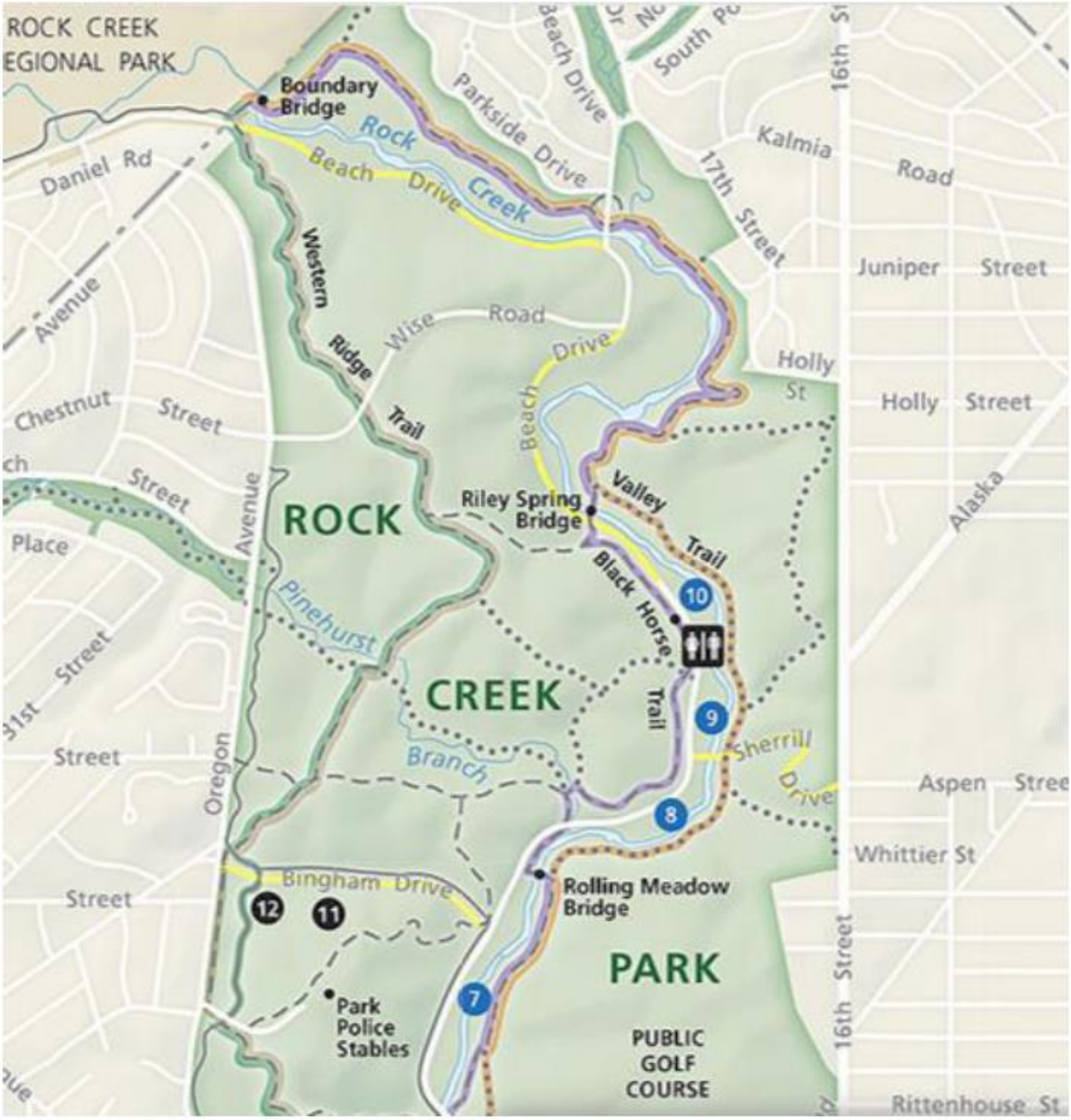


Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 14, 2021

Ms. Elizabeth Hughes
State Historic Preservation Officer
Attn: Ms. Beth Cole
Maryland Historical Trust
100 Community Place, 3rd Floor
Crownsville, MD 21032

Subject: Initiation of Section 106 Consultation, Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Ms. Hughes:

The National Park Service (NPS) is requesting to formally initiate Section 106 consultation with the Maryland Historical Trust regarding the preparation of an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday recreational use of the roadway. Park managers originally planned to re-open the roads to motor

vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

In accordance with the requirements of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA) (54 U.S.C. 306108), and the Advisory Council on Historic Preservation's implementing regulations (36 CFR Part 800), the NPS will consider the effects of this undertaking to historic properties that are listed in or eligible for listing in the National Register of Historic Places.

The Area of Potential Effect (APE) has not yet been determined, as the specifics for this undertaking are still under consideration. Once the undertaking has been finalized, we will share a map of the APE with your office. In the meantime, please find enclosed a map showing the current closures of Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW (Figures 1 and 2).

The NPS will conduct the appropriate consultation in accordance with Section 106, including consultation with the D.C. Historic Preservation Office and Federally recognized tribes. The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800. At this time, the NPS invites you to provide any initial comments regarding the proposed undertaking.

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov.

Thank you for your continued assistance.

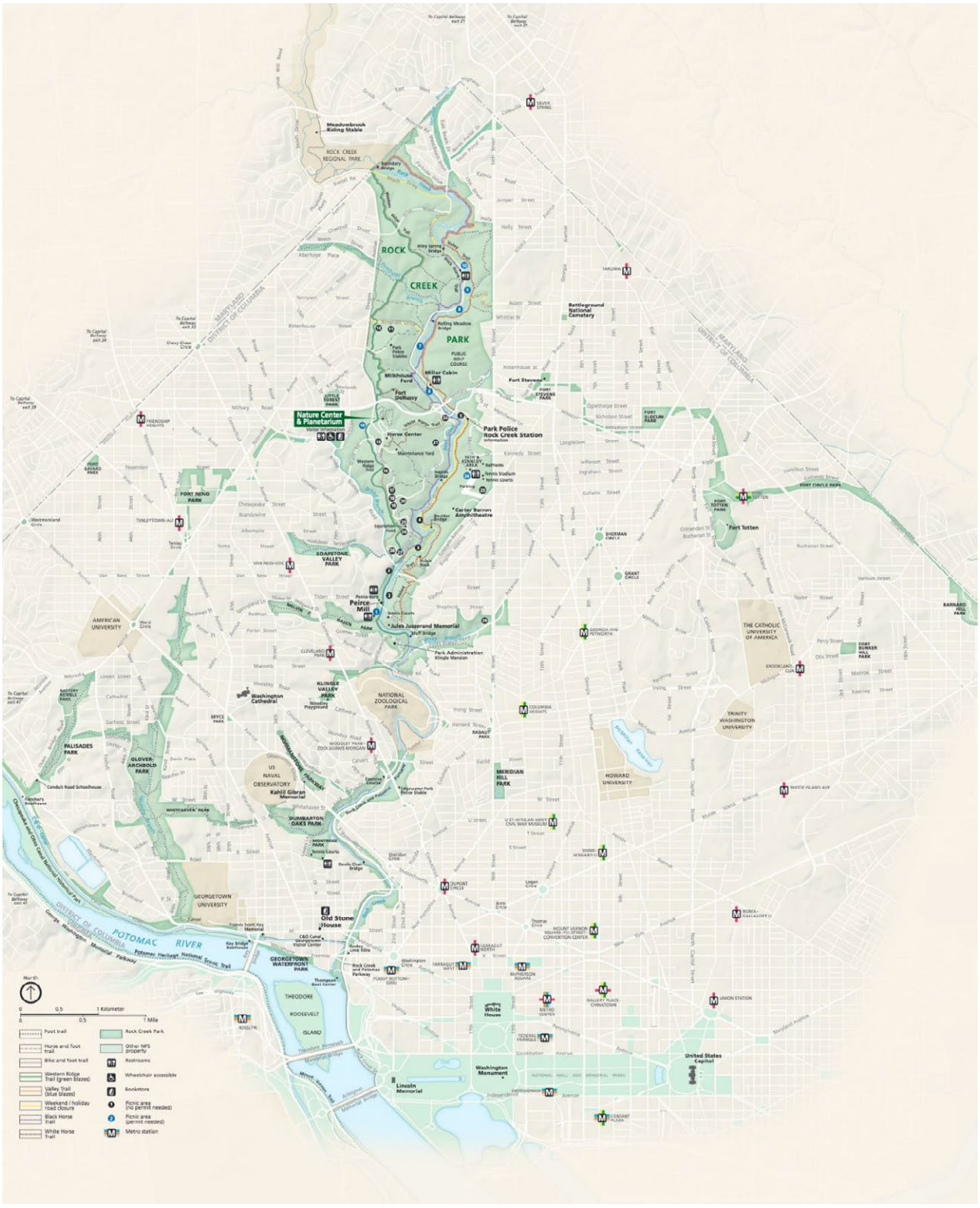
JULIA WASHBURN

Digitally signed by JULIA WASHBURN
Date: 2021.06.14 16:16:01 -04'00'

Sincerely,

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021



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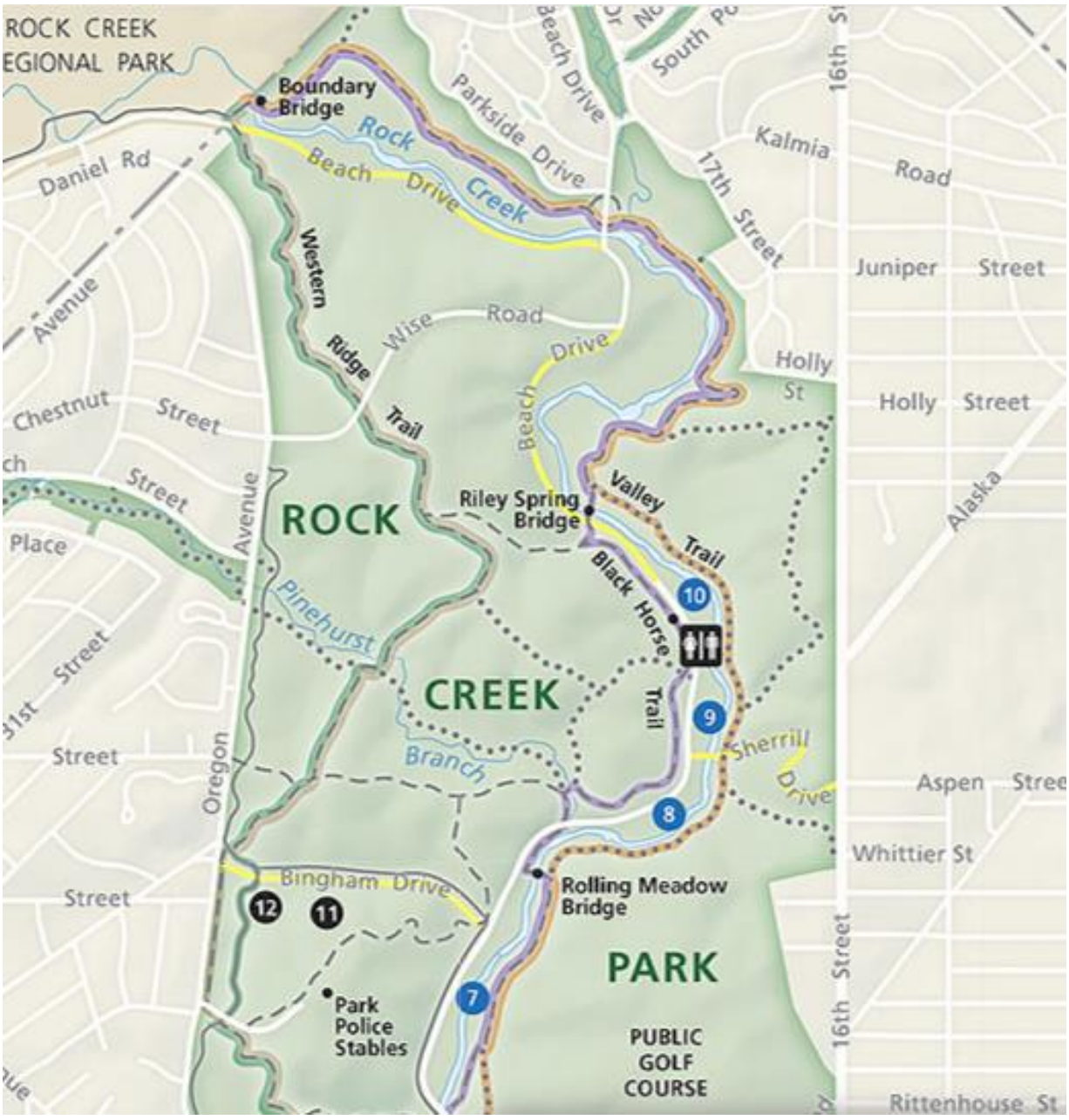

Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

[EXTERNAL] Fwd: Section 106 Consultation - Management of Upper Beach Drive NW

Becky Roman -MDP- <becky.roman@maryland.gov>

Mon 7/12/2021 10:42 AM

To: Krueger, Bradley A <Bradley_Krueger@nps.gov>
Cc: Beth Cole <beth.cole@maryland.gov>; Bartolomeo, Nick <Nick_Bartolomeo@nps.gov>; Stidham, Tammy <Tammy_Stidham@nps.gov>; Gorder, Joel S <Joel_Gorder@nps.gov>

1 attachments (551 KB)

Outgoing MD SHPO Consultation Upper Beach Drive_June 14, 2021.pdf;

Bradley A. Krueger
Cultural Resources Program Manager
Rock Creek Park
NPS National Capital Region
Washington D.C.

Good morning Mr. Krueger,

I am the new Preservation Officer - Architectural Historian here at the Maryland Historical Trust (MHT) assigned to review and partner with the National Park Service. I started in January of this year, replacing Natalie Loukianoff who left in late 2019.

Thank you for your recent letter, dated and received by the MHT on June 15, 2021, initiating consultation with our office pursuant to Section 106 of the National Historic Preservation Act for the above-referenced undertaking.

You submittal letter indicated that the project entails the development of an comprehensive management approach to allow for increased recreational opportunities on upper Beach Drive and adjacent roadways, which have been closed to vehicular traffic since April 2020. The 2007 management plan for the park will be updated as a result of this approach once approved. The Area of Potential Effect (APE) is still in development while the specifics of the undertaking are under consideration.

We appreciate NPS's early coordination on this essential undertaking and its efforts to ensure the appropriate consideration of the park's cultural resources during project planning and implementation, and we look forward to further coordination with your office to complete the Section 106 review of this undertaking.

Thank you for providing us this opportunity to comment.
Sincerely,

Becky Roman

Elizabeth L. (Becky) Roman
Preservation Officer
Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032

P. 410.697.9587
becky.roman@maryland.gov

MHT.Maryland.gov
Please take our customer service survey.

---------- Forwarded message ---------
From: **Beth Cole - MHT** <beth.cole@maryland.gov>
Date: Tue, Jun 15, 2021 at 8:20 AM
Subject: Fwd: Section 106 Consultation - Management of Upper Beach Drive NW
To: Bonnie Baden -MDP- <bonnie.baden@maryland.gov>

Please print email and attachments and log to me and Becky: F/NPS, MO Co, management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, DC

Beth Cole
Administrator, Project Review and Compliance
Maryland Historical Trust
Maryland Department of Planning
100 Community Place
Crownsville, MD 21032

beth.cole@maryland.gov / **410-697-9541**
MHT.Maryland.gov
Please take our customer service survey

***Please note that I am largely teleworking so email is the best means of contact. To check on the status of a submittal, please use our online search:** https://mht.maryland.gov/compliancelog/ComplianceLogSearch.aspx.

---------- Forwarded message ---------
From: **Krueger, Bradley A** <Bradley_Krueger@nps.gov>
Date: Tue, Jun 15, 2021 at 7:45 AM
Subject: Section 106 Consultation - Management of Upper Beach Drive NW
To: Elizabeth Hughes <elizabeth.hughes@maryland.gov>, Beth Cole <beth.cole@maryland.gov>
Cc: Bartolomeo, Nick <Nick_Bartolomeo@nps.gov>, Stidham, Tammy <Tammy_Stidham@nps.gov>, Gorder, Joel S <Joel_Gorder@nps.gov>

Dear Elizabeth and Beth:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. Built between 1897 and 1900, Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. Please find attached a PDF letter initiating Section 106 consultation with the Maryland Historical Trust (no hard copy will follow).

The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800

We welcome any initial comments you have at this time. Should you have any questions, please feel free to let us know.

We look forward to consulting with you on this project.

Best,
Brad

--
Bradley A. Krueger, MA, RPA
Cultural Resources Program Manager

National Park Service
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, DC 20008
202-895-6067 - direct
202-499-0365 - cell
bradley_krueger@nps.gov

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 14, 2021

Chief William Harris
Attn: Dr. Wenonah Haire
Catawba Indian Nation
996 Avenue of the Nations
Rock Hill, SC 29730

Subject: Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Chief Harris:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), the NPS is writing to invite the Catawba Indian Nation to consult on the development of the EA.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800.

The NPS understands that the Catawba Indian Nation has an interest in the preservation of American Indian cultural resources in the District of Columbia. Please respond to this invitation with your interest in consulting on the project. Should you decline, we will continue to provide brief updates and your comments are welcome. Please address and mail your response to this invitation to the Superintendent:

Julia Washburn, Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, D.C. 20008

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov

Sincerely,

JULIA WASHBURN

Digitally signed by JULIA WASHBURN
Date: 2021.06.14 16:18:55 -04'00'

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021

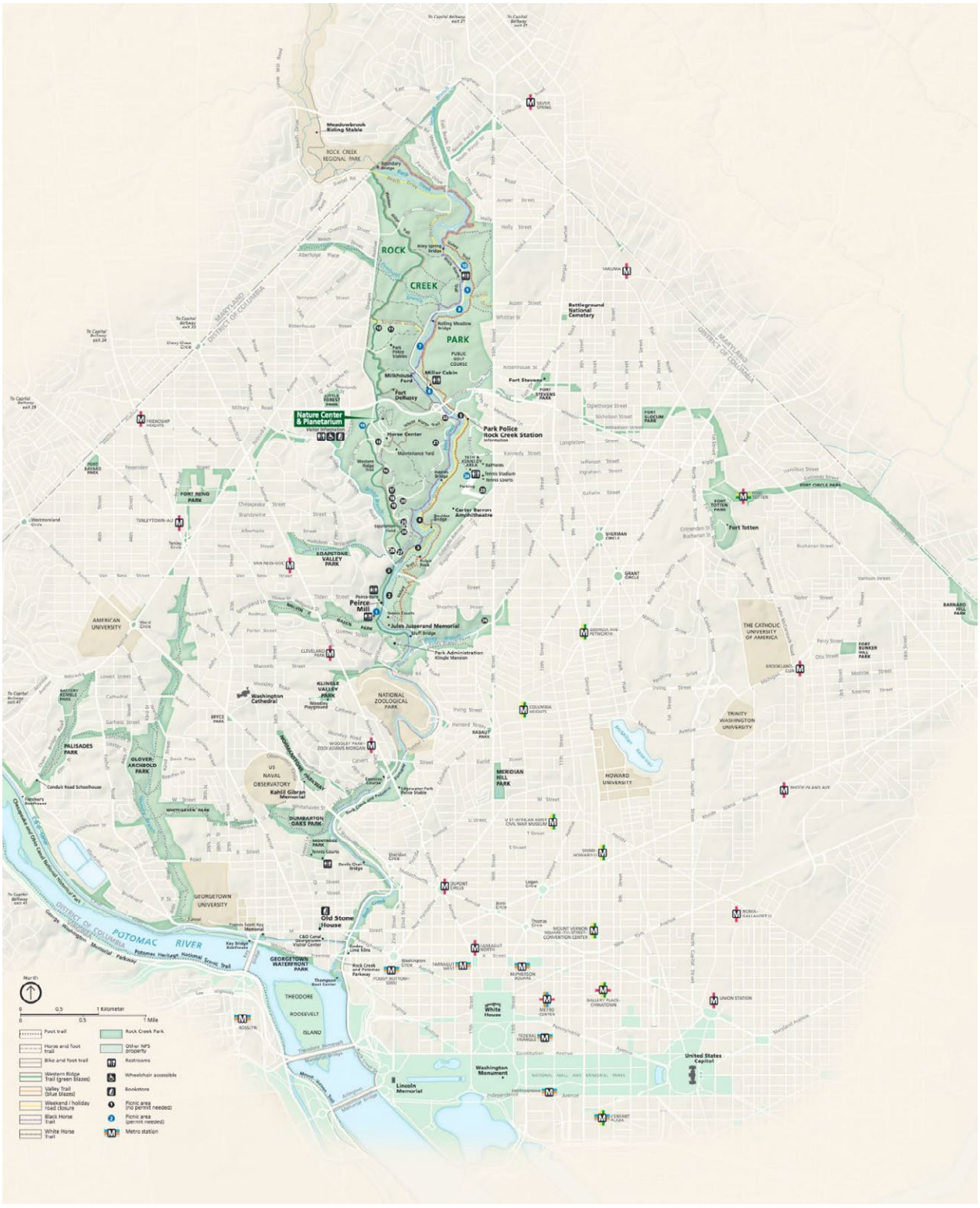

Figure 1. General map of Rock Creek Park in Washington, D.C.
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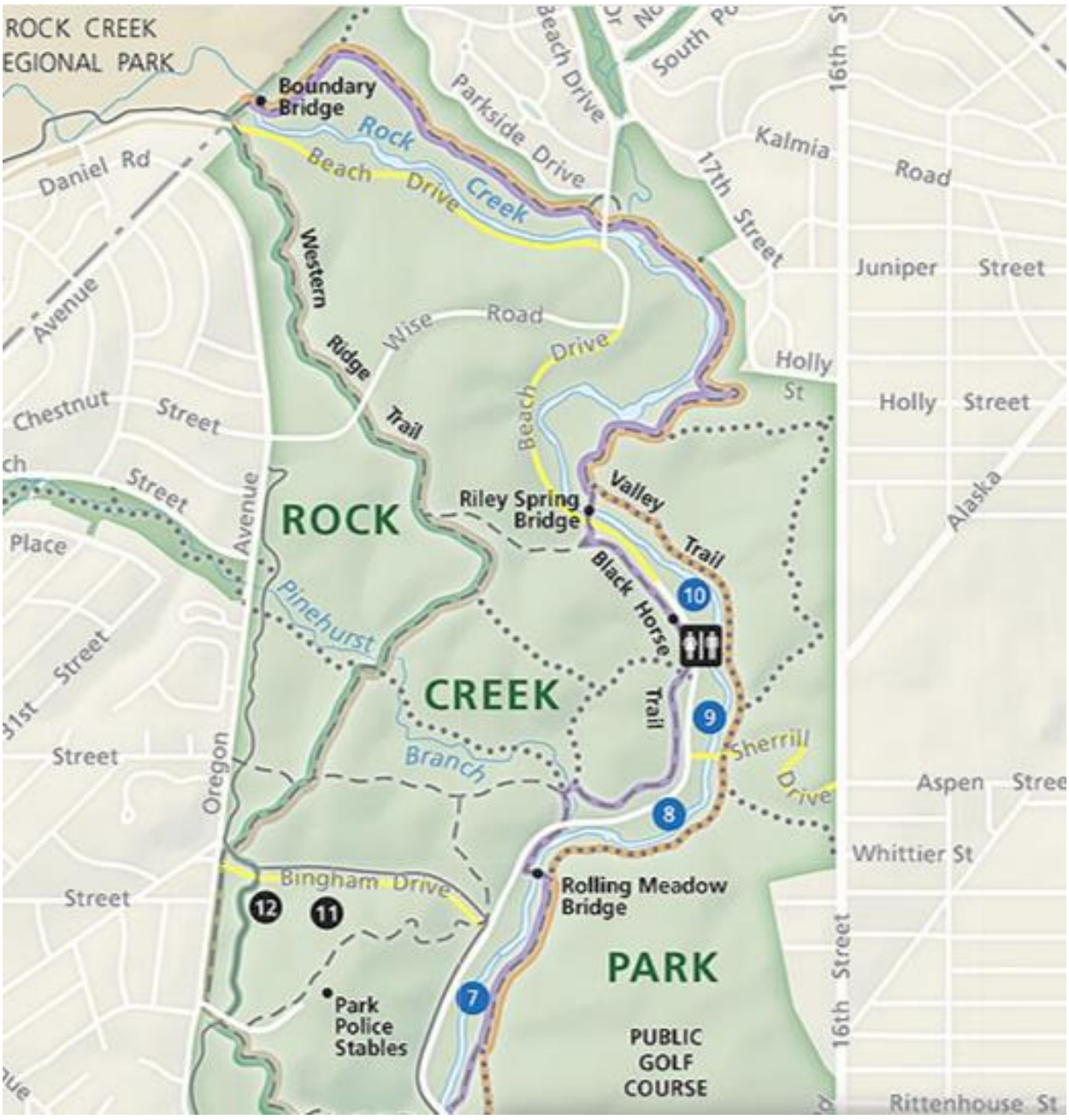


Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 14, 2021

Ms. Deborah Dotson
Attn: Ms. Erin Paden
Delaware Nation, Oklahoma
P.O. Box 825
Anadarko, OK 73005

Subject: Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Ms. Dotson:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), the NPS is writing to invite the Delaware Nation to consult on the development of the EA.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800.

The NPS understands that the Delaware Nation has an interest in the preservation of American Indian cultural resources in the District of Columbia. Please respond to this invitation with your interest in consulting on the project. Should you decline, we will continue to provide brief updates and your comments are welcome. Please address and mail your response to this invitation to the Superintendent:

Julia Washburn, Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, D.C. 20008

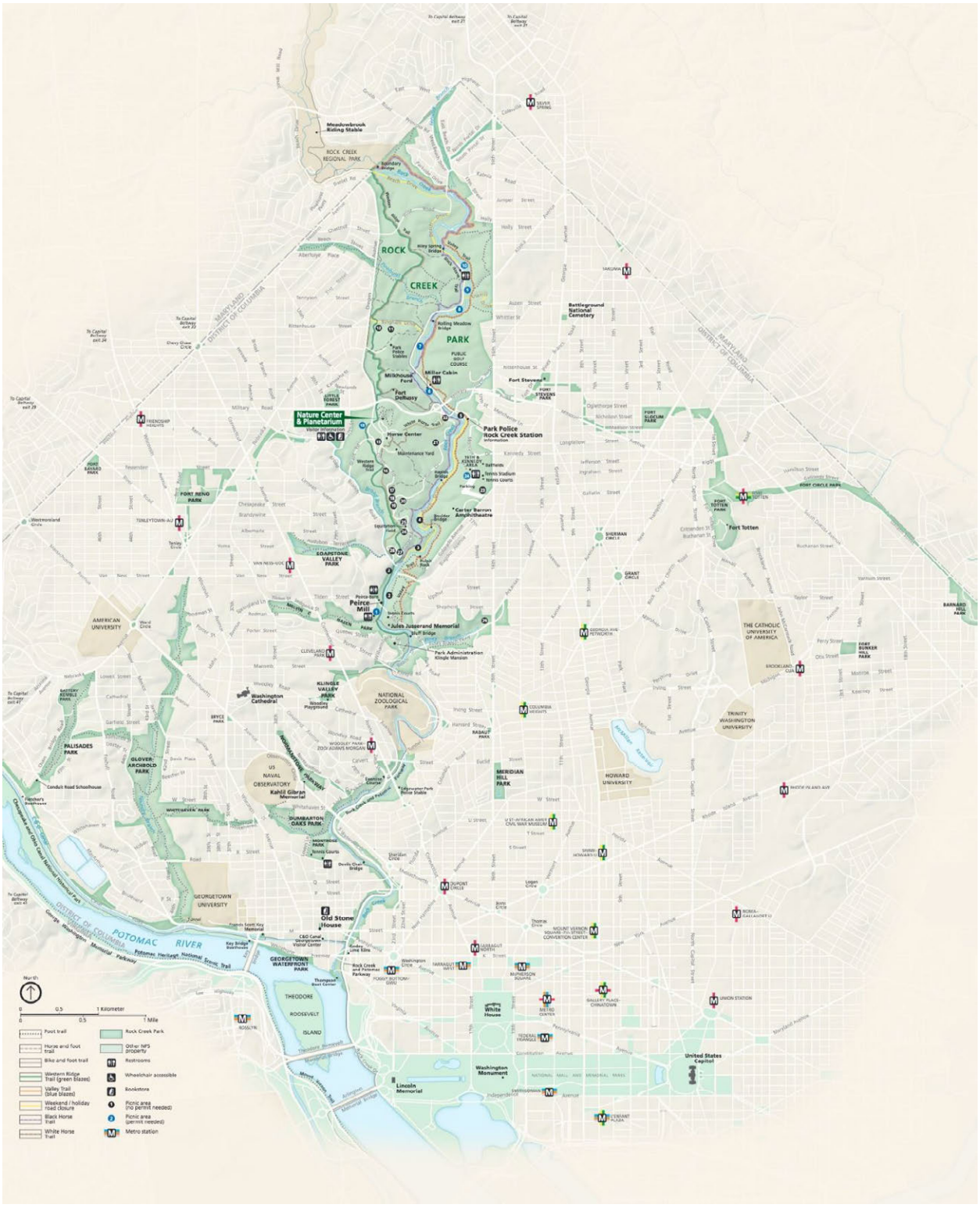
We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov

Sincerely,

JULIA WASHBURN Digitally signed by JULIA WASHBURN
Date: 2021.06.14 16:21:17 -04'00'

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021



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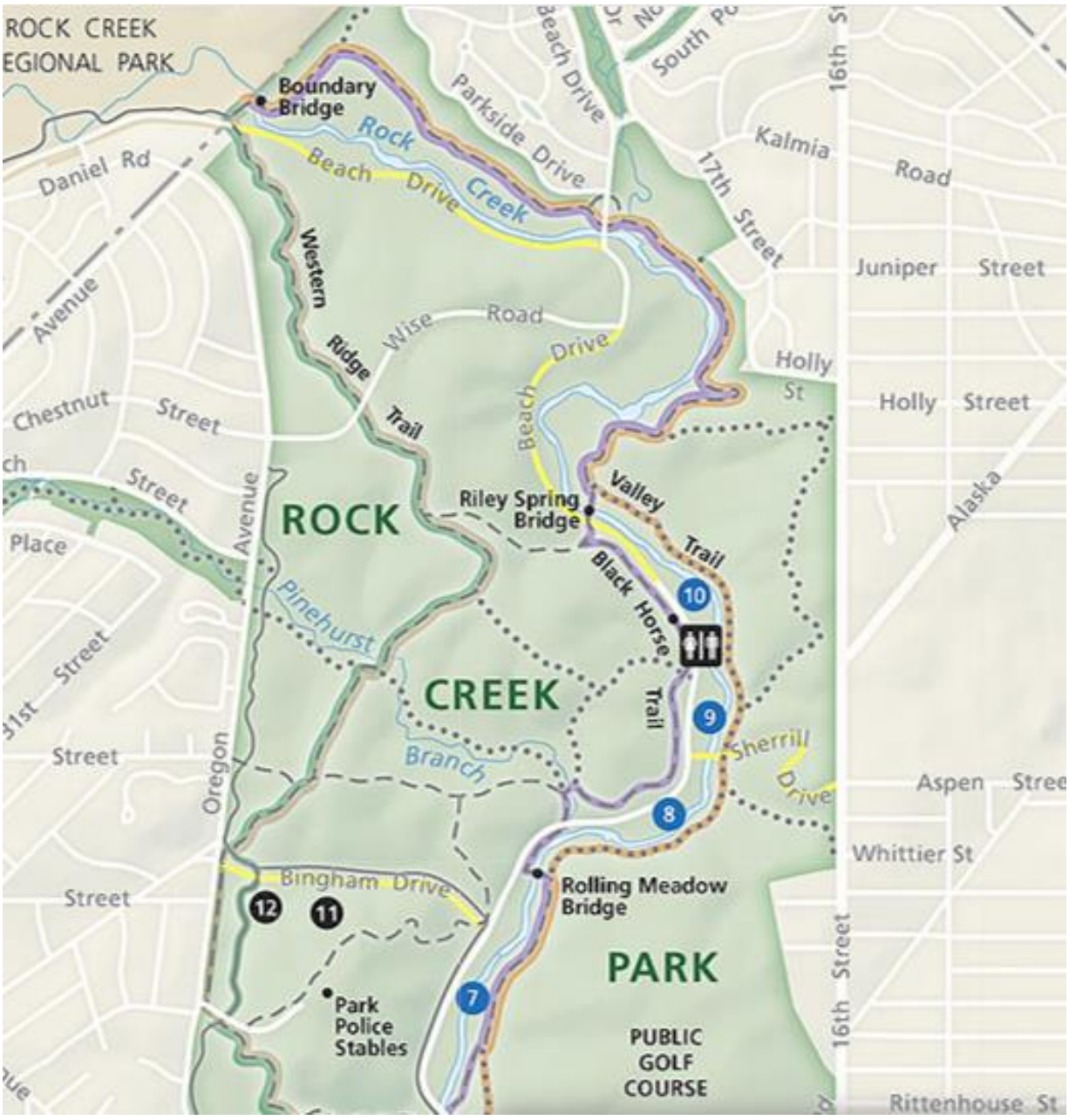

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United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 11, 2021

Chief Chester Brooks
Attn: Dr. Brice Obermeyer, Ms. Susan Bachor
Delaware Tribe of Indians
5100 Tuxedo Boulevard
Bartlesville, OK 74006

Subject: Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Chief Brooks:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), the NPS is writing to invite the Delaware Tribe of Indians to consult on the development of the EA.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

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The NPS understands that the Delaware Tribe of Indians has an interest in the preservation of American Indian cultural resources in the District of Columbia. Please respond to this invitation with your interest in consulting on the project. Should you decline, we will continue to provide brief updates and your comments are welcome. Please address and mail your response to this invitation to the Superintendent:

Julia Washburn, Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, D.C. 20008

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov

Sincerely,

JULIA WASHBURN

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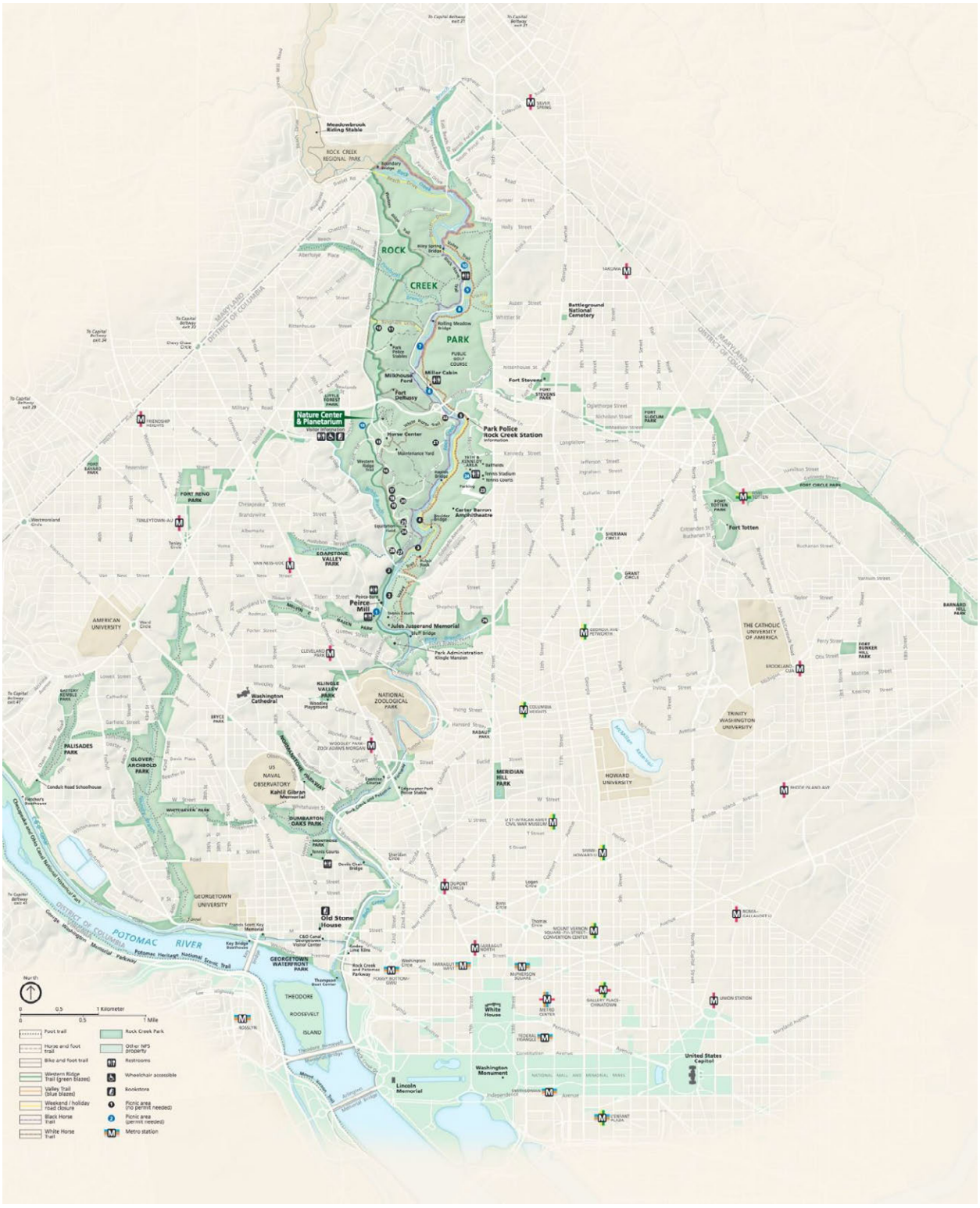
Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021



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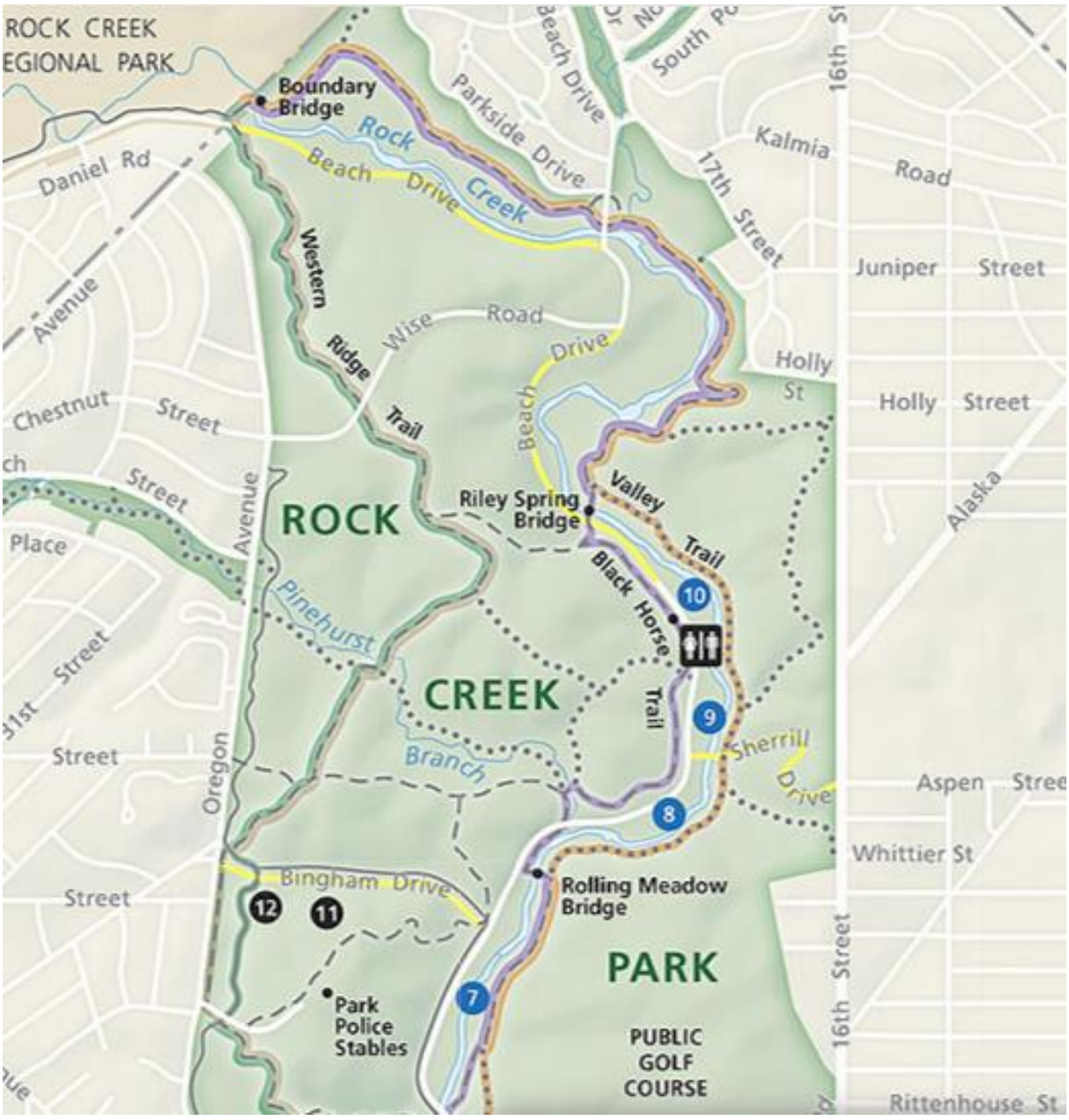

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United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 11, 2021

Chief Glenna Wallace
Attn: Mr. Paul Barton, Mr. Brett Barnes
Eastern Shawnee Tribe of Oklahoma
P.O. Box 350
Seneca, MO 64865

Subject: Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Chief Wallace:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), the NPS is writing to invite the Eastern Shawnee Tribe of Oklahoma to consult on the development of the EA.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800.

The NPS understands that the Eastern Shawnee Tribe of Oklahoma has an interest in the preservation of American Indian cultural resources in the District of Columbia. Please respond to this invitation with your interest in consulting on the project. Should you decline, we will continue to provide brief updates and your comments are welcome. Please address and mail your response to this invitation to the Superintendent:

Julia Washburn, Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, D.C. 20008

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov

Sincerely,

JULIA WASHBURN

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Date: 2021.06.14 16:26:27 -04'00'

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021

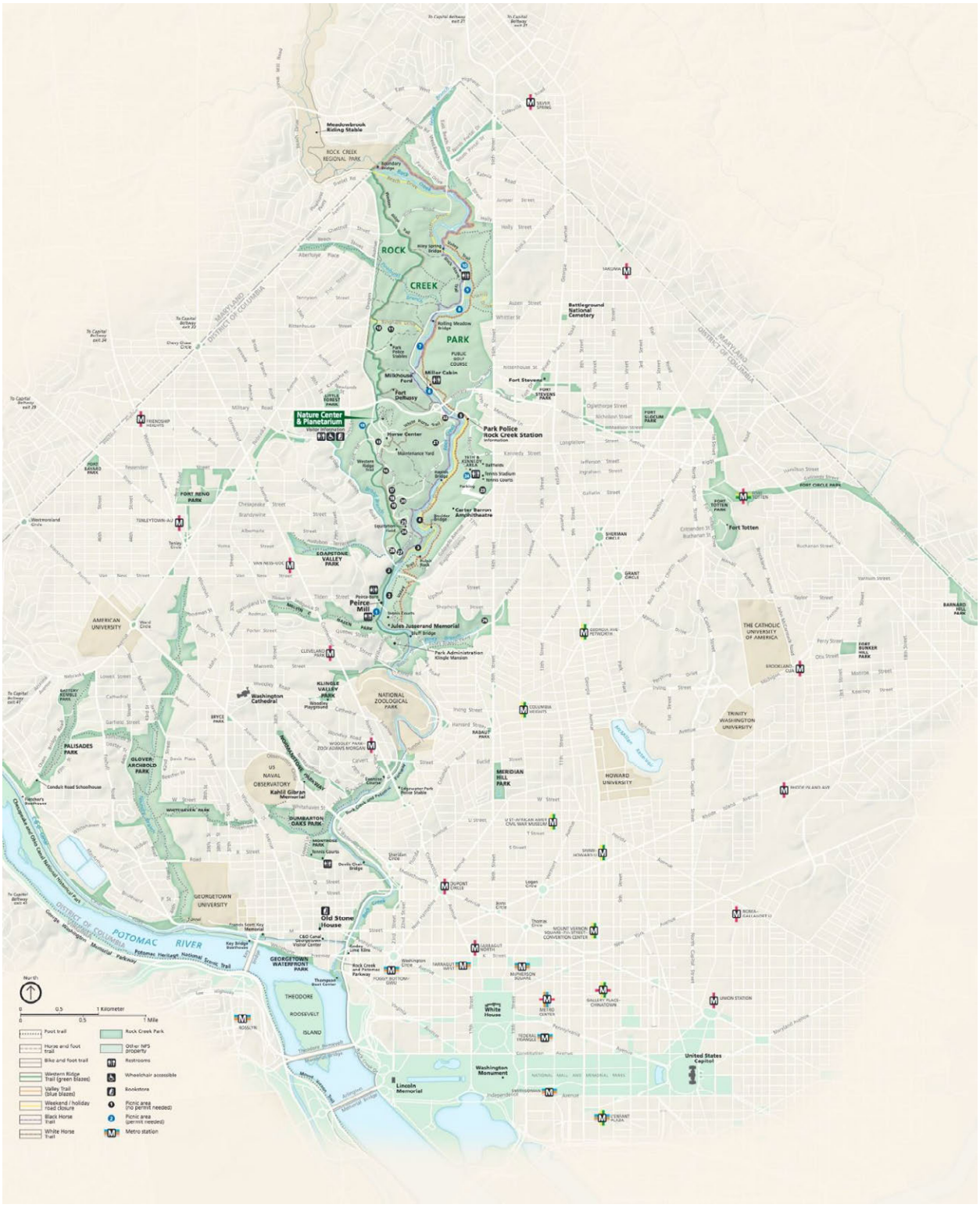


Figure 1. General map of Rock Creek Park in Washington, D.C.
(available online at https://www.nps.gov/rocr/planyourvisit/maps.htm)

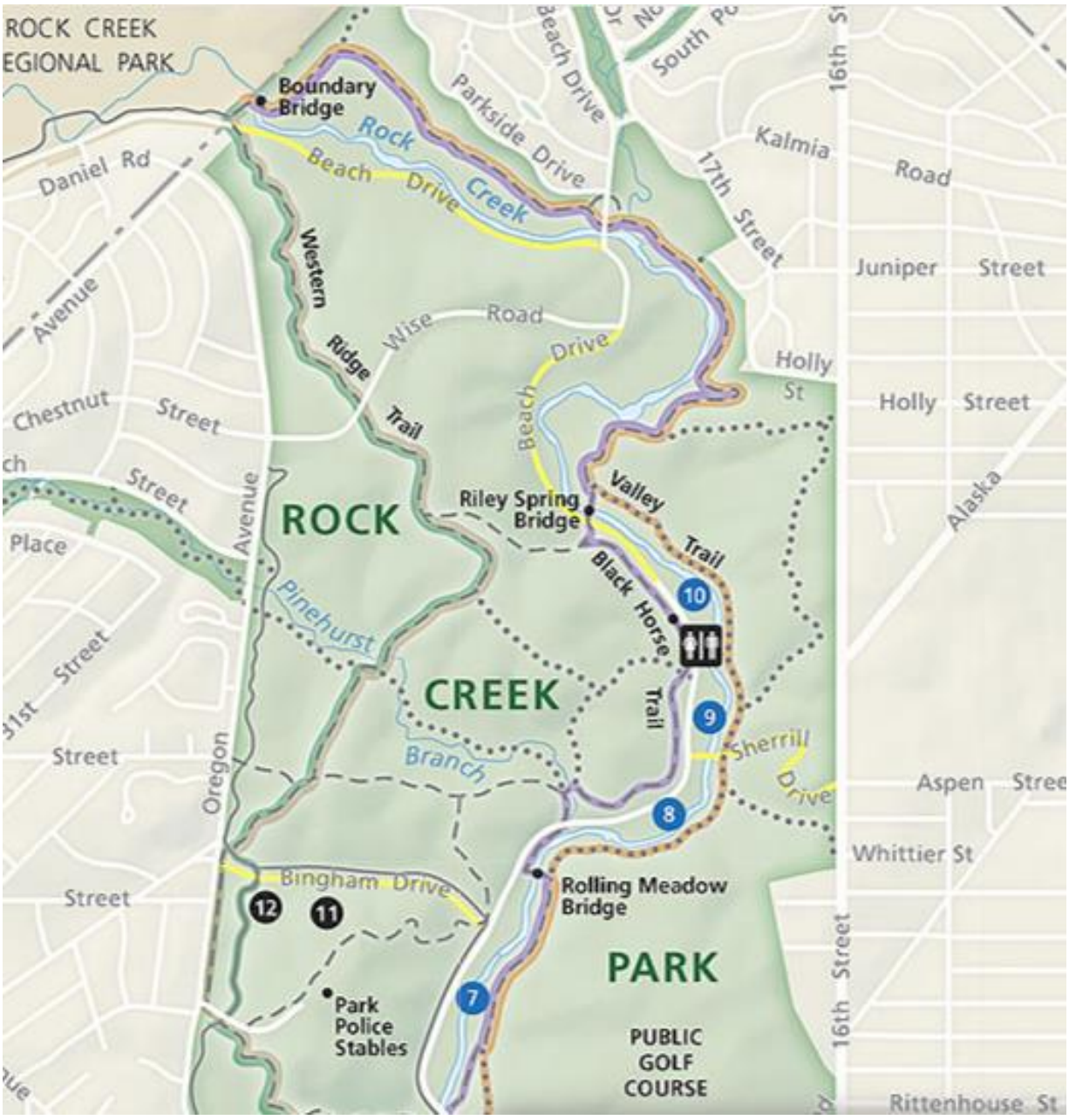


Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

United States Department of the Interior

NATIONAL PARK SERVICE
Region 1 – National Capital Area
Rock Creek Park
3545 Williamsburg Lane, N.W.
Washington, DC 20008-1207

IN REPLY REFER TO:
1.A.2 (ROCR)

June 14, 2021

Chief Robert Gray
Tribal Administrator
Pamunkey Indian Tribe
1054 Pocahontas Trail
King William, Virginia 23086

Subject: Preparation of an Environmental Assessment to Study the Management of Upper Beach Drive NW

Dear Chief Gray:

The National Park Service (NPS) is preparing an Environmental Assessment (EA) to study management alternatives for upper Beach Drive NW in Rock Creek Park, Washington, D.C. (U.S. Reservation 339). Beach Drive NW is a contributing resource to the Rock Creek Park Historic District, which is listed in the National Register of Historic Places. In accordance with Section 106 of the National Historic Preservation Act, as amended (NHPA) and the Advisory Council on Historic Preservation's regulations (36 CFR Part 800), the NPS is writing to invite the Pamunkey Indian Tribe to consult on the development of the EA.

Since the 1960s, the NPS has closed most of the upper sections of the park's main roadway, Beach Drive NW, to motorized traffic on weekends and holidays. These closures, which also included the adjacent Sherrill Drive NW and Bingham Drive NW, were meant to provide increased recreational opportunities within the park. The closures also bridge certain gaps in the regional paved multi-use trail system.

In April 2020, at the beginning of the COVID-19 pandemic, park managers closed Beach Drive NW from Broad Branch Road NW to the District of Columbia-Maryland border to motor vehicles on weekdays as well. This closure also included Ross Drive NW and Sherrill Drive NW; Bingham Drive NW was already closed for repairs. The purpose of these closures was to "provide sufficient room for park visitors to undertake essential recreation while maintaining a six-foot distance from each other." During this closure, NPS staff observed increased weekday

recreational use of the roadway. Park managers originally planned to re-open the roads to motor vehicles in coordination with the D.C. Mayor's COVID-19 Reopening Plan, which concluded with a full reopening of the city on June 11, 2021.

However, due to the increased recreational use that has been observed on the closed portions of Beach Drive NW and other park roadways, the NPS will prepare an EA for upper Beach Drive NW and adjacent roadways, in accordance with the National Environmental Policy Act of 1969 (NEPA). The purpose of this EA is to develop a comprehensive management approach for these roadways, one that looks at increasing recreational opportunities while minimizing impacts to the park's natural and historic resources. The EA would also amend the Rock Creek Park and the Rock Creek and Potomac Parkway General Management Plan, completed in 2007, which originally called for only weekend/holiday closures of upper Beach Drive NW, Bingham Drive NW, and Sherrill Drive NW. The NPS has extended the current roadway closures through December 2021, when the EA is expected to be completed.

The public engagement process for this EA will begin on July 8, 2021. To help facilitate this process, the NPS created a project page on its Planning, Environment, and Public Comment (PEPC) website, which can be found at the following address: https://parkplanning.nps.gov/projectHome.cfm?projectID=102800.

The NPS understands that the Pamunkey Indian Tribe has an interest in the preservation of American Indian cultural resources in the District of Columbia. Please respond to this invitation with your interest in consulting on the project. Should you decline, we will continue to provide brief updates and your comments are welcome. Please address and mail your response to this invitation to the Superintendent:

Julia Washburn, Superintendent
Rock Creek Park
3545 Williamsburg Lane, NW
Washington, D.C. 20008

We look forward to your response. Should you have any questions or comments regarding this correspondence, please contact Bradley Krueger, Cultural Resources Program Manager, by telephone at 202-895-6067 or by email at bradley_krueger@nps.gov

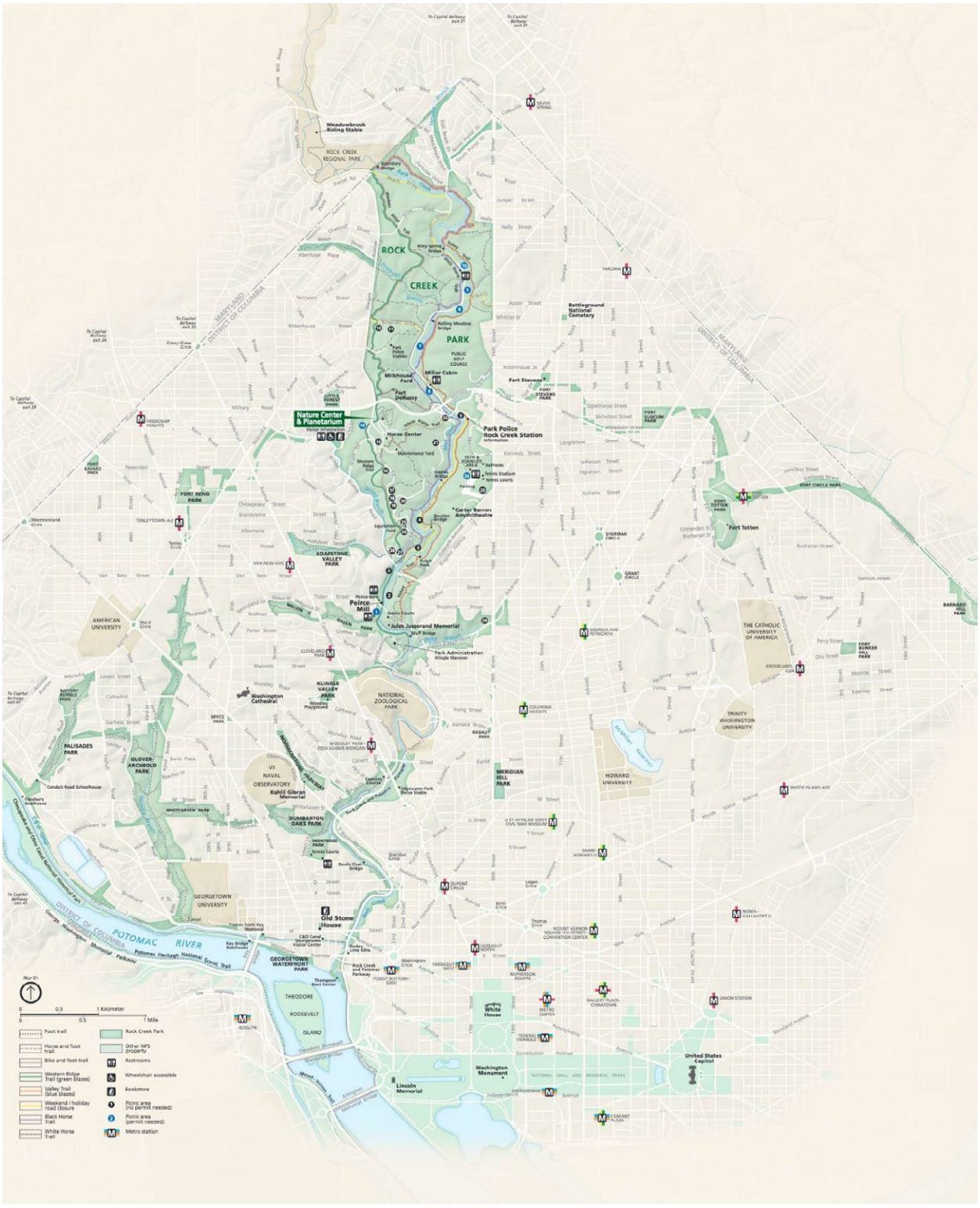
Sincerely,

JULIA WASHBURN

Digitally signed by JULIA WASHBURN
Date: 2021.06.14 16:11:54 -04'00'

Julia Washburn
Superintendent

Enclosures: Beach Drive Closure Map 2021



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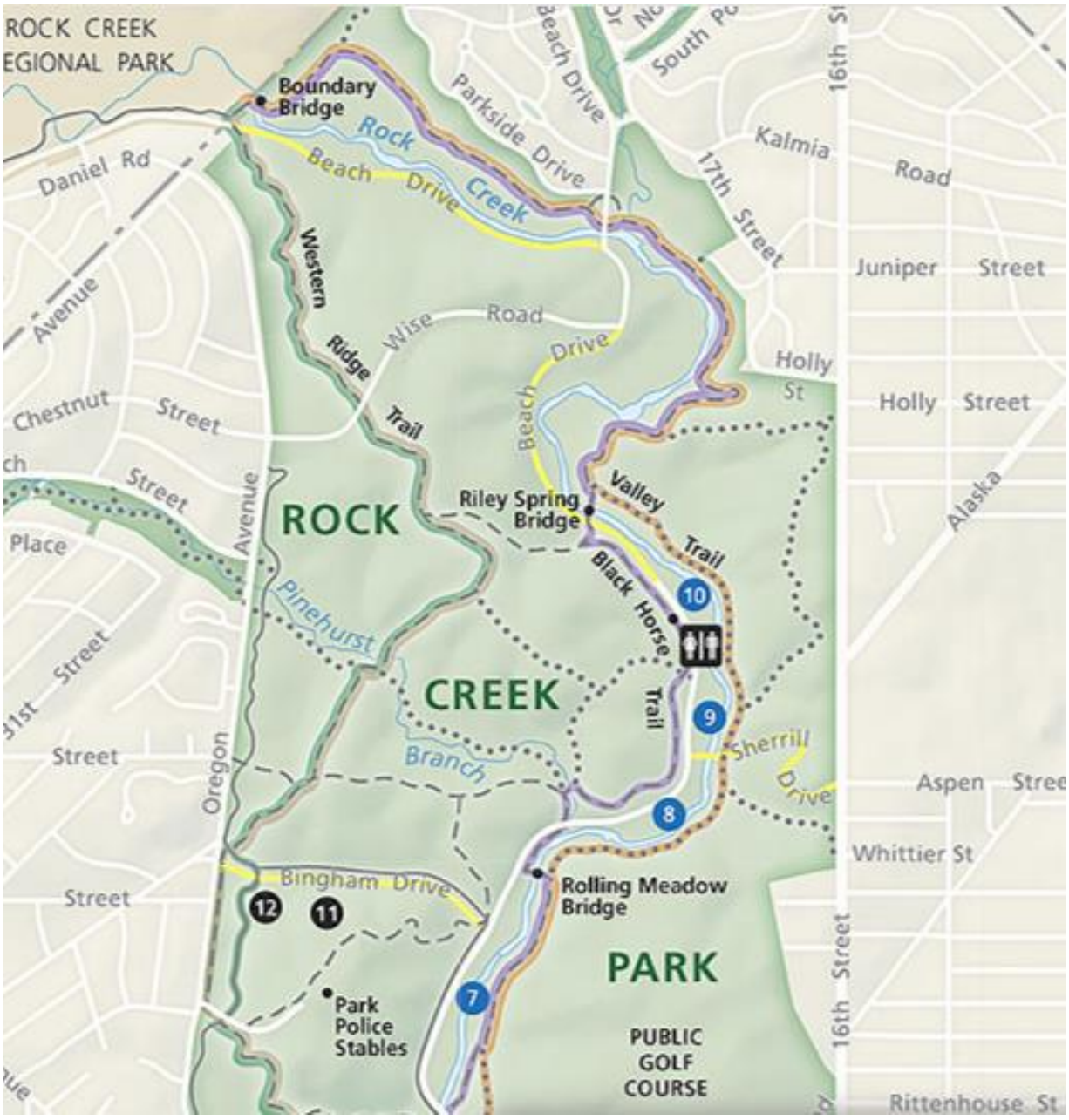


Figure 2. Map showing the northern section of Rock Creek Park, Washington, D.C. The current road closures for upper Beach Drive NW, Sherrill Drive NW, and Bingham Drive NW are highlighted in yellow.

APPENDIX B: UPPER BEACH DRIVE MANAGEMENT – TRAFFIC STUDY

District Department of Transportation

UPPER BEACH DRIVE MANAGEMENT PLAN- Traffic Study

October 2021

Traffic Study

Traffic Engineering and Safety Division

EXECUTIVE SUMMARY

Since the 1970s, the National Park Service (NPS) has closed Beach Drive NW to through traffic between Broad Branch Road NW and the Maryland line on weekends and federal holidays. In consultation with the District Government, NPS extended the closure to include all weekdays beginning in April 2020 to provide park visitors and District residents access to roads for exercise and recreational opportunities during the COVID-19 pandemic.

The six miles of closed roadways (including Beach Drive NW and adjacent NPS roadways) have proven extremely popular with the recreating public, created safe nonmotorized connections across a portion of the city, and filled a key gap in the regional trail network. On June 1, 2021, the Council of the District of Columbia voted on a resolution asking the NPS to extend the closure permanently. The Montgomery County Council followed up with a resolution supporting the NPS closure and the continuance of weekend closures of a 2.7-mile section of Beach Drive in Maryland. In response to the D.C. Council resolution, the District Department of Transportation (DDOT) leadership has agreed to help the NPS study traffic impacts and implement mitigations associated with the proposed weekday closure.

How much traffic uses Upper Beach Drive?

Motorists use Beach Drive NW as both a north-south connector to travel from the center of DC to Maryland but also as an east-west connector across the northern portion of the District. In general, traffic volumes near the Upper Beach Drive are relatively low compared to southern portions of Beach Drive NW near the National Zoo. Traffic counts collected pre-COVID show the following volumes on different sections of Upper Beach Drive:

PRE-COVID UPPER BEACH DRIVE TRAFFIC VOLUMES (2019)

	Average Daily Traffic - vehicles per day (vpd)	**AM (PM) Peak Hour Volumes Northbound - vehicles per hour (vph)**	**AM (PM) Peak Hour Volumes Southbound – vehicles per hour (vph)**
Broad Branch Road NW to Joyce Road NW	5,500	50 (425)	350 (100)
Joyce Road NW to Wise Road NW	8,500	150-175 (450-500)	500-650 (225-325)
West Beach Drive NW to Maryland State Line	7,000	175 (225)	300 (375)

Where will the traffic travel if Upper Beach Drive is closed on weekdays?

If NPS closes Upper Beach Drive during weekdays, motorists are expected to divert to several different roadways in the area. This has the potential to create delay during peak travel periods. Due to the impacts on traffic because of COVID-19, DDOT used traffic counts performed when the NPS reconstructed Beach Drive NW, pre-COVID turning movement counts in 2019, and counts when Upper Beach Drive was open. Travel demand forecasts were performed for the year 2045 based on the Metropolitan Washington Council of Governments travel demand model to estimate growth and diversions. Traffic analysis was performed for the year 2019 and 2045 for Upper Beach Drive open, closed, and closed with mitigations for the AM and PM peak periods. The majority of traffic diversion is expected onto the following roadways:

PRE-COVID UPPER BEACH DRIVE TRAFFIC DIVERSION (2019)

	AM (PM) Peak Hour Volumes Northbound-vph[1]	**AM (PM) Peak Hour Volumes Southbound-vph[1]**
16th Street NW	<25-125 (175-275)	150-350 (50-200)
Oregon Avenue NW	<50(175)	125-175 (100)
Blagden Avenue NW	<25 (175)	150 (25)
Broad Branch Road NW	<50(225)	150 (50)

[1]-Assume Upper Beach Drive open from Wise Road NW to West Beach Drive NW

Other roads will experience increases in traffic volumes, although to a lesser extent, including Pinehurst Parkway, Connecticut Avenue NW, Utah Avenue NW, and 23rd Street NW. Waze, Google Maps, and other navigational apps will vary routes motorists take from one day to the next.

What Improvements can be Implemented to Mitigate the Impacts on other Roadways?

The analysis points to several mitigation measures if Beach Drive NW is closed on weekdays to mitigate delay during peak period travel, improve safety, and discourage cut through traffic and speeding in residential neighborhoods. These include new and adjusted traffic signals, safety improvements, and traffic calming inside and outside the park:

- Signalize the Intersection of 16th Street NW and Blagden Avenue NW.
- Modify Signal Timings on 16th Street NW.

- Provide Left Turn Phasing for Military Road NW Westbound to Glover Road NW Southbound (only AM peak period).
- Modify Signal Offsets at 16th Street NW at the Missouri Avenue NW/ Military Road Ramp Intersections.
- Provide a Three Way Stop at Beach Drive NW at Blagden Avenue NW.
- Resign and Remark the Intersections of Beach Drive NW/ Broad Branch NW, BeachDrive NW/Wise Road NW and Beach Road NW/West Beach Drive NW.

There are other suggested mitigations which could be implemented in conjunction with available funding and neighborhood approval. In addition, it is recommended that the NPS continue to monitor Ross Drive NW if it remains open under a scenario where Beach Drive NW is closed. Ross Drive it is not designed for high traffic volumes and could become a major diversion route through the park. If conditions warrant, the NPS could close Ross Drive NW to motorists in the future.

Will these improvements totally mitigate the increase in traffic?

These improvements will help but will not bring conditions to the same level of operations as if Upper Beach Drive was open. The traffic study showed that, under conservative assumptions, if Upper Beach Drive (north of Broad Branch Road NW) is closed travel times during peak period on 16th Street NW will increase between 2.5 minutes to 4.5 minutes and speeds will reduce by up to 4 to 6 miles per hour in the peak direction. These findings assume implementation of proposed mitigations. Traffic delay is projected to increase by approximately 1.5 minutes in 2045 during peak periods due to projected background growth in traffic.

East-west travel times would increase for motorists that typically use Bingham Road NW to Beach Drive NW to Sherrill Road NW by about one to five minutes, depending upon the location of the origin and destination and time of day. The closing of Upper Beach Drive on the weekdays is projected to mean that three additional intersections in the AM peak hour and one in the PM peak hour will be reduced to a LOS E of the 25 intersections studied. In addition, six intersections in the AM peak hour and three in the PM peak hour are anticipated to experience over 20 seconds per vehicle of additional delay.

The mitigation measures in the AM peak hour will reduce potential impacts to traffic:

- Reduces approximately 70 seconds of delay per vehicle at Military Road NW/ Glover Road NW/Oregon Avenue NW.
- Improves Blagden Avenue NW approach to Beach Drive NW delay by 30 seconds per vehicle and reduces queues by over 500 feet.
- Improves LOS at the Blagden Avenue NW approach to 16th Street NW from a LOS F to LOS C.
- Slightly reduces travel time on 16th Street NW southbound.

The mitigation measures in the PM peak hour will reduce potential impacts to traffic:

- Improves one intersection along 16th Street NW from a LOS E to D
- Improves the Blagden Avenue NW / Beach Drive NW intersection from LOS F to C and delay reduced by 50 seconds/vehicle for Blagden Avenue NW motorists.
- Provides motorists with easier access to 16th Street NW from Blagden Avenue NW with the overall intersection still operating at LOS A.

Speeds are expected be lower along Chestnut Avenue NW due to recently implemented traffic calming measures.

2019 AND 2045 AM(PM) LEVEL OF SERVICE AND DELAY [*SECONDS/VEHICLE]

	2019 Upper Beach Dr Open		**2019 Upper Beach Dr. Closed**		**2019 Upper Beach Dr. Closed w/ Mitigation**		**2045 Upper Beach Dr. Open**		**2045 Upper Beach Dr Closed**		**2045 Upper Beach Dr. Closed w/ Mitigation**	
	Delay*	**LOS**	**Delay***	**LOS**	**Delay***	**LOS**	**Delay***	**LOS**	**Delay***	**LOS**	**Delay***	**LOS**
16th Street. NW and Colorado Ave, NW	42 (29)	D (C)	69 (39)	E (D)	68 (41)	E (D)	55 (38)	E (D)	83 (49)	F (D)	82 (51)	F (D)
16th Street NW and Military WB Ramp NW	33 (13)	C (B)	71 (22)	E (C)	72 (15)	E (B)	43 (14)	D (B)	76 (29)	E (C)	76 (17)	E (B)
16th Street NW and VanBuren Street, NW North	14 (14)	B (B)	61 (15)	E (B)	61 (14)	E (B)	24 (14)	C (B)	82 (16)	F (B)	82 (15)	F (B)
16th Street NW and AlaskaAve NW (North)	17 (32)	B (C)	17 (60)	B (E)	17 (49)	B (D)	18 (46)	B (D)	20 (80)	B (E)	21 (67)	C (E)
16th Street NW and Blagden Ave NW	>200 (>200)	F (F)	>200 (>200)	F (F)	16 (10)	B (A)	>200 (>200)	F (F)	>200 (>200)	F (F)	27 (10)	C (A)
Military Road NW and Oregon/Glover Road NW	110 (25)	F (C)	171 (51)	F (D)	107 (51)	F (D)	162 (35)	F (D)	232 (73)	F (E)	159 (73)	F (E)
Beach Drive NW at Blagden Avenue NW	>200 (125)	F (F)	>200 (75)	F (F)	100 (24)[1]	F (C)	>200 (198)	F (F)	>200 (121)	F (F)	25 (9)[1]	C (A)

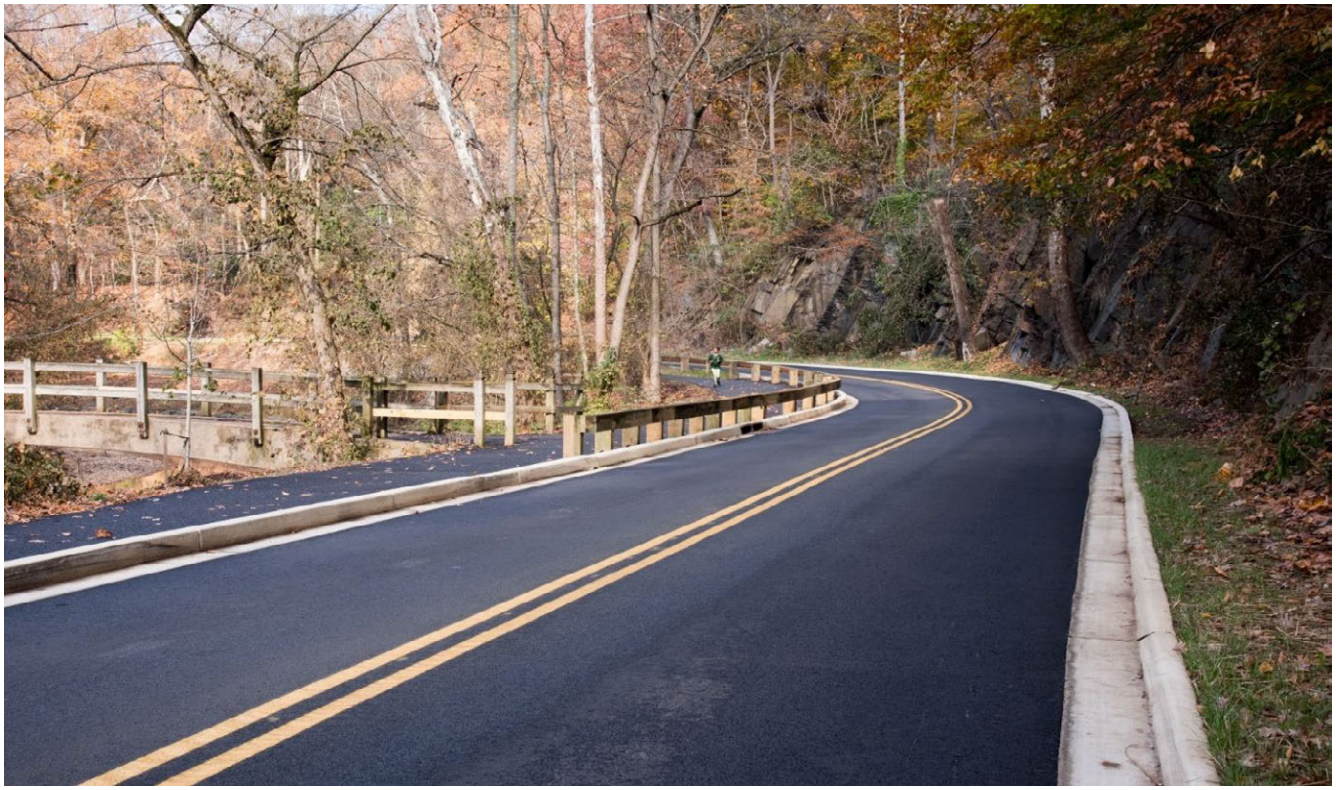
1- Assumes signalization by 2045

TABLE OF CONTENTS

1 INTRODUCTION

Beach Drive NW is the main road through Rock Creek Park in the northwest area of the District. The road serves both as an access road to the park and a commuter route for motorists. In response to COVID-19 and the limited opportunities for persons to do activities along with less traffic on the roadway network, the road was closed from Broad Branch Road NW to the Maryland State Line on weekdays. This section of roadway is referred to as Upper Beach Drive. This was for approximately 4.4 miles while the remaining portion of the roadway from Rock Creek and Potomac Parkway to Broad Branch Road NW remained open. A small 625-foot section of Upper Beach Drive from Wise Road NW to West Beach Drive NW remained open to facilitate east-west movements in the District. The closure occurred in April 2020 and allowed more pedestrians and bicyclists to use the section of roadway.

This study is being performed in response to a request from the Council of the District of Columbia and the Montgomery County Council to have Upper Beach Drive remained closed permanently on weekdays. Since schools have reopened and traffic volumes are greater, this study is being performed to evaluate the impacts with normal traffic volumes. It will also identify the mitigation measures needed to the other roadways in the network if the closure is made permanent.



2 BASELINE CONDITIONS

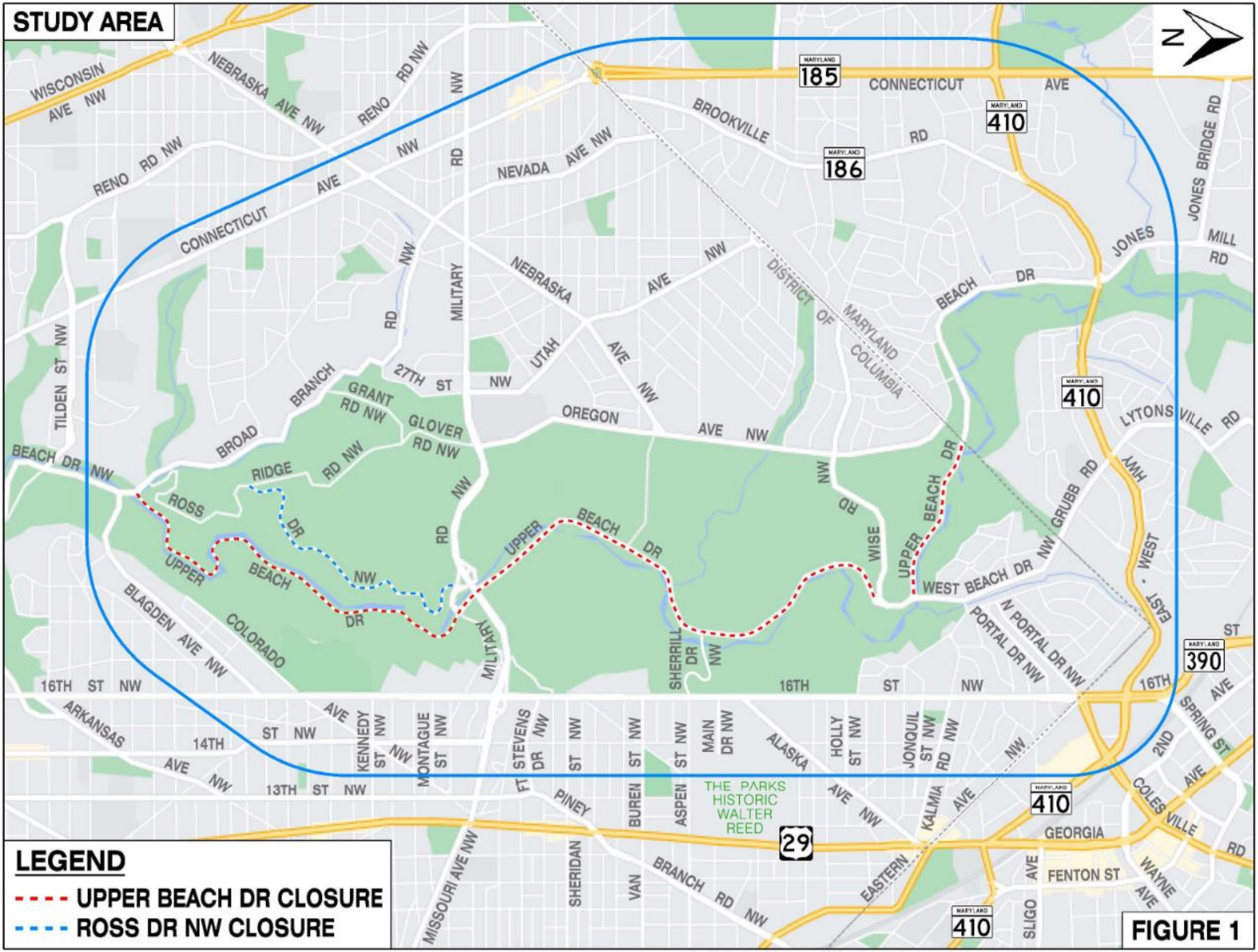
2.1 Study Area and Background

Beach Drive NW/Upper Beach Drive is located in the northwest section of Washington, DC within Rock Creek Park. The part of Upper Beach Drive for this study starts at Broad Branch Road NW/Blagden Avenue NW and continues north to the Maryland line. Upper Beach Drive is a two lane road with a 25 mph speed limit and carries mostly north-south traffic. It is a closed section roadway with no shoulders. The road generally parallels Rock Creek and there are numerous parking areas/picnic areas located along the route that serve as access points to the park. There are several pedestrian crosswalks and some horse crossing locations along this road. At some locations along Upper Beach Drive, there is an adjacent bike/pedesrian trail seperated from Upper Beach Drive and at other locations bicyclists have to share the road with vehicular traffic. On the section of Upper Beach Drive from Broad Branch Road NW to the Maryland line, there are five unsignalized intersections, which are internal to the park:

1. Upper Beach Drive and Joyce Road NW (Four-way stop controlled) – This is the southern most intersection on this section of Upper Beach Drive and is south of Military Road NW
2. Upper Beach Drive and Bingham Drive NW (T-type intersection, stop condition on Bingham Drive NW) – Bingham Drive NW connects to Oregon Avenue NW but is gated on the Oregon Avenue NW end, thus it mostly serves as an access road to Picnic Area 12 of Rock Creek Park.
3. Upper Beach Drive and Sherrill Drive NW (T-type intersection, stop condition on Sherrill Drive NW) – The Sherrill Drive NW approach is stop controlled. Sherrill Drive NW connects to 16th Street NW.
4. Upper Beach Drive and Wise Road NW (T-type intersection, 3-way stop controlled) – Wise Road NW connects to Oregon Avenue NW.
5. Upper Beach Drive and West Beach Drive NW (T-type intersection, 3 way stop controlled) – West Beach Drive NW connects to Primrose Road NW/Grubb Road NW which connects to MD 410 (East-West Highway).

Directly adjacent to Upper Beach Drive is Military Road NW which passes over Upper Beach Drive. There are three ramps to/from Military Road NW (from Military Road NW eastbound, from Military Road NW westbound and to Military Road NW westbound) via Joyce Road NW. Joyce Road NW ties into 16th Street NW and Ross Drive NW. Ross Drive NW is presently closed to traffic.

The study area is shown in Figure 1.



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Thursday, October 28, 2021 AT 10:47 AM

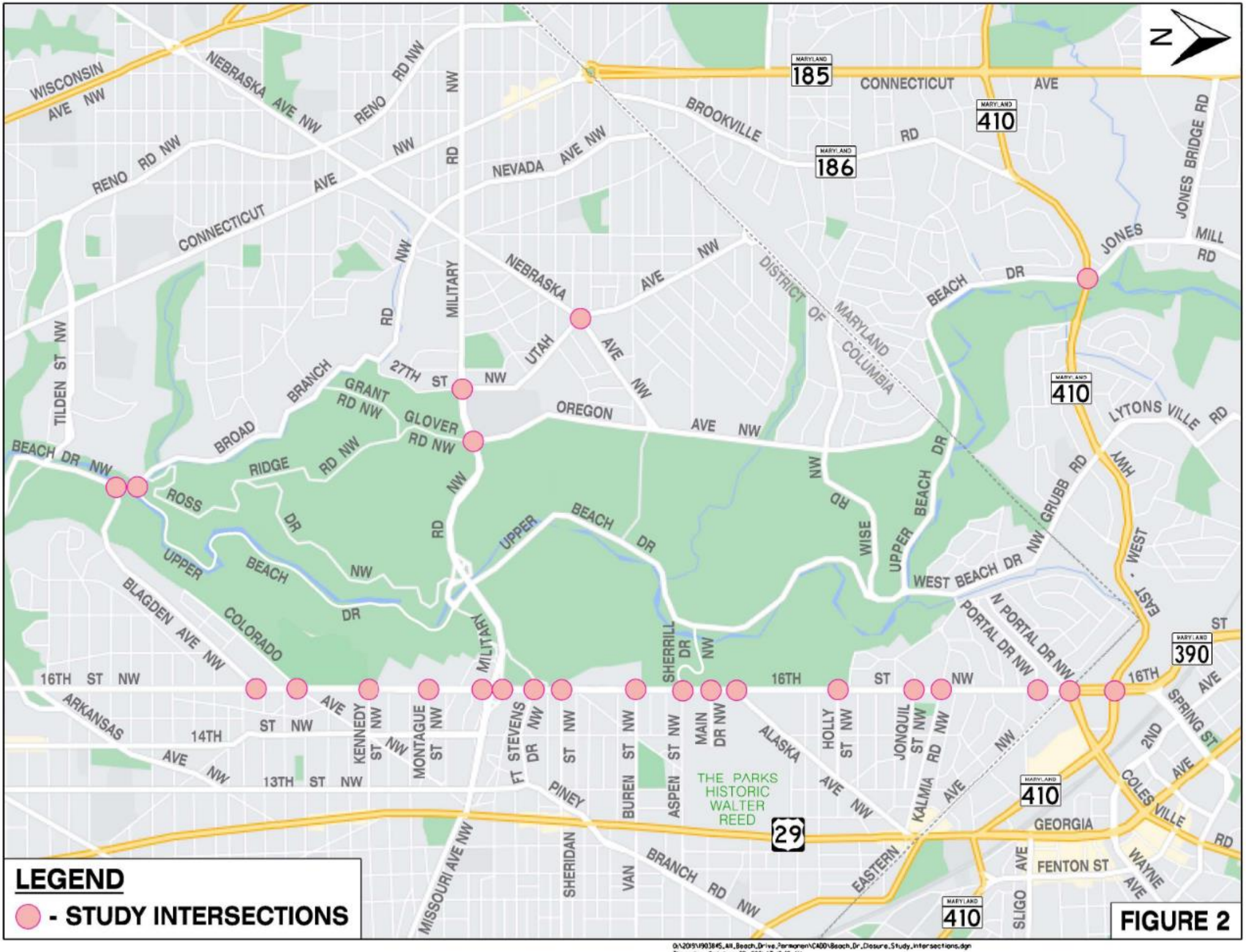
The closure of Upper Beach Drive from Broad Branch NW to the Maryland line will divert traffic to adjacent roads in the area. From a review of traffic patterns, various intersections were identified to be analyzed as part of this study. The study area intersections are mainly signalized locations. This is not meant to include where all traffic would divert but represents the intersections expected to experience the highest changes in volume. The study intersections are as follows and are shown in **Figure 2**:

STUDY AREA INTERSECTIONS

1. 16th Street NW at Blagden Avenue NW
2. 16th Street NW and Colorado Avenue NW
3. 16th Street NW and Kennedy Street NW
4. 16th Street NW and Montague Street NW
5. 16th Street NW and Missouri Avenue NW/Military Road Eastbound Ramp NW
6. 16th Street NW and Military Road NW Westbound Ramp
7. 16th Street NW and Fort Stevens Drive NW
8. 16th Street NW and Sheridan Street NW
9. 16th Street NW and Van Buren Street NW (South Intersection)
10. 16th Street NW and Van Buren Street NW (North Intersection)
11. 16th Street NW and Aspen Street NW
12. 16th Street NW and Walter Reed Hospital
13. 16th Street NW and Alaska Avenue NW
14. 16th Street NW and Holly Street NW
15. 16th Street NW and Jonquil Street NW
16. 16th Street NW and Kalmia Road NW
17. 16th Street NW and Portal Drive NW
18. 16th Street NW and Eastern Avenue/Colesville Road (Multiple Intersections)
19. MD 390 and MD 410
20. Beach Drive NW and Blagden Avenue NW
21. Upper Beach Drive and Broad Branch Road NW
22. Military Road NW and Oregon Avenue NW/Glover Road NW
23. Military Road NW and 27th Street NW
24. Utah Avenue NW and Nebraska Avenue NW
25. Beach Drive and MD 410

2.2 Roadway Reconstruction

Beach Drive NW was experiencing severe deterioration of the pavement. In order to rectify the situation, a project was undertaken by the National Park Service (NPS) in conjunction with the Federal Highway Administration (FHWA) to reconstruct the roadway. Due to the width of the roadway ranging from approximately 19 to 22 feet wide and the need to do full depth reconstruction of the roadway within the existing footprint, it was decided that the reconstruction would take place by closing the roadway in sections and detouring traffic, pedestrians, and bicyclists. The reconstruction was split up into the following sections:



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Thursday, October 28, 2021 AT 10:48 AM

- Stage 1: Shoreham Avenue NW to Tilden Street NW (The 500-foot section from the ramps to Klingle Road NW to Piney Branch Parkway did remain open during all stages)
- Stage 2: Tilden Street NW to Joyce Road NW with the section from Tilden Street NW to Broad Branch Rd NW being completed first.
- Stage 3: Broad Branch Road NW to Joyce Road NW
- Stage 4: Joyce Road NW to the Maryland State Line (The approximate 625-foot section between Wise Road NW and West Beach Drive NW remained open during the majority of the construction on this portion of the roadway)

Construction commenced in September 2016 and was completed in September 2019. The following are the approximate time frames for each Stage:

- Stage 1: September 2016 to August 2017
- Stage 2: August 2017 to January 2018
- Stage 3: January 2018 to July 2018
- Stage 4: July 2018 to October 2019

The NPS and FHWA during this time monitored traffic volumes and operations of vehicles, pedestrians, and bicyclists during each stage of construction. This allowed for adjustments to be made along the detour routes and other routes which motorists were utilizing to use in place of Beach Drive NW. Also, various questions from citizens were responded to about operations. Traffic, pedestrian, and bicycle counts were taken at critical locations throughout the study area during each stage.

Beach Drive NW reconstruction project

2.3 Geometry

The following is a description of the primary roadway geometry within the study area:

Beach Drive NW/ Upper Beach Drive: Beach Drive NW/Upper Beach Drive is a closed section roadway with a 25-mph speed limit and is classified as a minor arterial. This road in the study area traverses generally north-south through Rock Creek Park from Shoreham Road NW to MD 410. The study area is from Blagden Avenue NW to MD 410. There are numerous parking areas/picnic areas located along the route that serve as access points to the park. There are several pedestrian crosswalks and some horse crossing locations along this road. At some

locations along Beach Drive NW/ Upper Beach Drive there is an adjacent bike/pedesrian trail seperated while other locations bicyclists share the road with vehicular traffic. There are four all-way stop intersections on Upper Beach Drive in the study area. Upper Beach Drive is normally closed on the weekend from Broad Branch Road NW to the Maryland line before COVID-19.

Ridge Road NW: Ridge Road NW is classified as a local road inside Rock Creek Park. It is a two-lane curb section with a 25-mph speed limit. The geometric alignment of this road has numerous horizontal curves. There are some pedestrian crosswalks and equestrian crossing signs along the route. Ridge Road NW connects to Military Avenue NW after changing to Glover Road NW. The intersection of Glover Road NW/Oregon Avenue NW and Military Road NW is a signalized intersection.

16th Street NW: 16th Street NW is classified as a principal arterial and runs north-south on the east side of Rock Creek Park. It is a four-lane roadway with a raised concrete median in most areas. At major intersections, the raised concrete median is removed to provide a left turn lane. There are sidewalks on each side of the road separated by a grass area from the roadway. There are numerous pedestrian crosswalks along the route. The speed limit is posted at 30 mph. Several of the intersections are signalized including Colorado Avenue NW, Kennedy Street NW, Montague Street NW, Missouri Avenue NW/Military Road NW eastbound ramp, Military Road NW westbound ramp, Fort Stevens Drive NW, Sheridan Street NW, Van Buren Street NW, Aspen Street NW, Alaska Avenue NW, Holly Street NW, Kalmia Road NW, Portal Drive NW/Eastern Avenue NW, and MD 410). Also, there is a HAWK signal at Jonquil Street NW. The street is well utilized by buses with numerous bus stops.

Oregon Avenue NW: This roadway runs from Military Road NW to Western Avenue NW and is classified as a collector road. It forms the western boundary of Rock Creek Park. It is a two-lane road with a 25-mph speed limit. There is an all-way stop at the intersection of Northhampton Street NW, Nebraska Avenue NW, Tennyson Street NW, Oregon Knolls Drive NW, Wise Road NW, and at Western Avenue NW.

27th Street NW: 27th Street NW is classified as a local road that connects Broad Branch Road NW to Utah Avenue NW. It is a narrow two-lane road south of Military Road NW with no posted speed limit. There are no passing centerline markings on the entire length. On the north side of Military Road NW, the road changes to Utah Avenue NW north of Newlands Street NW. In this section, the roadway widens out to approximately 42 feet. St Johns College High School is located north of Military Road NW.

Utah Avenue NW: This roadway is classified as a collector and runs from 27th Street NW to Western Avenue NW at the Maryland line. It is a two-lane street with on street parking. The speed limit is posted at 25 mph and the centerline is marked for no passing. The road traverses through a residential area with sidewalks on both sides. There is a traffic signal at the intersection of Nebraska Avenue NW. There is an all way stop at the intersections of Rittenhouse Street NW and at Tennyson Street NW. There are several bus stops along Utah Avenue NW.

Western Avenue NW: The part of Western Avenue NW in the study area traverses from Utah Avenue NW to Oregon Avenue NW. This road is classified as a collector road. This is

approximately 34 feet wide two-lane road through a residential neighborhood with on street parking. The centerline is marked for no passing and the speed limit is posted at 25 mph. There is a sidewalk on the south side of this road. There are all way stops at Aberfoyle Place NW, at Chestnut Street NW, and at Oregon Drive NW.

Blagden Avenue NW/Colorado Avenue NW: These roads are classified as collector roads. Blagden Avenue NW is a two lane, closed section street with a 25-mph speed limit. There are sidewalks on some sections of the street. There are all way stops at Mathewson Drive NW, at Allison Street NW, and at 17th Street NW. Blagden Avenue NW is stop controlled at Upper Beach Drive. There is also on street parking in some areas. Colorado Avenue NW is a two-lane street through a residential area on the south side. Rock Creek Park is located on the north side of the road. It has a 25-mph speed limit and no passing pavement markings. Various cross streets tie Blagden Avenue NW and Colorado Avenue NW which are one block apart.

Military Road NW: This road is classified as a principal arterial. The part of Military Road NW in the study area is from the intersection of Utah Avenue NW/27th Street NW to 16th Street NW. This part is a four-lane, divided highway. Left turn lanes are developed at the major intersections. There are sidewalks on each side of Military Road NW between 27th Street NW and Oregon Avenue NW and this section also has some bus stops. There is an interchange with Upper Beach Drive/Joyce Road NW in Rock Creek Park. The speed limit is posted at 35 mph. The intersection of Military Road NW with Oregon Avenue NW/ Glover Road NW is signalized. An interchange occurs at 16th Street NW. The eastbound off ramp connects with Missouri Avenue NW and a ramp from Joyce Road NW.

Ross Drive NW: Ross Drive NW traverses through Rock Creek Park between Ridge Road NW and Joyce Road NW. This is narrow two-lane roadway. There are various trail and equestrian crossings along the roadway. The speed limit is 25 mph. Ross Drive NW is presently closed to traffic.

Broad Branch Road NW: The southern limit of the proposed closure of Upper Beach Drive is at Broad Branch Road NW. Broad Branch Road NW is a two-lane roadway from Beach Drive NW to Linnean Road NW. It intersects with Ridge Road NW, Glover Road NW and 27th Street NW. The roadway is classified as a minor collector.

2.4 Field Observations

Field observations were conducted during the AM and PM peak periods to examine operations in the study area both before and during the time of the study. The following is a summary of the findings:

AM Peak Period

Beach Drive NW/ Upper Beach Drive

- On Beach Drive NW southbound queues formed from the signal at Beach Drive NW at Tilden Street NW/ Park Road NW extending through the Blagden Avenue NW and Broad Branch Road NW intersections. On Blagden Avenue NW, queues can extend

past Mathewson Drive NW to as far as Allison Street NW. Motorists are given courtesy gaps to access Beach Drive NW. Broad Branch Road NW eastbound motorists queue for about 10 vehicles at the stop sign and when Beach Drive NW was open southbound queues extend about 15 vehicles north of Broad Branch Road NW.
- Northbound traffic is light with motorists flowing at or above the speed limit.
- Motorists on Beach Drive southbound south of MD 410 turn right on to Pinehurst Parkway and Wyndale Road to access Western Avenue NW and point south and west.

16th Street NW/ MD 390:
- 16th Street NW southbound motorists experienced stop and go traffic throughout the corridor.
- There are long queues at the intersection at the intersection of MD 390 and MD 410 in the westbound direction and for the eastbound MD 410 left turn.

Military Road NW:
- Left turning motorists from Military Road NW westbound to Glover Road NW southbound was a high-volume movement. During certain cycles, left turning motorists would queue into the through lane.
- There was a lot of activity of parents dropping off children at St Johns College High School both on 27th Street NW and Oregon Avenue NW. Overall from these two crossroads, motorists mostly cleared in one cycle.
- Traffic volumes are high on Military Road NW westbound with long queues forming at the intersection of Oregon Avenue NW/ Glover Road NW to the Upper Beach Drive bridge. Occasionally, queues from the 27th Street NW intersection would extend almost to Oregon Avenue NW/ Glover Road NW intersection in the westbound direction.
- Eastbound traffic was relatively light.

Western Avenue NW
- Traffic moved slowly between Pinehurst Parkway and Aberfoyle Place NW.

MD 186 (Brookville Road)
- Southbound traffic experienced stop and go conditions from the multi-way stops at Woodbine Street, Taylor Street, Raymond Street and Primrose Street.

PM Peak Period

Beach Drive NW/ Upper Beach Drive
- Beach Drive NW/Upper Beach Drive operates with little congestion from Piney Branch Parkway north in the PM peak period. Queues are relatively minor at all multi-way stops. Blagden Avenue NW westbound in the PM peak period has much lower traffic volumes but motorists do wait a fair amount of time due to the northbound traffic free flowing and the left turning traffic from Upper Beach Drive southbound to Blagden Avenue NW. Maximum queues were about eight vehicles. Motorists using Blagden Avenue NW either accessed 16th Street NW from the unsignalized Blagden Avenue

NW intersection or used streets such as 17th Street NW or 18th Street NW to access the signalized intersection at Colorado Avenue NW. All motorists cleared at the intersection from Colorado Avenue NW.

- Motorists along the Western Avenue NW area to get north on Upper Beach Drive make illegal left turns at Pinehurst Parkway, Wyndale Road and Leland Street.

16th Street NW/ MD 390:

- Northbound 16th Street NW experiences stop and go conditions along the study area. The signals at the Missouri Avenue NW/Military Road NW eastbound ramps cause queues that can extend to the Blagden Avenue NW area. Once through the intersections at Military Road NW intersection, traffic still moves fairly slow with more major congestion occurring near the Blair Circle (MD 384(Colesville Road)) intersection.
- Maryland 390 queues at MD 410 at times extended to Colesville Road. Maryland 410 motorists also experienced long queues with about 25 vehicles being stored at one time.

Military Road NW:

- Queues along Military Road NW can extend from the signal at 14th Street NW toward the Beach Drive NW overpass. A high number of motorists would exit from Military Road NW to the ramps to 16th Street NW/ Missouri Avenue NW. The lane configuration for the left turn from Military Road NW ramps/ Missouri Avenue NW was adjusted during the Beach Drive NW project for a double left turn movement but motorists will sometime queue on to the mainline of Military Road NW. The off-ramp merges with traffic from Joyce Road NW along this section of Missouri Avenue NW. Motorists making the left are stopped at the Military Road NW westbound ramp intersection which limits the number of motorists that can clear.
- Overall traffic operations at Military Road NW/27th Street NW and Military Road NW/Oregon Avenue NW showed some delay but not major congestion.

MD 410/ MD 186 (Brookville Road)

- MD 410 experienced stop and go conditions from Bradley Lane to Taylor Street.
- Motorists at all approaches of MD 410 at Beach Drive/Jones Bridge Road experienced significant queues. On Maryland 410 westbound traffic extended past MD 186. Fifteen vehicle queues were observed on MD 410 eastbound and Jones Bridge Road southbound. Beach Drive northbound, despite being closed at the Maryland line, motorists still had to wait multiple cycles to clear the intersection. The volume was caused by motorists using roads such as Pinehurst Parkway.

2.5 Traffic Volumes

2019 Existing Volumes (Before Closure)

Traffic volume data was gathered from multiple sources for the study area. This included from count data that was continuously occurring as part of monitoring traffic for the

reconstruction of Beach Drive NW/Upper Beach Drive, from the DDOT traffic signal system data and from the Maryland State Highway Administrations traffic monitoring database. New counts could not be performed due to the closure of Beach Drive NW/Upper Beach Drive and the impacts of COVID-19 reducing traffic volumes throughout the District.

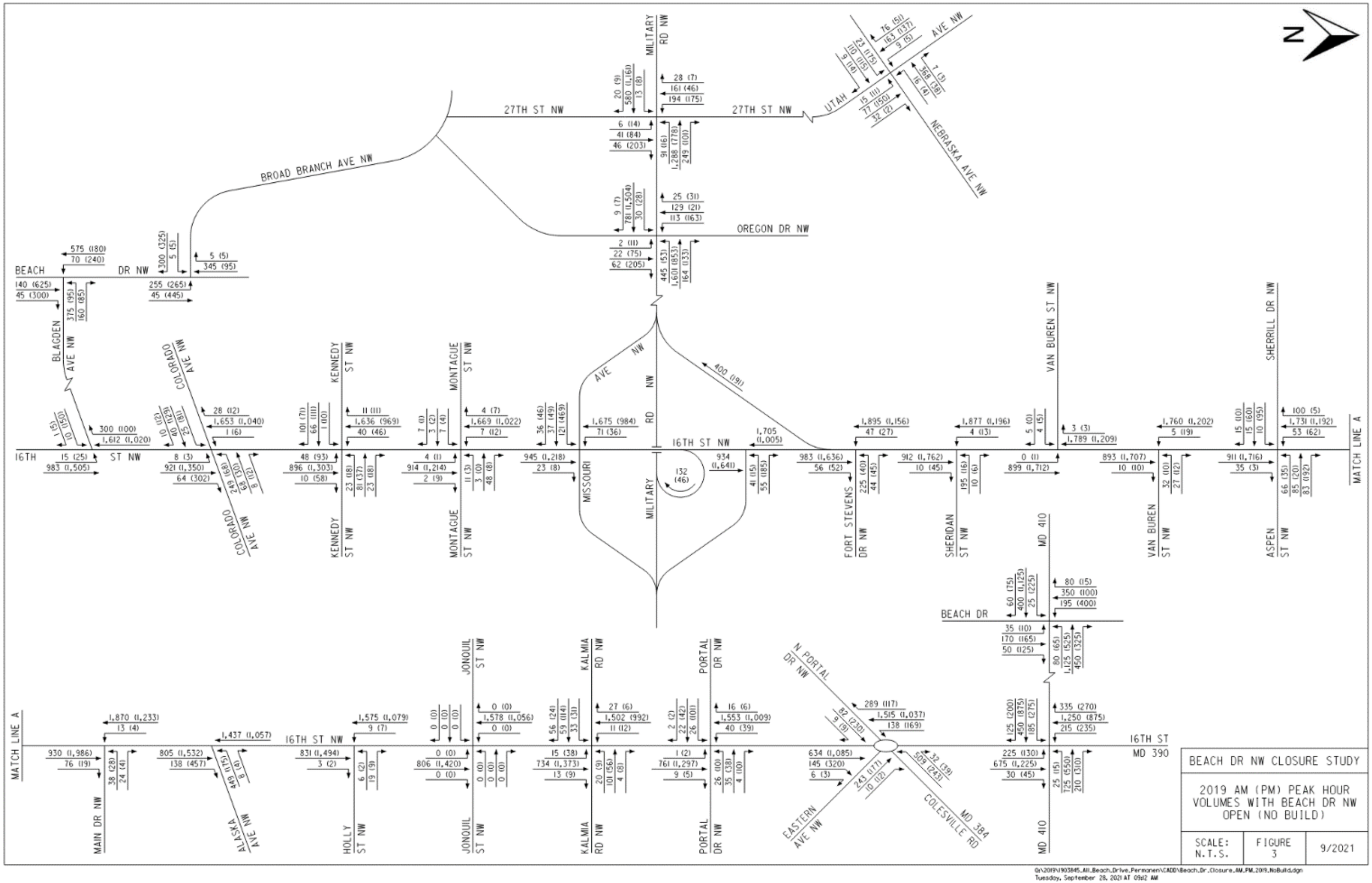
Traffic volumes along Beach Drive NW vary depending on the section of roadway. The average daily traffic (ADT) volumes range from approximately 5,500 vehicles per day (vpd) between Broad Branch Road NW and Joyce Road NW to over 12,000 vpd on the section from Wise Road NW to West Beach Drive NW. North of Joyce Road NW most sections carry about 7,000 to 8,000 vpd with the exception of the area between Wise Road NW and West Beach Drive NW. Traffic volumes during the AM and PM peak hours are higher north of Joyce Road NW versus south of Joyce Road NW. The ADT, AM and PM peak hour volumes along Upper Beach Drive are shown in **Table 1**.

TABLE 1. PRE-COVID UPPER BEACH DRIVE TRAFFIC VOLUMES (2019)

	Average Daily Traffic -Vehicles per day (vpd)	**AM (PM) Peak Hour Volumes Northbound-Vehicles per hour (vph)**	**AM (PM) Peak Hour Volumes Southbound- Vehicles per hour (vph)**
Broad Branch Road NW to Joyce Road NW	5,500	50 (425)	350(100)
Joyce Road NW to Wise Road NW	8,500	150 (450-500)	500-650(225-325)
Wise Road NW to West Beach Drive NW	12,000	200(650)	850(450)
West Beach Drive NW to Maryland State Line	7,000	175(225)	300 (375)

The highest volume of traffic for other roadways in the study area is along 16th Street NW. This roadway has an ADT of approximately 29,000 to 34,000 vpd. Other roadways in the area with volumes over 20,000 vpd include Military Road NW and Maryland 410. Blagden Avenue NW, Broad Branch Road NW, Oregon Avenue NW, 27th Street NW, West Beach Drive NW all have ADT's of approximately 5,000 vpd to 8,000 vpd. Utah Avenue NW and Joyce Road NW to the west of Upper Beach Drive carry slightly less than 5,000 vpd. Ross Drive has an ADT of about 800 vpd.

The highest directional volume in the AM peak hour is Military Road NW westbound through Rock Creek Park with approximately 2,000 vehicles per hour with a slightly less volume eastbound in the PM peak hour. The highest north-south volume in the AM peak hour is along 16th Street NW southbound ranging from approximately 1,500 to 1,900 vph while PM peak hour volumes northbound are in the 1,300 to 2,000 vph range. Roads with volumes of 300 to 650 vph in the AM or PM peak hour, peak direction include Broad Branch Road NW, Blagden Avenue NW, 27th Street NW and West Beach Drive NW. On Ross Drive NW, most motorists use the roadway southbound in the AM peak hour (180) pre-closure. The existing traffic volumes are shown in Figure 3.



BEACH DR NW CLOSURE STUDY

2019 AM (PM) PEAK HOUR VOLUMES WITH BEACH DR NW OPEN (NO BUILD)

SCALE: N.T.S.	FIGURE 3	9/2021

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Tuesday, September 28, 2021 AT 09:12 AM

3 FUTURE CONDITIONS

3.1 Scenarios

Two scenarios were evaluated for both the 2019 and 2045 conditions. Although, Upper Beach Drive could be closed in any section from Broad Branch Road NW to the Maryland line, a full closure scenario was analyzed. This would be to close this entire section except for the portion between Wise Road NW and West Beach Drive NW as shown in Figure 1. The four scenarios analyzed included:

- Scenario 1: 2019 Existing traffic with Upper Beach Drive open from Broad Branch Rd to the Maryland Line.
- Scenario 2: 2019 Existing traffic with Upper Beach Drive closed from Broad Branch Rd to the Maryland Line except for Wise Road NW to West Beach Drive NW.
- Scenario 3: 2045 Existing traffic with Upper Beach Drive open from Broad Branch Rd to the Maryland Line.
- Scenario 4: 2045 Existing traffic with Upper Beach Drive closed from Broad Branch Rd to the Maryland Line except for Wise Road NW to West Beach Drive NW.

AM and PM peak hour traffic volumes were developed and analyzed for each scenario. Scenario 1 is defined as the existing traffic condition with Upper Beach Drive open the entire length.

Scenario 2: Pre-COVID Volumes with Closure- Broad Branch Road to Maryland Line(2019)

During the reconstruction of Upper Beach Drive, NPS closed various sections of the roadway. The FHWA during each stage of construction monitored traffic and directed traffic counts to be performed at key intersections. This included along Upper Beach Drive and throughout the roadway network where motorists used alternative routes. This count data was used as a basis for the reassignment of volumes since it represents the actual travel patterns motorists followed during the closure of Upper Beach Drive.

The closure of Upper Beach Drive through Rock Creek Park from Broad Branch Road NW to the Maryland line will shift the Upper Beach Drive traffic to adjacent roads. Since Upper Beach Drive is a north-south road, it is projected that most of the shifted traffic will use 16th Street NW to Blagden Road NW/Colorado Avenue NW on the east side of Upper Beach Drive and either Oregon Avenue NW/Glover Road NW/Grant Road NW or Utah Avenue NW/27th Street NW to Broad Branch Road NW on the west side of Upper Beach Drive. Other roadways that will experience increases in volumes include Military Road NW, Connecticut Avenue NW, Maryland 186, and several lower volume roadways. There will be some volume decreases on roadways that tie into Upper Beach Drive such as West Beach Drive NW. In the state of Maryland, there are projected increases on MD 410, MD 186 (Brookville Road), and various local streets that tie into Beach Drive NW. The larger changes are summarized in Table 2.

TABLE 2. PRE-COVID UPPER BEACH DRIVE TRAFFIC DIVERSION (2019)

	AM (PM) Peak Hour Volumes Northbound-vph	AM (PM) Peak Hour VolumesSouthbound-vph
16th Street NW	<25-125 (175-275)	150-350 (50-200)
Oregon Avenue NW	<50(175)	125-175 (100)
Blagden Avenue NW	<25 (175)	150 (25)
Broad Branch Road NW	<50(225)	150 (50)

AM Peak Hour

Traffic volumes were reassigned during the AM peak hour throughout the roadway network to reflect the closing of Upper Beach Drive. The following describes the anticipated major adjustments in volumes:

Blagden Road NW/16th Avenue NW- The southbound traffic on Blagden Avenue NW is projected to increase by approximately 150 vehicles per hour (vph). On 16th Avenue NW the southbound traffic increases by approximately 175 vph between Blagden Avenue NW and Missouri Avenue NW, by about 250-350 vph between Missouri Avenue NW and MD 384 (Colesville Road). Projected increases to northbound traffic on 16th Avenue NW range up to 135 vph with the largest increase occurring towards the Maryland line.

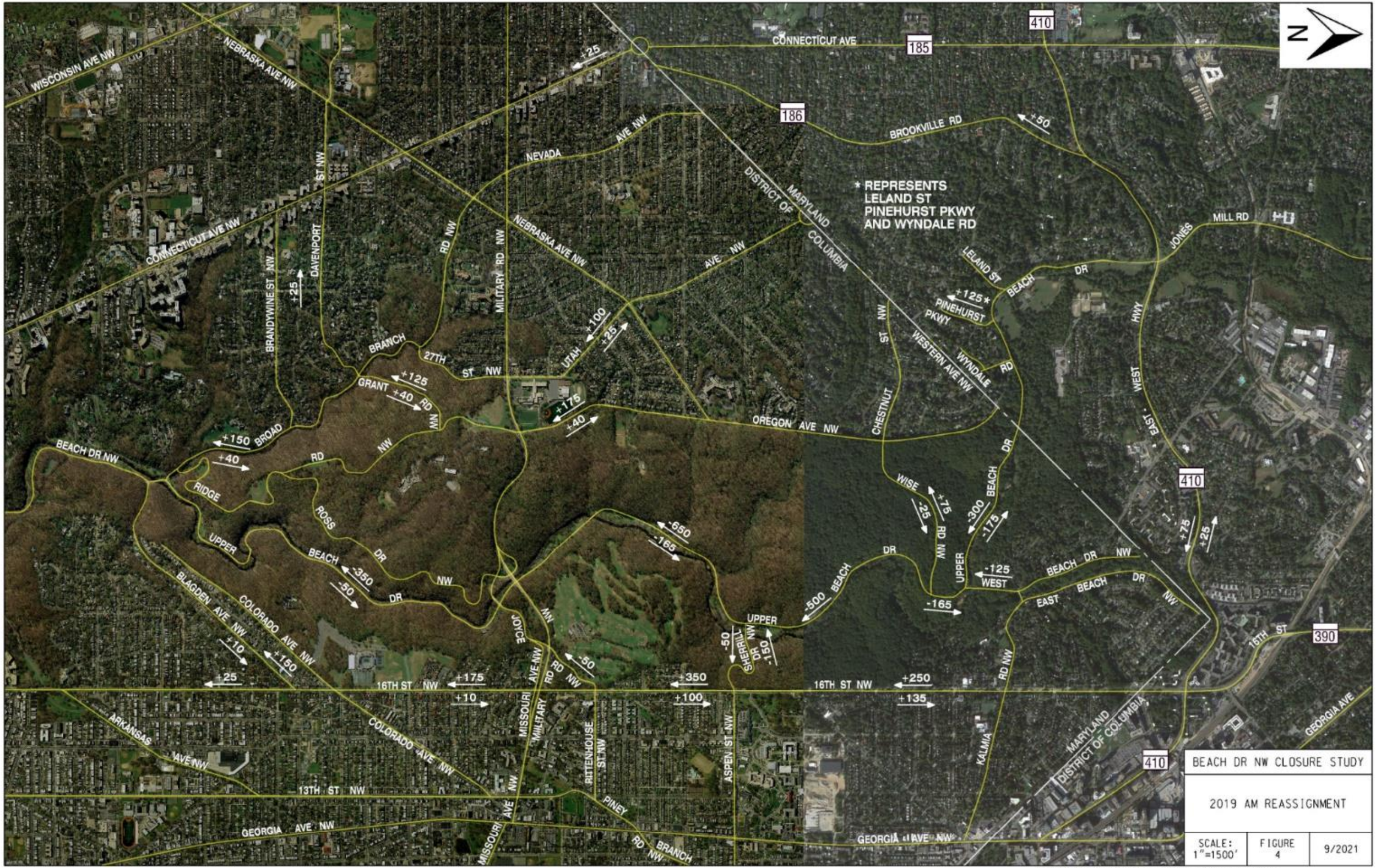
Oregon Avenue NW/Glover Road NW/Grant Road NW/Broad Branch Road – Other roadways which will experience an increase in traffic volumes are along the Oregon Avenue NW/ Glover Road NW/ Ridge Road NW and Broad Branch Road NW corridors. Volumes are anticipated to increase from approximately 125-175 vph on each of these roadways in the southbound direction.

Utah Avenue NW/27th Street NW/Broad Branch Road NW – On Utah Avenue NW the southbound volume will increase by approximately 100 vehicles.

Connecticut Avenue NW – The Connecticut Avenue corridor is anticipated to see a minor increase in volume (less than 100 vehicles per hour).

MD 410 and MD 186 (Brookville Road) – In Maryland, the volumes are anticipated to increase on eastbound and westbound MD 410 with Beach Drive closed. Motorists will also use westbound MD 186 (Brookville Road) as an alternative route with about 50 additional vehicles on that section of roadway.

Pinehurst Parkway, Wyndale Road, Leland Street, Western Avenue NW, and Chestnut Street NW– Motorists will continue to use Beach Drive in Montgomery County south of MD 410 and then turn on roadways such as Pinehurst Parkway, Wyndale Road and Leland Drive which is prohibited in the AM peak period. These motorists will funnel on to other roads such as Western Avenue NW and Chestnut Street NW to Utah Avenue NW or Oregon Avenue NW to continue south. Combined between these roadways, it is anticipated that about 125 motorists will choose this route.
The reassignment of traffic volumes from Beach Drive NW are shown in **Figure 4** for the AM peak hour volumes.



BEACH DR NW CLOSURE STUDY		
2019 AM REASSIGNMENT		
SCALE: 1"=1500'	FIGURE 4	9/2021

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Thursday, October 28, 202 AT 10:59 AM

PM Peak Hour

Motorists in the PM peak hour will find alternative routes to using Upper Beach Drive if the roadway is closed. This includes the following anticipated changes to the traffic patterns:

Blagden Road NW/16th Avenue NW – One of the major roadways that will experience increases in traffic volume is along Blagden Avenue NW to 16th Street NW and then continuing along 16th Street NW. Along Blagden Avenue NW, northbound volumes are expected to increase by approximately 125 vph. On 16th Avenue NW northbound, volume increases are anticipated to be in the range of 175 to 275 vph. Since Upper Beach Drive is less directional in the PM peak, southbound volumes along 16th Street NW are projected to increase by 50 to 200 vph with the largest increases closer to the Maryland line.

Oregon Avenue NW/Glover Road NW/Grant Road NW/Broad Branch Road NW – An additional 225 vph is anticipated to use Broad Branch Road NW versus when Upper Beach Drive was open to traffic to the Maryland line. Traffic will fan out from there on to other roadways including Grant Road NW and Glover Road NW and ultimately up to Oregon Avenue NW. Oregon Avenue NW is projected to have approximately 175 vph more northbound and 100 vph increase southbound.

Connecticut Avenue NW – Along the Connecticut Avenue NW corridor, slight increases in traffic volumes should occur with Upper Beach Drive closed. Some traffic will travel through the Forest Hills area and others using roads such as Davenport Street NW and Brandywine Street NW to access MD 186(Brookville Road), 27th Street NW or Grant Road NW. Volume increases should be relatively light on those roadways/areas.

MD 410 and MD 186(Brookville Road) – MD 410 eastbound and westbound are projected to increase by 150 and 100 vehicles respectively. MD 186 Brookville Road volumes will increase slightly both eastbound and westbound.

Pinehurst Parkway, Wyndale Road, Leland Street, Western Avenue NW, and Chestnut Street NW– As in the AM peak period, motorists will ignore the turn restrictions of streets that tie into Beach Drive north of the Maryland line. This includes making the left turn from Pinehurst Parkway, Wyndale Road and Leland Street to cut through the northwest area of the District to reach Upper Beach Drive. Volumes are anticipated to be in the area of 75-100 vph combined for these three roadways. In order to access those roadways, streets such as Western Avenue NW and Chestnut Avenue NW will be used.

The resignment of traffic in the PM peak hour is shown in Figure 5. The total AM and PM peak hour volumes are depicted in Figure 6.

N

* REPRESENTS
LELAND ST
PINEHURST PKWY
AND WYNDALE RD

CONNECTICUT AVE
185
410
WISCONSIN AVE NW
NEBRASKA AVE NW
186
BROOKVILLE RD
NEVADA AVE NW
DISTRICT OF COLUMBIA
MARYLAND
MILL RD
JONES
LELAND ST
BEACH DR
PINEHURST PKWY
WYNDALE RD
WESTERN AVE NW
CHESTNUT ST NW
EAST - WEST HWY
CONNECTICUT AVE NW
BRANDYWINE ST NW
DAVENPORT ST NW
MILITARY RD NW
BRANCH AVE NW
27TH ST NW
UTAH AVE NW
GRANT RD NW
OREGON AVE NW
BROAD BRANCH RD NW
BEACH DR NW
RIDGE RD NW
ROSS DR NW
UPPER BEACH DR NW
WISE RD NW
WEST BEACH DR NW
EAST BEACH DR NW
BLAGDEN AVE NW
COLORADO AVE NW
JOYCE RD NW
SHERRILL DR NW
16TH ST NW
16TH ST
390
ARKANSAS AVE NW
MISSOURI AVE NW
MILITARY RD NW
RITTENHOUSE ST NW
ASPEN ST NW
13TH ST NW
PINEY BRANCH RD NW
GEORGIA AVE NW
KALMIA RD NW
MARYLAND
DISTRICT OF COLUMBIA
GEORGIA AVE

+25 +50 +100 +175 +200 +225 +275 +150 +160
-100 -225 -325 -375 -425 -450 -500 -50

BEACH DRIVE NW CLOSURE STUDY

2019 PM REASSIGNMENT

SCALE: 1"=1500'	FIGURE 5	9/2021

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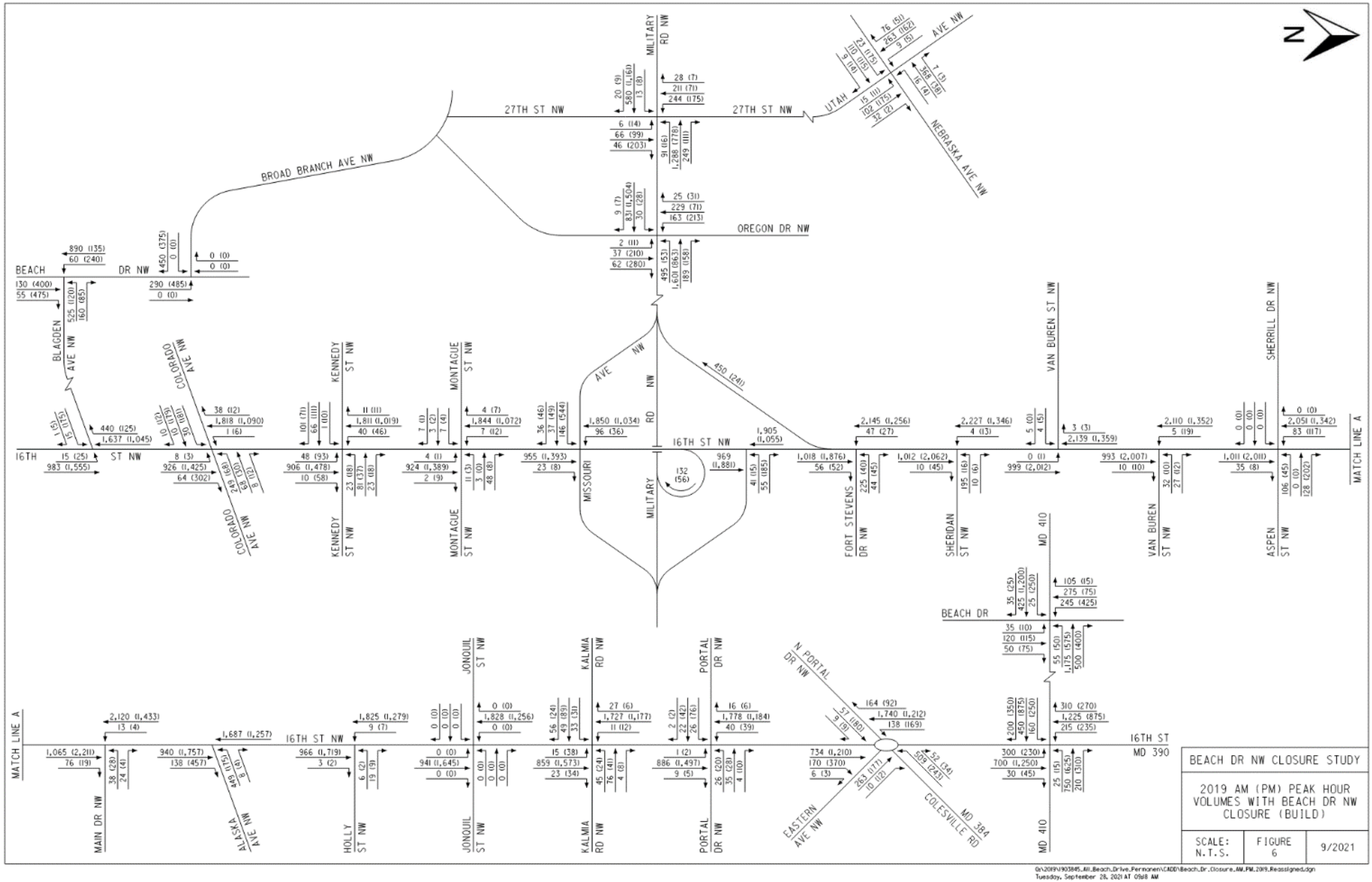
Thursday, October 28, 202 AT 11:01 AM



BEACH DR NW CLOSURE STUDY

2019 AM (PM) PEAK HOUR VOLUMES WITH BEACH DR NW CLOSURE (BUILD)

SCALE: N.T.S.	FIGURE 6	9/2021

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Tuesday, September 28, 2021 AT 09:18 AM

3.2 Future Volumes

Travel demand forecasts were developed for the year 2045 which is the furthest out year for the Metropolitan Washington Council of Governments (MWCOG) travel demand forecasting model. A base year model run was performed to compare 2017 model volumes with 2017 actual roadways along roadways in the study area. Future 2045 model runs were performed. The model includes the proposed 2045 roadway and transit network along with the projected socio-economic data for that year. The 2045 model was run for both the scenario with Upper Beach Drive open to the Maryland line and with it closed from Broad Branch Road NW to the Maryland line on weekdays.

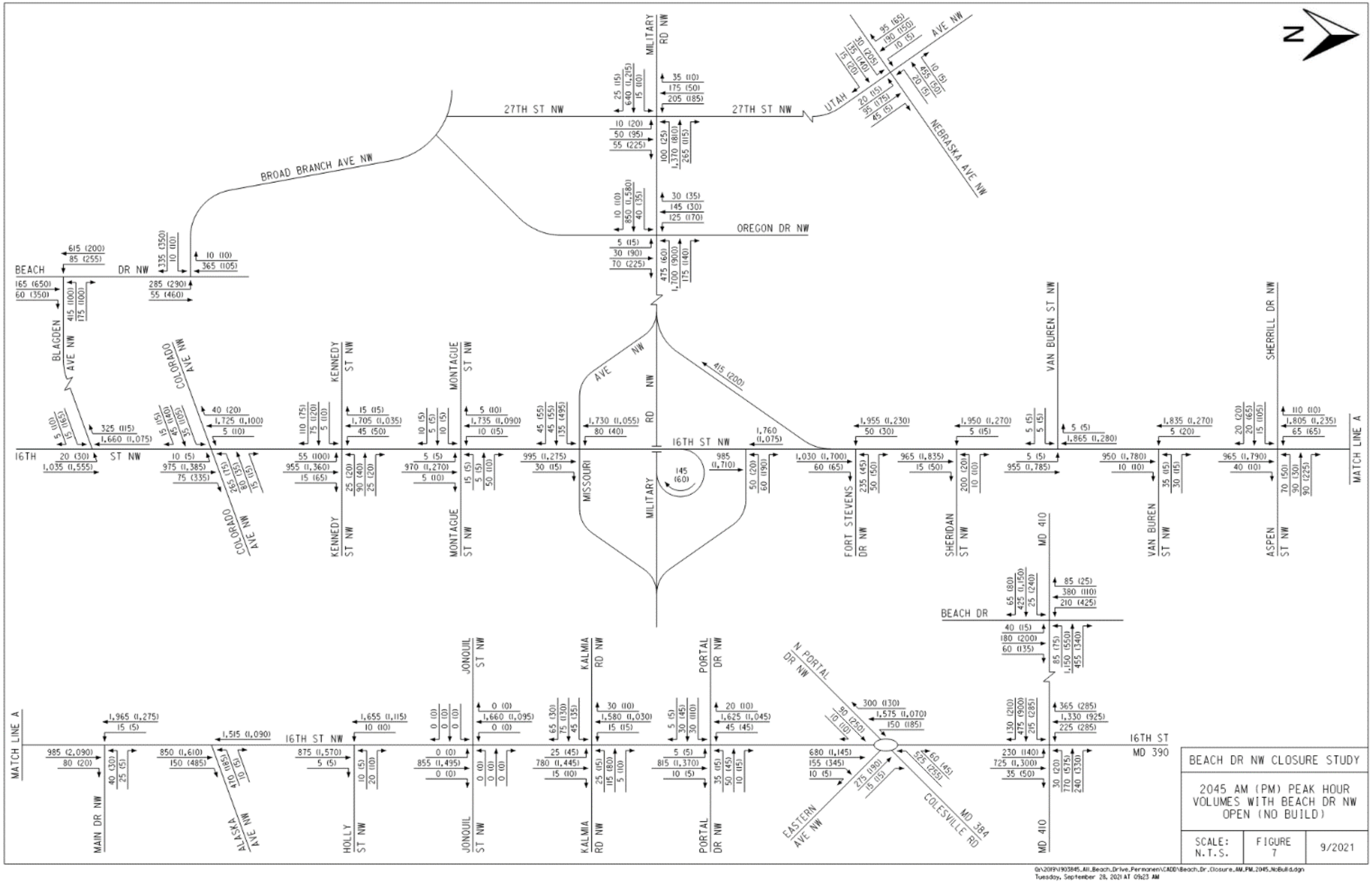
Scenario 3: 2045 Volumes with Upper Beach Drive Open

Traffic volumes were developed for the year 2045 with Beach Drive NW/Upper Beach Drive open from Shoreham Road NW to the Maryland line. A two-part process was used to develop the volumes. The volumes on the major roads which are utilized by more regional traffic plus local traffic were based on a refined volume from the MWCOG model runs. The change in volumes on local streets (e.g., Van Buren Street NW, Holly Street NW) were assumed to have virtually no growth since the streets are fully developed.

The model runs produced volumes on an average daily traffic (ADT) basis and for AM and PM peak periods. Each road and each section of roadway are anticipated to grow at different rates. On an ADT basis, Upper Beach Drive is projected to grow ranging from less than 3% up to 15%. 16th Street NW is fairly consistent with an ADT increase of 7 to 10%. Among other roadways Military Road NW is expected to increase by 3-8% and Connecticut Avenue NW is projected to grow by 2 to 7% over existing volumes. The AM and PM model growth shows a smaller percentage for many of these roadways. The reason for this is that many of these roadways are operating at or near capacity (e.g.,16th Street NW) and therefore only incremental growth can occur. Traffic will spread out over a longer period causing a higher level of congestion in the shoulder hours (those times around the peak hour) than occurred previously. For Upper Beach Drive, Table 3 identifies the anticipated peak hour volumes in 2045. The 2045 AM and PM peak hour volumes are shown in Figure 7.

TABLE 3. 2045 UPPER BEACH DRIVE TRAFFIC VOLUMES

	Average Daily Traffic-vph	AM (PM) Peak Hour Volumes Northbound-vph	AM (PM) Peak Hour Volumes Southbound-vph
Broad Branch Road NW to Joyce Road NW	6,300	65(470)	375(115)
Joyce Road NW to Wise Road NW	9,300	185(400-500)	575-700(225-325)
Wise Road NW to West Beach Drive NW	14,000	250(750)	950(525)
West Beach Drive NW to Maryland State Line	8,400	250(275)	375(450)



BEACH DR NW CLOSURE STUDY		
2045 AM (PM) PEAK HOUR VOLUMES WITH BEACH DR NW OPEN (NO BUILD)		
SCALE: N.T.S.	FIGURE 7	9/2021

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Tuesday, September 28, 2021 AT 09:23 AM

Scenario 4: 2045 Volumes with Closure – Broad Branch Road NW to Maryland Line

Traffic volumes were developed for the closure of Upper Beach Drive from Broad Branch Road NW to the Maryland Line. Traffic volumes were reassigned from Upper Beach Drive on to other roadways in the area. The reassignment was based on the method used to reassign the existing volumes which involved comparing traffic counts from the Upper Beach Drive closures during reconstruction of the roadway and reviewing the MWCOG model with Beach Drive NW closed to evaluate where traffic could possibly divert to in the network. The main roadways that are projected to exhibit the largest changes in traffic volumes are shown in Table 4.

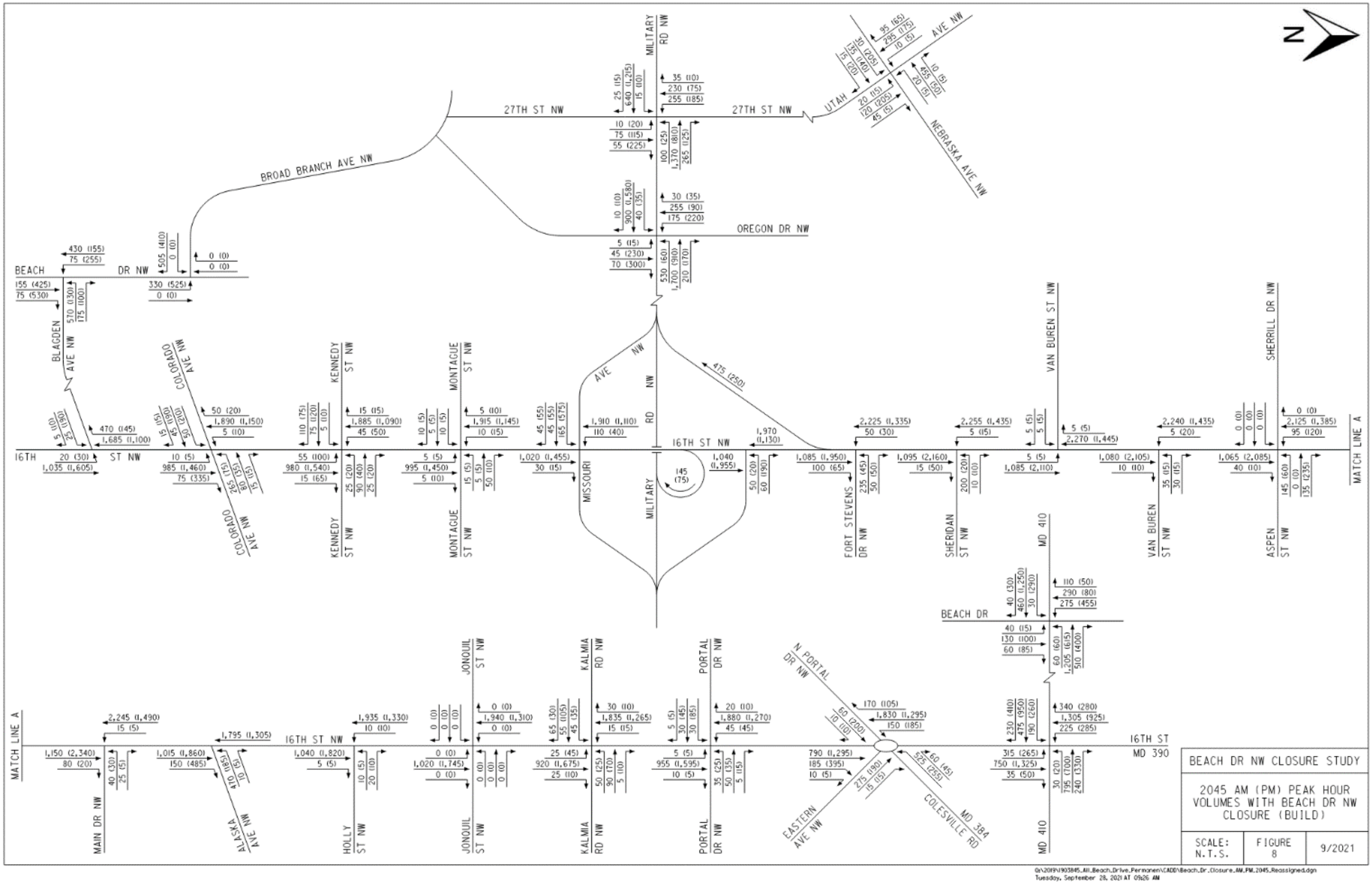
TABLE 4. 2045 TRAFFIC VOLUMES INCREASES DUE TO UPPER BEACH DRIVE CLOSURE

	AM Peak Hour Volume Increase Southbound (vph)	PM Peak Hour Volume Increase Northbound (vph)
16th Street NW	175-300	175-300
Blagden Avenue NW	150-175	175-200
Broad Branch Road NW	150-175	225-250
Oregon Avenue NW	150-175	175-200
Utah Avenue NW	100-125	25-50

Several other roadways in the study area will have increases of 100 vph or less. MD 410 eastbound and westbound in the PM peak hour will be the highest east-west increase with a range of approximately 100-175 vph. The 2045 AM and PM peak hour volumes with Upper Beach Drive closed are shown in Figure 8.

3.3 Operational Analysis

Traffic analysis was conducted using the pre-COVID 2019 existing and the 2045 projected volumes for the study area. The analysis was performed for the conditions of Upper Beach Drive open, and Upper Beach Drive closed from Broad Branch Road NW to the Maryland line except for the section between Wise Avenue NW and West Beach Drive NW. Traffic simulation modeling of the corridor was conducted using Synchro for the signalized and unsignalized intersections. The models included the roadway geometry, volumes, and signal timings. The signal timings for intersections within the District were provided from the DDOT signal system models while the timings in Maryland were provided by the Maryland Department of Transportation State Highway Administrations' Office of Traffic and Safety (OOTS). The Highway Capacity Manual (HCM) outputs were used to determine the level of service (LOS) for the signalized intersections. The results of the analysis for the four scenarios during the AM and PM peak hours are shown in Table 5-12. Travel time analysis was performed for the 16th Street NW corridor. The results of that analysis are shown in Table 13. Tables 14-19 identify the queuing analysis. Synchro files have been included separately.



BEACH DR NW CLOSURE STUDY		
2045 AM (PM) PEAK HOUR VOLUMES WITH BEACH DR NW CLOSURE (BUILD)		
SCALE: N.T.S.	FIGURE 8	9/2021

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Tuesday, September 28, 2021 AT 09:26 AM

TABLE 5. 16TH ST NW TRAFFIC ANALYSIS (AM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/Mitigation		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
16th St and Colorado Ave NW	42.4	D	0.98	69.2	E	1.07	68.5	E	1.07	55.2	E	1.05	83.0	F	1.13	82.3	F	1.13
16th St and Kennedy St NW/Morrow Dr NW	10.4	B	0.81	16.2	B	0.88	11.5	B	0.90	12.9	B	0.86	25.1	C	0.93	16.6	B	0.95
16th St and Montague Street NW	7.7	A	0.68	8.7	A	0.75	8.6	A	0.75	8.2	A	0.71	9.7	A	0.79	9.7	A	0.79
16th St and Missouri Ave NW/Military Rd EB Ramp (South)	7.0	A	0.70	7.2	A	0.78	7.7	A	0.78	7.7	A	0.73	8.0	A	0.81	8.5	A	0.81
16th St and Military Rd WB Ramp NW (North)	33.2	C	0.88	71.4	E	0.98	72.5	E	0.98	43.0	D	0.92	75.7	E	1.01	76.8	E	1.01
16th St and Fort Stevens Dr NW	13.1	B	0.94	34.6	C	1.04	23.6	C	1.04	16.4	B	0.97	45.9	D	1.08	35.2	D	1.08
16th Street and Sheridan St NW	17.4	B	0.93	50.8	D	1.08	50.9	D	1.08	21.2	C	0.97	53.7	D	1.09	53.7	D	1.09
16th St and Van Buren St NW (South)	8.3	A	0.78	10.7	B	0.94	10.7	B	0.94	8.9	A	0.82	12.3	B	1.00	12.3	B	1.00
16th St and Van Buren St NW (North)	14.1	B	0.87	61.3	E	1.03	61.3	E	1.03	23.6	C	0.92	82.2	F	1.10	82.2	F	1.10
16th St and Aspen St NW	18.0	B	0.87	14.9	B	0.91	15.3	B	0.91	21.2	C	0.92	20.3	C	0.98	20.9	C	0.98
16th St and Walter Reed Ent NW	4.9	A	0.73	5.5	A	0.82	5.5	A	0.82	5.4	A	0.77	6.4	A	0.87	6.9	A	0.87
16th St and Alaska Ave NW	16.6	B	0.78	17.4	B	0.89	17.4	B	0.89	18.1	B	0.82	20.0	B	0.94	21.6	C	0.94

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/Mitigation		
16th St and Holly St NW	7.3	A	0.64	10.9	B	0.74	10.9	B	0.74	8.2	A	0.68	13.5	B	0.79	13.7	B	0.79
16th St and Jonquil St NW	4.3	A	0.62	6.0	A	0.73	6.0	A	0.73	4.9	A	0.66	6.9	A	0.78	6.9	A	0.78
16th St and Kalmia Rd NW	14.7	B	0.73	15.8	B	0.81	15.8	B	0.81	17.5	B	0.81	19.3	B	0.89	19.2	B	0.89
16th St and Portal Dr NW	7.7	A	0.62	9.0	A	0.70	9.0	A	0.70	8.7	A	0.67	10.3	B	0.76	10.3	B	0.76
16th St and North Portal Dr NW	8.4	A	0.84	9.4	A	0.88	9.4	A	0.88	9.3	A	0.87	10.4	B	0.90	10.4	B	0.9
16th St, Eastern Ave and Colesville Rd NW	32.8	C	0.61	36.3	D	0.66	21.7	C	0.47	33.3	C	0.66	33.5	C	0.68	33.5	C	0.68
16th St and Colesville Rd (NB)	23.2	C	0.44	21.7	C	0.47	36.3	D	0.66	23.2	C	0.47	21.7	C	0.50	21.7	C	0.5
16th St and Colesville Rd (SB)	15.5	B	0.48	16.5	B	0.47	16.5	B	0.52	16.0	B	0.51	17.3	B	0.55	17.3	B	0.55

TABLE 6. MILITARY RD NW TRAFFIC ANALYSIS (AM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/ Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/ Mitigation		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
27th St and Military Rd NW	19.6	B	0.88	24.9	C	0.95	23.3	C	0.95	41.4	D	0.97	56.6	E	1.08	55.7	E	1.08
Military Rd, Oregon Ave and Glover Rd NW	110	F	1.37	171.1	F	1.68	107	F	1.15	162.4	F	1.6	232	F	2.05	159.5	F	1.41
Utah Ave and Nebraska Ave NW	23.5	C	0.66	26	C	0.79	26	C	0.79	46.6	D	0.82	50.8	D	0.95	50.8	D	0.95

TABLE 7. MD 410 TRAFFIC ANALYSIS (AM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/ Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed with Mitigation			2045 Upper Beach Dr. Closed		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
MD 410 and Beach Drive	28.8	C	0.67	27.6	C	0.69	27.6	C	0.69	30.4	C	0.7	29.8	C	0.74	29.8	C	0.74
MD 410 and MD 386	40.4	D	0.87	42.8	D	0.9	42.8	D	0.9	43.6	D	0.95	48.3	D	0.96	48.3	D	0.96

TABLE 8. BLAGDEN AVE NW – TRAFFIC ANALYSIS (AM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open		2019 Upper Beach Dr. Closed		2019 Upper Beach Dr. Closed w/Mitigation		2045 Upper Beach Dr. Open		2045 Upper Beach Dr. Closed		2045 Upper Beach Dr. Closed w/Mitigation	
Intersection	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
16th St and Blagden Ave, NW (signalization w/mitigation)	>200	F	>200	F	15.6	B	>200	F	>200	F	26.8	C
Blagden Ave and Beach Drive NW (Blagden stop controlled)	203.5	F	219.7	F	N/A	N/A	345.2	F	347.4	F	N/A	N/A
Blagden Ave and Beach Drive NW (3 way stop)	129.6	F	99.8	F	99.8	F	174.9	F	138.7	F	N/A	N/A
Blagden Ave and Beach Drive NW (signalized)	21.7	C	25.4	C	N/A	N/A	21.9	C	25.3	C	25.3	C

TABLE 9. 16TH ST NW TRAFFIC ANALYSIS (PM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/Mitigation		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
16th St and Colorado Ave NW	29.4	C	0.82	39.4	D	0.93	41.4	D	0.93	38.4	D	0.86	49.1	D	0.99	51.5	D	0.99
16th St, Kennedy St and Morrow Dr NW	9.0	A	0.68	9.5	A	0.76	9.3	A	0.76	10.0	B	0.72	10.1	B	0.78	10.2	B	0.78
16th St and Montague St NW	7.3	A	0.50	7.2	A	0.57	5.2	A	0.57	7.8	A	0.53	7.7	A	0.60	5.5	A	0.60
16th St and Missouri Ave/ Military Rd EB ramp NW (South)	20.4	C	0.76	29.4	C	0.86	30.5	C	0.88	24.7	C	0.80	36.6	D	0.91	38.5	D	0.93
16th St and Military Rd WB Ramp NW (North)	12.7	B	0.77	22.0	C	0.87	14.8	B	0.87	13.9	B	0.81	28.6	C	0.94	16.9	B	0.91
16th St and Fort Stevens Dr NW	7.9	A	0.72	14.9	B	0.81	5.5	A	0.81	9.7	A	0.75	22.3	C	0.85	7.2	A	0.85
16th St and Sheridan St NW	8.5	A	0.73	17.6	B	0.85	20.9	C	0.85	9.7	A	0.76	29.1	C	0.89	32.5	C	0.89
16th St and Van Buren St NW (South)	5.7	A	0.88	26.4	C	1.02	26.4	C	1.02	9.3	A	0.92	46.5	D	1.08	46.5	D	1.08
16th St and Van Buren St NW (North)	14.1	B	0.76	14.9	B	0.89	14.3	B	0.89	14.7	B	0.80	16.2	B	0.94	15.7	B	0.94
16th St and Aspen St NW	39.9	D	1.07	32.3	C	0.99	32.4	C	0.99	56.8	E	1.15	46.1	D	1.06	46.2	D	1.06
16th St and Walter Reed Ent NW	4.3	A	0.80	4.4	A	0.89	4.4	A	0.89	4.8	A	0.84	8.6	A	0.94	8.6	A	0.94
16th St and Alaska Ave NW	31.7	C	0.92	60.2	E	1.02	48.6	D	1.02	45.7	D	0.97	79.5	E	1.08	66.7	E	1.08
16th St and Holly St NW	11.1	B	0.61	11.8	B	0.70	12.0	B	0.70	10.8	B	0.64	12.2	B	0.75	12.9	B	0.75

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/Mitigation		
16th St and Jonquil St NW	6.2	A	0.61	16.4	B	0.71	16.5	B	0.71	7.5	A	0.64	28.5	C	0.75	28.6	C	0.75
16th St and Kalmia Rd NW	11.3	B	0.69	11.3	B	0.77	11.3	B	0.77	12.9	B	0.75	12.8	B	0.82	12.8	B	0.82
16th St and Portal Dr NW	5.8	A	0.63	5.4	A	0.68	5.4	A	0.68	6.7	A	0.68	6.4	A	0.73	6.4	A	0.73
16th Street and North Portal Dr NW	11.7	B	0.60	9.4	A	0.64	9.4	A	0.64	12.6	B	0.63	10.4	B	0.71	10.4	B	0.71
16th St, Eastern Ave and Colesville Rd NW	23.6	C	0.78	27.1	C	0.80	27.1	C	0.8	26.5	C	0.84	32.1	C	0.88	32.1	C	0.88
16th St and Colesville Rd (NB)	8.8	A	0.47	8.2	A	0.50	8.2	A	0.50	8.9	A	0.49	8.6	A	0.53	8.3	A	0.53
16th St and Colesville Rd (SB)	20.6	C	0.31	20.7	C	0.36	20.7	C	0.36	20.6	C	0.33	21.0	C	0.39	21.0	C	0.39

TABLE 10. MILITARY RD NW TRAFFIC ANALYSIS (PM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed w/Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed w/Mitigation		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
27th St and Military Rd NW	23.1	C	0.89	23.2	C	0.90	30.6	C	0.90	28.1	C	0.98	29.1	C	1.00	37.7	D	1.00
Military Rd, Oregon Ave and Glover Rd NW	25.4	C	0.93	50.9	D	1.21	50.9	D	1.21	35.3	D	1.00	73.5	E	1.34	73.5	E	1.34
Utah Ave and Nebraska Ave NW	21.2	C	0.54	21.0	C	0.57	21.0	C	0.57	21.2	C	0.57	33.0	C	0.68	33.0	C	0.68

TABLE 11. MD 410 TRAFFIC ANALYSIS (PM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open			2019 Upper Beach Dr. Closed			2019 Upper Beach Dr. Closed Mitigation			2045 Upper Beach Dr. Open			2045 Upper Beach Dr. Closed			2045 Upper Beach Dr. Closed Mitigation		
Intersection	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**	**Delay**	**LOS**	**v/c**
MD 410 and Beach Drive	46	D	0.9	47.9	D	0.91	47.9	D	0.91	53.1	D	0.98	54.3	D	0.92	54.3	D	0.92
MD 410 and MD 386	40.7	D	0.93	44.2	D	0.99	44.2	D	0.99	48.4	D	1.07	51	D	1.06	51	D	1.06

TABLE 12. BLAGDEN AVE NW – TRAFFIC ANALYSIS (PM PEAK) AND DELAY (SEC/VEH)

	2019 Upper Beach Dr. Open		2019 Upper Beach Dr. Closed		2019 Upper Beach Dr. Closed w/Mitigation		2045 Upper Beach Dr. Open		2045 Upper Beach Dr. Closed		2045 Upper Beach Dr. Closed w/ Mitigation	
Peak	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**	**Delay**	**LOS**
16th St and Blagden Ave NW (signalization w/mitigation)	>200	F	>200	F	10	A	>200	F	>200	F	9.6	A
Blagden Ave and Beach Drive NW (Blagden stop controlled)	125	F	74.5	F	N/A	N/A	198.2	F	121.4	F	N/A	N/A
Blagden Ave and Beach Drive NW (3 way stop)	75.9	F	23.6	C	23.6	C	93.9	F	32.9	D	N/A	N/A
Blagden Ave and Beach Drive NW (signalized)	7.3	C	8.4	A	N/A	N/A	7.4	A	8.5	A	8.5	A

TABLE 13. TRAVEL TIME ANALYSIS- 16TH STREET NW CORRIDOR – MARYLAND LINE TO BLAGDEN AVENUE NW

Peak	Volume Year	Direction	Scenario	Travel Time (min)	Arterial Speed (mph)	Reduction in Travel Time	Increase in Speed
AM	2019	NB	Open	9.4	19.2	N/A	N/A
			Closed	9.6	18.8	2%	-2%
			Closed w/Mitigation	9.6	18.7	3%	-3%
		SB	Open	10.0	18.2	N/A	N/A
			Closed	14.8	12.3	48%	-32%
			Closed w/ Mitigation	14.6	12.4	47%	-32%
	2045	NB	Open	9.5	18.9	N/A	N/A
			Closed	9.7	18.5	2%	-2%
			Closed w/ Mitigation	9.7	18.4	3%	-3%
		SB	Open	11.1	16.4	N/A	N/A
			Closed	16.8	10.8	52%	-34%
			Closed w/ Mitigation	16.8	10.8	52%	-34%
PM	2019	NB	Open	9.5	18.9	N/A	N/A
			Closed	12.6	14.3	32%	-24%
			Closed w/ Mitigation	12.0	14.9	27%	-21%
		SB	Open	9.5	18.9	N/A	N/A
			Closed	9.6	18.6	2%	-2%
			Closed w/Mitigation	9.6	18.6	2%	-2%
	2045	NB	Open	10.6	17.1	N/A	N/A
			Closed	15.8	11.4	50%	-33%
			Closed w/Mitigation	14.9	12.1	41%	-29%
		SB	Open	9.6	18.6	N/A	N/A
			Closed	9.8	18.2	2%	-2%
			Closed w/ Mitigation	9.8	18.3	2%	-2%

TABLE 14. 16TH STREET NW 95TH PERCENTILE QUEUEING AT SELECTED INTERSECTIONS (FEET)[1]

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/ Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
North Portal Dr NW	SBL	1	0	1	0	1	0	1	0	m1	0	m1	0
	SBT/R	517	22	584	61	584	61	561	23	655	384	655	384
Eastern Ave and Colesville Rd NW	NBT	296	431	296	540	296	540	325	495	318	#752	318	#752
	NBR	41	70	40	91	40	91	41	80	41	m107	41	m107
Colesville Rd NW (NB)	NBT/T/R	98	30	97	26	97	26	102	34	101	m32	101	m32
Colesville Rd NW (SB)	SBT	328	201	361	236	361	236	349	214	392	271	392	271
Kalmia Rd NW	NBL	m18	m0	m13	m0	m13	m0	25	m0	m#57	m0	m#57	m0
	NBT/R	199	0	201	m0	201	m0	200	m0	200	m0	200	m0
	SBL	m18	m7	m1	m6	m1	m6	m2	m9	m2	m7	m2	m7
	SBT/R	78	464	100	587	100	587	93	483	#173	647	#173	647
Alaska Ave NW	NBT/R	158	#1071	165	m#1258	165	m#1227	155	#1176	166	m#1255	166	m#1224
	SBT	51	454	122	453	122	453	82	452	m#282	451	m57	451
Aspen Ave NW	NBT/R	312	236	350	m#1026	359	m#1026	339	#866	392	m#1007	391	m#1007
	SBL	m18	34	m4	#170	m4	#171	m2	47	m4	m#174	m4	m#175
	SBT/R	17	132	57	151	57	128	21	132	#1011	169	#1011	143
Sheridan Ave NW	NBT/R	105	30	112	m#961	m114	#1089	m105	m33	m115	m#979	m117	m#1148
	SBL	m18	m22	m1	m19	m1	m19	m105	m23	m1	m19	m1	m19
	SBT	#931	522	#1248	567	#1248	567	#997	552	#1272	567	#1272	567

1- M and # represent nearest node. Please see Synchro models

TABLE 15. 16TH STREET NW AT MISSOURI AVENUE/ MILITARY ROAD NW EB RAMP 95TH PERCENTILE QUEUEING (FEET)

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
16th St NW and Missouri Ave NW/Military Rd EB Ramp (South)	EBL (Missouri Ave/ Military Rd EB Ramp NW)	131	#437	146	#517	146	#517	150	#490	165	#567	165	#567
	EBT/R (Missouri Ave/ Military Rd EB Ramp NW)	129	#449	144	#521	144	#521	146	#481	165	#568	165	#568
	NBT/T/R (16th St NW)	208	66	214	168	218	255	241	85	253	269	251	431
	SBL (16th St NW)	m2	m1	m2	m1	m2	m1	m2	m1	m3	m2	m3	m2
	SBT/R (16th St NW)	m22	15	m21	16	m21	16	m25	18	m23	20	m23	19
16th St NW and Missouri Ave NW/Military Rd WB Ramp (North)	WBL/T/R (Military Rd WB Ramp NW)	m47	m105	m47	m118	m47	m122	m62	m121	m62	m132	m62	m136
	NBT (16th St NW)	55	m588	66	m#925	66	m667	61	m646	75	m#957	75	m#764
	SBT/R (16th St NW)	m#258	109	m#248	173	m#1137 *	172	m#267	152	m#216	228	m#280	215
16th St and Colorado Ave NW	NBL (16th St NW)	m8	m0	m8	m0	m7	m0	m11	m1	10	m1	m8	m1
	NBT/R (16th St NW)	396	#952	398	#1015	235	#1021	431	#1009	434	#1078	438	#1084
	SBL (16th St NW)	m0	m4	m0	m3	m0	m3	m2	m6	m1	m5	m1	m6
	SBT/R (16th St NW)	#979	298	m#1022	337	m#1102	300	m#1026	334	m#1033	338	m#1110	352
	NEL (Colorado Ave NW)	40	100	45	216	45	216	51	127	68	256	68	256
	NET/R (Colorado Ave NW)	58	154	58	154	58	154	67	170	69	196	69	196
	SWL (Colorado Ave NW)	m#320	m72	m#329	m72	m#329	m72	m#368	m83	m#368	m86	m#368	m86
	SWT/R (Colorado Ave NW)	m76	m33	m76	m33	m76	m33	m92	m39	m92	m39	m92	m39

M and # represent nearest node. Please see Synchro models

TABLE 16 – 16TH STREET AND BLAGDEN AVENUE NW 95TH PERCENTILE QUEUES IN FEET

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
16th St and Blagden Ave NW	NBL (16th St NW)	4	3	6	3	m8	m0	7	4	10	4	m10	m0
	NBT (16th St NW)	0	0	0	0	165	6	0	0	0	0	175	6
	SBT/R (16th St NW)	0	0	0	0	m73	297	0	0	0	0	m74	287
	NEL/R (Blagden Ave NW)[1]	43	>2,000	54	>2,000	33	227	198	>2,000	205	>2,000	49	249

M and # represent nearest node. Please see Synchro models [1]-Simtraffic queues for unsignalized conditions

TABLE 17 – MILITARY ROAD, OREGON AVENUE AND GLOVER ROAD, NW 95TH PERCENTILE QUEUES

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Military Rd and Oregon Ave/ Glover Rd NW	EBL (Military Rd NW)	m13	m10	m11	m10	m11	m6	m15	m12	m12	m12	m13	m7
	EBT/R (Military Rd NW)	m228	m#597	m216	m#596	m#413	m#678	m23	m#594	m197	m#587	m301	m#717
	WBL (Military Rd NW)	#544	#102	#390	#96	#562	31	#625	#112	#743	#109	#690	39
	WBT/R (Military Rd NW)	#1020	#416	#1041	#390	#1003	#390	#1112	#456	#1140	#481	#1118	#493
	NBL/T/R (Glover Rd NW)	48	165	59	#342	60	310	58	195	71	#432	70	323
	SBL/T/R (Oregon Ave NW)	251	#196	#395	#373	#406	#373	289	#228	#564	#422	#553	#387

M and # represent nearest node. Please see Synchro models

TABLE 18 – NEBRASKA AVENUE AND UTAH AVENUE, NW 95TH PERCENTILE QUEUES IN FEET

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
Nebraska Ave and Utah Ave NW	SEL/T/R (Utah Ave NW)	104	75	#207	88	#207	88	#134	86	#254	100	#254	100
	NWL/T/R (Utah Ave NW)	50	72	62	83	62	83	79	85	78	100	78	100
	NEL/T/R (Nebraska Ave NW)	70	#207	70	#207	70	#207	70	#208	92	#261	92	#261
	SWL/T/R (Nebraska Ave NW)	#248	26	#248	26	#248	26	#332	32	#332	32	#332	32

M and # represent nearest node. Please see Synchro models

TABLE 19 – BEACH DRIVE NW AT BLAGDEN AVENUE NW 95TH PERCENTILE QUEUES IN FEET

Intersection	Lane Group	2019 Open		2019 Closed		2019 Closed w/ Mitigation		2045 Open		2045 Closed		2045 Closed w/Mitigation	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2 way stop	WBL	458	241	871	179	N/A	N/A	1708	498	2698	376	N/A	N/A
	WBR	166	107	160	102	N/A	N/A	156	147	151	134	N/A	N/A
	NBT	-	-	-	-	N/A	N/A	-	-	-	-	N/A	N/A
	NBR	-	-	-	-	N/A	N/A	-	-	-	-	N/A	N/A
	SBL	36	116	35	108	N/A	N/A	43	133	40	123	N/A	N/A
	SBT	-	87	-	55	N/A	N/A	-	107	-	106	N/A	N/A
3 way stop	WBL	162	59	307	61	307	61	222	61	948	62	948	62
	WBR	108	52	158	50	158	50	136	57	161	54	161	54
	NBT	66	722	64	147	64	147	70	914	70	225	70	225
	NBR	48	260	47	155	47	155	49	257	46	195	46	195
	SBL	165	90	100	97	100	97	172	101	135	100	135	100
	SBT	183	80	160	63	160	63	170	91	177	81	177	81
Signal	WBL	406	132	530	160	N/A	N/A	440	153	580	192	580	192
	WBR	159	97	156	84	N/A	N/A	169	127	161	125	161	125
	NBT	101	302	109	162	N/A	N/A	127	387	133	202	133	202
	NBR	40	168	41	120	N/A	N/A	42	191	149	163	149	163
	SBL	108	123	93	115	N/A	N/A	129	134	119	120	119	120
	SBT	303	130	367	79	N/A	N/A	348	196	369	135	369	135

The traffic analysis showed that intersections within the study area operated better in both 2019 and 2045 with Upper Beach Drive open. In the AM peak hour, most intersections remained at the same level of service (LOS) while some saw decreases in operation. The following were the major changes in 2019:

AM Peak Hour

- 16th Street NW and Colorado Avenue NW- LOS D to E
- 16th Street NW and Military Road NW westbound ramp- LOS C to E
- 16th Street NW and Van Buren Road NW (North)- LOS B to E
- Military Road NW and Oregon Avenue NW/Glover Road NW- 60 second increase in vehicle delay
- 16th Street NW and Blagden Avenue NW currently operates at LOS F and delays will increase with Upper Beach Drive closed.

PM Peak Hour

- 16th Street NW and Alaska Avenue NW- LOS C to E
- Military Road NW and Oregon Avenue NW/Glover Road NW- LOS C to D
- 16th Street NW and Blagden Avenue NW currently operates at LOS F and delays will increase with Upper Beach Drive closed.

In 2045, similar results were shown from the analysis with Upper Beach Drive open providing better operations. The major changes in operation in 2045 are as follows:

AM Peak Hour

- 16th Street NW and Colorado Avenue NW- LOS E to F
- 16th Street NW and Military Road NW westbound ramp- LOS D to E
- 16th Street NW and Van Buren Road NW (North)- LOS C to F
- 16th Street NW and Blagden Avenue NW currently operates at LOS F and delays will increase with Upper Beach Drive closed.

PM Peak Hour

- 16th Street NW and Alaska Avenue NW- LOS D to E
- Military Road NW and Oregon Avenue NW/Glover Road NW- LOS D to E
- 16th Street NW and Blagden Avenue NW currently operates at LOS F and delays will increase with Upper Beach Drive closed.

The travel time analysis was conducted to review operations along 16th Street NW from the Maryland line to Blagden Avenue NW. The major changes between Upper Beach Drive open and closed between Broad Branch Road NW and the Maryland line:

2019

- AM Southbound- Approximately an additional 4.5 minutes of travel time and speeds reduced by about 6 mph
- PM Southbound- Approximately an additional 2.5 minutes of travel time and speeds reduced by about 4 mph

2045

- AM Southbound- Approximately an additional 5.5 minutes of travel time and speeds reduced by about 6 mph
- PM Southbound- Approximately an additional 5 minutes of travel time and speeds reduced by about 6 mph

Along 16th Street NW, the travel times in the model versus travel times in the field are about the same or slightly lower than the observed field observations. The corridor is a highly used bus corridor so stops delay all vehicles plus occasionally there will be vehicles parked either temporarily or long term that really hamper operations. For example, in the PM peak period, when a vehicle parks near Sheridan Street NW queues can extend to Colorado Avenue NW. Points of congestion include the Missouri Avenue NW/ Military Road NW ramps on through the Van Buren Street NW intersection in the PM peak period. Signal timing adjustments can assist some but especially at the clustered intersections it is difficult to make major adjustments.

In addition to north-south travel times a review was performed of east-west travel times. This was related to the closure of motorists that travel from Bingham Road NW to Upper Beach Drive to Sherrill Road NW and the reverse movement. The increase in travel time will vary for that movement depending upon the time of day. This showed that motorists performing that movement would experience an increase of one to five minutes depending on the origin and destination of the trip. It should be noted this movement will be made slightly quicker with the reopening of Oregon Avenue NW. The Wise Road NW to West Beach Drive NW connection will remain open to facilitate that movement.

4 MITIGATION MEASURES

4.1 Recommended Improvements

If NPS decides to close Upper Beach Drive on all weekdays, various improvements are recommended to be implemented to mitigate some of the traffic impacts. These include:

A) Provide a Three Way Stop at Beach Drive NW at Blagden Avenue NW

The closure of Upper Beach Drive north of Broad Branch Road NW will increase the traffic along Blagden Avenue NW. In fact, in the AM peak hour volumes along Blagden Avenue NW approaching Beach Drive NW will exceed volumes on Upper Beach Drive. In order to mitigate delay for motorists along Blagden Avenue NW, a three-way stop should be provided.

A three-way stop warrant analysis was previously performed for the intersection. The analysis showed that criteria C for the minimum volume requirements were met for the intersection. During the time of this study, the section of Beach Drive NW from Shoreham Road NW to Klingle Road NW was closed to traffic which may have influenced volumes at this intersection. Because of this, a signal warrant analysis was not performed (Note: this section has reopened during certain periods at the end of September). From previous counts, it appears that the four-hour volume warrant could be met. Ultimately, signalization should be evaluated when traffic returns to normal conditions.

B) Resign and Remark the Intersections of Upper Beach Drive/ Broad Branch Road NW, Upper Beach Drive/Wise Road NW and Upper Beach Drive/West Beach Drive NW

The signing and pavement markings for the intersections of Upper Beach Drive with Broad Branch Road NW, Wise Road NW and West Beach Road NW were established as t-intersections with through movements for Upper Beach Drive. Since these locations will become two way stop controlled intersections with no through movements, revisions should be made to the pavement marking and signing to reflect this new configuration. It is suggested that delineators be used in the short term and NPS decide if they want to do something more permanent long term to direct motorists to the proper lane. At the intersection of Broad Branch Road NW and Upper Beach Drive, there is a pedestrian crossing on the east leg. To address the interaction of motorists turning left with pedestrians crossing the street, possible options include placing a rectangular rapid flashing beacon (RRFB), a raised crosswalk or installing a two-way stop-controlled intersection. The stop-controlled intersection is only viable if the intersection of Upper Beach Drive and Blagden Avenue NW is converted to a three-way stop. If the Beach Drive NW and Blagden Avenue NW intersection is stop controlled or is converted to a signal, the queues from Upper Beach Drive northbound at Broad Branch Road NW would extend into this intersection.

C) Provide Left Turn Phasing for Military Road NW Westbound to Glover Road NW

The volume for the movement from Military Road NW to Glover Road NW has over 400 vehicles in the AM peak hour. With Beach Drive NW closed this volume would be projected

to increase. Traffic at times will queue from the left turn lane into the through lane. Based on the DDOT criteria for implementation of left turn phasing the cross product exceeds 100,000. This means the movement qualifies for protected/permitted phasing, but this should not be implemented in the PM peak period due to its implications to traffic operations on Military Road NW.

D) Modify Signal Offsets at 16th Street NW at the Military Road NW Ramp Intersections

An adjustment should be made to the offsets between the signals on 16th Street NW between the Missouri Avenue NW/ Military Road NW eastbound off ramp with the 16th Street NW/ Military Road westbound ramp intersection. Motorists making the left turn movement from Missouri Avenue NW/Military Road NW eastbound ramp from the start of their green time should be given some green time to clear out 16th Street NW northbound traffic plus some of the left turning motorists, so the remaining left turning motorists have a place to store. This will facilitate more motorists clearing with the anticipated increase due to the closure.

E) Modify Signal Timings on 16th Street NW

The closure of Upper Beach Drive will increase travel times and delay at most intersections along 16th Street NW, with particular impacts identified at key constrained locations (e.g., 16th Street NW and Missouri Avenue NW/Military Rd NW, and 16th Street NW and Colorado Ave, NW). It would not be feasible to increase the cycle length without impacting the cross-street access and pedestrian wait times at the intersections. A slight improvement can be obtained by adjusting signal timings at selected intersections which do have some split flexibility. However, this will not mitigate the total delay increase caused by traffic diversions due to the closure. Intersections this could occur at would be 16th Street NW and Fort Stevens Drive, NW, and 16th Street NW and Van Buren St NW.

F) Signalize the 16th Street NW and Blagden Avenue NW Intersection

With Upper Beach Drive closed to the north of Broad Branch Road NW, an increase in traffic will occur traffic on Blagden Avenue NW. Motorists northbound will mostly desire to travel to 16th Street NW. They have the option of using the unsignalized intersection of Blagden Avenue NW or turning on to 17th Street NW or 18th Street NW to Colorado Avenue NW. The intersection of Blagden Avenue NW and 16th Street NW meet the four-hour volume warrant for the installation of a traffic signal. It is recommended this intersection be signalized and various traffic calming measures be provided. At the intersection, right turn hardening is proposed for the 16th Street NW southbound to Blagden Avenue NW movement and modifications to the 16th Street NW northbound left turn lane should be implemented which were developed in a previous DDOT study should be included with the signalization.

The location of the recommended improvements is shown in Figure 9. If the closure occurs only during the summer or on Mondays/Fridays, the following improvements should still be implemented:

- Provide a three way stop at Beach Drive NW and Blagden Avenue NW
- Provide left turn phasing for Military Road NW westbound to Glover Road NW

- Modify signal offsets at 16th Street NW at the Military Road NW eastbound/Missouri Avenue NW intersection and the Military Road NW westbound ramp intersection
- Install traffic calming on Chestnut Street NW

It would be recommended that a traffic count take place at 16th Street NW and Blagden Avenue NW intersection during the closure times.

4.2 Suggested Improvements

Various other improvements are suggested, but not required, to be evaluated as follows:

A) Provide Minor Improvements to Broad Branch Road NW, Grant Road NW, and Ridge Road NW

Volumes along these roadways will increase with the potential closure of Beach Drive NW. These roadways are in fair condition. At a minimum, it would be preferred to patch the potholes along the roadways and reinstall center lines in certain areas

B) Perform Tree Trimming

Various locations in northwest portion of the District need tree trimming to better observe signal or stop signs. This includes at Blagden Avenue NW southbound at 17th Street NW, Chestnut Avenue NW at Wise Avenue NW, 16th NW at Van Buren Street NW northwest quadrant, Utah Avenue NW at 31st Place NW southbound, along Western Avenue NW westbound approaching Chestnut Avenue NW and on Linnean Avenue NW northbound at Davenport Street NW.

C) Provide Pavement Marking and Signing Improvements

Several locations could benefit from modifications to the signing and pavement markings. This includes:

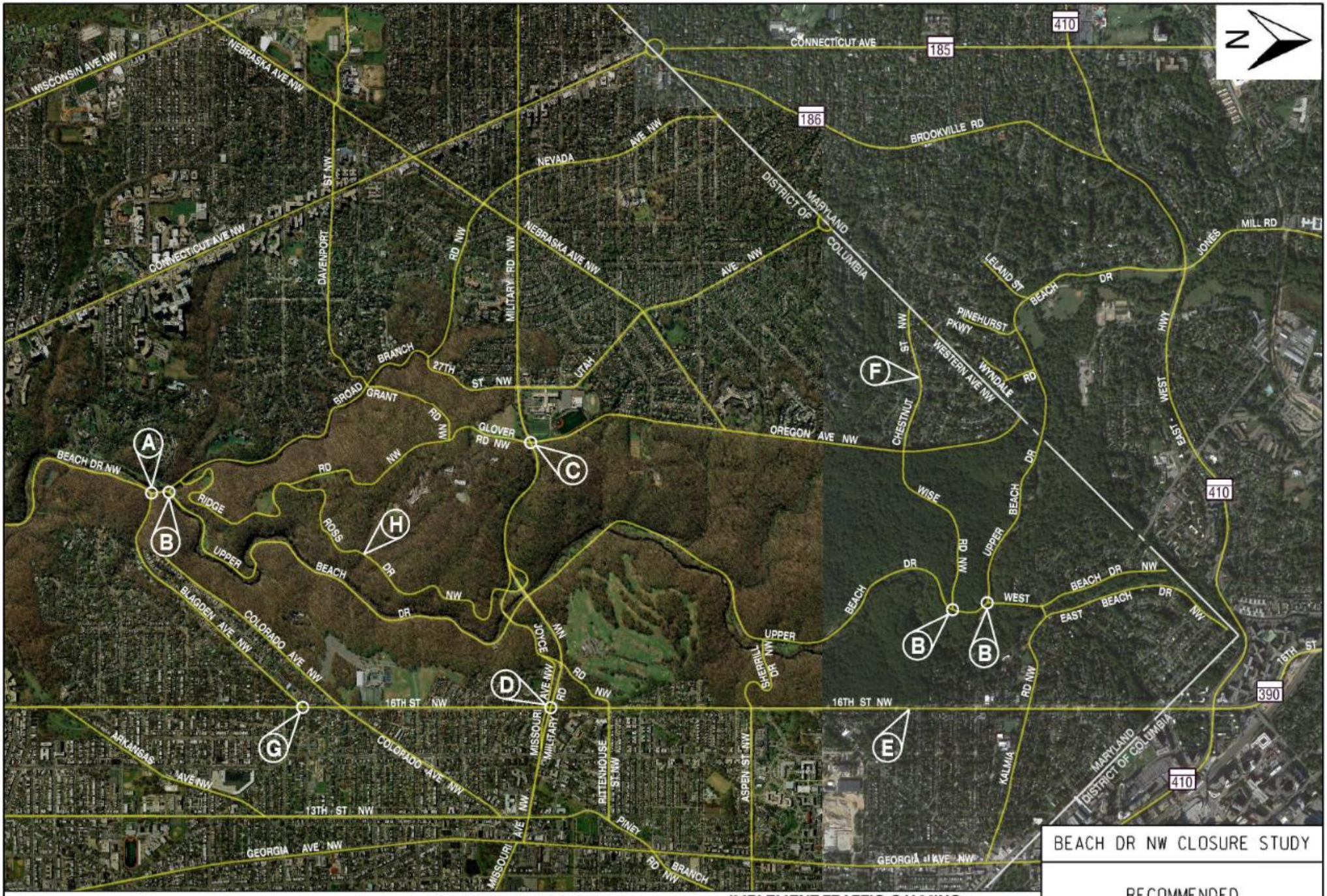
- Adding a Stop Ahead sign on Grant Road NW southbound approaching Broad Branch Road NW. Also add all way plaque to stop sign at the intersection.
- Cleaning the stop ahead sign on Blagden Road NW northbound approaching Mathewson Drive NW.
- Adding a Stop Ahead sign on Western Avenue NW eastbound approaching Aberfoyle Place NW.
- Placing stop ahead markings on Western Avenue NW westbound before Aberfoyle Place NW.
- Provide high visibility crosswalk or at a minimum upgrade existing crosswalk pavement marking on Western Avenue NW at Cummings Lane NW.

- Placing sign on Military Road NW eastbound ramp to Missouri Avenue NW identifying traffic can use both lanes for left turn to 16th Street NW before the merge from Joyce Road NW.

- Adjusting the speed limit 25mph sign on Brandywine Street NW westbound opposite 30th Street NW that is parallel to the roadway.
- Review and relocate pedestrian crossing signs along Utah Avenue between 31st Place NW to Tennyson Street NW.
- Adjust bus sign and stop sign on Western Avenue NW westbound so that the bus sign does not block stop sign.
- Consider doubling up on stop signs on Brandywine Street NW westbound at Linnean Avenue NW, 30th Street NW and 31 Street NW.

D) Consider Traffic Calming Measures

There will be minor traffic volume increases with the closure of Upper Beach Drive along roadways such as Utah Avenue NW, Western Avenue NW, Blagden Avenue NW, Pinehurst Parkway, Leland Road and Wyndale Road. For Pinehurst Parkway, Leland Road, Daniel Road and Wyndale Road consideration should be given to installing speed humps but this would need to be accomplished in accordance with Montgomery County guidelines. Bulb-outs could be provided in combination with marked parking lanes along Western Avenue NW and Utah Avenue NW. Possible locations for bulb-outs on Western Avenue NW include Cummings Lane NW (east side) and Greenvale Street NW (east side and northwest quadrant). Locations along Utah Avenue NW include Newlands Street NW, Northhampton Street NW, Rittenhouse Street NW (north side and southwest quadrant) and 31st Place NW. Blagden Avenue NW southbound could be marked for a parking lane from 16th Street NW to Allison Street NW.



(A) PROVIDE A THREE-WAY STOP

(B) RESIGN AND REMARK INTERSECTIONS

(C) PROVIDE LEFT-TURN PHASING FROM MILITARY RD NW WB TO GLOVER RD NW SB

(D) MODIFY SIGNAL OFFSETS AT MILITARY RD NW NB RAMP INTERSECTIONS

(E) MODIFY SIGNAL TIMINGS ON 16TH ST NW

(F) IMPLEMENT TRAFFIC CALMING ALONG CHESTNUT ST NW

(G) SIGNALIZE THE 16TH ST NW AT BLAGDEN AVE NW INTERSECTION

(H) ROSS DR NW TO REMAIN CLOSED

BEACH DR NW CLOSURE STUDY

RECOMMENDED MITIGATION MEASURES

SCALE:	FIGURE	
1"=2200'	9	9/2021

O:\2019\1903845_All_Beach_Drive_Permanent\CADD\Beach_Dr_Mitigation_Measures.dgn
Thursday, October 28, 2021 AT 10:53 AM

5 CONCLUSION

The potential closure of Upper Beach Drive permanently on weekdays will change traffic patterns in the area. Several roadways will experience an increase in volumes, including Blagden Avenue NW, Broad Branch Road NW, 16th Street NW and Oregon Avenue NW. In addition, several other roadways will encounter minor increase in volumes. The increase in volume will lead to slower travel times and more delay at most intersections in the study area. Along 16th Street NW travel time will increase between 2.5 minutes and 4.5 minutes in the peak hour peak direction. Besides intersections along 16th Street NW, the intersection of Military Road NW and Oregon Avenue NW will be the most impacted by the closure.

The following improvements are recommended if Upper Beach Drive is closed:

- Provide a Three Way Stop at Beach Drive NW at Blagden Avenue NW.
- Resign and Remark the Intersections of Upper Beach Drive / Broad Branch NW, Upper Beach Drive/Wise Road NW and Upper Beach Drive/West Beach Drive NW.
- Provide Left Turn Phasing for Military Road NW Westbound to Glover Road NW Southbound.
- Modify Signal Offsets at 16th Street NW at the Missouri Avenue NW/ Military Road NW Ramp Intersections.
- Modify Signal Timings on 16th Street NW.
- Implement Traffic Calming on Chestnut Street NW.
- Signalize the 16th Street NW and Blagden Avenue NW intersection.

In addition, the following improvements are suggested:

- Monitor volumes and speeds on Ross Drive NW
- Provide Various Minor Improvements to Broad Branch Road NW, Grant Road NW, and Ridge Road NW.
- Perform Tree Trimming.
- Provide Pavement Marking and Signing Improvements.
- Consider Traffic Calming Measures.