George Washington Memorial Parkway
Virginia

U.S. Department of the Interior
National Park Service

Langley Fork Park and Langley Oaks Park Land Exchange

ENVIRONMENTAL ASSESSMENT

February 2018

National Park Service
US Department of the Interior

George Washington Memorial Parkway
Virginia

LANGLEY FORK PARK AND LANGLEY OAKS PARK LAND EXCHANGE

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FEBRUARY 2018

PROJECT SUMMARY

Introduction

The National Park Service, specifically the George Washington Memorial Parkway, and Fairfax County Park Authority propose to exchange two park properties. The National Park Service would convey approximately 52 acres of National Park Service property to the Fairfax County Park Authority to facilitate the improvement and development of recreational facilities within Langley Fork Park. In return, the Fairfax County Park Authority would transfer Langley Oaks Park, an approximately 102-acre undeveloped park owned and administered by the Fairfax County Park Authority, to the National Park Service. The proposed action is the subject of this environmental assessment. This environmental assessment demonstrates compliance with the National Environmental Policy Act of 1969, as amended.

Purpose of and Need for the Action

The purpose of the action is an exchange of land between the National Park Service and Fairfax County Park Authority to facilitate site improvement and expansion of the current recreational facilities at Langley Fork Park.

Currently, the Langley Fork Park is owned by the federal government and administered by the National Park Service. The National Park Service permits Fairfax County Park Authority to manage and maintain the park's facilities. Fairfax County Park Authority maintains and schedules the use of the athletic facilities at Langley Fork Park. The demand for athletic fields in this portion of Fairfax County exceeds the capacity of area facilities, creating a demand for expanded programming. Current facilities, constructed in 1981, are degrading and need to be updated. The exchange is needed because the National Park Service no longer wishes to administer athletic fields through permits because it is not consistent with the purpose or significance of the George Washington Memorial Parkway, and this park has become a valuable recreational resource to the local community.

Fairfax County Park Authority has proposed a land exchange whereby the Fairfax County Park Authority would make improvements at Langley Fork Park to help meet public need for athletic fields, and that would remove the George Washington Memorial Parkway from administering athletic fields. Under current Fairfax County Park Authority ownership, there are no plans to develop Langley Oaks Park, and it is Fairfax County Park Authority policy to maintain such parks as open space. Langley Oaks Park is currently protected as open space by Fairfax County Park Authority, but transfer of this park to the George Washington Memorial Parkway would enhance that protection to be consistent with the mission of NPS and the George Washington Memorial Parkway.

The National Park Service would proceed with the exchange pursuant to the Act of July 15, 1968, Section 5 of PL 90-401, 82 Stat. 356 (initially codified as amended at 16 USC 460l-22(b)) and recodified as amended at 54 USC 102901) wherein the Secretary of the Interior is authorized to acquire non-federal property in exchange for federally owned property administered by the US Department of the Interior.

Overview of the Alternatives

The National Park Service explored and objectively evaluated a range of alternatives. Three action alternatives and the No-Action Alternative were carried forward for further analysis as follows:

- Alternative 1: No Action

- Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by Fairfax County Park Authority
- Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by Fairfax County Park Authority
- Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by Fairfax County Park Authority (Preferred)

Summary of Impacts

Impacts of the proposed alternatives were assessed in accordance with the National Environmental Policy Act, National Park Service Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making*, and the National Historic Preservation Act. Several impact topics were dismissed from further analysis because the proposed action would result in no impacts or negligible to minor and/or short-term impacts to those resources. There could be moderate long-term adverse impacts from clearing of vegetation by Fairfax County Park Authority under Alternative 3, and adverse effects to archeological resources and the George Washington Memorial Parkway Historic District that would be mitigated through the use of protections, deed restrictions, and a memorandum of agreement with the Virginia State Historic Preservation Office. No major impacts are anticipated as a result of this project.

How to Comment

Agencies and the public are encouraged to review and comment on the contents of this environmental assessment during a 30-day public review and comment period. We invite you to comment on this document and you may do so by any one of the following methods. The preferred method of providing comments is on the park's Planning, Environment, and Public Comment website: http://parkplanning.nps.gov/GWMP. You may also submit written comments to the following address:

Superintendent
George Washington Memorial Parkway
Attn: Langley Fork Park/Langley Oaks Park Land Transfer
Turkey Run Headquarters
700 George Washington Memorial Parkway
McLean, Virginia 22101

Only written comments will be accepted. Please submit your comments within 30 days of the posting of the notice of availability on the Planning, Environment, and Public Comment website. If you wish to remain anonymous, please clearly state that within your correspondence. However, before including your address, phone number, e-mail address, or other personal identifying information in your comment, please be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can request that your personal identifying information be withheld from public review, it cannot be guaranteed.

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Acronyms

CEQ	Council on Environmental Quality
dbh	diameter at breast height
EA	environmental assessment
FCPA	Fairfax County Park Authority
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRHP	National Register of Historic Places
PEPC	Planning, Environment, and Public Comment
SHPO	State Historic Preservation Office
USFWS	US Fish and Wildlife Service

CHAPTER 1: PURPOSE OF AND NEED FOR ACTION

The National Park Service (NPS) and Fairfax County Park Authority (FCPA) propose to exchange two park properties. The NPS would convey approximately 52 acres of NPS property to FCPA to facilitate the improvement and development of recreational facilities within Langley Fork Park. In return, FCPA would transfer Langley Oaks Park, an approximately 102-acre undeveloped park owned and administered by FCPA, to NPS (figure 1).

Langley Fork Park is located at 6250 Georgetown Pike in McLean, Virginia. The property is currently part of the George Washington Memorial Parkway national park system unit, and is operated as a recreational park by FCPA. Approximately one third of the park is developed with athletic fields and associated improvements and the remaining area is forested. In 1981, NPS issued a 25-year special use permit allowing FCPA to maintain and operate the park. The permit was renewed in 2006 for a two-year interim period that expired July 8, 2008. Since that time, FCPA has continued operations on the site based on short-term, special use permit agreements that are renewed on a yearly basis. FCPA and NPS have sought options for site management that would more effectively contribute to the goals and objectives of each group. NPS objectives include the desire to protect resources in the Potomac Gorge and to remove the NPS from administration of recreational ball fields within George Washington Memorial Parkway while FCPA aims to meet the increased local need for recreational sports fields and improve management of the fields at Langley Fork Park more generally. One such site management option includes an exchange of land between Langley Fork Park and Langley Oaks Park.

An environmental assessment (EA) analyzes a proposed action and alternatives and the potential impacts on the environment. This EA examines the impacts of a potential land exchange as well as potential subsequent development of Langley Fork Park by FCPA, as established by the FCPA master planning process. The park master plan determines the best use for the property based on natural and cultural resources, recreational need, and community input and preference. Additionally, this EA examines impacts on Langley Oaks Park, which is proposed to be transferred from FCPA to NPS. No development is currently proposed for Langley Oaks Park, and NPS would initially manage the exchanged parcel in its natural condition. Under current FCPA ownership, there are no plans to develop Langley Oaks Park, and it is FCPA policy to maintain such parks as open space. Under NPS administration the park would be managed consistent with the George Washington Memorial Parkway's purpose and intent. Any future development at Langley Oaks Park would comport with the mission of NPS and the George Washington Memorial Parkway.

This EA has been prepared in accordance with National Environmental Policy Act (NEPA) and its implementing regulations at Title 40 Code of Federal Regulations (CFR) 1500–1508 and NPS Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* and Handbook (NPS 2011, 2001). Compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA) has been conducted concurrently with the NEPA process, and a separate Assessment of Effect has been prepared.

FIGURE 1. PROJECT AREA, LANGLEY FORK PARK AND LANGLEY OAKS PARK

Four alternatives were considered: the No-Action Alternative (Alternative 1), a land exchange with minimal development at Langley Fork Park by FCPA (Alternative 2), a land exchange with more extensive development at Langley Fork Park by FCPA (Alternative 3), and a land exchange with mid-level development at Langley Fork Park by FCPA (Alternative 4).

PURPOSE OF THE PROJECT

The purpose of the action is an exchange of land between NPS and FCPA to facilitate site improvement and expansion of the current recreational facilities at Langley Fork Park.

NEED FOR ACTION

Currently, the Langley Fork Park property is owned by the federal government and administered by the NPS. The NPS permits FCPA to manage and maintain the park's facilities. FCPA maintains and schedules the use of the athletic facilities at Langley Fork Park. The demand for athletic fields in this portion of Fairfax County exceeds the capacity of area facilities, creating a demand for expanded programming. Current facilities, constructed in 1981, are degrading and need to be updated. The exchange is needed because NPS no longer wishes to administer the athletic fields through permits because it is not consistent with the purpose or significance of the George Washington Memorial Parkway and Langley Fork Park has become a valuable recreational resource to the local community.

FCPA has proposed a land exchange whereby FCPA would make improvements at Langley Fork Park to help meet public need for athletic fields, and that would remove the George Washington Memorial Parkway from administering athletic fields. Langley Oaks Park is currently protected as open space by FCPA, but transfer of this park to the George Washington Memorial Parkway would enhance that protection to be consistent with the mission of NPS and the George Washington Memorial Parkway. NPS would proceed with the exchange pursuant to the Act of July 15, 1968, Section 5 of PL 90-401, 82 Stat. 356 (initially codified as amended at 16 USC 460l-22(b)) and recodified as amended at 54 USC 102901), wherein the Secretary of the Interior is authorized to acquire non-federal property in exchange for federally owned property administered by the US Department of the Interior.

PROJECT SITE LOCATIONS

Langley Fork Park is located at 6250 Georgetown Pike in McLean, Virginia. The property is currently administered by NPS as part of the George Washington Memorial Parkway and is operated as a recreational park by FCPA under a special use permit. Approximately one-third of the park is developed with athletic fields and the remaining area is forested.

Langley Oaks Park covers approximately 102 acres and is located about 0.5 miles northwest of Langley Fork Park in McLean, Virginia in Fairfax County. Langley Oaks Park is bounded to the southeast, south, and west by suburban private residences; and to the north and northeast by a transmission line right-of-way and the George Washington Memorial Parkway.

PURPOSE AND SIGNIFICANCE OF GEORGE WASHINGTON MEMORIAL PARKWAY

The George Washington Memorial Parkway was established by Congress on May 29, 1930, through the Capper-Cramton Act of May 29, 1930 (46 Stat. 482) PL 71-284, and occupies more than 7,300 acres of land in Virginia, Maryland, and the District of Columbia. The parkway runs along the Potomac River, protecting the landscape and natural shoreline of the river while offering magnificent scenic vistas of

Washington, DC and the Great Falls of the Potomac. Along its route, the parkway also connects several important historic sites, memorials, and scenic and recreation areas in the Washington, DC, metropolitan area (NPS 2013).

The George Washington Memorial Parkway was established as a "scenic roadway honoring the nation's first president, that protects and preserves cultural and natural resources along the Potomac River between Great Falls and Mount Vernon, and is part of a comprehensive system of parks, parkways, and recreational areas surrounding the nation's capital" (NPS 2013).

The parkway is significant for several reasons that are pertinent to the EA, including the following:

- the parkway was the first comprehensively designed modern motorway built by the federal government;
- the parkway was based on the idea of a landscaped, park-like roadway corridor that protected riverfront lands; and
- the 15-mile long Potomac Gorge, through which the parkway runs, is one of the most biologically diverse natural areas in the national park system (NPS 2013).

Langley Fork Park

Langley Fork Park and the adjacent Claude Moore Colonial Farm (formerly Turkey Run Farm) are historically part of the 230-acre Langley tract. The tract was transferred on August 12, 1971, from the General Services Administration to the George Washington Memorial Parkway when the Federal Highway Administration determined the tract was excess property. A 25-year special use permit of approximately 52 acres for Langley Fork Park was issued to FCPA for the first time in 1981 (Macintosh 1996). While many of the improvements planned for Turkey Run Park and the Langley tract (such as a campground, etc.) did not occur, the park furthers the George Washington Memorial Parkway for the preservation of the Potomac Gorge. Langley Fork Park is adjacent to Georgetown Pike. Claude Moore Colonial Farm, located on NPS lands and an administrative unit of George Washington Memorial Parkway, is now managed by a private organization in partnership with the NPS. There is federally owned land to the east of the park and there is residential development west of the park. Clemyjontri Park, another FCPA park, is across Georgetown Pike.

The park currently contains two multi-purpose athletic fields, two baseball diamonds, two basketball courts, a trail with fitness stations, and parking. The recreational fields are mostly in areas that were historically farm fields, and were installed in the 1980s.

Langley Oaks Park

Langley Oaks Park was conveyed to FCPA in three parcels in December 1976 and June 1977 as dedicated open space for the Langley Oaks subdivision. It is an undeveloped, forested tract with steep topography adjacent to Turkey Run Park that is administered by the George Washington Memorial Parkway. Dead Run trail passes through the northernmost portion of the park, maintaining the connection of Langley Oaks Park to the larger George Washington Memorial Parkway, and there are numerous social trails in Langley Oaks Park, as well. If exchanged, Langley Oaks Park would be significant in its contributions to the protections of the Potomac Gorge, as it would allow the NPS to continue to preserve the area consistent with the purpose of the George Washington Memorial Parkway.

SCOPING PROCESS AND PUBLIC PARTICIPATION

Internal Scoping

Internal scoping included meetings and studies involving NPS and FCPA over the course of two years. Phase I and II archeological investigations of Langley Fork Park were performed as well as an assessment of nonnative vegetation. A rare plant survey was also conducted, looking for the one-sided wintergreen (*Orthilia secunda*), a state-listed rare plant. A natural resources study was performed at both Langley Fork Park and Langley Oaks Park (FCPA 2013a). The study included a forest stand delineation and a natural community assessment. The process also includes the appraisal of Langley Fork Park and Langley Oaks Park to determine the fair market value of each property.

Public Scoping

Public scoping was initiated on December 5, 2013, and continued through February 3, 2014. A public scoping meeting was held at Franklin Sherman Elementary School in McLean, Virginia, on January 14, 2014. Twenty-four people attended, including neighbors of both parks. Additionally, residents interested in the recreational use of Langley Fork Park were present, including representatives of local lacrosse, soccer, and other sports organizations that currently use the park, as well as proponents of establishment of a dog park at Langley Fork Park. The park received 17 comments during the public scoping comment period. These comments spoke mostly in favor of the exchange as it would allow for improvements of the recreational facilities at the park, and because Langley Oaks Park would be an appropriate addition to the George Washington Memorial Parkway. Several commenters raised concerns about the exchange and the potential for traffic congestion particularly on Colonial Farm Road and on Georgetown Pike, increased light and noise from the improved park, and the need to maintain a forested buffer between any recreational facilities at Langley Fork Park and Claude Moore Colonial Farm immediately north of the park.

ISSUES AND IMPACT TOPICS

The following impact topics are discussed in "Chapter 3: Affected Environment" and are analyzed in "Chapter 4: Environmental Consequences" of this EA. These topics identify resources that could be beneficially or adversely affected by the actions proposed in each alternative. They were developed to ensure that the alternatives are evaluated and compared based on the most relevant resource topics. These impact topics were either identified during scoping; reflect requirements found in federal laws, regulations, executive orders, and NPS *Management Policies 2006*; or come from NPS staff knowledge of limited or easily impacted resources.

Impact Topics Analyzed in this Environmental Assessment

The land exchange, as an administrative action, would not result in direct impacts on the impact topics described in this section. Indirect impacts resulting from the subsequent development of Langley Fork Park by FCPA are summarized in this section. Because of the potential for impacts, the following resources are addressed as impact topics in this EA:

Soils. Development at Langley Fork Park by FCPA under any of the action alternatives would result in impacts on soils through clearing and additions of new facilities or through the reconfiguration of existing facilities.

Vegetation. Development at Langley Fork Park by FCPA under any of the action alternatives would result in impacts on vegetation through clearing and additions of new facilities, through the reconfiguration of existing facilities or the replacement of turf grass fields with artificial surfaces.

Wildlife and Wildlife Habitat. Development at Langley Fork Park by FCPA under any of the action alternatives would result in impacts to wildlife and wildlife habitat, mostly as a result of vegetation clearing, and increased noise and light from the operation of new and reconfigured athletic fields.

Cultural Resources. The NHPA, as amended (54 USC 300101 et seq.), NEPA, NPS Organic Act, NPS *Management Policies 2006* (NPS 2006), Director's Order 12: *Conservation Planning, Environmental Impact Analysis, and Decision Making* (NPS 2011), and Director's Order 28: *Cultural Resource Management* (NPS 1998) require the consideration of impacts to any cultural resources that might be affected, and the NHPA, in particular, protects cultural resources either listed in or eligible to be listed in the National Register of Historic Places (NRHP). As defined by NPS, cultural resources are aspects of cultural heritage that are valued by or significantly representative of a culture, or aspects of cultural heritage that contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are places or objects that can be touched, and are categorized as buildings, sites, structures, districts, objects, as well as cultural landscapes. Cultural practices can include stories, songs, and celebrations, and intangible resources may include works of art, archival documents, and ethnographic resources.

Efforts to identify cultural resources included a review of information provided by NPS, supplemented by interviews with NPS staff, and other published and unpublished sources, including the listings of the NRHP. The project area contains two categories of cultural resources: historic structures and districts (structures, buildings, districts, sites, objects, etc.) and archeological resources (historic and prehistoric sites), that have the potential to be impacted by the development of Langley Fork Park by FCPA.

Visitor Use and Experience. Visitor use and experience at Turkey Run Park has the potential to improve through the addition of Langley Oaks Park, especially for urban visitors of the Washington, DC, region looking for local outdoor experiences that are easily accessible. Visitor use and experience would be enhanced by increasing the amount of high-quality forest land officially available to visitors to the George Washington Memorial Parkway as well as by the potential for improvements (e.g. trail development) that could be implemented, consistent with the purpose and significance of the George Washington Memorial Parkway. The features of visitor use and experience at Langley Fork Park would improve for sports organizations that currently use the park as a result of the exchange and subsequent development of the park by FCPA under all action alternatives.

Neighboring Properties. Development at Langley Fork Park by FCPA has the potential to be noticeable from neighboring properties, including changes in the intensity of use for Langley Fork Park, or changes in the amenities, such as the addition of lighting fixtures around the fields. There is less potential for impacts to neighboring properties at Langley Oaks Park, because access to that property could be from Turkey Run Park, and increase in use would likely not be noticeable.

Traffic and Transportation. Development actions at Langley Fork Park after the exchange would potentially affect traffic volume on surrounding streets, such as Georgetown Pike and Dolley Madison Boulevard, particularly with two federal complexes adjacent to the park. However, it is not possible to fully assess the traffic impacts until a development program is further defined. FCPA would be required to consult with Virginia Department of Transportation and the Fairfax County Department of Transportation prior to any changes at Langley Fork Park, and would provide mitigation for any impacts that would occur as a condition of development.

Issues Considered but Dismissed from Further Consideration

Geology and Topography. There would be minor grading as a result of development of Langley Fork Park, however, the general topography and natural geologic character of Langley Fork Park would not be changed. No impacts to the topography and natural geologic character of Langley Oaks Park would occur from the land exchange. Therefore, this impact topic was not analyzed further.

Water Resources. As a standard of practice, FCPA would seek to retain a riparian buffer adjacent to the intermittent stream near the existing multiple use field on the east side of the park. If any design changes were made in this area, the specific width, and vegetation composition of the riparian buffer would be determined during the design process. FCPA is required to manage both the quantity and quality of stormwater for any future development, and stormwater management requirements preclude any increases in runoff over predevelopment conditions. Therefore, impacts at Langley Fork Park would be minimal. No impacts to the water resources of Langley Oaks Park would occur from the land exchange, and with no planned development at Langley Oaks Park, there would be no indirect effects. Therefore, this impact topic was not analyzed further.

Floodplains. Executive Order 11988 "Floodplain Management" requires an examination of impacts to floodplains and the potential risk involved in placing facilities within floodplains. Neither Langley Fork Park nor Langley Oaks Park is within a designated floodplain; therefore, floodplains were not addressed as an impact topic in this EA.

Wetlands. Executive Order 11990 "Protection of Wetlands" directs federal agencies "…to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative…" Although there are wetlands within Langley Fork Park, it is not anticipated they would be disturbed by future development under any of the action alternatives. Wetlands in Langley Oaks Park would not be impacted from the land transfer because the land exchange is an administrative action, and no development is being considered in Langley Oaks at this time. Therefore, this impact topic was not analyzed further.

Threatened, Endangered, and Other Species of Special Concern. The Endangered Species Act (1973), as amended, requires an analysis of effects to all federally listed threatened or endangered species, or those species proposed for listing. NPS policy also requires examination of the impacts to these species, as well as state-listed threatened, endangered, candidate, rare, declining, and sensitive species. A search of the US Fish and Wildlife Service (USFWS) database on October 20, 2016, shows the northern long-eared bat (*Myotis septentrionalis*), which was listed as federally threatened in May 2015, may occur in the area.

The northern long-eared bat is one of the species of bats most impacted by the disease known as white-nose syndrome. The northern long-eared bat has been found previously in the George Washington Memorial Parkway; in 2006 it was acoustically detected near Carriage Road in Great Falls Park, and in 2015 it was detected on the west side of Dyke Marsh (Steury pers. comm. 2017). A 2017 bat survey revealed the presence of the northern long-eared bat at one site within the George Washington Memorial Parkway and the presence of the Indiana bat (*Myotis sodalis*), which was listed as federally endangered in 1973, at three sites within the George Washington Memorial Parkway. The proposed action, a real property exchange, would not affect either bat species directly. Future development actions by FCPA have the potential to affect bats and bat habitat at Langley Fork Park, but it is not possible to quantify those effects at this time. The FCPA would be required to consult with USFWS in accordance with Section 10 of the Endangered Species Act and obtain an incidental take permit and complete a habitat conservation plan prior to any clearing or land disturbing activities. A habitat conservation plan is a legally binding agreement between the Secretary of the Interior and the permit holder to ensure that the

effects of the authorized incidental take are adequately minimized and mitigated. Through this process, FCPA would be required to survey for the presence of the northern long-eared bat and Indiana bat, suitability of the habitat, and to limit tree clearing to times when the bats are in their hibernacula, and are not roosting in the trees or snags. In addition, a 150-meter no-cutting buffer surrounding any known roost trees would be required.

A rare plant survey was conducted at Langley Fork Park for the state-listed one-sided wintergreen (*Orthilia secunda*). According to the Virginia Department of Conservation and Recreation Natural Heritage Program database, the historical record from the Washington, DC, herbarium specimens collected by W.R. Maxon in 1902 ([Collection #540] and F.W. Layton in 1915 [no collection number]) for the one-sided wintergreen noted that the species was last observed at the site of Langley Fork Park in 1915 (Hypes pers. comm. 2012). The park was surveyed twice over the dates of June 11–12, 2012, and August 6–7, 2012. These dates coincide with the potential bloom season of the one-sided wintergreen, generally occurring from June through August. Despite some potentially suitable habitat, no specimens of one-sided wintergreen were located and it is highly unlikely that it occurs at the site at this time.

Therefore, because the rare plant survey did not find the state-list species and the presence of the long-eared bat would be confirmed prior to any future development action and consultation to avoid impacts on the bat would take place at that time, this impact topic was not analyzed further.

Cultural Resources: Cultural Landscapes. According to Director's Order 28, *Cultural Resources Management Guideline*, a cultural landscape is

> …a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions.

The entirety of the George Washington Memorial Parkway and the land that encompasses the larger parkway landscape is listed in the NRHP. Although it contains similar contributing features such as vegetation and topography as the North Section cultural landscape, Langley Fork Park is not one of the 19 currently identified major cultural landscapes of the park. Therefore, this impact topic was not analyzed further.

Cultural Resources: Ethnographic Resources. Ethnographic resources are defined by NPS as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 1998). In this analysis, the NPS term "ethnographic resource" is equivalent to the term "traditional cultural property," which is more widely used in the cultural resource management industry. Guidance for the identification of ethnographic resources is found in National Register Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties* (Parker and King 1998). The key considerations in identifying traditional cultural properties are their association with cultural practices or beliefs of a living community that are (1) rooted in the community's history, and (2) important in maintaining the continuing cultural identity of the community (Parker and King 1998). Based on current information at the park and the best professional opinion of park staff, there are no known ethnographic resources within the area of potential effect that would be affected by future development. Therefore, ethnographic resources were not analyzed further.

Air Quality. The 1963 Clean Air Act, as amended (42 USC 7401 et seq.), requires federal land managers to follow policies that protect park air quality. The act also assigns the federal land manager (park

superintendent) an affirmative responsibility to protect park air quality and related values — including visibility, plants, animals, soil, water quality, cultural and historic resources and objects, and visitors — from adverse air pollution impacts. Section 118 of the Clean Air Act requires that the park meet all federal, state, and local air pollution standards.

The proposed project is in the Metropolitan Washington Air Quality Control Region, an area the US Environmental Protection Agency (EPA) has designated as in attainment for the following National Ambient Air Quality Standards criteria pollutants: particulate matter less than 10 micrometers, sulfur dioxide, nitrogen dioxide, and lead. The EPA has designated Washington, DC, as a marginal non-attainment area for the criteria pollutant ozone and in moderate non-attainment area for particulate matter less than 2.5 micrometers.

During any proposed development of the Langley Fork Park, some emissions would result from the operation of construction vehicles. No additional traffic-related emissions in the area-wide transportation network during the construction phase would be expected. Once development is complete, while additional vehicles may visit the site, those vehicles are already operating within the airshed. Therefore, there would be no additional impacts to air quality regionally. Based on projects of similar scale and nature, it is expected that sources of emissions during construction and operation would not change regional air quality and would fall well below the minimum pollutant levels for a marginal ozone and moderate particulate matter less than 2.5 micrometers non-attainment area (subject to 40 CFR 93, Determining Conformity of Federal Actions to State or Federal Implementation Plans) and would result in negligible impacts to air quality under the action alternative during the construction phase. Because emissions would remain below the minimum pollutant levels during both the construction and operation phases of this project, this resource was as not analyzed further.

Socioeconomics. NEPA requires an analysis of impacts on the human environment, which includes economic, social, and demographic elements in the affected area. Construction activities associated with the future development of Langley Fork Park may bring a short-term need for additional personnel, but this addition would be minimal and would not affect the surrounding community's overall population, income, or employment base. Additionally, the proposed action would neither change local and regional land use nor appreciably impact local businesses or other agencies. Implementation of an action alternative could provide a temporary and long-term beneficial impact to the economies of the nearby area (e.g., minimal increases in employment opportunities for the construction workforce and revenues for local businesses generated from construction activities and workers, additional opportunities for recreation at Langley Fork Park). Impacts would be beneficial but not noticeable locally or regionally. As a result, socioeconomics was not analyzed further.

Environmental Justice. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations" directs agencies to address environmental and human health conditions in minority and low-income communities to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations. Local residents may include low-income populations; however, these populations would not be particularly or disproportionately affected by any of the proposed site development and as a result, this resource was as not analyzed further.

Park Management and Operations. The exchange would have little effect on park management and operations, other than to remove the need to reprocess the special use permit for FCPA to be able to continue to manage Langley Fork Park. Management activities at Langley Oaks Park would be minimal because no development is currently proposed and it would remain in its current natural and undeveloped condition. Minimal activities, such as trail maintenance and placement of additional signage would take place. Therefore, this impact topic was not analyzed further.

Climate Change. Climate change refers to any significant changes in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality and storm frequency) lasting for an extended period (decades or longer). Recent reports by the US Climate Change Science Program, the National Academy of Sciences, and the United Nations Intergovernmental Panel on Climate Change provide evidence that climate change is occurring as a result of rising greenhouse gas emissions and could accelerate in the coming decades.

Although climate change is a global phenomenon, it manifests differently depending on regional and local factors. General changes expected to occur in the future as a result of climate change include hotter, drier summers; warmer winters, warmer ocean water; higher ocean levels; more severe wildfires; degraded air quality; more heavy downpours and flooding; and increased drought. Climate change is a far-reaching, long-term issue that could affect the park and its resources, visitors, and management. Although some effects of climate change are considered known or likely to occur, many potential impacts are unknown. Much depends on the rate at which the temperature would continue to rise and whether global emissions of greenhouse gases can be reduced or mitigated. Climate change science is a rapidly advancing field and new information is being collected and released continually.

Construction activities associated with the development of Langley Fork Park would contribute to increased greenhouse gas emissions, but such emissions would be short term, ending with the cessation of construction, and it is not possible to meaningfully link the greenhouse gas emissions of such individual project actions to quantitative effects on regional or global climatic patterns. Any effects on climate change would not be discernible at a regional scale. Therefore, this impact topic was not analyzed further.

CHAPTER 2: ALTERNATIVES

The National Environmental Policy Act (NEPA) requires federal agencies to explore a range of reasonable alternatives aimed at addressing the purpose of and need for the proposed action. The alternatives under consideration must include the "no-action" alternative as prescribed by Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR 1502.14).

In accordance with NEPA, the alternatives analyzed in this document are based on preliminary studies and the result of internal and public scoping. The action alternatives described in this chapter meet the overall purpose of and need for proposed action. Because the range of alternatives was considered to be reasonable, no additional alternatives were considered but dismissed from analysis in this Environmental Assessment (EA). The National Park Service (NPS) explored and objectively evaluated four alternatives in this environmental assessment (EA), including the following:

- Alternative 1: No Action
- Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by Fairfax County Park Authority (FCPA)
- Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA
- Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

ALTERNATIVE 1: NO ACTION

Under the No-Action Alternative, the federal government would retain ownership of, and NPS would continue to administer, Langley Fork Park; the federal government would not exchange it with FCPA for Langley Oaks Park. FCPA would continue to manage Langley Fork Park for recreational sports activities under a special use permit, in keeping with current NPS permitting policies. The existing areas of development, totaling 14.5 acres with 2.0 acres of impervious surfaces, would remain as is and there would not be improvements made to either park. Langley Oaks Park is currently unimproved, although Dead Run Trail passes through the northernmost portion of the park and there are informal social trails that visitors have developed as they have used the park over time.

ELEMENTS COMMON TO THE ACTION ALTERNATIVES

Under all action alternatives, NPS and FCPA would exchange the area known as Langley Fork Park (approximately 52 acres) that is part of the George Washington Memorial Parkway, with Langley Oaks Park which currently exists as an undeveloped parcel of approximately 102 acres. Figure 2 is a map of the properties proposed for exchange.

The terms of the exchange would be finalized upon completion of the real property appraisal process. The appraisal process determines the fair market value for both properties to establish a comparison of their values. Fair market value is defined in the Uniform Standards for Federal Land Acquisitions (Interagency Land Acquisition Conference 2016) as "the amount in cash, or on terms reasonably equivalent to cash, for which in all probability the property would have sold on the effective date of value, after a reasonable exposure time on the open competitive market, from a willing and reasonably knowledgeable seller to a willing and reasonably knowledgeable buyer, with neither compelled to buy or sell, giving due consideration to all available economic uses of the property."

FIGURE 2. PROPERTIES PROPOSED FOR EXCHANGE

A preliminary appraisal was performed in 2013, in accordance with standards established by the current edition of the Uniform Standards of Professional Appraisal Standards, and criteria for appraisals established by the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC 4601 et seq.) (Uniform Act), and its implementing regulations (49 CFR 24). A reappraisal would be performed prior to the exchange to account for market changes, modifications to the estates to be exchanged, and revisions in legal descriptions and acreages resulting from boundary surveys completed in 2015.

The law under which NPS would accomplish the exchange, 54 USC 102901(b), requires that the lands or interests in land to be exchanged by the parties must be of approximately equal appraised fair market value. By agreement of the parties, values may be equalized by subtracting land from the parcels proposed for exchange; by an equalization payment from one party to the other; or, if the value of the land or interests in land conveyed by the FCPA to the United States is greater than the value of the land or interests in land conveyed by the United States to the FCPA, by the FCPA donating the difference in values to the United States. The real estate transfer would likely result in some form of development on the Langley Fork Park parcel; therefore, different development scenarios have been analyzed for each action alternative, and the impacts from these scenarios would be considered indirect. Any improvements or facilities development at Langley Fork Park would be subject to the FCPA master planning process, and the configuration would be consistent with the outcome of that process

All of the action alternatives include a minimum 250-foot wide forested buffer that would be retained along the northern property boundary of Langley Fork Park with the parkway at Claude Moore Colonial Farm and any new facilities or athletic fields at Langley Fork Park. Under Alternatives 2 and 4, the 250-foot forested buffer would exclude the current northwest athletic field. Under Alternative 3, this buffer would extend across the entirety of the northern and western site boundaries, including approximately 6 acres of land that would be replanted in the northwest corner of the park. Additionally, NPS would place restrictive covenants or other deed restrictions that would prevent the removal of forest stands, a contributing element to the George Washington Memorial Parkway Historic District, outside of the development area for the selected alternative at Langley Forks Park. NPS would also place restrictive covenants or other deed restrictions to protect areas with significant and potentially significant archeological resources to prevent future impacts once Langley Fork Park leaves federal ownership. The details of the restrictions would be determined through consultation with the Virginia State Historic Preservation Office (SHPO) as part of Section 106 consultation, prior to the signing of a decision document for this EA, and could include assessment of unevaluated resources, data recovery, or permanent protection.

Lastly, the proposed management of Langley Oaks Park, received by NPS in exchange for Langley Fork Park, would be the same under all action alternatives. NPS would initially manage Langley Oaks Park in a natural and undeveloped condition, in order to enhance protection of the Potomac Gorge resource areas. Minimal activities, such as trail construction and maintenance and additional signage, could take place, consistent with park purposes and uses, although no improvements at Langley Oaks Park are planned. Visitor access to the property could be achieved on the north side of the property, adjacent to existing land in the park, while the surrounding neighborhood would continue to access the park via the existing social trails.

Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

As discussed in “Elements Common to the Action Alternatives,” NPS and FCPA would exchange the area known as Langley Fork Park, that is part of the George Washington Memorial Parkway, with Langley Oaks Park, in return. NPS would manage Langley Oaks Park in its natural condition, ensuring

permanent protection of the Potomac Gorge watershed and site resources with no initial plans for change or development.

Under Alternative 2, FCPA would improve and redevelop facilities in Langley Fork Park within the general footprint of the existing facilities (figure 3). The developed area would increase from the current 14.5 acres to 15.4 acres. Athletic field sizes and types might be varied; improvements such as field lighting outside of the county's Historic Overlay District (but within the national register-listed George Washington Memorial Parkway Historic District), synthetic turf on athletic fields; and new features such as a pavilion might be added. These improvements would occur largely within existing open space; however, there would be up to approximately 1 acre of additional tree loss. Impervious surfaces would increase to approximately 2.3 acres at the site, from 2.0 acres, as a result of a minimal extension of the existing parking area to address existing parking shortages.

Outside the development areas shown in figure 3, FCPA could develop and maintain trails and install signage. No boundary fences between Langley Fork Park and NPS property would be installed.

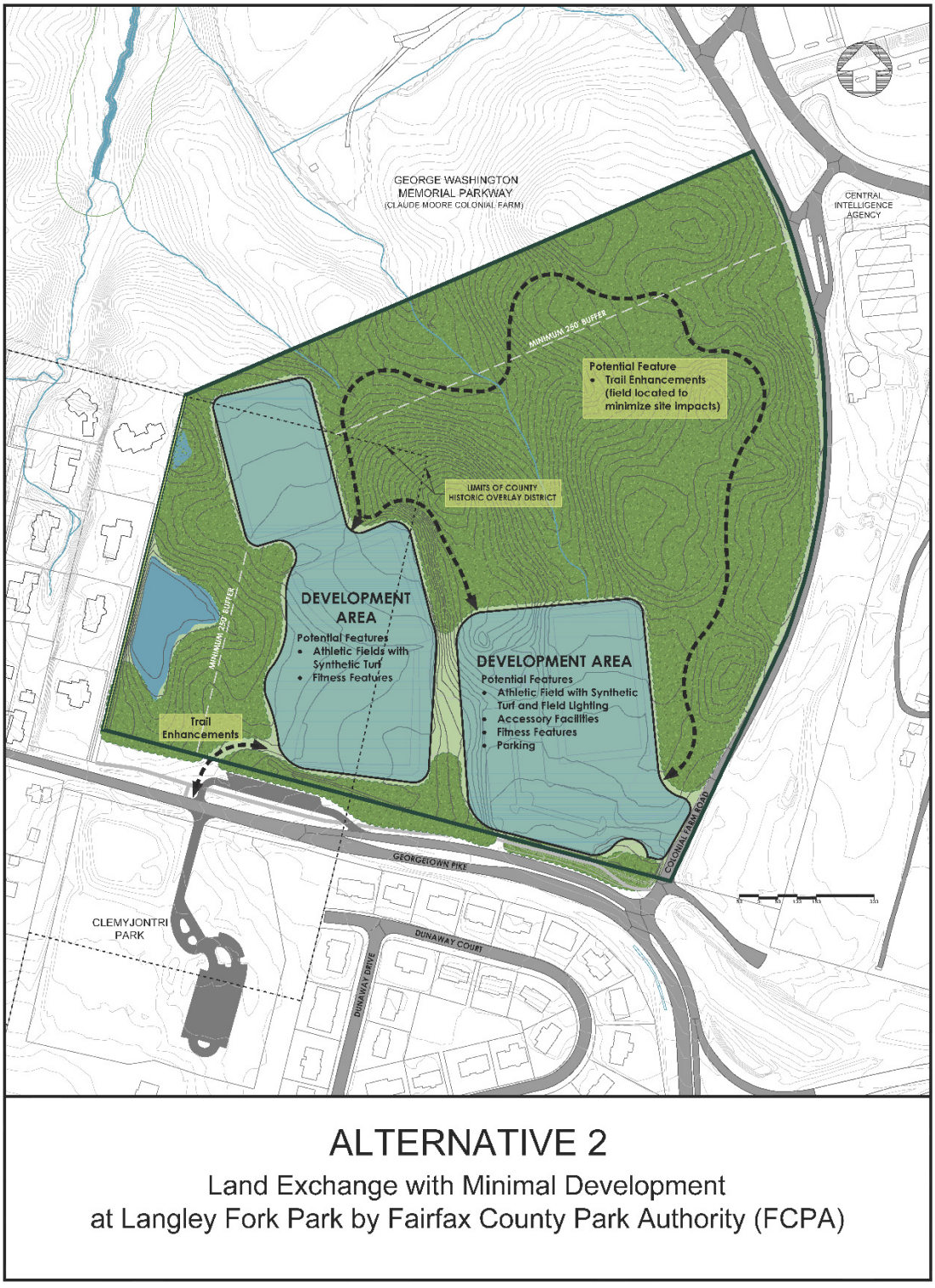

FIGURE 3. DEVELOPMENT AREAS IN LANGLEY FORK PARK UNDER ALTERNATIVE 2

Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

As discussed in "Elements Common to the Action Alternatives," NPS and FCPA would exchange the area known as Langley Fork Park, that is part of the George Washington Memorial Parkway, with Langley Oaks Park. NPS would manage Langley Oaks Park in its natural condition, ensuring permanent protection of the Potomac Gorge watershed and site resources with no initial plans for change or development.

Under Alternative 3, FCPA would more fully develop Langley Fork Park as shown in figure 4. The developed area would increase from the current 14.5 acres to 26.8 acres not all of which is forested. As a result, up to 11.9 acres of forested area could be cleared to make way for development. Possible improvements include an expansion in the number of athletic fields to serve a variety of sports, increased signage and trail infrastructure, improvement of fields with synthetic turf and the addition of field lighting outside of Fairfax County's Historic Overlay District, trail enhancements, a pavilion, an off-leash dog exercise area, and expanded parking. Impervious surfaces would increase to 3.2 acres from the existing 2.0 acres as a result of additional parking areas. In addition to the 250-foot wide buffer along the northern park boundary, a 250-foot wide buffer would be added along the western side of the park, and at the time clearing occurs in the northwestern development area, the existing recreational field in the northwestern corner of the parcel, approximately 6 acres of land, would be reforested, closing the gap in the forested buffer. The net tree loss at Langley Fork Park under Alternative 3 would total 5.9 acres.

As discussed in "Elements Common to the Action Alternatives," NPS would initially manage Langley Oaks Park in a natural condition, ensuring permanent protection of the Potomac Gorge watershed and site resources with no current plans for change or development, although the park could make improvements such as trails that are consistent with park purpose on the Langley Oaks parcel in the future. Such improvements would be subject to NEPA compliance.

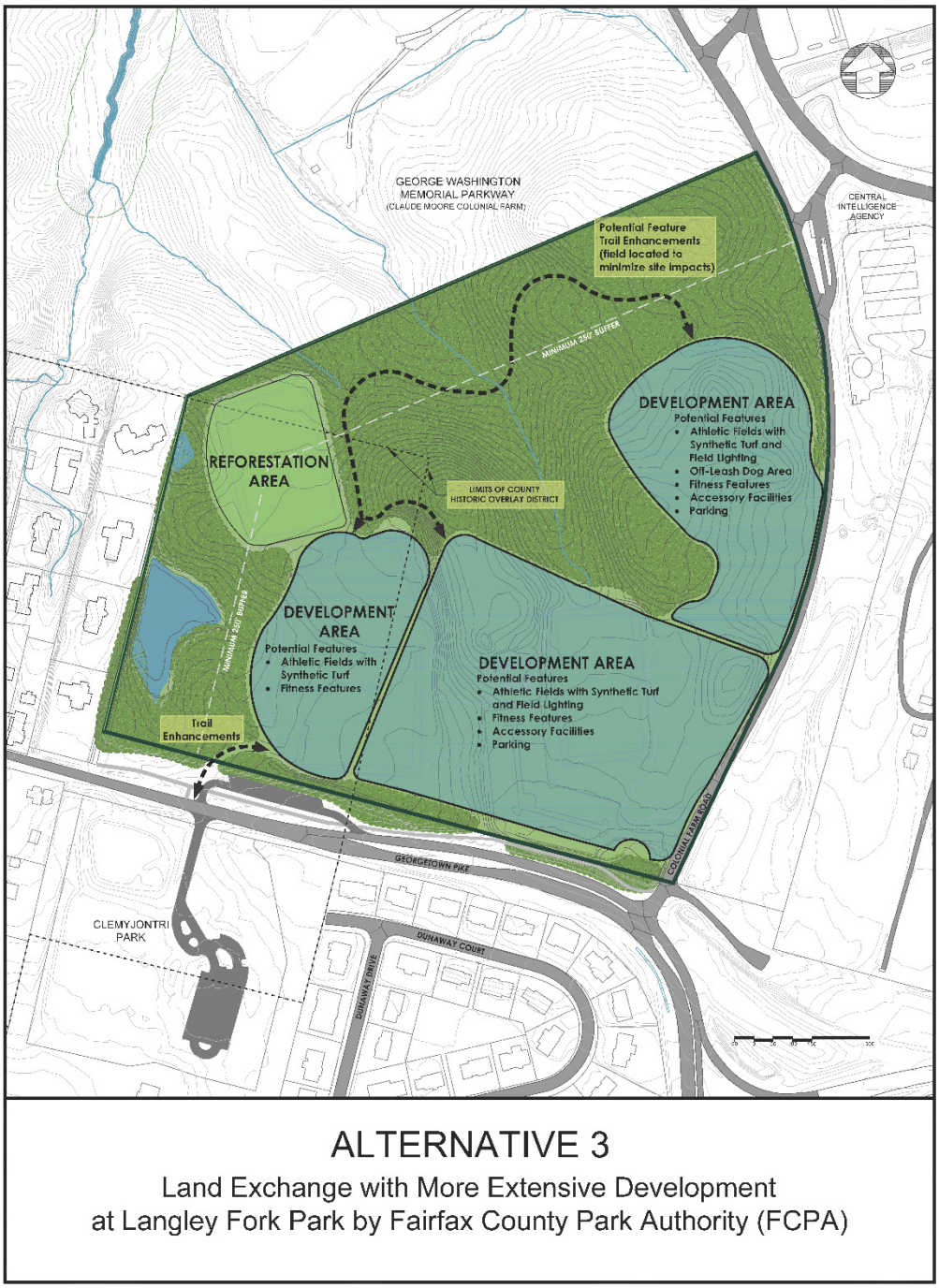

FIGURE 4. DEVELOPMENT AREAS IN LANGLEY FORK PARK UNDER ALTERNATIVE 3

Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

As discussed in "Elements Common to the Action Alternatives," NPS and FCPA would exchange the area known as Langley Fork Park, that is part of the George Washington Memorial Parkway, with Langley Oaks Park. NPS would manage Langley Oaks Park in its natural condition, ensuring permanent protection of the Potomac Gorge watershed and site resources, with no initial plans for change or development.

Alternative 4 includes the same land exchange as described under "Elements Common to the Action Alternatives," and FCPA would more fully develop the existing Langley Fork Park recreational footprint, but in a more compact configuration, as shown in figure 5. As with the other action alternatives, development would be subject to the FCPA master planning process, and the configuration would be consistent with the outcome of that process. The disturbed and developed area would increase by approximately 2.5 acres, totaling 17.0 acres within the limits of disturbance. Of the 2.5 acres of land cleared for development, approximately 0.6 acres of land would be replanted, resulting in a net tree loss of up to 1.9 acres.

Possible improvements under Alternative 4 include an expansion in the number of athletic fields to serve a variety of sports, increased signage and trail infrastructure, improvement of some athletic fields with synthetic turf, improvement of fields outside of the Historic Overlay District with lighting, trail enhancements, a pavilion, and expanded and reconfigured parking with a turnaround for emergency vehicles. Synthetic turf would not be used to improve the existing athletic fields in the northern and western portions of the site due to the presence of archeological resources. Impervious surfaces would increase by approximately 0.3 acres, from the existing impervious area of approximately 2.0 acres to approximately 2.30 acres, as a result of additional parking areas.

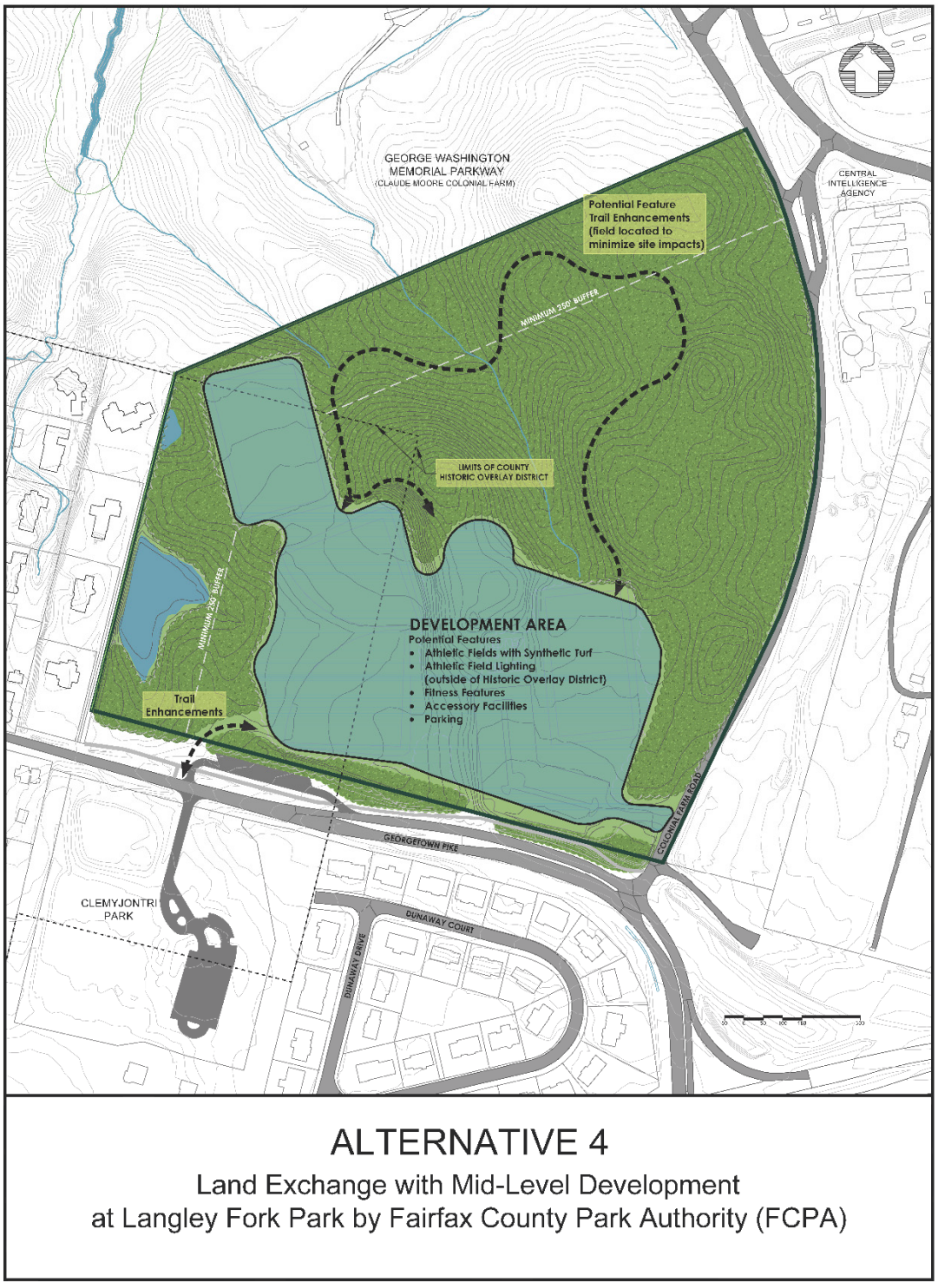

FIGURE 5. ALTERNATIVE 4: LAND EXCHANGE WITH MID-LEVEL DEVELOPMENT BY FCPA (PREFERRED)

MITIGATION MEASURES FOR THE ACTION ALTERNATIVES

NPS places a strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. To help ensure the protection of natural and cultural resources and the quality of the visitor experience, protective measures would be implemented as part of the selected action alternative. In developing Langley Fork Park, FCPA would follow local, state, and federal regulations.

Soils

Best management practices in accordance with the Virginia Erosion and Sediment Control Regulations, such as silt fencing and sediment traps, would be used to prevent and control soil erosion and sedimentation during construction of the proposed enhancements.

Soils disturbed within the proposed construction areas, but outside of athletic fields that would use synthetic turf, would be actively reseeded to stabilize the soil, repair compaction, or improve soil productivity.

Wetlands and Waterways

Wetlands disturbance is not anticipated, and it is assumed that wetlands, including a 25-foot buffer, would be avoided. FCPA would also include a 25-foot buffer to streams and other water bodies on the property to the extent possible, including the stream that runs north of the existing soccer field. FCPA would mitigate as needed per the permitting process if it cannot maintain the buffer.

Vegetation

Tree clearing is anticipated under Alternatives 3 and 4. FCPA would adhere to the county's development guidelines, which would require FCPA to retain 30% of the 10-year tree canopy and the county would extend the limits of clearing and grading only as far as necessary to accommodate construction. Depending on the extent of disturbance, additional native trees and shrubs could be planted.

Wildlife

FCPA would consult with the US Fish and Wildlife Service (USFWS) on the federally listed northern long-eared bat prior to any clearing or development should the land exchange take place. Consultation would likely include confirming the presence or absence of bats as well as suitable bat habitat in Langley Fork Park. FCPA would adhere to any restrictions the USFWS requires to protect the threatened bat species.

Clearing would also be conducted outside the breeding season for migratory birds to the extent possible. The nesting season for migratory birds is generally April through August, which coincides with the period when northern long-eared bats roost. Consultation with the Virginia Department of Game and Inland Fisheries and USFWS would be required. Pre-construction surveys would be conducted for migratory bird nests. No vegetation clearing would be conducted in identified nesting areas until the young have fledged or any bats present have returned to their hibernacula.

Cultural Resources, including Archeological Resources, and Historic Structures and Districts

Cultural resource impacts can arise from the land transfer itself, and from direct, indirect, or cumulative impacts to resources. FCPA and NPS are consulting with the Virginia SHPO to develop avoidance, minimization, and mitigation measures for the project. All parties are in agreement that the land transfer would include deed restrictions at Langley Fork Park protecting archeological resources outside of development areas, and would include deed restrictions at Langley Fork Park protecting forest stands outside of development areas. These measures would be common to the action alternatives. In addition, all action alternatives include some loss of forest stands at Langley Fork Park, which would constitute an adverse impact to the George Washington Memorial Parkway Historic District. FCPA has agreed to mitigate this loss of forest by planting new trees on NPS lands within the George Washington Memorial Parkway in Fairfax County. Details on the deed restrictions and tree planting would be detailed in a memorandum of agreement.

In addition to the mitigation measures common to the action alternatives, formal measures that may be implemented under Alternative 2 include the following:

- Evaluation of Site 44FX3643 and mitigation if eligible for listing on the National Register of Historic Places (NRHP).
- Mitigation of impacts to Site 44FX3635 and the Langley Fork Quartz Workshop District.

Mitigation details would be determined through the consultation process and would be formalized in an agreement document.

Mitigation measures under Alternative 3 would include those outlined above for Alternative 2, and would also include mitigation to impacts to Sites 44FX3637 and 44FX3639. Mitigation details would be determined through the consultation process and would be formalized in an agreement document.

Alternative 4 would have one mitigation measure beyond those common to the action alternatives. This mitigation measure would be an agreement to maintain the northwestern athletic field in its current state, thereby avoiding impacts to Site 44FX3643.

A memorandum of agreement for the project, needed under all action alternatives, would include measures for site protection during construction, to protect sites from temporary impacts such as staging, storage, and utility test-pit excavation.

Under any alternative, Langley Fork Park would remain within the George Washington Memorial Parkway Historic District, and would have some protection under Fairfax County's cultural resource guidelines and the National Historic Preservation Act (NHPA). In addition, under all alternatives, FCPA would adhere to restrictions in Fairfax County's Langley Fork Historic Overlay District, which is in place to protect the Langley Fork Historic District.

Park Neighbors and Transportation

At the time of site development, FCPA would coordinate with the Virginia Department of Transportation and the Fairfax County Department of Transportation to identify appropriate transportation improvements to mitigate traffic impacts of the proposed development.

Visitor Use and Experience

During the construction period, FCPA would implement mitigation measures to ensure the enjoyment and safety of visitors. These measures include the following:

- Conduct all construction activities during daylight hours to avoid noise impacts to park neighbors.
- Avoid construction during peak visitor use periods (i.e., weekends, holidays).
- Close the park or portions of the park when under construction.
- Place construction fencing at the intersections of construction areas and anywhere else visible to visitors to discourage their entry into a construction site.
- Coordinate construction activities to ensure the safety of park visitors, workers, and park personnel.

Traffic and Transportation

Transportation demand management would be necessary under all action alternatives to manage the expected increased number of visitors. Formal mitigation measures and infrastructure improvements would likely only be necessary for Alternatives 3 and 4 due to the increased impacts from delays and increased congestion to the transportation network from those alternatives. Transportation demand management for all action alternatives includes staggering start times of events on the fields. This simple scheduling revision could spread out Langley Fork Park trips and prevent bunching of visitors on the hour.

The following formal mitigation measures and infrastructure improvements may be implemented under Alternatives 3 and 4:

- Allowing inbound park traffic access through outbound Colonial Farm Road queues, signs, and striping to alert waiting cars to leave space for inbound park vehicles.
- Providing a secondary park entrance further north on Colonial Farm Road and link internal parking lots (Alternative 3 only).
- Extending the left-turn lane on eastbound Georgetown Pike for left turns onto Colonial Farm Road could improve safety and increase queuing space for additional visitors.
- Improving the exiting left-turn movement onto eastbound Georgetown Pike. Some improvements may also benefit other turning movements, such as the left turn onto Colonial Farm Road from Georgetown Pike:
  - Widen the median area to allow for a vehicle to pause while making a left turn off of Colonial Farm Road, allowing the driver to focus on one direction of traffic at a time.
  - Reduce the radius of the ramp from westbound Dolley Madison Boulevard onto Georgetown Pike, slowing down merging vehicles and increase the length of the transition area.
  - Restripe and widen lanes on Colonial Farm Road at the intersection with Georgetown Pike, because the current lanes are narrow (one entering lane, two exiting lanes – one left, one right); adding some additional width may provide additional comfort to drivers easing into the flow of traffic.

  - Possible channelizing of lanes along westbound Georgetown Pike between Dolley Madison Boulevard and Colonial Farm Road, forcing traffic to merge earlier so there is less conflict and more space for vehicles to move into the Colonial Farm Road turn lane.

- Improving signs and, where possible, sight lines along the Georgetown Pike curve, alerting motorists to what may become a slightly more heavily traveled intersection of Georgetown Pike and Colonial Farm Road.

ALTERNATIVES CONSIDERED BUT DISMISSED

The range of alternatives was considered to be reasonable, and no alternatives were considered and not carried forward for analysis in this EA.

NATIONAL PARK SERVICE PREFERRED ALTERNATIVE

The CEQ regulation, Section 5.4 (d), requires NPS to identify a preferred alternative in the EA if one has been identified. The preferred alternative is the alternative NPS believes would best accomplish its goals, objectives, and purpose and need. In selecting a preferred alternative, NPS must consider the associated impacts to natural and cultural resources.

Following internal NPS decision-making processes, Alternative 4 was recommended as the NPS preferred alternative, because it best meets the purpose and need of the project, allowing the FCPA and NPS to both resolve the short-term management issues at Langley Fork Park, and best satisfy long-term management goals by providing flexibility and resource protection as the park is developed in the future.

SUMMARY OF ENVIRONMENTAL IMPACTS

Table 1 provides a summary of environmental consequences for each resource area analyzed in “Chapter 4: Environmental Consequences.” Alternatives are determined to have beneficial or adverse impacts for each area of analysis, and adverse impacts are rated as negligible, minor, moderate, or major. Impacts are also assessed as to whether they are short term (duration of construction) or long term (greater than the duration of construction). Threshold definitions for each topic are listed in chapter 4.

TABLE 1. SUMMARY OF IMPACTS (ENVIRONMENTAL CONSEQUENCES)

Resource Area	Alternative 1: No Action	Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA	Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA	Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)
Soils	Soil conditions would not change and the implementation of this alternative would result in continued negligible adverse impacts on soil resources from regular activities at the park.	Soils would be adversely impacted as a result of construction activities and clearing as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park.	Soils would be impacted because of construction activities and clearing as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park.	Soils would be impacted because of construction activities and clearing as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park.
Vegetation	Implementation of Alternative 1 would result in negligible adverse impacts on vegetation at Langley Fork Park and no impacts at Langley Oaks Park.	Although the land exchange would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 2 would result in indirect impacts on vegetation through up to 1 acre of tree and vegetation clearing and modification of facilities and replacement of turf grass fields with artificial surfaces. Alternative 2 would therefore have long-term negligible adverse to minor adverse impacts on vegetation at Langley Fork Park. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on vegetation.	Although the land exchange would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 3 would result in indirect impacts on vegetation through potential land clearing (up to 11.5 acres), new development, and modification of existing facilities in Langley Fork Park. Alternative 3 would therefore have long-term moderate indirect adverse impacts on vegetation at Langley Fork Park and some long-term benefits from reforestation of approximately 2 acres in the northwest corner of the park. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on vegetation.	Although the land exchange would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 4 would result in indirect impacts on vegetation through limited land clearing (2.5 acres, with 0.6 acre replanted onsite, for a net clearing of 1.9 acres), new development, and modification of existing facilities in Langley Fork Park. Alternative 4 would therefore have long-term minor adverse impacts on vegetation at Langley Fork Park. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on vegetation.

Resource Area	Alternative 1: No Action	Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA	Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA	Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)
Wildlife and Wildlife Habitat	Implementation of Alternative 1 would result in no impacts on wildlife and wildlife habitat as the level of wildlife and condition of wildlife habitat would remain in its current state for both parks.	Implementation of Alternative 2 would impact wildlife and wildlife habitat due to minor habitat loss from the development and modification of facilities and temporary disturbance to wildlife as a result of land clearing activities. Under Alternative 2 there would be short-term minor adverse impacts on wildlife and wildlife habitat. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat.	Implementation of Alternative 3 would result in short- and long-term minor to moderate adverse impacts on wildlife and wildlife habitat in Langley Fork Park due to wildlife disturbance and habitat loss resulting from land clearing activities and increased development. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat.	Implementation of Alternative 4 would result in short- and long-term minor adverse impacts on wildlife and wildlife habitat in Langley Fork Park due to wildlife disturbance and habitat loss resulting from land clearing activities and increased development. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat.
Cultural Resources: Historic Structures and Districts	Implementation of Alternative 1 would result in no impacts on historic structures and districts.	Implementation of Alternative 2 would result in long-term minor adverse impacts on historic structures and districts as well as long-term beneficial impacts from the transfer of Langley Oaks Park to federal ownership and administration by NPS.	Implementation of Alternative 3 would result in long-term minor to moderate adverse impacts on historic districts and structures as well as long-term beneficial impacts from the transfer of Langley Oaks Park to federal ownership and administration by NPS.	Implementation of Alternative 4 would result in long-term minor adverse impacts on one historic district as well as long-term beneficial impacts from the transfer of Langley Oaks Park to federal ownership and administration by NPS.
Cultural Resources: Archeological Resources	Implementation of Alternative 1 would result in no impacts on archeological resources.	Implementation of Alternative 2 would result in long-term minor to moderate adverse impacts on two of the six eligible or potentially eligible archeological sites within Langley Fork Park and to an archeological district. Impacts would be mitigated through actions stipulated in deed restrictions and a memorandum of agreement.	Implementation of Alternative 3 would result in long-term moderate adverse impacts on four of the six eligible or potentially eligible archeological sites within Langley Fork Park and to an archeological district. Impacts would be mitigated through actions stipulated in deed restrictions and a memorandum of agreement.	Implementation of Alternative 4 would result in no impacts on archeological resources. Protective measures would be stipulated in deed restrictions and in a memorandum of agreement.

Resource Area	Alternative 1: No Action	Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA	Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA	Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)
Visitor Use and Experience	Conditions at the park would continue to exist without the appropriate amount of parking and lighting, as well as the lack of any improvements to the existing athletic fields and multi-use trails. As a result of the continuation of these conditions, there would be long-term negligible adverse impacts on visitor use and experience at Langley Oaks Park.	The land exchange along with the addition of expanded parking, a pavilion, lighting, and synthetic turf would provide the park with an enhanced visitor use and experience. In addition, the proposed trail enhancements would improve accessibility. As a result, there would long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure.	Improvements to the park including the addition of developed land, athletic fields, a dog park, and park lighting, as well as enhanced synthetic turf and multi-use trails, would result in long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure.	Improvements to the park including the moderate addition of developed land, athletic fields, and park lighting, as well as enhanced synthetic turf and multi-use trails, would result in long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure.
Neighboring Properties	Implementation of Alternative 1 would result in no impacts on neighboring properties of Langley Fork Park and Langley Oaks Park. Under this alternative, both parks would remain in their current state and no additional traffic, noise, or amenities would occur.	Long-term minor adverse impacts may occur to neighboring properties under this alternative. Although the land exchange between NPS and FCPA would not have direct impacts on neighboring properties, it may result in indirect short-term minor adverse impacts as an increase on traffic, noise, and lighting is expected to occur. Some long-term benefits would result from improved recreation opportunities at Langley Fork Park.	Beneficial impacts would be greater than those described under Alternative 2; however, there would still be short-term minor adverse impacts during the period of construction and long-term minor adverse impacts during the operation of parks.	Beneficial impacts would be greater than those described under Alternative 2 but less than those described under Alternative 3. There would still be short-term minor adverse impacts during the construction period and long-term minor adverse impacts during the operation of parks.

Resource Area	Alternative 1: No Action	Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA	Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA	Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)
Traffic and Transportation	No impacts would result from Alternative 1 since there would be no increase in programmed uses at either park location.	Long-term negligible to minor adverse impacts may result from Alternative 2 due to a slight increase in trips generated from additional programming and parking spaces. Impacts would be primarily evident when park activities overlap with weekday evening rush hour volumes and high southbound exiting volumes on Colonial Farm Road, as well as during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Minor delays would mainly accrue to approaching and departing eastbound drivers.	Long-term minor adverse impacts may result from Alternative 3 due to an increase in trips generated from additional facilities and programming. Impacts on congestion or delay would likely be perceptible when high park usage overlapped with weekday evening rush hour volumes and during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Delays would mainly accrue to approaching and departing eastbound trips. Impacts would be more intense than Alternative 2, but would likely not elevate impacts beyond the moderate threshold.	Long-term minor adverse impacts may result from Alternative 4 due to an increase in trips generated from additional facilities and programming. Impacts on congestion or delay would likely be perceptible when high park usage overlapped with weekday evening rush hour volumes and during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Delays would mainly accrue to approaching and departing eastbound trips.

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CHAPTER 3: AFFECTED ENVIRONMENT

This chapter describes existing environmental conditions in the areas potentially affected by the alternatives evaluated. This section describes the following resource areas: soils, vegetation, wildlife and wildlife habitat, cultural resources (including historic structures and districts, and archeological resources), visitor use and experience, neighboring properties, and traffic and transportation. Potential impacts are discussed in the same order in "Chapter 4: Environmental Consequences."

SOILS

The Soil Survey of Fairfax County, Virginia, part of the National Cooperative Soil Survey conducted by the Natural Resources Conservation Service shows eight different soil map units in the Langley Fork Park and ten different soil map units in Langley Oaks Park (NRCS 2010, n.d.). The soil conditions within each park are described in this section.

Approximately half of the soils within Langley Fork Park are rated as moderately favorable for building site development (i.e., small commercial buildings) with the remainder split between soils that are either very favorable or unfavorable. Soil properties that would limit development include steep slope, high erosion potential, or shrink-swell potential that would lead to soil instability. Most soils in the project area are rated as moderately favorable for recreational development with limitations from steep slope, high erosion potential, and potential for ponding. The soils within the existing athletic fields have been previously disturbed and subject to some grading in the past. The soils on the athletic fields, and to a lesser extent the trails, are likely compacted due to heavy visitor use.

The soils within Langley Oaks Park are primarily not suited to building site development (i.e., small commercial buildings) due to either steep slopes or flooding and shallow depths to the water table. Most soils are rated as unfavorable for recreational development with the main limitations being steep slope and erosion potential, shallow depth to water table, and potential for ponding. Most of the soils within the park are likely not very compacted except for the heavily trafficked social trails and paths.

VEGETATION

Forest Community

An assessment of the forest communities of Langley Fork Park and Langley Oaks Park was completed in 2011 by the Virginia Department of Conservation and Recreation on behalf of the National Park Service (NPS) (VA DCR 2011). Additional surveys, including nonnative invasive species and rare plant species, were performed in 2012; the results of which were compiled into a single report, and are used to assess the affected environment of both parks (FCPA 2013a).

Langley Fork Park. The approximately 52 acres in Langley Fork Park extends from the western edge of the park adjacent to private subdivision residences, to the north adjacent to Claude Moore Colonial Farm on federally owned property under a use agreement with NPS, and to the east along Colonial Farm Road, adjacent to the Central Intelligence Agency headquarters. The natural vegetation within Langley Fork Park corresponds most closely to a Successional Tuliptree Forest (Rich Type) in the northern and eastern portions of the park, and a Successional Mixed Deciduous Forest to the west (figure 6). Historically, this area has experienced various land uses, including farming in the 1800s and athletic use in the 1970s.

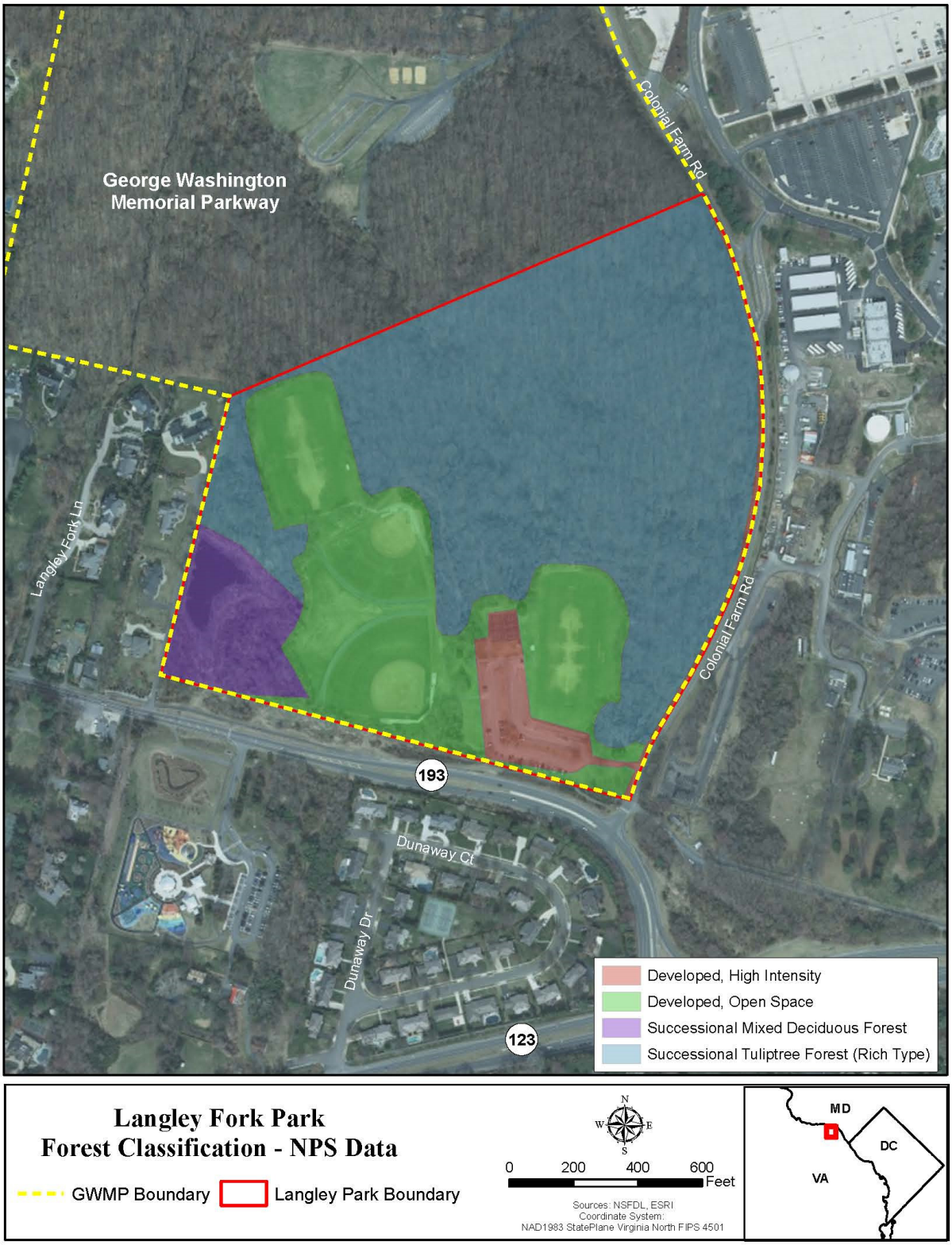


FIGURE 6. VEGETATION COVER AND TYPE AT LANGLEY FORK PARK

Langley Oaks Park. Langley Oaks Park is composed of approximately 102 acres of a continuous forested area extending toward the George Washington Memorial Parkway to the north and to private subdivision residences on the west. The eastern edge is bordered by a utility line right-of-way, while further to the south is Langley High School. Natural vegetation within Langley Oaks Park corresponds to several forest types, including Mid-Atlantic Mesic Mixed Hardwood Forest, Successional Tuliptree Forest (Rich Type), Piedmont Basic Mesic Hardwood Forest (Coastal Plain/Piedmont Type), Piedmont Dry-Mesic Acidic Oak-Hickory Forest, Successional Meadow/Grassland, and Tuliptree Small-Stream Floodplain Forest (figure 7).

Table 2 quantifies the acres of each community surveyed in Langley Fork Park and Langley Oaks Park. A description of each community follows.

TABLE 2. FOREST MAP UNITS IN LANGLEY FORK PARK AND LANGLEY OAKS PARK

Park	Natural Communities of Virginia Community Type	Acres
Langley Fork	Successional Tuliptree Forest (Rich Type)	31.6
	Successional Mixed Deciduous Forest	3.6
Langley Oaks Park	Mid-Atlantic Mesic Mixed Hardwood Forest	45.3
	Successional Tuliptree Forest (Rich Type)	34.5
	Piedmont Basic Mesic Hardwood Forest (Coastal Plain/Piedmont Type)	8.5
	Piedmont Dry-Mesic Acidic Oak-Hickory Forest	8.0
	Successional Meadow/Grassland	4.7
	Tuliptree Small-Stream Floodplain Forest	0.06

Successional Tuliptree Forest. The Successional Tuliptree Forest association is the dominant vegetation type in Langley Fork Park (31.6 acres) and is present in a large portion of Langley Oaks Park (34.5 acres). This community type is not included in the Natural Communities of Virginia: Ecological Groups and Community Types classification because it is not a "natural" community, but rather a modified / successional community that has resulted from human disturbance (VA DCR 2011; Fleming pers. comm. 2011). Tree species associated with this forest type found within Langley Fork and Langley Oaks Park include tuliptree (*Liriodendron tulipfera*), American sycamore (*Platanus occidentalis*), sugar maple (*Acer saccharum*), northern red oak (*Quercus rubra*), red maple (*Acer rubrum*), black locust (*Robinia pseudoacacia*), eastern black walnut (*Juglans nigra*), white ash (*Fraxinus americana*), and American beech (*Fagus grandifolia*) (VA DCR 2011). Slippery elm (*Ulmus rubra*) and chinkapin oak (*Quercus muehlenbergii*) are also commonly associated with this forest type throughout the Commonwealth of Virginia (VA DCR 2011), but are not likely to occur at Langley Fork Park or Langley Oaks Park.

In Langley Fork Park and Langley Oaks Park, the overstory is dominated by tuliptrees and black cherry (*Prunus serotina*). Diameter at breast height (dbh) ranged between one inch and 20 inches, with the majority of trees having a dbh between 12 and 14 inches.

Although the understory lacks recruitment of black cherry and tuliptree, a sparse shrub layer of Amur honeysuckle (*Lonicera maackii*) is present. Other shrub species include blackberries (*Rubus* spp.), greenbrier (*Smilax rotundifolia*), and bristly sarsaparilla (*Aralia hispida*). The herbaceous layer consists of Indian strawberry (*Duchesnia indica*), and Japanese honeysuckle (*Lonicera japonica*).

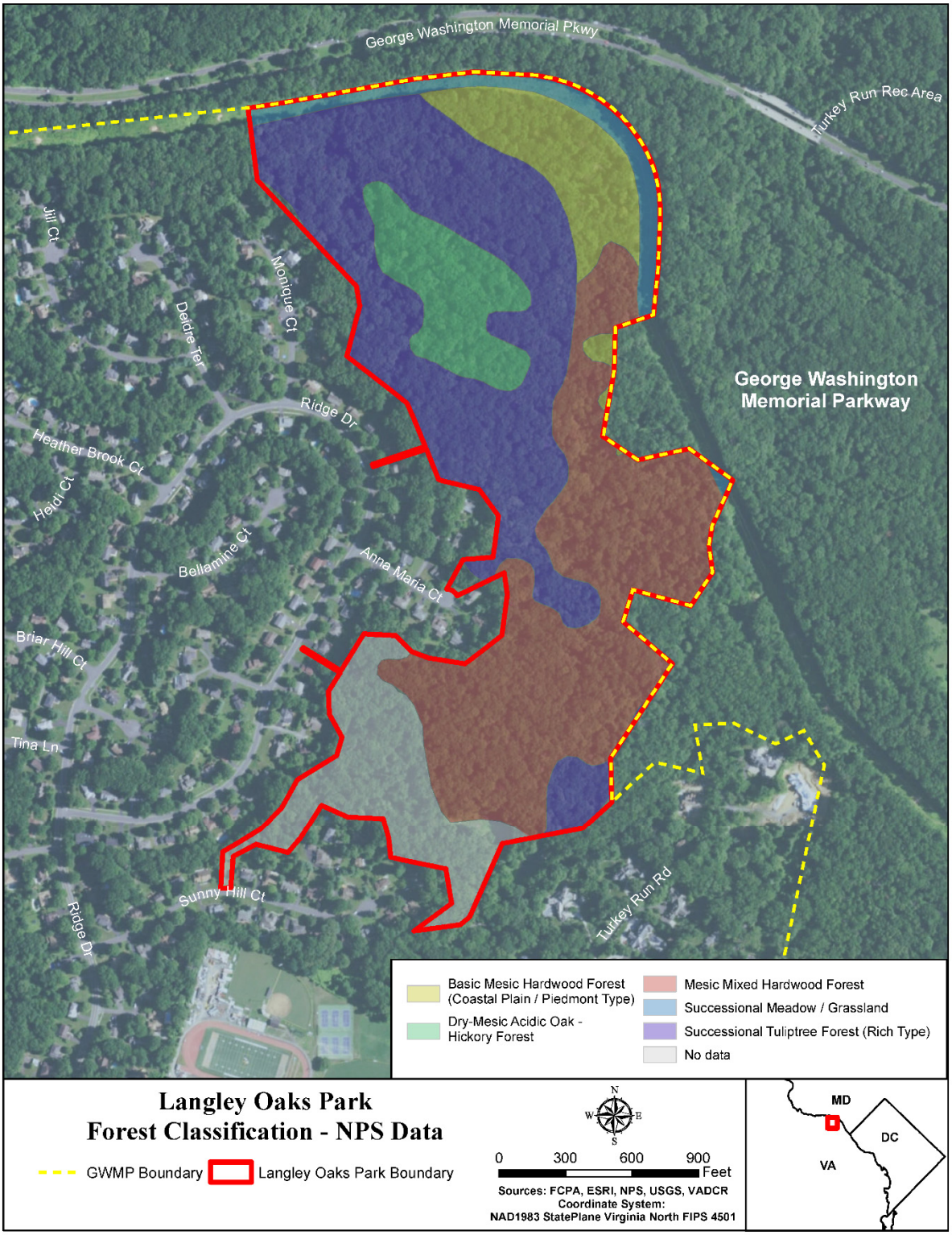


FIGURE 7. VEGETATION COVER AND TYPE AT LANGLEY OAKS PARK

Successional Mixed Deciduous Forest. This community type is not included in the Natural Communities of Virginia: Ecological Groups and Community Types classification because it is not a "natural" community, but rather a modified/successional community that has resulted from human disturbance (VA DCR 2011; Fleming pers. comm. 2011). The Successional Mixed Deciduous Forest association is present in Langley Fork Park only on approximately 3.6 acres. Tree species associated with this forest type generally include some combination of black cherry, tuliptree, white ash, black locust, and red maple. Other associates can include eastern black walnut, sassafras (*Sassafras albidum*), eastern red cedar (*Juniperus virginiana*), box elder (*Acer negundo*), silver maple (*Acer saccharinum*), tree of heaven (*Ailanthus altissima*), American elm (*Ulmus americana*), oaks (*Quercus* sp.), serviceberry (*Amelanchier arborea*), white pine (*Pinus strobus*), and big-toothed aspen (*Populus grandidentata*) (VA DCR 2011).

In Langley Fork Park, the overstory is dominated by box elder. Several individuals of American elm and eastern red cedar were present in the sub-canopy, along with recruitments of box elder. The dbh ranged between 1 and 18 inches, with the majority of trees having a dbh between 4 and 8 inches.

The varied understory consists of the exotic species garlic mustard (*Alliaria petiolata*), Japanese honeysuckle, wild garlic (*Allium vineale*), Tatarian honeysuckle, Oriental bittersweet (*Celastrus orbiculatus*), and grapes (*Vitis* sp.)

Mid-Atlantic Mesic Mixed Hardwood Forest. The Mid-Atlantic Mesic Mixed Hardwood Forest association is present in Langley Oaks Park only and dominates the park (45.3 acres). Tree species in this forest type typically include American beech, white oak (*Quercus alba*), northern red oak, and tuliptree, with associates that often include black oak (*Quercus velutina*), southern red oak (*Quercus falcata*), scarlet oak (*Quercus coccinea*), American sweet-gum, and red maple. American beech and American hornbeam (*Carpinius caroliniana*) are often found in the sub-canopy. The shrub layer ranges from sparse to very dense and often consists of paw (*Asimina triloba*), maple-leaf viburnum (*Viburnum acerifolium*), and southern arrowwood (*Viburnum dentatum*). The herb layer frequently includes Christmas fern (*Polystichym acrostichoides*), New York fern (*Thelypteris noveboracensis*), and perfoliate bellwort (*Uvularia perfoliata*) (VA DCR 2011).

In Langley Oaks Park, the overstory is dominated by tuliptree, chinkapin oak, and American beech. Sub-dominant species include hackberry (*Celtis occidentalis*), green ash (*Fraxinus pennsylvanica*), and sugar maple. The dbh ranged between one inch and 27 inches, with the majority of trees having a dbh between 1 and 6 inches.

The understory consists of American beech, paw paw, American elm, sugar maple, and mockernut hickory (*Carya tomentosa*). Residing in the herbaceous layer are American holly (*Ilex Opaca*), viburnum (*Viburnum* spp.), Christmas fern, Japanese honeysuckle, and Japanese barberry (*Berberis thungbergii*).

Piedmont Dry-Mesic Acidic Oak-Hickory Forest. The Piedmont Dry-Mesic Acidic Oak-Hickory Forest, which is a sub-community of Acidic-Oak Hickory Forests, is present in Langley Oaks Park only, occupying approximately 8.5 acres. This forest type usually develops on submesic to subxeric upland sites with northerly or easterly aspects and is dominated by a mixture of oaks and hickories, with white oak being most prevalent along with northern red oak, scarlet oak, black oak, southern red oak, white oak, red hickory (*Carya ovalis*), and pignut hickory (*Carya glabra*). The understory sometimes consists of red maple, flowering dogwood (*Cornus florida*), American holly, and black gum (*Nyssa sylvatica*) (VA DCR 2011).

In Langley Oaks Park, the overstory is dominated by chinkapin oak, red oak, and mockernut hickory. Several individuals of American beech are also present. The understory is dominated by American beech,

while a sparse herbaceous layer consisting of viburnum, blackberry (*Rubus* spp.), and Japanese honeysuckle is present.

Piedmont Basic Mesic Hardwood Forest (Coastal Plain/Piedmont Type). The Piedmont Basic Mesic Hardwood Forest association, which is a sub-community of Basic Mesic Forests, is present in Langley Oaks Park only, occupying approximately 8.0 acres. This forest type usually develops in sheltered ravines and slopes where soils are typically base-rich. American beech and tuliptree are the dominant species with associates including bitternut hickory (*Carya cordiformis*) and northern red oak (VA DCR 2011).

In Langley Oaks Park, the overstory is dominated by red oak and tuliptree. Individuals of mockernut hickory and American beech are present in the sub-canopy layer. The dbh ranged between 1 and 42 inches, with the majority of trees having a dbh between 1 and 4 inches.

The understory consists of significant recruitment of American beech, while residing in the sparse herbaceous layer are blackberry and green ash.

Successional Meadow/Grassland. This community type is not included in the Natural Communities of Virginia: Ecological Groups and Community Types classification because it is not a "natural" community, but rather a modified/successional community that has resulted from human disturbance (VA DCR 2011; Fleming pers. comm. 2011). This community type was observed within a utility right-of-way in Langley Oaks Park only, occupying approximately 4.7 acres.

There is no tree or shrub layer, the herbaceous species present includes aster (*Aster* spp.), Indian hemp (*Apocynum cannabinum*), wingstem (*Verbesina alternifolia*), spotted ladysthumb (*Polygonum persecaria*), common mullein (*Verbascum thapsus*), wood sorrel (*Oxalis* spp.), Christmas fern, and red fescue (*Festuca rubra*). In addition to the native species mentioned above, the Successional Meadow/Grassland association also includes the invasive species Japanese honeysuckle, common chickweed (*Stellaria media*), Asiatic tearthumb (*Polygonum perfoliatum*), multiflora rose (*Rosa multiflora*), and garlic mustard.

Tuliptree Small-Stream Floodplain Forest. A Tuliptree Small-Stream Floodplain Forest, which is a sub-community of Piedmont/Mountain Small-Stream Alluvial Forests, is present in Langley Oaks Park only, occupying less than 0.1 acre. This community type usually develops at low elevations with relatively acidic soils along small streams and is dominated by tree species such as sweetgum and tuliptree, along with American sycamore, and red maple. This community type reflects two subtypes, the tuliptree subtype and the sweetgum subtype, and in some examples is dominated by one subtype (VA DCR 2011).

In Langley Oaks Park, the overstory is dominated by tuliptree, American beech, hackberry, and green ash. The dbh ranged between 1 and 42 inches, with the majority of trees having a dbh between 1 and 4 inches.

A sparse shrub layer of paw paw is present, while herbaceous species present in the plot include Christmas fern, American holly, blackberry, and Indian strawberry. Exotic species include Japanese barberry and Japanese honeysuckle.

Nonnative Invasive Species

A survey for nonnative invasive species was performed by the Louis Berger Group in Langley Fork Park to determine current conditions, using the Fairfax County Park Authority (FCPA) nonnative invasive plant site prioritization protocol. The nonnative invasive plant site prioritization protocol provides a rapid assessment tool to assess the degree of infestation and comparatively rank sites for invasive species

management. Scoring is based on three areas of concern: ecosystem (noting the level of existing biodiversity and disturbance), nonnative invasive species (noting the level of infestation and the level of difficulty to control it), and cultural value (noting site visitation level and ownership issues that might complicate management efforts). The total scoring indicates the priority for treatment of nonnative invasive species at a particular site.

Excluding the ball fields and parking areas, the remainder of Langley Fork Park was split into eight individual survey plots and assessed for the presence of nonnative invasive species and the level of management required to restore these areas. Several species of invasive plants were identified, including shrubs, such as Amur honeysuckle and wine berry (*Rubus phoenicolasius*); vines, such as ivy-leaved morning glory (*Ipomoea hederacea*), Oriental bittersweet, and Japanese honeysuckle; and herbs, such as Asiatic tearthumb, common burdock (*Arctium minus*), field garlic (*Allium vineale*), garlic mustard, hemlock parsley (*Conioselinum chinense*), and Japanese stilt grass (*Microstegium vimineum*). Although several different species of nonnative invasive plants are present throughout Langley Fork Park, the overall ranking using the nonnative invasive plant site prioritization protocol reflected that this site would currently be a low priority for nonnative invasive plant treatment due to the significant level of site disturbance and complications of management due to ownership.

Rare Plant Species

A rare plant survey was conducted by the Louis Berger Group at Langley Fork Park for the one-sided wintergreen (*Orthilia secunda*). According to the Department of Conservation and Recreation Natural Heritage Program database, the historical record from the Washington, DC, herbarium specimens collected by W.R. Maxon in 1902 (Collection #540) and F.W. Layton in 1915 (no collection number) for the one-sided wintergreen noted that the species was last observed at the site of Langley Fork Park in 1915 (Hypes pers. comm. 2012). As a result, the Virginia Department of Conservation and Recreation lists the species as possibly extirpated. The park was surveyed twice over the dates of June 11–12, 2012, and August 6–7, 2012, to coincide with the potential bloom season of the one-sided wintergreen. Although there are few areas of potential habitat at Langley Fork Park, no observations of the one-sided wintergreen were noted. Additionally, based on professional judgment and that the last known sighting was in 1915, it is unlikely that one-sided wintergreen is present in the park because of the density of Japanese stilt grass, which uses the same habitat, is dominant in those areas.

WILDLIFE AND WILDLIFE HABITAT

Langley Fork Park and Langley Oaks Park are located in a suburban environment. Langley Fork Park is on lands previously disturbed by various uses, including farming in the 1800s and athletic use in the 1970s, while the sloped terrain of Langley Oaks Park has made it less palatable for development, and the majority of it has remained undisturbed. These differing development patterns have resulted in different wildlife habitats that support a variety of species.

Langley Fork Park

The most prominent wildlife habitat within Langley Fork Park is a large forested area made up of primarily Successional Tuliptree Forest. The forest is recovering from past farming; however, it could provide habitat for many woodland species and for several state-listed species of concern. These habitats could also support resident and transient avian species, including migratory birds which may use portions of the park as stopover and potential nesting habitat during annual migrations. The nesting season for migratory birds is generally April through August. Most native migratory bird species are protected under the Migratory Bird Treaty Act.

Numerous species of wildlife have been observed by FCPA staff on site visits to the park, most notably solitary sandpiper (*Tringa solitaria*) (uncommon in Fairfax County), red-shouldered hawk (*Buteo lineatus*), orchard oriole (*Icterus spurius*), wood duck (*Aix sponsa*), white-tailed deer (*Odocoileus virginianus*), and gray tree frogs (*Hyla versicolor*) (FCPA 2013b). Numerous species of resident and migratory birds are also likely to occur within the park, which is located within the Atlantic Flyway migration corridor. Common migratory species in the area include Canada goose (*Branta canadensis*), canvasback (*Aythya valisineria*), osprey (*Pandion haliaetus*), great blue heron (*Ardea herodias*), cedar waxwing (*Bombycilla cedrorum*), and field sparrow (*Spizella pusilla*). A comprehensive wildlife survey has not been conducted at Langley Fork Park. Deer populations have not been measured in this park but are expected to be high, with correspondingly high vegetation browse levels. Similarly, vegetation browsing by deer is notably high within the George Washington Memorial Parkway (FCPA 2013b).

Langley Oaks Park

The most prominent wildlife habitat in Langley Oaks Park is made up primarily of Mid-Atlantic Mesic Mixed Hardwood Forest and Successional Tuliptree Forest. There is also a variety of hardwood forest within Langley Oaks Park. These forested areas could provide habitat for many woodland species and for several state-listed species of concern. A small amount of riparian stream forest habitat within Langley Oaks Park could support amphibians and other wildlife that prefer riparian habitats. Forested riparian buffers allow for wildlife shelter and protect aquatic stream habitat by providing shade and fallen woody debris and provide travel corridors and havens for migratory birds and other wildlife. There is some Successional Meadow / Grassland habitat in Langley Oaks Park that would support a variety of grassland dwelling wildlife. All of these habitats could support resident and migratory avian species as well. Transient species, many of which are protected under the Migratory Bird Treaty Act, are most likely to occur seasonally during annual migrations. The Successional Meadow / Grassland within Langley Oaks Park and the surrounding properties offers a patchwork of meadow and woodland habitats that many species prefer.

Invasive Wildlife and Insect Species

No surveys have been conducted for invasive wildlife or insect species at either park. The emerald ash borer (*Agrilus planipennis*), an invasive beetle species that kills ash trees by destroying the tissues that transport water and nutrients, was first found in the county in 2003. In a forest stand, most ash trees succumb to the effects of the beetle within 3 to 6 years (NPS 2017), and concerns about the financial and environmental cost of the emerald ash borer continue to increase countywide (Fairfax County 2016). White ash (*Fraxinus americana*) is a common tree in forests within the National Capital Region, and has been documented within both Langley Fork Park and Langley Oaks Park. A study of white ash trees within Catoctin Mountain Park, located approximately 50 miles north of the study area, showed a decline of one-quarter in the number of white ash trees within the park between 2009 and 2016. NPS staff have reported active emerald ash borer infestation within George Washington Memorial Parkway. The Virginia Department of Agriculture and Consumer Services has designated the entire state as an emerald ash borer quarantine area. NPS has treated ash trees at Dyke Marsh, which is part of the George Washington Memorial Parkway, to prevent emerald ash borer infestation. However, NPS has also removed hundreds of affected trees elsewhere in the park, including approximately 200 trees at Theodore Roosevelt Island in 2017. No other species of wildlife or insects are known to be of concern.

CULTURAL RESOURCES

For this study, efforts to identify cultural resources included a review of information provided by NPS, supplemented by other published and unpublished sources, primarily National Register of Historic Places

(NRHP) nomination forms and Virginia Department of Historic Resources records, and records held by the FCPA Cultural Resources Management and Protection section. In addition to the review of known resources, FCPA and NPS sponsored an archeological identification and evaluation study of Langley Fork Park (Katz et al. 2016), which provided a comprehensive inventory of archeological resources in the property proposed for transfer. All known resources within the cultural resources study area (area of potential effect) are reviewed below.

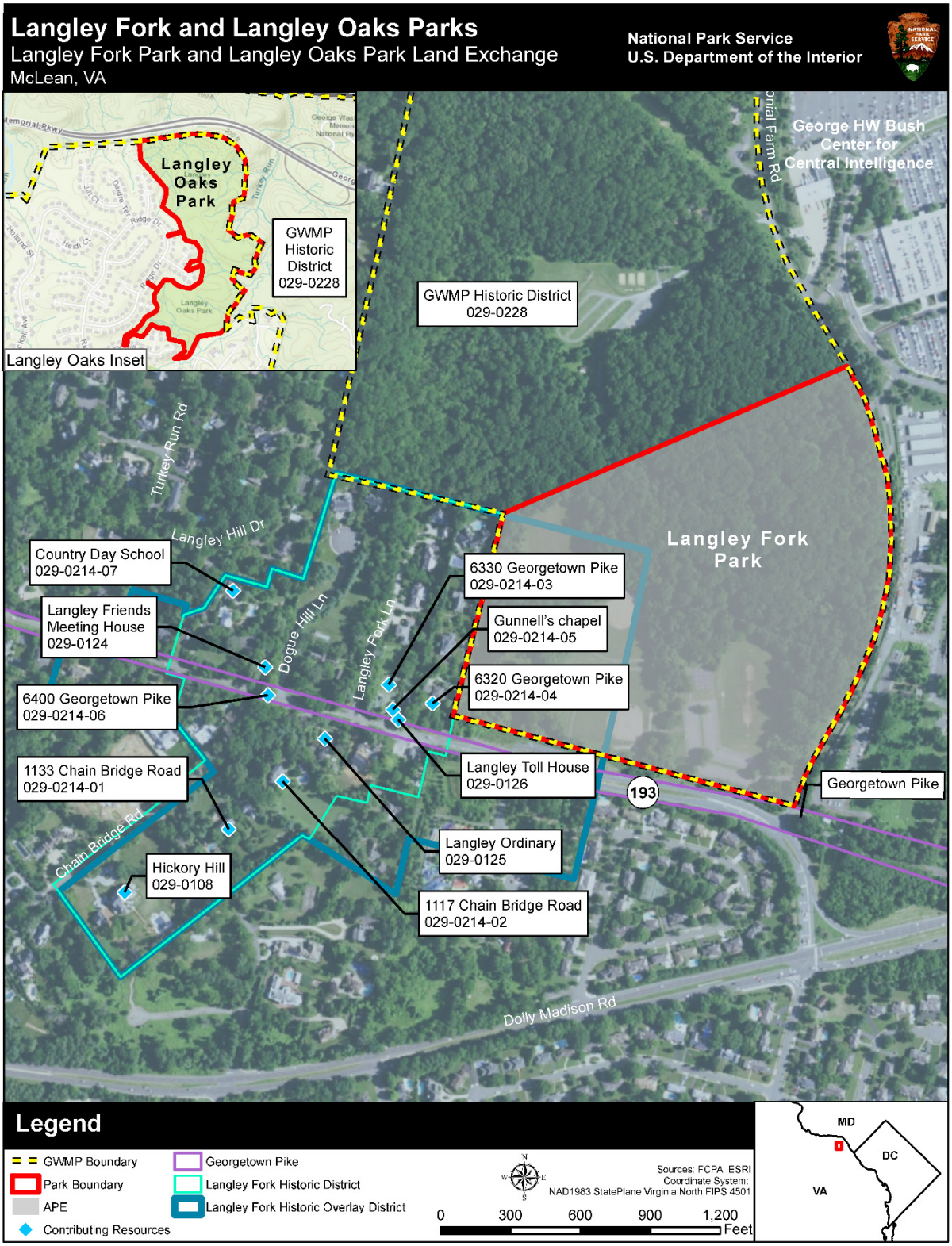
Historic Structures and Districts

A number of historic districts have been documented within the cultural resources study area, or the area of potential effect (figure 8). The George Washington Memorial Parkway Historic District (VDHR No. 029-0466) encompasses the entirety of Langley Fork Park and abuts Langley Oaks Park. The parkway was evaluated in 1993 and listed on the NRHP in 1995 (NPS 1995). The entirety of the George Washington Memorial Parkway and the land that encompasses the larger parkway landscape was listed in the NRHP under the nominations for the Mount Vernon Memorial Highway (NPS 1981), George Washington Memorial Parkway (NPS 1995), and the Parkways of the National Capital Region (NPS 1991). The historic district recordation was recently updated (Babin et al. 2017). The George Washington Memorial Parkway (VDHR No. 029-0228) is a planned landscape designed to provide scenic views and vistas of the Potomac River and the Potomac Gorge; it was also created with the intent of preserving the forested nature of the Potomac Gorge. The forest stands at Langley Fork Park have been listed as contributing resource to the historic district (Babin et al. 2017). The general landscape within Langley Fork Park provides similar benefits as described for the vegetation in the north section George Washington Memorial Parkway cultural landscape inventory and in the George Washington Memorial Parkway NRHP nomination characteristics of tree-covered areas as contributing features, although the recreational fields do not provide these similar benefits.

Langley Fork Park is adjacent to two additional resources: the Langley Fork Historic District (VDHR No. 029-0214), and Georgetown Pike (VDHR No. 029-0466). The Langley Fork Historic District was evaluated in 1980 (David 1980), whereas Georgetown Pike was evaluated in 1995 (Beauchamp 1995), reexamined in 2010 (VDHR 2010), and listed on the National Register in 2012 (Beauchamp 2012). The resource boundaries coincide with road right-of-way. Langley Fork Park abuts the eastern boundary of the Langley Fork Historic District while the Georgetown Pike is located immediately south of the park (figure 8).

In addition, Fairfax County has designated a historic overlay zoning district called the Langley Fork Historic Overlay District, which includes a portion of Langley Fork Park. While not a resource *per se*, Fairfax County has outlined standards and guidelines for retaining the historic character of the adjacent historic district through the use of protections in the Historic Overlay District, and these protections affect the future development planned within the Historic Overlay District.

Beyond the resources mentioned above, there are no individually listed or eligible historic architectural resources located within the boundary of either park. Indirect impacts may extend to the Langley Fork Historic District and Georgetown Pike, and therefore are both included in the indirect area of potential effect. Each historic structure and district is discussed in detail below.



*The George Washington Memorial Parkway Historic District boundary coincides with the boundary of the park.

FIGURE 8. HISTORIC RESOURCES WITHIN THE AREA OF POTENTIAL EFFECT

George Washington Memorial Parkway Historic District. Langley Fork Park is part of the George Washington Memorial Parkway Historic District. The parkway itself was listed on the NRHP in 1995, updated in 2017, and comprises 7,146 acres and extends 38.3 miles along the Potomac River. The southern section of the parkway, opened in 1932, extends from Arlington Memorial Bridge Gateway to Mount Vernon. The northern section runs 9.7 miles from Memorial Bridge to the Capital Beltway/Interstate 495 in Virginia and 6.6 miles in Maryland. All but a small portion of this section of the parkway north of Chain Bridge in the District of Columbia opened in 1965. The parkway has a period of significance from 1785 through 1802, and 1929 through 1976. The parkway was determined eligible under NRHP Criteria A, B, and C. The George Washington Memorial Parkway is recognized as significant for including innovative landscape and transportation engineering design as part of its mission for the protection and preservation of the lands and natural scenery of the Potomac River and Gorge.

Langley Fork Historic District. The Langley Fork Historic District is defined by the intersection of the Georgetown Turnpike (Route 193) and the Chain Bridge Road (Route 3563). This location is one of the few remaining areas in Fairfax County that retains its historic appearance and an interesting assemblage of vernacular buildings (David 1980). The Langley Fork area was listed on the NRHP as a historic district (David 1980) under Criteria A for its association with important events in history, and under Criterion C for the architecture associated with the district. The importance of the district stems from its position as a junction on a major turnpike in northern Virginia and the use of the Langley Ordinary as a Civil War headquarters for Union Major-General George McCall of the Pennsylvania Reserves. The historic importance of this area is represented in the architectural resources present dating to the early 19th century.

The district encompasses a total 40 acres of land and includes 13 structures, 2 of which are non-contributing. Six structures form the nucleus of the historic district: the Langley Ordinary, Langley Tollhouse, Gunnell's Chapel, Langley Friends Meeting House, the Mackall House, and Hickory Hill. These structures were constructed beginning in the 1820s through the 1860s and while some have been modified over time, they retain their historic character. The remaining five contributing resources "reinforce the character of the older structures by their similar scale, setback, and building materials" and date up through the mid-20th century (David 1980). Modern intrusions into the district include infill development north of 6320 and 6330 Georgetown Pike, but the new development is set back from the road and screened by landscaping. Table 3 lists the individual historic structures located within the Langley Fork Historic District (also shown in figure 8).

TABLE 3. LANGLEY FORK HISTORIC DISTRICT CONTRIBUTING RESOURCES

Structure Name	Description
Hickory Hill (1147 Chain Bridge Road)	Circa 1870 structure, originally mansard-roofed with a columned veranda, altered in 1931 to a 2 1/2-story colonial revival. The north wing was added in 1964. Owned by Supreme Court Justice Robert Jackson, President John F. Kennedy, and Senator Robert F. Kennedy. Currently undergoing renovations.
1133 Chain Bridge Road	1950, 2 1/2-story colonial revival with one-story wings on north and south elevations.
1117 Chain Bridge Road	Two-story brick residence built 1953. Two- and one-story wings to the south and one-story frame wing to the north.
Langley Ordinary (1101 Chain Bridge Road)	Two-story frame and clapboard dwelling built ca. 1850. One-story porch on north and west elevations. Is currently a private residence but was originally a tavern, used during the Civil War as a hospital and headquarters of Union Major-General George McCall of the Pennsylvania Reserves.
6330 Georgetown Pike	1 1/2-story bungalow, built 1925 with 1 1/2-story addition on west elevation.

Structure Name	Description
6320 Georgetown Pike	Two-story frame prairie style dwelling built ca. 1910. Land north of the dwelling has been sub-developed since the nomination was written.
Langley Tollhouse (6324 Georgetown Pike)	Mid-19th century frame structure that replaced original tollhouse built ca. 1820. This two-story structure was originally one story; the second story was added during the 20th century.
Gunnell's Chapel (6324 Georgetown Pike)	This frame and clapboard chapel was built after 1865. Has decorative bargeboard above the entry and narrow four-over-four wood sash windows. Was originally built for an African-American congregation.
6400 Georgetown Pike	Two 1/2-story frame and clapboard dwelling built ca. 1934. Has a later two-story shingled addition.
Langley Friends Meeting House (6410 Georgetown Pike)	Built ca. 1893, this one-story frame building has an asymmetrical bell tower and wooden buttresses. The meeting house has clapboard siding with scrollwork bargeboard and long narrow windows surmounted by geometric pediments. The building has a one-story addition on its north elevation. Built in 1853 as the Trinity Methodist Church, it was purchased in 1961 by the Religious Society of Friends and is now known as the Langley Friends Meeting House.
Country Day School (6418 Georgetown Pike)	Two-story masonry structure, first built in 1858 as the Trinity Methodist Church. The center block, which shows characteristics of the Greek Revival style, was the original church. When the building was purchased by the McCall family in the latter part of the 19th century it was converted into a residence and wings were added on the east and west elevations. A porch was added to the south and east elevations It was occupied by the Mackalls until the 1940s. Since that time it has housed several schools, most recently the Country Day School.

Gunnell's Chapel and the Langley Tollhouse are located approximately 200 feet from the southwest corner of Langley Fork Park; these are.

In the past, local residents have rallied to preserve the historic character of the Langley Fork area. Ultimately, Fairfax County designated an overlay zone called the Langley Fork Historic Overlay District and established standards and guidelines to ensure the integrity of the historic setting. This overlay area is larger than the NRHP listed Langley Fork Historic District, covering 70 acres, and although it encompasses the historic district, it is a separate entity and is not listed on the NRHP. Its primary purpose is to provide protection to the historic resources in the Langley Fork Historic District, including Georgetown Pike. The Historic Overlay District includes 13.5 acres of Langley Fork Park. The guidelines for this Historic Overlay District seek to protect the rural character of the area with respect to the development pattern, landscape form, and architectural character. Within the Langley Fork Historic Overlay District proposed development should

- maintain the character of Georgetown Pike as a two-lane curving road
- blend driveways and access roads with the character of the road
- screen all parking areas
- maintain natural land contours
- encourage informal, natural landscaping with preference for deciduous trees
- preserve open space at the eastern end of the district
- consider the potential for archeological resources early in the development process
- avoid dominant, vertical elements

- use simple entrance gates and posts
- use discreet signs that are not internally lighted
- use simple exterior light fixtures
- avoid free-standing light posts

The western portion of the project area at Langley Fork Park is within Fairfax County's Langley Fork Historic Overlay District and is currently subject to the standards and guidelines developed by Fairfax County. Portions of Langley Fork Park that lie beyond the limits of the Historic Overlay District are not subject to the guidelines and restrictions listed above.

Georgetown Pike. Georgetown Pike has evolved from a Native American fur trading route in the 17th century and a road transporting tobacco to Potomac River shipping after European settlement. In 1813 the Georgetown & Leesburg Turnpike Company was chartered, after which road paving began. The Virginia turnpike system lasted until the Civil War, after which the road was operated as a private toll road. In 1934 the Madeira School purchased the road from the Washington, Great Falls and Dranesville Highway Company and turned it over to the Commonwealth of Virginia (Beauchamp 1995). In 1973, Georgetown Pike was designated the first Virginia Scenic Byway.

Georgetown Pike, which runs through the center of Langley Fork Historic District, was determined eligible for the NRHP in 1993 under Criterion A. An NRHP nomination was initially completed in 1995 but was not submitted for listing; the nomination was updated in 2010. The resource was listed on the national register in 2012. The resource consists of the 14.75-mile historic turnpike that runs west from Arlington County to Leesburg Pike at Dranesville near the border of Loudon County. Its present Virginia Department of Transportation-owned right-of-way varies from 40 feet to 130 feet wide and is a two-lane undivided rural road. The present asphalt-surface roadbed is approximately 22 feet wide with open ditches and no shoulders (Virginia Department of Historic Resources 2010). The road now runs through a semi-rural residential area with woodland and open horse country that retains sufficient integrity to convey its historic significance.

Archeological Resources

Langley Fork Park. As a supporting study for this environmental assessment (EA), an archeological identification and evaluation study was completed for Langley Fork Park (Katz et al. 2016). Prior to this study, the approximately 52-acre park property had not been surveyed for archeological resources. The study began with background research and a Phase I survey of the entire park property. Nine archeological sites and an archeological district were identified in the survey (table 4).

TABLE 4. ARCHEOLOGICAL RESOURCES IN LANGLEY FORK PARK

Site Number and Name	Description	NRHP Status
Langley Fork Park Quartz Workshop District	Complex of prehistoric quarry and workshop sites	Eligible
44FX3635 (Langley Fork 1)	Prehistoric quarry and workshop (unknown age)	Contributing to district; eligible
44FX3636 (Langley Fork 2)	Historic tenant farmstead (19th–20th century)	Unevaluated
44FX3637 (Langley Fork 3)	Prehistoric quarry and workshop (unknown age)	Contributing to district; eligible
44FX3638 (Langley Fork 4)	Historic artifact scatter (indeterminate age)	Not eligible

Site Number and Name	Description	NRHP Status
44FX3639 (Langley Fork 5)	Prehistoric lithic scatter (unknown age)	Contributing to district; not individually eligible
44FX3640 (Langley Fork 6)	Prehistoric lithic scatter (unknown age)	Not eligible
44FX3641 (Langley Fork 7)	Prehistoric lithic scatter (unknown age)	Not eligible
44FX3642 (Langley Fork 8)	Farmstead (19th–20th century)	Unevaluated
44FX3643 (Langley Fork 9)	Midden and farm outbuildings; (late 19th–20th century)	Unevaluated

Source: Katz et al. 2016.

The Langley Fork Quartz Workshop District is a complex of three prehistoric sites located in the eastern side of the park. The district is the site of local quartz procurement and reduction into stone tools. The district includes three sites: 44FX3635, 44FX3637, and 44FX3639. Site 44FX3635 is located on a small hill and has dense deposits of quartz debitage. A Halifax point recovered from the site indicates activity during the Middle Archaic period (3500 to 2800 BC) and the site is interpreted as a quarry and workshop site. At nearby site 44FX3637, fewer artifacts were found; however, the site is believed to be a quarry and workshop site. A buried hearth found at the site was radiocarbon dated to approximately 300 BC. The third site, 44FX3639, is located near the other two sites, and has very low densities of prehistoric artifacts. Tool production may have taken place at the site, and the site is of unknown age.

In consultation with the Virginia State Historic Preservation Office (SHPO), the Langley Fork Quartz Workshop District and the three constituent sites with significance to local prehistory (sites 44FX3635, 44FX3637, and 44FX3639) have been determined eligible for listing on the NRHP . All three sites have been determined individually eligible for listing on the NRHP and as contributing resources to the district.

In addition to the sites within the Langley Fork Quartz Workshop District, the survey identified two prehistoric lithic scatters (44FX3640 and 44FX3641) and a historic artifact scatter or trash dump (44FX3638); these sites were determined not to be significant resources (not eligible for listing on the NRHP). The survey also identified three historic domestic sites (44FX3636, 44FX3642, and 44FX3643). The historic sites date to the 19th and early 20th centuries and are thought to be farmhouse and tenant house sites. Additional investigation has been recommended for the three historic domestic sites (44FX3636, 44FX3642, and 44FX3643); these sites have an unevaluated status for listing on the NRHP but have been considered significant resources for the purposes of National Historic Preservation Act (NHPA) and National Environmental Policy Act (NEPA) compliance.

The park was thought to be at or near the location of Camp Pierpont, a Civil War camp. The camp was under the command of Union Major-General George McCall of the Pennsylvania Reserves. Some 10,000 men spent the winter of 1861-1862 at the camp. The precise location of the camp has never been identified; however, it has been known that it covered the woods and hills near Langley Crossroads. No Civil War-related resources were found at the park. Based on the negative finding from the survey, it is likely that Camp Pierpont was not established within the boundaries of Langley Fork Park.

Langley Oaks Park. A comprehensive archeological survey has not been conducted at Langley Oaks Park; however, three reconnaissance-level surveys have been conducted as well as a limited Phase I survey (Katz et al. 2016). The surveys were all conducted by Fairfax County archeologists. In the initial investigation (Johnson 1979), three transects of subsurface tests were excavated in the southern portion of the park near Turkey Run Park, where a pond was being constructed. The subsurface testing encompassed approximately 2/3 acres and identified site 44FX197. The northern portion of the park was the subject of an archeological reconnaissance in 1980 (Johnson 1980); this reconnaissance led to the identification of

two sites (44FX327 and 44FX328). A nearby road-cut was examined in 1981 (Johnson 1981), identifying site 44FX375. Fairfax County archeologists conducted an additional reconnaissance survey of the park in 2009 (Johnson 2009), identifying four sites (44FX3439, 44FX3440, 44FX3441, and 44FX3442).

A total of eight archeological resources have been identified in Langley Oaks Park (table 5). All of the sites have prehistoric occupations of unknown age. Turkey Run Mound (44FX327) also has a historic component of uncertain age. None of the sites have been evaluated for eligibility for listing on the NRHP.

TABLE 5. ARCHEOLOGICAL RESOURCES IN LANGLEY OAKS PARK

Site Number and Name	Description	NRHP Status
Langley Oaks Pond Site (44FX197)	Prehistoric, unknown	Unevaluated
Turkey Run Mound (44FX327)	Prehistoric, unknown; Historic, unknown	Unevaluated
44FX328	Prehistoric lithic quarry	Unevaluated
44FX375	Prehistoric, unknown	Unevaluated
Langley Oaks Pond #P7 (44FX3439)	Prehistoric, unknown	Unevaluated
Langley Oaks Pond #P8 (44FX3440)	Prehistoric, unknown	Unevaluated
Langley Oaks Pond #P9 (44FX3441)	Prehistoric, unknown	Unevaluated
Langley Oaks Pond #P10 (44FX3442)	Prehistoric, unknown	Unevaluated

Sources: Johnson 1979, 1980, 1981, 2009.

VISITOR USE AND EXPERIENCE

The George Washington Memorial Parkway and its related parks serves as a gateway for millions of people who live and visit the metropolitan Washington, DC, area to enjoy outdoor, natural experiences. More than a dozen individual parks are within a short driving distance of the nation's capital via the George Washington Memorial Parkway. These parks are used year-round.

George Washington Memorial Parkway and its related park sites averaged more than 7.2 million visitors per year over the last five years. The general visitation trend over this period was in an upward direction although visitors for 2013 were down slightly from the previous year, likely due to the temporary federal government shut down. For the period of January through April 2014, more than 1,350,000 people visited the George Washington Memorial Parkway sites for recreational purposes (NPS 2016).

Turkey Run Park and Claude Moore Colonial Farm are the administrative units of the George Washington Memorial Parkway in closest proximity to Langley Fork Park and Langley Oaks Park, and offer an estimate of potential visitor use for Langley Fork Park and Langley Oaks Park. Table 6 shows the number of visitors between 2011 and 2015 for the George Washington Memorial Parkway, Turkey Run Park, and Claude Moore Colonial Farm. Turkey Run Park, located on the Potomac River north of the George Washington Memorial Parkway close to Langley Oaks Park, contains picnic areas and numerous trails through natural habitats of the Potomac Gorge ecosystem. Claude Moore Colonial Farm is a working farm providing educational experiences related to colonial life and history through tours, demonstrations, programs, and special events. The proximity of both parks to the George Washington Memorial Parkway and associated parks allows for enhanced recreational opportunities and visitor experiences that highlight both cultural and natural resources of the Potomac River.

TABLE 6. GEORGE WASHINGTON MEMORIAL PARKWAY VISITATION (NUMBER OF VISITORS)

Year	George Washington Memorial Parkway	Turkey Run Park	Claude Moore Colonial Farm
2011	7,417,397	142,979	55,935
2012	7,425,577	147,869	48,214
2013	7,360,392	126,630	58,892
2014	7,472,150	121,883	59,586
2015	7,286,463	137,465	63,936

Langley Fork Park

Recreational facilities available at Langley Fork Park include two baseball diamonds, two rectangular athletic fields, two basketball courts, a trail with fitness stations, and parking. The athletic fields and courts are routinely used by teams and individuals. Trails throughout the park support pedestrian uses such as walking, wildlife viewing, and enjoyment of natural habitats in addition to informal connections (social trails) to adjacent George Washington Memorial Parkway sites. Vehicular access to Langley Fork Park is by way of Colonial Farm Road with pedestrian access provided by a paved trail on Georgetown Pike.

Reservations are required to schedule use of the two diamond fields and two rectangle fields during weekday evenings and all day on weekends from March 1 through November 30. Currently, one of the baseball diamonds is used on Monday through Thursday evenings from late March through early November by a softball league and from early August to the end of October by the Northern Virginia Travel Baseball League. From late March to the end of July, the Fairfax Adult Softball League and the Northern Virginia Travel Baseball League use the field on Saturdays from morning through evening. The McLean Little League uses the field on Saturdays from the beginning of August through November and on Sundays beginning at noon from late March through late October. The other baseball diamond is used exclusively by the Northern Virginia Travel Baseball League on weekday evenings and weekends from late March until early November.

The Oak Crest School uses one of the rectangle fields primarily on Mondays and Wednesdays during April and early May from 3:30 p.m. to 5:00 p.m. McLean Youth Athletics uses the field on almost every weekday beginning at 5:00 p.m. and every weekend. Lacrosse teams from this program use the field from late March through November and football teams from August through November. The other rectangle field is reserved for lacrosse and soccer from March through November. The McLean Youth Athletics lacrosse program uses the field most weekday evenings from March to November, Saturdays from March to July, and Sundays from August to November. Additional usage includes soccer on Saturday afternoons from August through November and other soccer programs on Sundays from March through July (Dixon pers. comm. 2014).

Langley Oaks Park

Recreational potential at Langley Oaks Park includes hiking on natural surface trails. A portion of Dead Run Trail passes through the northernmost portion of the park, maintaining the connection of Langley Oaks Park to the larger George Washington Memorial Parkway, and there are numerous social trails in Langley Oaks Park. There are no outbuildings located in Langley Oaks Park, and the only access to the trails is from concrete paved trails connected to the adjacent development, or from the George

Washington Memorial Parkway. Parking is restricted to street-access only as there is no off-street parking available.

NEIGHBORING PROPERTIES

Several properties are located within close proximity to Langley Fork Park. These neighboring properties are described below.

Claude Moore Colonial Farm

The Claude Moore Colonial Farm, located on NPS lands and an administrative unit of George Washington Parkway, is situated to the north of Langley Fork Park and is a living history museum that portrays family life on a small, low-income farm just prior to the Revolutionary War. The farm is now managed by a private organization within the NPS, and has served more than 1.8 million visitors since it opened in 1973 (Claude Moore Colonial Farm 2014).

Langley High School

Langley High School is located in McLean, Virginia, and less than a mile west of Langley Fork Park and Langley Oaks Park. The geographic attendance area of the school, the largest in its school district, encompasses residences on the border of Loudoun County as well as the community of McLean. Langley High School is one of 26 secondary and high schools in the Fairfax County Public School system. The school district is the largest in Virginia and the eleventh largest in the country, with over 175,000 students annually (Langley High School 2014).

Residential Districts

Langley Fork Park and Langley Oaks Park are bounded to the south and west by residential neighborhoods, and to the north and east by non-residential areas. South of Langley Fork Park, across Georgetown Pike, is the Everymay subdivision; west of Langley Fork Park are individually developed residential lots. To the west and south of Langley Oaks Park is the Langley Oaks subdivision.

Clemyjontri Park

Founded in 2006, Clemyjontri Park is the first park in Virginia where children of all abilities can have a parallel playground experience. This park is made up of four separate play areas with a central pavilion and a parking area. It is located directly south of Langley Fork Park, across Georgetown Pike (Friends of Clemyjontri 2014).

Federal Agencies

Two federal agencies are located near Langley Fork Park, on the eastern side of Colonial Farm Road: the Central Intelligence Agency and the Federal Highway Administration. Access to the Federal Highway Administration is off of Colonial Farm Road. The primary access to the Central Intelligence Agency is off of Route 123 although access for materials delivery and screening facility is provided from Colonial Farm Road.

TRAFFIC AND TRANSPORTATION

Site Characteristics

Langley Fork Park. The transportation infrastructure at Langley Fork Park consists of a parking lot, a pedestrian trail, and several walkways connecting recreational fields and spaces. The Langley Fork Park parking lot is on the west side of Colonial Farm Road, about 175 feet from the intersection with Georgetown Pike. The L-shaped parking lot is paved on the drive aisles, but is primarily gravel in the parking areas. With two aisles of parking, there is space for approximately 180 vehicles. Several spaces are marked as accessible parking and it was observed on July 10, 2014, that school buses, likely from trips to Clemyjontri Park, park at this lot while they are waiting. A pedestrian trail runs along the frontage of Georgetown Pike as part of the countywide trails network, providing a recreational trail that continues along Georgetown Park to the west about 2 miles and to the east about 1/2 mile. A smaller one-way parking lot with angled parking exists on Georgetown Pike. This parking lot, constructed by Virginia Department of Transportation, is located in the right-of-way for Georgetown Pike. This parking lot is not part of Langley Fork Park and does not provide parking for Langley Fork Park. This lot includes approximately 21 parking spaces, 2 of which are for accessible parking, and is intended primarily for viewing a historic marker located on the right-of-way although it is frequently used as overflow parking for Clemyjontri Park. The entrance to this smaller lot is closer to the intersection with Colonial Farm Road (about 700 feet east), and the exit to the lot is further west, across the street from Clemyjontri Park. A well-marked pedestrian crosswalk exists, creating a connection to the well-used Clemyjontri Park (Fairfax County n.d.).

Langley Oaks Park. Unlike Langley Fork Park, there are no public roads or parking areas within Langley Oaks Park. There are, however, several points of frontage on neighborhood streets.

Road Characteristics

Langley Fork Park. Langley Fork Park is located on Georgetown Pike, near its intersection with Colonial Farm Road (on which the entrance to the park is located). Georgetown Pike is a minor arterial road that begins in western Fairfax County at Route 7 and continues eastward to its terminus at Route 123 (Dolley Madison Boulevard) about 1/4 mile from the entrance to the park. Georgetown Pike provides east-west vehicular connections for residents, businesses, and visitors of Great Falls, northern Tysons Corner, and McLean, Virginia. Georgetown Pike also provides connections to larger arterial roads including both Interstate 495 (I-495) just over 2 miles west of the park and Route 123 (Dolley Madison Boulevard) 0.25 miles to the east, which continues in the same south-eastward direction until it intersects with the George Washington Memorial Parkway and the District of Columbia border. Colonial Farm Road, which provides access to the parking and activity areas of Langley Fork Park, is a short road, less than one mile long, that extends north from Georgetown Pike and provides access to Claude Moore Colonial Farm, Federal Highway Administration Turner Fairbank Highway Research Center, and the Central Intelligence Agency via a secondary vehicular and truck screening entrance.

Georgetown Pike is unique in that it was designated the first Virginia Scenic Byway in 1973 and is listed in the Virginia Landmarks Register and the NRHP. For the majority of the road's length between I-495 and Route 123, it is a two-lane road with no curbs and a speed limit of 35 mph, except in school zones or areas with turning activity that do not have great visibility due to hills where the speed limit is typically 25 mph. The road has no paved shoulders, has utility poles primarily on the south side of the street, is designated as a snow emergency route, and is not lighted except for a small section at the pedestrian crossing at the entrance to Clemyjontri Park. The road has very few left turn lanes except, for example, at the high school and for Clemyjontri Park, but there are several short right-turn deceleration lanes at higher

traffic locations such as entrances to new developments or churches. Between the southwest corner of Langley Fork Park on Georgetown Pike and Route 123, a median begins and the road widens to two lanes eastbound and westbound. At the intersection with Route 123, eastbound Georgetown Pike widens to provide two dedicated left turn lanes and a combined through and right turn lane. A single lane is provided to enter eastbound Georgetown Pike from the south on Route 123 or from the east at Potomac School Road. This lane is joined by a free flow access coming from the north on Route 123. The widening of the Georgetown Pike at Route 123 is likely due to the back entrance to the Central Intelligence Agency via Colonial Farm Road. Colonial Farm Road is also a two-lane road, except at the intersection with Georgetown Pike where there are two southbound lanes, one that turns left and the other right onto Georgetown Pike. The road has no curbs, no observed speed limit signs, and no paved shoulders, although flat grassy areas on either side provide pull-off areas if needed.

Langley Oaks Park. Langley Oaks Park is between residential neighborhoods and the George Washington Memorial Parkway forested area. Access to Langley Oaks Park is possible via residential streets north of Georgetown Pike, providing access to unpaved trails or dirt roads. As of July 10, 2014, access points to the park were unclear because rural paved or unpaved roads could not be discerned from private driveways and no signs indicated access to the park.

Road Environment

The character of Georgetown Pike between I-495 and Route 123 is primarily rural. Residences and institutions (churches, schools, parks) are primary uses the road supports. The two-lane road follows rolling hills, has significant deciduous tree cover, and development is set back from the street, all further contributing to the rural character. Although a pedestrian path runs the length of much of this stretch of the drive, it is narrow, buffered from the road by grass, and not always adjacent to the road; instead it weaves behind tree stands that border the road. This stretch of Georgetown Pike generally has no signals except for at Ridge Road and either end (near I-495 and at Route 123), with a few pedestrian crosswalks marked at intersections.

Operational Characteristics

Georgetown Pike and Colonial Farm Road likely experience their highest traffic levels during peak morning and evening rush hours due to the location of the Central Intelligence Agency, the schools along Georgetown Pike (morning peak contributors), and the access Georgetown Pike provides between northern Fairfax County and Washington, DC. The peak morning and evening rush hours, however, are likely substantially offset by alternate uses along the road such as the playing fields at Langley Fork Park, Clemyjontri Park (with highest traffic levels between 10:00 a.m. and 2:00 p.m.), churches, and schools (which have afternoon closing times).

Langley Fork Park is located on a minor arterial road, while street frontage to Langley Oaks Park is provided from Anna Maria Court, a residential cul-de-sac, although no physical access is constructed. Therefore, the location of Langley Fork Park is more conducive to higher levels of activity due to its location on a drive that supports additional traffic and access.

Traffic Conditions

According to the 2010 Virginia Department of Transportation Daily Traffic Volume Estimates Including Vehicle Classification Estimates Jurisdiction Report, annual average daily traffic volumes for Georgetown Pike at Langley Fork Park were 9,700 vehicles and at Ridge Drive (with access to Langley Oaks Park) were 13,000 vehicles (VDOT 2010). The report estimates that 11.7% and 10.2% of the annual average daily traffic volumes traveled during the peak hours. A 1994 report on Georgetown Pike by

Virginia Department of Transportation (Senate Document No. 47), for the Governor and General Assembly of Virginia, average daily traffic volumes recorded in June for Georgetown Pike at Langley Fork Park were 9,840 vehicles and at Ridge Road (with access to Langley Oaks Park) were 12,255. The 2010 Virginia Department of Transportation data are comparable, showing a slight increase on the western segment of Georgetown Pike, which is probably attributable to general growth in the area.

The 1994 Virginia Department of Transportation report cites a capacity of 12,000 average daily traffic for Georgetown Pike according to the Virginia Department of Transportation Northern Virginia District Transportation Planning Division (VDOT 1994). If this threshold is still valid, the segment of Georgetown Pike by Langley Oaks Park is just over capacity and the section by Langley Fork Park is under or within capacity. The Fairfax County Comprehensive Plan, 2013 Edition (Fairfax County 2014), states that although Georgetown Pike is commonly acknowledged to contain some traffic hazards, it is generally acceptable in its present condition to local residents. Additionally, the Comprehensive Plan notes that Georgetown Pike should be maintained within its existing right-of-way, “Center turn lanes and deceleration and acceleration lanes should be discouraged and curb cuts not be allowed unless no other alternative exists.”

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

This "Environmental Consequences" chapter analyzes both beneficial and adverse impacts that would result from implementing any of the alternatives considered in this environmental assessment (EA). This chapter also includes methods used to analyze impacts, and the analysis methods used for determining cumulative impacts. As required by the Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA), table 1 provides a summary of the environmental consequences for each alternative ("Chapter 2: Alternatives"). The resource topics presented in this chapter and the organization of the topics correspond to the resource discussions in "Chapter 3: Affected Environment."

GENERAL METHODOLOGY FOR MEASURING IMPACTS

The following elements were used in the general approach for establishing impact thresholds and measuring the effects of the alternatives on each resource category:

- general analysis methods as described in guiding regulations, including the context and duration of environmental effects
- basic assumptions used to formulate the specific methods used in this analysis
- methods used to evaluate the cumulative impacts of each alternative in combination with unrelated factors or actions affecting park resources

These elements are described in the following sections.

General Analysis Methods

The analysis of impacts follows CEQ guidelines and Director's Order 12 (NPS 2011) and is based on the underlying goal of preserving the historic and natural resources that contribute to the significance of the park for the use, inspiration, and benefit of the public. This analysis incorporates the best available scientific literature applicable to the setting and the actions being considered in the alternatives. For each resource topic addressed in this chapter, the applicable analysis methods are discussed, including assumptions and impact intensity thresholds.

Assumptions

Several guiding assumptions were made to provide context for this analysis. These assumptions are described in the following sections.

Analysis Period. The analysis period for this assessment is the expected period needed to construct the proposed alternatives. However, the analysis period for some resource areas may extend beyond the period of construction. The specific analysis period for each impact topic is defined at the beginning of each topic discussion.

Geographic Area Evaluated for Impacts (Area of Analysis). The general geographic area for this assessment are the boundaries of each park as discussed below. For some impact topics and for cumulative impact analysis, the area of analysis may extend beyond the boundaries of Langley Fork Park

and Langley Oaks Park, and is noted in the introductory language for each resource. The specific area of analysis for each resource topic is defined at the beginning of each resource discussion.

Type of Impact

The potential impacts of the alternatives are described in terms of type, as follows:

Direct: Impacts that would occur as a result of the proposed action at the same time and place of implementation (40 CFR 1508.8).

Indirect: Impacts that would occur as a result of the proposed action but later in time or farther in distance from the action (40 CFR 1508.8).

Beneficial: A positive change in the condition or appearance of the resource or a change that moves the resource toward a desired condition.

Adverse: A change that declines, degrades, and/or moves the resource away from a desired condition or detracts from its appearance or condition.

Assessing Impacts Using Council on Environmental Quality Criteria

The impacts of the alternatives are assessed using the CEQ definition of "significantly" (40 CFR 1508.27), which requires consideration of both context and intensity:

Context: This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

Intensity: This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action.

For each impact topic analyzed, an assessment of the potential significance of the impacts according to context and intensity is provided in the "Conclusion" section that follows the discussion of the impacts under each alternative.

Cumulative Impacts

The CEQ regulations for implementing NEPA require the assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as "the impact to the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7). As stated in the CEQ handbook, *Considering Cumulative Effects* (CEQ 1997), cumulative impacts need to be analyzed in terms of the specific resource, ecosystem, and human community being affected, and the analysis should focus on effects that are truly meaningful. Cumulative impacts are considered for all alternatives, including the No-Action Alternative.

Cumulative impacts were determined by combining the impacts of the alternative being considered with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other

ongoing or reasonably foreseeable future projects and plans at Langley Fork Park and, if applicable, in the surrounding area.

The analysis of cumulative impacts was accomplished using four steps:

> **Step 1.** Identify resources affected. Fully identify resources affected by any of the alternatives. These include the resources addressed as impact topics in chapters 3 and 4 of this document.
>
> **Step 2.** Set boundaries. Identify an appropriate spatial and temporal boundary for each resource. The temporal boundaries are noted in table 7, and the spatial boundary for each resource topic is listed under each topic.
>
> **Step 3.** Identify past, present, and reasonably foreseeable future actions. Determine which past, present, and reasonably foreseeable future actions to include with each resource. These are listed in table 7 and described below.
>
> **Step 4.** Perform cumulative impact analysis. Summarize impacts of these other actions (x) plus impacts of the proposed action (y), to arrive at the total cumulative impact (z). This analysis is included for each resource.

Table 7 summarizes the actions that could affect the various resources at the park, along with the plans and policies of the park and surrounding jurisdictions, which were discussed in "Chapter 1: Purpose and Need." Descriptions of the actions follow the table.

TABLE 7. CUMULATIVE IMPACT PROJECTS

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions
Soils	Langley Fork and Langley Oaks Parks, and lands immediately adjacent to the parks	None	None	George Washington Memorial Parkway North Section Rehabilitation
Vegetation	Langley Fork and Langley Oaks Parks, and lands immediately adjacent to the parks	None	None	George Washington Memorial Parkway North Section Rehabilitation
Wildlife and Wildlife Habitat	Langley Fork and Langley Oaks Parks, and lands immediately adjacent to the parks	None	None	George Washington Memorial Parkway North Section Rehabilitation
Archeological Resources	George Washington Memorial Parkway	None	None	Potomac Yards Metrorail Station Arlington National Cemetery Expansion George Washington Memorial Parkway North Parkway Rehabilitation Arlington Memorial Bridge Rehabilitation Memorial Circle Safety Improvements George Washington Memorial Parkway North Section Rehabilitation

Impact Topic	Study Area	Past Actions	Present Actions	Future Actions
Historic Structures and Districts	George Washington Memorial Parkway	Update to the George Washington Memorial Parkway Historic District	Dyke Marsh Restoration project	Potomac Yards Metrorail Station Arlington National Cemetery Expansion George Washington Memorial Parkway North Parkway Rehabilitation Arlington Memorial Bridge Rehabilitation Memorial Circle Safety Improvements George Washington Memorial Parkway North Section Rehabilitation
Visitor Use and Experience	Langley Fork and Langley Oaks Parks, and lands immediately adjacent to the parks	None	None	George Washington Memorial Parkway North Section Rehabilitation
Neighboring Properties	Langley Fork and Langley Oaks Parks, and lands immediately adjacent to the parks	None	None	George Washington Memorial Parkway North Section Rehabilitation
Traffic and Transportation	Langley Fork and Langley Oaks Parks, and lands within 0.25 mile of the entrances to these parks	None	None	George Washington Memorial Parkway North Section Rehabilitation

Potomac Yards Metrorail Station. The Washington Metropolitan Area Transit Authority plans to open a new station in Alexandria near the Potomac Yards development on Route 1. NPS land in the George Washington Memorial Parkway will be part of the project. It is anticipated that the project area could impact archeological and other cultural resources, and mitigation for impacts on these resources is necessary under Section 106 of the National Historical Preservation Act (NHPA).

Arlington National Cemetery Expansion. The cemetery is planning to expand burial space onto land previously administered by NPS. Through Section 106 consultation, it was determined that the project would result in an adverse effect to a portion of the wooded area that contributes to the National Register of Historic Places (NRHP) listed Arlington House, the Robert E. Lee Memorial, which is administered by the George Washington Memorial Parkway. NEPA and NHPA compliance have been completed for this project.

George Washington Memorial Parkway North Parkway Rehabilitation. Elements of the north parkway have deteriorated and require corrective treatment. George Washington Memorial Parkway is coordinating the treatment effort with the Federal Highway Administration. The Federal Highway Administration advocates the implementation of modern safety improvements into the project. This includes elements such as larger guide walls that could impact the historic integrity of the George Washington Memorial Parkway. Archeological resources could be impacted as well. An EA for this project is in process.

Arlington Memorial Bridge Rehabilitation. Components of the bridge have deteriorated to the point that corrective treatment is required. Some of the alternatives proposed have the potential to impact the historic character of the bridge and its visual appearance within the landscape of the George Washington Memorial Parkway. An EA has been prepared and released for public review.

Memorial Circle Safety Improvements. A road safety audit was conducted for Memorial Circle and its immediate vicinity. The audit proposed a number of modifications to the circle in order to address identified safety issues. Some of the proposed alternatives could result in conspicuous visual impacts on the historic George Washington Memorial Parkway. An EA is in planned to evaluate these alternatives.

George Washington Memorial Parkway North Section Rehabilitation. The George Washington Memorial Parkway supports more than 33 million vehicles per year, with the northern section receiving the heaviest amount of daily traffic. The proposed action would include reconstructing the asphalt pavement and constructing new concrete curbs; replacing drainage inlets and culverts; stabilizing erosion at drainage outfalls; improving safety; reconfiguring the interchange at Route 123 / George Washington Memorial Parkway; and other smaller project elements such as creation of emergency turnarounds, extension of acceleration and deceleration lanes, and installation of stormwater management practices. The rehabilitation has been proposed to provide visitors with a safe and aesthetically pleasing driving experience while extending the life of the parkway.

SOILS

Methodology and Assumptions

Under NPS *Management Policies 2006*, NPS actively seeks to understand and preserve the soil resources of national park system parks and properties, and prevent unnatural erosion, physical removal, or contamination of the soil to the extent possible (NPS 2006). Analysis of possible impacts on soil resources was based on a review of existing literature and soil maps, information provided by NPS and other agencies, and professional judgment. The majority of soils in the project area are undisturbed except for the developed portions of Langley Fork Park that are eroded and compacted.

Study Area

The study area for soil resource impacts is the project area of Langley Fork Park and the portion of Langley Oaks Park to be exchanged. This includes the limit of disturbance required for development activities, and any necessary staging areas for stockpiling material and construction equipment.

Impacts of Alternative 1: No Action

Analysis. Alternative 1 represents the current conditions at the project site. There would be no redevelopment or improvements performed within either park and there would be no land transfer. Soils at Langley Oaks Park would continue to be mainly undisturbed due to the undeveloped nature of the park. However, in the existing unpaved, hard-packed dirt trails, disturbed soils would continue in these locations. Langley Fork Park contains approximately 14.5 acres of development including 1.9 acres of impervious surfaces. The soils associated with the gravel fitness trail and the athletic fields have been compacted by intense visitor use and are subject to mild erosion due to the lack of turf grass in some areas. Under Alternative 1, typical visitor use at both Langley Oaks Park and Langley Fork Park and routine site maintenance activities would continue to impact soils. Therefore, the implementation of Alternative 1 would result in negligible adverse impacts on soils.

Cumulative Impacts. No past, present, or reasonably foreseeable projects would have an impact on soils at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 1.

Conclusion. Under Alternative 1, soil conditions would not change and the implementation of this alternative would result in continued negligible adverse impacts on soil resources from regular activities at the park. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under Alternative 2, Fairfax County Park Authority (FCPA) actions to improve and redevelop Langley Fork Park would impact soils. Potential redevelopment of the facilities in Langley Fork Park include improvements such as the addition of lighting for the fields, expansion of the parking lot, resurfacing the athletic fields with synthetic turf; and construction of a pavilion. These actions would take place within the general footprint of existing development and areas of disturbed soil. Reconfiguration of the athletic fields could disturb previously disturbed soils through regrading. The possible replacement of natural turf athletic fields with synthetic turf would cover existing soils. However, soil functions such as infiltration, drainage, and groundwater recharge should not be negatively impacted, and could be improved, because the synthetic turf is pervious, and would allow water to reach the underlying soil (FCPA n.d.). During construction of the pavilion, soil would be excavated and temporarily exposed, increasing erosion potential. Soils would be compacted following construction and heavy equipment usage. Construction of the pavilion and extension of the parking area would permanently cover existing soils, in addition to existing impervious surface, and add a minimal amount of new impervious surface, thereby decreasing soil functions such as water infiltration, groundwater recharge, and pollutant filtration as well as increasing stormwater runoff. Installation of field lighting would result in temporary disturbance of small areas of soil for placement of lighting structures. However, implementation of all these actions would follow the minimum standards stated in the Virginia Erosion and Sediment Control law, regulations, and handbook including all applicable criteria, techniques, and policies to prevent and minimize soil impacts and sedimentation of local waterways. Areas of exposed and compacted soil would be reseeded to prevent long-term erosion, restore soil functions, or improve productivity. Redevelopment and improvements would result in some additional developed area and impervious surface for a total of 15.1 developed acres, which would increase total development by 1 acre and 2.0 impervious acres, an increase in 0.1 acres of impervious surface. Installation of signs and construction and maintenance of trails could take place outside the current development area boundaries. Therefore, because of the disturbed nature of the soils at Langley Fork Park and the use of best management practices during construction to prevent erosion, the impacts on soils would be short- and long-term minor adverse.

Under Alternative 2, negligible adverse to no impacts on soil resources within Langley Oaks Park would be expected as the park would continue to be managed in its existing natural condition with no development or associated soil disturbances planned, although NPS could establish trails in the park in the future.

Cumulative Impacts. No past, present, or reasonably foreseeable actions would have an impact on soils at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 2.

Conclusion. Under Alternative 2, soils would be adversely impacted as a result of construction activities as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park. Required sediment and erosion control practices would be used to minimize impacts related to erosion. There would be no cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Under Alternative 3, FCPA actions to improve and redevelop Langley Fork Park would impact soils in a manner similar to those described under Alternative 2. The addition of lights for the fields, expansion of the parking area, synthetic resurfacing of the athletic fields, and construction of a pavilion would be similar to those proposed under Alternative 2, resulting in short- and long-term minor adverse impacts on soils.

Additional improvements under Alternative 3 include potential creation of additional athletic fields in the southern and northeast portions of the park, a second pavilion feature, an off-leash dog area, and the addition of fitness features. The additional features proposed under Alternative 3 would require clearing and land disturbance of approximately 11.5 aces of forested land beyond the area of existing development. Overall, redevelopment and improvements would result in a total of 26.1 developed acres and 3.1 acres of impervious surface, an increase in 1.2 acres of impervious surface.

The development of new athletic fields, a dog park, and an additional pavilion would temporarily adversely impact previously undisturbed soils due to exposure of bare soil following forest clearing, regrading, and soil compaction. However, these disturbed and exposed soils would be reseeded to prevent long-term adverse impacts. If these new fields are resurfaced with synthetic turf, larger surface areas would be covered; however, impacts from synthetic turf coverage would be temporary during placement of the material. Following implementation, the pervious nature of the synthetic turf should allow water to infiltrate allowing for continued, and perhaps improved, soil function. However, long-term impacts from the compaction of soil for new facilities and synthetic turf would remain. Development of the dog park would temporarily disturb the soil within the proposed footprint. Disturbances include the placement of fencing and grading of the area to establish an acceptable slope within the dog park. The surface of the dog park would likely consist of a 4-inch layer of stone dust, in keeping with current FCPA standards, a pervious material resulting in minimal impacts on soil function. The addition of fitness equipment or fitness stations would require minimal soil disturbance including temporary soil exposure and compaction with the potential for erosion followed by a long-term reduction in infiltration and recharge abilities with the addition of impervious surface.

Under Alternative 3 there would be a larger area of potential disturbance including the newly cleared land and a larger amount of soil would be impacted than under Alternative 2. However, all applicable Virginia soil and erosion criteria, techniques, and policies to prevent and minimize soil impacts and sedimentation of local waterways would be followed including the use of best management practices such as silt fences and sediment traps. Areas of exposed and compacted soil would be reseeded to prevent long-term erosion, restore soil functions, or improve productivity. Therefore, because of the previously disturbed nature of the soils at Langley Fork Park and the use of best management practices during construction, there would be short- and long-term minor adverse impacts on soils.

The reforestation of the existing field in the northwest corner of the park would improve soils in that area of the park, as the forest becomes established, and organic matter begins to build up on the forest floor over time and enriches the soil and result in long-term beneficial impacts in that area. This would partially offset loss of soil function from grading and installation of new facilities and impervious surface elsewhere in the park.

Under Alternative 3, negligible adverse to no impacts on soil resources within Langley Oaks Park would be expected as the park would continue to be managed in its existing natural condition with no development or associated soil disturbances planned.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on soils at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 3.

Conclusion. Under Alternative 3, soils would be adversely impacted because of construction activities and clearing as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park. There would be some long-term benefits to soils in the reforestation area. There would be no cumulative effects.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. Under Alternative 4, FCPA actions to improve and redevelop Langley Fork Park would impact soils in a manner similar to those described under Alternatives 2 and 3. The impacts from the addition of lights for the fields, expansion of the parking area, synthetic resurfacing of the athletic fields, and construction of a pavilion would be similar to those proposed under Alternatives 2 and 3, resulting in short- and long-term minor adverse impacts on soils.

In addition to the enhancements described above, improvements under Alternative 4 include potential creation of additional athletic fields in the southern portion of the park and one pavilion feature. The additional features proposed under Alternative 4 would require clearing and land disturbance of approximately 0.65 aces of forested land beyond the area of existing development. Overall, redevelopment and improvements would result in a total of 15.6 developed acres and 2.3 acres of impervious surface, an increase in 0.3 acres of impervious surface.

The development of new athletic fields in the southern portion of the park would temporarily adversely impact some previously undisturbed soils due to exposure of bare soil following forest clearing, regrading, and soil compaction. However, these disturbed and exposed soils would be reseeded to prevent long-term adverse impacts.

Similar to both of the other action alternatives, impacts from synthetic turf coverage would be temporary during placement of the material and should allow water to infiltrate allowing for continued, and perhaps improved, soil function. Synthetic turf would not be used to improve the existing athletic fields in the northern and western portions of the site due to the presence of archeological resources. Under Alternative 4, there would be no development of an additional diamond field or dog park in the northeast portion of the park, resulting in less disturbances than those outlined under Alternative 3. Additionally, there would be no reforestation activity in the northwest corner of the park.

Impacts from the addition of fitness equipment or fitness stations would be similar to those outlined under Alternative 3, and could result in long-term reduction in infiltration and recharge abilities with the addition of impervious surface. Under Alternative 4 there would be a larger area of potential disturbance from newly cleared land and a larger amount of soil would be impacted than under Alternative 2, however, impacts from disturbance would be significantly less than those outlined under Alternative 3.

All applicable Virginia soil and erosion criteria, techniques, and policies and best management practices would be followed during construction. Areas of exposed and compacted soil would be reseeded to prevent long-term erosion, restore soil functions, or improve productivity. Therefore, because of the previously disturbed nature of the soils at Langley Fork Park and the use of best management practices during construction, there would be short- and long-term minor adverse impacts on soils.

Under Alternative 4, negligible adverse to no impacts on soil resources within Langley Oaks Park would be expected as the park would continue to be managed in its existing natural condition with no development or associated soil disturbances planned.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on soils at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 4.

Conclusion. Under Alternative 4, soils would be adversely impacted because of construction activities and clearing as well as an increase in impervious surface. Implementation of this alternative would result in short- and long-term minor adverse impacts on soils at Langley Fork Park and negligible adverse to no impacts at Langley Oaks Park. There would be no cumulative effects.

VEGETATION

Methodology and Assumptions

Under NPS Director's Order 77: *Natural Resources Management* (NPS n.d.), NPS is responsible for managing, conserving, and protecting the natural resources found in national park system units. Information on vegetation and vegetation communities potentially impacted in the project area was compiled based on an assessment of the forest communities of Langley Fork Park and Langley Oaks Park completed in 2011 by the Virginia Department of Conservation and Recreation on behalf of NPS and additional surveys, including nonnative invasive species and rare plant species, performed by the Louis Berger Group in 2012.

Study Area

The study area for vegetation analysis includes all plant communities within the boundaries of Langley Fork Park and Langley Oaks Park.

Impacts of Alternative 1: No Action

Analysis. Under Alternative 1, the exchange of lands between NPS and FCPA would not occur. FCPA would continue to manage Langley Fork Park for recreational sports activities under a special use permit, in keeping with NPS permitting policies. Vegetation coverage in Langley Fork Park would remain at approximately 35 acres and there would be no changes to the plant community. Negligible adverse impacts on vegetation, such as occasional trampling or other disturbances, would be expected from continued visitor use.

Langley Oaks Park would remain under the management of FCPA. No impacts on vegetation within Langley Oaks Park would be expected as the park would continue to be managed in its existing natural condition with no development planned.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on vegetation at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 1.

Conclusion. The implementation of Alternative 1 would result in negligible adverse impacts on vegetation at Langley Fork Park and no impacts at Langley Oaks Park. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under Alternative 2, NPS and FCPA would exchange the approximately 52-acre portion of George Washington Memorial Parkway known as Langley Fork Park with an undeveloped portion of Langley Oaks Park. FCPA would modify recreation facilities in Langley Fork Park within the general footprint of the existing facilities resulting in a slight increase from the current approximately 14.5 acres to 15.1 acres of developed area. Additionally, Alternative 2 would slightly expand the parking lot increasing the paved surface from 1.95 acres to 2.0 acres, resulting in a slight loss in turf vegetation cover. The actions proposed under Alternative 2 would result in a net loss of 0.65 acres of undeveloped land adjacent to the currently developed area, primarily consisting of Successional Tuliptree Forest. This represents a slight loss in vegetation cover but would not significantly change the plant community structure. No rare plant species or species of special concern would be affected because no such species are known to exist within the project area.

Modifications to recreation facilities in Langley Fork Park could include replacement of turf grass fields with synthetic turf. Although this would result in a loss of total vegetation cover in the park, adverse impacts on vegetation would be negligible due to the low ecological value of turf grasses that have replaced native plant species in the action area. Clearing of up to an acre if vegetation, primarily the Successional Tuliptree Forest adjacent to the currently developed area, for modification of existing recreational facilities would result in localized long-term negligible to minor adverse impacts on vegetation in Langley Fork Park. Removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted. Long-term adverse impacts on vegetation under Alternative 2 would be due to the relatively small portion of new development, most of which would be contained within the existing footprint, and the poor ecological function of the study area due to previous disturbance.

As a result of the land exchange outlined under Alternative 2, NPS would manage the exchanged parcel of Langley Oaks Park in its natural condition, allowing for limited improvements, such as installation of trails, consistent with park purpose and significance. This would potentially result in some degree of long-term beneficial impacts by ensuring permanent protection of the Potomac Gorge watershed and site resources with no plans for change or development. Although the NPS may make limited improvements to the Langley Oaks parcel in the future, no such improvements are currently planned and any future improvements would be subject to further NEPA compliance and public review. Under current FCPA ownership, there are no plans to develop the park, and it is FCPA policy to maintain such parks as open space.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on vegetation at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under the Alternative 2.

Conclusion. Although the land exchange itself would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 2 would result in future direct impacts on vegetation due to clearing by the FCPA of Successional Tuliptree Forest adjacent to the currently developed area, modification of facilities, and replacement of turf grass fields with synthetic turf. Alternative 2 would have long-term negligible to minor adverse impacts on vegetation at Langley Fork Park. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on vegetation. There would be no cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Under Alternative 3, the same land exchange described under Alternative 2 would occur. However, under Alternative 3, FCPA would more fully develop Langley Fork Park. Development could include clearing of additional lands, including 11.5 acres of Successional Tuliptree Forest in the northeast corner of the park, modification of recreation facilities, and replacement of turf grass fields with synthetic turf, as well as the addition of an off-leash dog area, fitness features, and a second pavilion. Unlike Alternative 2, modifications to park facilities under Alternative 3 would not be contained within the existing footprint. New development and modification of existing facilities would increase the footprint from the current area of approximately 14.5 acres to approximately 26.1 acres and expand the parking lot area from 2.0 acres to 3.1 acres. The actions proposed under Alternative 3 would result in a net loss of 12.6 acres of undeveloped land and a 1.1-acre increase in impervious surface. This would result in long-term moderate adverse impacts on vegetation due to loss in forest and vegetation coverage. Clearing and removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted. To offset impacts of the removal of the forested areas in the northeast corner of the park, the existing field (approximately 2 acres) on the northwest corner that sits partially within the proposed forested buffer would be reforested. A landscape plan to ensure that there is a buffer along Georgetown Pike would be developed and implemented. There would be enough remaining forest cover in the park that additional plantings would not be required under county ordinances. The natural resources report documented a large amount of nonnative and invasive plant species in the forest around the edges of the existing fields on the eastern edge of the park, and the reforested field would be planted with native species in an effort to decrease the amount of nonnative species in the park, although careful management would be necessary while the forest becomes established (FCPA 2013a). Overall, the reforestation would result in long-term beneficial impacts to vegetation.

Similar to Alternative 2, modification of recreation fields via replacement of turf grass with synthetic turf would result in negligible adverse impacts on vegetation due to low ecological value of turf grasses which have replaced native plant species in the action area. Clearing of vegetation for development of new and modification of existing recreational facilities would result in localized long-term minor adverse impacts on vegetation in Langley Fork Park.

Some degree of long-term beneficial impacts on vegetation in Langley Oaks Park could occur due to permanent NPS protection of the exchanged undeveloped parcel as described under Alternative 2.

Cumulative Impacts. No past present, or reasonably foreseeable projects included in the cumulative scenario would have an impact on vegetation at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under the Alternative 2.

Conclusion. Although the land exchange would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 3 would result in direct impacts on vegetation by FCPA through land clearing, new development, and modification of existing facilities in Langley Fork Park. Alternative 3 would have long-term negligible to moderate adverse impacts on vegetation at Langley Fork Park. However, the reforestation to 2 acres adjacent to other forested area and 250-foot wide forested buffer would result in some long-term benefits. Increased protection and management of Langley Oaks Park by NPS would result in some potential long-term beneficial impacts on vegetation. There would be no cumulative impacts.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. Under Alternative 4, the same land exchange described under Alternatives 2 and 3 would occur. However, under Alternative 4, FCPA would moderately develop Langley Fork Park beyond the existing footprint.

Similar to Alternative 2, the actions proposed under Alternative 4 would result in a net loss of 0.65 acres of undeveloped land adjacent to the currently developed area primarily consisting of Successional Tuliptree Forest. This clearing would result in a slight loss in vegetation cover but would not significantly change the plant community.

In addition to the land clearing described above, proposed features under Alternative 4 include modification of recreation facilities, replacement of some turf grass fields with synthetic turf, and construction of one pavilion. Synthetic turf would not be used to improve the existing athletic fields in the northern and western portions of the site due to the presence of archeological resources. The modifications to park facilities under Alternative 4 would extend slightly beyond the existing developed footprint, with additional development occurring primarily along the northern and eastern boundaries of the existing baseball diamonds and eastern rectangular athletic field. New development and modification of existing facilities would increase the footprint from the current area of approximately 14.5 acres to approximately 17 acres, of which 2.5 acres of forest would be cleared, and 0.6 acre would be reforested with native tree species. FCPA would replant 1.9 acres of forest elsewhere within the Fairfax County Portion of the George Washington Memorial Parkway as mitigation for impacts to the George Washington Memorial Parkway Historic District, of which the tree canopy is a contributing resource.

The actions proposed under Alternative 4 would result in a net loss of 0.65 acres of undeveloped land and a 0.3-acre increase in impervious surface. This would result in long-term minor adverse impacts on vegetation due to loss in forest and vegetation coverage. Clearing and removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted.

Similar to the other action alternatives, modification of some recreation fields via replacement of existing turf grass with synthetic turf would result in negligible adverse impacts on vegetation due to the low ecological value of turf grasses which have replaced native plant species in the action area. Moderate levels of vegetative clearing associated with development of new and modification to existing recreational facilities would result in localized long-term minor adverse impacts on vegetation in Langley Fork Park.

Some degree of long-term beneficial impacts on vegetation in Langley Oaks Park could occur due to permanent NPS protection of the exchanged undeveloped parcel as described under Alternatives 2 and 3.

Cumulative Impacts. No past present, or reasonably foreseeable projects included in the cumulative scenario would have an impact on vegetation at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 4.

Conclusion. Although the land exchange would not have direct impacts on vegetation at Langley Fork Park, implementation of Alternative 4 would result in direct impacts on vegetation by FCPA through land clearing, new development, and modification of existing facilities in Langley Fork Park. Alternative 4 would have long-term negligible to minor adverse impacts on vegetation at Langley Fork Park. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on vegetation. There would be no cumulative impacts.

WILDLIFE AND WILDLIFE HABITAT

Methodology and Assumptions

The NPS Organic Act, which directs parks to conserve wildlife unimpaired for future generations, is interpreted by the NPS to mean that native animal life should be protected and perpetuated as part of the natural ecosystem. Natural processes are relied on to control populations of native species to the greatest extent possible; otherwise they are protected from harvest, harassment, or harm by human activities. According to NPS *Management Policies 2006*, the restoration of native species is a high priority (NPS 2006, Section 4.1). Management goals for wildlife include maintaining components and processes of naturally evolving park ecosystems, including natural abundance, diversity, and the ecological integrity of plants and animals.

Information on wildlife and wildlife habitat potentially impacted in the project area was compiled based on data from the Virginia Fish and Wildlife Information System (VFWIS 2014).

Study Area

The study area for wildlife and wildlife habitat analysis includes all areas within the boundaries of Langley Fork Park and Langley Oaks Park.

Impacts of Alternative 1: No Action

Analysis. Under Alternative 1 the exchange of lands between NPS and FCPA would not occur, and both parks would continue to be managed and maintained in their current state. FCPA would continue to manage Langley Fork Park for recreational sports activities under a special use permit, in keeping with NPS permitting policies. Langley Oaks Park would continue to be managed by FCPA in its current natural state. Wildlife habitat in Langley Fork Park and Langley Oaks Park would remain in its present state. There would be no impacts on wildlife and wildlife habitat under the No-Action Alternative.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on wildlife or wildlife habitat at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under the Alternative 1.

Conclusion. The implementation of Alternative 1 would result in no impacts on wildlife and wildlife habitat as the level of wildlife and condition of wildlife habitat would remain in its current state for both parks. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under Alternative 2, NPS and FCPA would exchange the approximately 52-acre portion of George Washington Memorial Parkway known as Langley Fork Park with Langley Oaks Park. FCPA would modify recreation facilities in Langley Fork Park within the general footprint of the existing facilities resulting in a slight increase from the current approximately 14.5 acres to 15.4 acres. Additionally, the parking lot would be expanded slightly, increasing the paved surface from approximately 2 acres to 2.3 acres. The actions proposed under Alternative 2 would result in a net loss of approximately 1 acre of undeveloped land, consisting primarily of a small area of Successional Tuliptree Forest edge habitat, resulting in a minor loss of wildlife habitat. Modifications to recreational facilities would also include replacement of turf grass fields with synthetic turf.

Clearing of vegetation for modifications of existing recreational facilities could temporarily disturb wildlife and would result in localized short-term minor adverse impacts on wildlife and wildlife habitat in Langley Fork Park during construction. This could include temporary displacement of birds and other species due to noise and the presence of construction equipment and crews. Most species, including migratory birds, would use nearby habitats and would avoid the area during periods of active construction and vegetation removal. Alternative 2 is not likely to adversely affect migratory birds because, to the extent possible, construction activities would be conducted outside the period when migratory species may nest in the park (April through August), as noted in chapter 2. Removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted, potentially allowing some habitat recovery in the long term. Long-term adverse impacts on wildlife under Alternative 2 would be negligible due to the relatively small portion of habitat lost as a result of new development, most of which would be contained within the existing footprint. Replacement of turf grass fields with synthetic turf would have negligible adverse impacts on wildlife due to the minimal ecological value of non-native turf grasses and high levels of disturbance to wildlife resulting from use of these areas as sports and recreation fields. Additionally, the quality of all habitat that would be disturbed is poor as a result of previous disturbance and fragmentation of habitat by human activities, as well as the presence of invasive species. Migratory birds would continue to use nearby areas of suitable stopover and potential nesting habitat during annual migrations.

As a result of the land exchange under Alternative 2, NPS would manage the exchanged parcel of Langley Oaks Park in a natural condition, and would limit improvements at Langley Oaks to trails and similar improvements that would be consistent with the purpose of the George Washington Memorial Parkway. This would result in potential long-term beneficial impacts to wildlife species, including migratory birds and their habitats, by ensuring permanent protection of the Potomac Gorge watershed and site resources with no plans for change or development.

Cumulative Impacts. No past, present, or reasonably foreseeable actions have been identified that would have an impact on wildlife or wildlife habitat at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 2.

Conclusion. Implementation of Alternative 2 would impact wildlife and wildlife habitat due to minor habitat loss from the development and modification of facilities and temporary disturbance to wildlife as a result of land clearing activities. Under Alternative 2 there would be short-term minor adverse impacts on wildlife and wildlife habitat. Land clearing and construction activities under Alternative 2 would not likely adversely affect nesting migratory birds because, to the extent possible, these activities would be conducted outside their nesting season. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat. There would be no cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Under Alternative 3 the same land exchange described under Alternative 2 would occur. However, under Alternative 3 FCPA would more fully develop Langley Fork Park which would include additional land clearing, development of new recreation facilities, and modification of existing facilities beyond the existing developed footprint. New development and modification of existing facilities would increase the footprint from approximately 14.5 acres to 26.08 acres and expand the parking lot area from 1.95 acres to 3.08 acres. The actions proposed under Alternative 3 would result in a net loss of 12.63 acres of undeveloped land including 11.5 acres of Successional Tuliptree Forest which serve as potential

wildlife habitat, resulting in long-term, adverse impacts. This would represent a loss of suitable stopover and potential nesting habitat for migratory birds that may be seasonally present in the park. However, migratory birds would continue to use nearby areas of suitable stopover and potential nesting habitat during annual migrations. Modifications to existing facilities would include replacement of turf grass fields with synthetic turf, as described under Alternative 2. This would result in negligible adverse impacts on wildlife due to the minimal ecological value of non-native turf grasses used as sports fields. Clearing of vegetation for modifications of existing recreational facilities could temporarily disturb wildlife and would result in short-term minor adverse impacts on wildlife and wildlife habitat in Langley Fork Park during construction. Most species, including migratory birds, would use nearby habitats and would avoid the area during periods of active construction and vegetation removal. Construction is not likely to adversely affect nesting migratory birds because, to the extent possible, construction activities would be conducted outside their nesting season (April through August), as noted in chapter 2. Although reforestation of approximately 2 acres atop an existing field would provide new habitat that would change over time as the forest matures, providing different sorts of habitat for wildlife over time, cleared areas would not recover due to new development. The location of the reforested area adjacent to a large tract of existing forest would provide more benefits than reforestation in a more isolated location, because it would increase the size of contiguous forest area. The permanent clearing of trees for new infrastructure, however, would result in minor adverse impacts on wildlife and wildlife habitat over the long term. Additional long-term adverse indirect impacts to wildlife could occur as a result of increased noise and light pollution from use of the newly constructed recreation facilities as well as from the transformation of interior forest habitat to edge habitat.

The extent of the impacts on wildlife and wildlife habitat under Alternative 3 would be somewhat limited due to the relatively poor quality of the existing habitat as a result of previous disturbance and habitat fragmentation. Removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted, potentially allowing some habitat recovery in the long term.

In addition to the benefits from the reforestation, potential long-term beneficial impacts on wildlife, including migratory birds, in Langley Oaks Park would occur due to permanent NPS protection of vegetation and habitat located on the exchanged undeveloped parcel as described under Alternative 2.

Cumulative Impacts. No past, present, or reasonably foreseeable actions were identified that would affect wildlife or wildlife habitat at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks, or further afield. Therefore, there would be no cumulative impacts under Alternative 3.

Conclusion. Implementation of Alternative 3 would result in short- and long-term minor to moderate adverse impacts on wildlife and wildlife habitat in Langley Fork Park due to wildlife disturbance and habitat loss resulting from land clearing activities and increased development compared to Alternative 2. Land clearing and construction activities under Alternative 3 would not likely adversely affect nesting migratory birds because, to the extent possible, these activities would be conducted outside their nesting season. There would be some long-term benefits from the reforestation of the existing recreation field adjacent to a large tract of forest. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat. There would be no cumulative impacts.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. Under Alternative 4 the same land exchange described under Alternative 2 would occur. However, under Alternative 4 FCPA would moderately develop Langley Fork Park which would include some additional land clearing, development of new recreation facilities, and modification of existing facilities slightly beyond the existing developed footprint. New development and modification of existing facilities would increase the footprint from approximately 14.5 acres to 15.6 acres and expand the parking lot area from 1.95 acres to 2.30 acres. The actions proposed under Alternative 4 would result in a net loss of 1.1 acres of undeveloped land including 0.65 acres of Successional Tuliptree Forest which serve as potential wildlife habitat.

Similar to the other action alternatives described above, modifications to existing facilities would include replacement of turf grass fields with synthetic turf, resulting in negligible adverse impacts on wildlife due to the minimal ecological value of non-native turf grasses. Synthetic turf would not be used to improve the existing athletic fields in the northern and western portions of the site due to the presence of archeological resources. Clearing of vegetation for modifications of existing recreational facilities could temporarily disturb wildlife and would result in short-term minor adverse impacts on wildlife and wildlife habitat in Langley Fork Park during construction. Most species, including migratory birds, would use nearby habitats and would avoid the area during periods of active construction and vegetation removal. Construction and clearing of vegetation is not likely to adversely affect nesting migratory birds because, to the extent possible, these activities would be conducted outside their nesting season (April through August), as noted in chapter 2. Permanent clearing of vegetation for development of new facilities on the southern portion of the park would result in negligible to minor adverse impacts on wildlife and wildlife habitat over the long term. Migratory birds would continue to use nearby areas of suitable stopover and potential nesting habitat during annual migrations. Additional negligible to minor long-term adverse indirect impacts to wildlife could occur as a result of increased noise and light pollution from use of the newly constructed recreation facilities.

The extent of the impacts on wildlife and wildlife habitat under Alternative 4 would be somewhat limited due to the relatively poor quality of the existing habitat as a result of previous disturbance and habitat fragmentation. Removal of vegetation would extend only as far as necessary to accommodate construction. Following construction, disturbed areas adjacent to new development would be seeded with a native seed mix for stabilization. Depending on the extent of disturbance, additional native trees and shrubs may be planted, potentially allowing some habitat recovery in the long term. Overall impacts to wildlife and wildlife habitat would be slightly greater than those outlined under Alternative 2, and significantly less when compared to those outlined under Alternative 3.

Potential long-term beneficial impacts on wildlife, including migratory birds, in Langley Oaks Park would occur due to permanent NPS protection of vegetation and habitat located on the exchanged undeveloped parcel as described under Alternatives 2 and 3.

Cumulative Impacts. No past, present, or reasonably foreseeable actions were identified that would affect wildlife or wildlife habitat at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks, or further afield. Therefore, there would be no cumulative impacts under Alternative 4.

Conclusion. Implementation of Alternative 4 would result in short- and long-term minor adverse impacts on wildlife and wildlife habitat in Langley Fork Park due to wildlife disturbance and habitat loss resulting from some land clearing activities and moderately increased development compared to Alternative 2. Land clearing and construction activities under Alternative 4 would not likely adversely affect nesting migratory birds because, to the extent possible, these activities would be conducted outside their nesting

season. Increased protection and management of Langley Oaks Park by NPS would result in long-term beneficial impacts on wildlife and wildlife habitat. There would be no cumulative impacts.

CULTURAL RESOURCES

Historic Structures and Districts

Methodology and Assumptions

Historic structures and districts are classified as buildings, structures, sites, objects, or districts (i.e., all the various types of historic property, except for archeological sites) that are potentially eligible for the NRHP. Impacts on historic structures, like other environmental impacts, are described in NEPA documents such as this EA. In accordance with the Advisory Council on Historic Preservation regulations implementing Section 106 (36 CFR 800, "Protection of Historic Properties"), impacts on cultural resources are identified and evaluated by (1) determining the area of potential effects, (2) identifying historic properties present in the area of potential effect that are listed in or eligible for listing in the NRHP, (3) applying the criteria of adverse effect to these historic properties, and (4) identifying methods to avoid, minimize, or mitigate any adverse effects, if they exist.

Under Advisory Council on Historic Preservation regulations, a determination of either *adverse effect* or *no adverse effect* must be made for affected cultural resources eligible for or listed in the NRHP. An *adverse effect* occurs whenever an impact alters, either directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion on the NRHP (e.g., diminishes the integrity of the resource location, design, setting, materials, workmanship, feeling, or association). Adverse effects also include reasonably foreseeable effects that could occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, "Assessment of Adverse Effects"). A determination of *no adverse effect* means the proposed action would not diminish the integrity of the historic property in a manner that alters any characteristics of the property that qualify it for the NRHP. Section 106 compliance and the assessment of effects is a separate, but parallel, process that has informed this NEPA analysis and will be concluded before the NEPA decision document is signed.

CEQ regulations and Director's Order 12 also call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact (e.g., reducing the intensity of an impact from major to moderate or minor). Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation only under NEPA. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Although *adverse effects* under Section 106 may be mitigated, the effect remains adverse.

The sale, transfer, or lease of property out of federal ownership is considered an *adverse effect* under Section 106 of the NHPA unless there are "adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance" (36 CFR 800.5.a.2). The NPS and FCPA would develop deed restrictions and a memorandum of agreement to ensure that adverse effects are avoided, minimized, and mitigated; and cultural resources are considered during all future undertakings.

Study Area

The study area for historic structures and districts is the same as the area of potential effect described in for the historic structures and districts (see chapter 3, figure 8). This area includes the George Washington

Memorial Parkway Historic District (DHR No. 029-0466), which encompasses the entirety of Langley Fork Park and abuts Langley Oaks Park. It also includes the Langley Fork Historic District (DHR No. 029-0214) and Georgetown Pike (DHR No. 029-0466), which are adjacent to Langley Fork Park. The Langley Fork Historic Overlay District, an overlay historic zoning district designated by Fairfax County, also includes a portion of Langley Fork Park. While not a resource *per se*, Fairfax County has outlined standards and guidelines for retaining the historic character of the Historic Overlay District, and these protections will affect the future development of the area.

Impacts of Alternative 1: No Action

Analysis. The Langley Fork Historic District and Georgetown Pike are located adjacent to Langley Fork Park; the continued use of the park would not result in impacts on these districts. Additionally, there are no historic districts or buildings within either Langley Fork Park or Langley Oaks Park that could be impacted by the continuation of existing conditions. The lands within Langley Fork Park are part of the George Washington Memorial Parkway and within the associated historic district. However, the continuation of the existing conditions would not impact the overall integrity of this resource. Maintenance of the existing facilities within the Langley Fork Historic Overlay District (county ordinance) would follow the guidelines established for this area and would continue to ensure that modifications do not impact the historic character of the area and the nearby historic districts. There would be no impacts on the George Washington Memorial Parkway Historic District as a result of the No-Action Alternative. Therefore, the No-Action Alternative would have no impacts on historic structures and districts.

Cumulative Impacts. Alternative 1 would result in no impacts on historic structures and districts; therefore, there would be no cumulative impacts.

Conclusion. Implementation of Alternative 1 would result in no impacts on historic structures and districts. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. This alternative would have minor adverse impacts on historic structures and districts. The Langley Fork Historic District and Georgetown Pike are located adjacent to Langley Fork Park. The existing facilities within the park would be improved or redeveloped within the existing footprint of each facility and several smaller facilities may be added. In general, the overall layout and use of the area would not change dramatically and there would be negligible adverse impacts on the nearby Langley Fork Historic District and Georgetown Pike. The Langley Fork Historic Overlay District would continue to provide protection to the historic district through covenants restricting certain activities, such as the placement of field lighting within the overlay district. Field lighting may be added outside the Langley Fork Historic Overlay District that may result in some visual intrusions into the nearby historic districts, but is expected to be minimal given the distance between the proposed development areas and the historic districts as well as the tree cover within Langley Fork Park, which would be reduced by 1.0-acre under this alternative. Alternative 3 would make no changes to the setting of Georgetown Pike, and would therefore have no impacts to this resource.

Under this alternative, a portion of the George Washington Memorial Parkway Historic District would be transferred out of federal ownership, with deed restrictions protecting forest stands at Langley Fork Park outside the development area. However, the alternative includes the loss of 1 acre of forested lands at Langley Fork Park (a contributing element to the George Washington Memorial Parkway Historic District), which would constitute a long-term minor adverse impact on the historic district. An important

feature of the historic district is the stands of forest along the Potomac Gorge, and the natural scenery along the parkway including views and vistas of the Potomac River and the Potomac Gorge. The loss of forested land at Langley Fork Park, while small relative to the size of the historic district, would nonetheless negatively impact the historic district. The lands would still fall within the current boundaries of the George Washington Memorial Parkway Historic District and there would be no impact to the overall eligibility of the resource. The impacts to the George Washington Memorial Parkway Historic District would be mitigated through one or more of the following measures: historical interpretation within Langley Fork Park and/or the development of web-based resources, tree replacement plantings, historical and archeological research pertinent to Langley Fork Park, Langley Oaks Park, and/or the George Washington Memorial Parkway, and similar strategies to resolve adverse effects under Section 106 of the NHPA.

This alternative would include deed restrictions protecting forest stands at Langley Fork Park outside of the development area. These protective measures would result in negligible adverse impacts on the district. Langley Fork Park would remain within the boundaries of the George Washington Memorial Parkway Historic District.

Future impacts at Langley Fork Park would be avoided and minimized through the maintenance of a 250-foot wide forested buffer along the northern boundary of the park adjacent to the George Washington Memorial Parkway, deed restrictions that protect woodlands outside the development area from future removal, and the development of a landscape plan in accordance with FCPA's master planning process, to ensure that the character of the George Washington Memorial Parkway Historic District would be maintained. These mitigation and protection measures, along with a process for reviewing the impacts of future undertakings on cultural resources, would be finalized in formal deed restrictions and a memorandum of agreement as detailed in chapter 2.

Alternative 2 would have minor adverse impacts on historic structures and districts.

Cumulative Impacts. There are a number of future projects that could affect historic structures and districts within George Washington Memorial Parkway. These projects include construction of the Potomac Yards Metrorail Station, expansion at Arlington National Cemetery, rehabilitation of the George Washington Memorial Parkway North Parkway, rehabilitation of Arlington Memorial Bridge, and safety improvements to Memorial Circle. These projects could involve visual modification to the George Washington Memorial Parkway Historic District as well as the potential to remove lands from the George Washington Memorial Parkway Historic District, potentially resulting in long-term moderate adverse impacts. An update to the George Washington Memorial Parkway Historic District nomination was completed in early 2017, and has facilitated management of the resource by more clearly delineating the boundaries, contributing resources, and periods of significance for the resource. The completion of this update has resulted in a long-term minor beneficial impact on the resource. Additionally, the Dyke Marsh Restoration project would have beneficial impacts on the historic district. Alternative 2 would have a short-term negligible adverse impact on historic structures and districts, but would have a long-term minor beneficial impact due to the addition of new lands from Langley Oaks Park. The new lands would not be added to the historic district, but would serve as forested buffer to the historic district and would enhance visitor use and interpretation. In sum, Alternative 2 would have a negligible adverse contribution to overall minor to moderate adverse cumulative impacts with some minor beneficial cumulative impacts.

Conclusion. Implementation of Alternative 2 would have minor adverse impacts on historic structures and districts as well as long-term beneficial impacts from the transfer of Langley Oaks Park to NPS ownership. Alternative 2 would have a minor adverse contribution to overall minor to moderate adverse cumulative impacts with some minor beneficial cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. This alternative would have minor to moderate adverse impacts on historic structures and districts. The development of new areas under this alternative would occur a sufficient distance from the Langley Fork Historic District and Georgetown Pike that there would be negligible to minor adverse impacts on these resources. The primary impact on the Langley Fork Historic District would come from the installation of field lighting immediately outside the Langley Fork Historic Overlay District. However, given the distance between the proposed placement of the lighting and the historic districts, the visual intrusion of these lights should be minimal. The Langley Fork Historic Overlay District would continue to provide protection to the historic district through covenants restricting certain activities, such as the placement of field lighting within the overlay district. Therefore, the transfer of this area should not lead to long-term adverse impacts to the Langley Fork Historic District. Alternative 3 would make minor alterations to the setting of Georgetown Pike; however, the character of the roadway would not be altered substantially from present conditions. There would be negligible adverse impacts to Georgetown Pike under this alternative.

Similar to Alternative 2, a portion of the George Washington Memorial Parkway Historic District would be transferred out of federal ownership, with deed restrictions protecting forest stands at Langley Fork Park outside the development area. However, with the loss of 11.5 acres of forested lands at Langley Fork Park (a contributing element to the George Washington Memorial Parkway Historic District), there would be a long-term moderate adverse impact on the historic district. An important feature of the historic district is the stands of forest along the Potomac Gorge, and the natural scenery along the parkway including views and vistas of the Potomac River and the Potomac Gorge. The loss of forested land at Langley Fork Park would negatively impact the historic district. The lands would still fall within the current boundaries of the George Washington Memorial Parkway Historic District and there would be no impact to the overall eligibility of the resource. Additionally, the increased development and the expansion of athletic fields would have minor to moderate adverse impacts on the George Washington Memorial Parkway Historic District. The proposed development and expansion of park recreation facilities would alter the character of the district by introducing new elements that are inconsistent with the naturalistic character of the district. The proposed clearing is small relative to the size of the district, and Langley Fork Park already has recreational fields that do not contribute to the significance of the district. The impacts to the George Washington Memorial Parkway Historic District, specifically the clearing of vegetation and expanded development, would be mitigated through one or more of the following measures: historical interpretation within Langley Fork Park and/or the development of web-based resources, tree replacement plantings, historical and archeological research pertinent to Langley Fork Park, Langley Oaks Park, and/or the George Washington Memorial Parkway, and similar strategies to resolve adverse effects under Section 106 of the NHPA.

Future impacts at Langley Fork Park would be avoided and minimized through the maintenance of a 250-foot wide forested buffer along the northern boundary of the park adjacent to the George Washington Memorial Parkway, deed restrictions that protect woodlands outside the development area from future removal, and the development of a landscape plan in accordance with FCPA's master planning process, to ensure that the character of the George Washington Memorial Parkway would be maintained. These mitigation and protection measures, along with a process for reviewing the impacts of future undertakings on cultural resources, would be finalized in formal deed restrictions and a memorandum of agreement as detailed in chapter 2.

Overall, Alternative 3 would have minor to moderate adverse impacts on historic structures and districts. Alternative 3 would directly impact a contributing element of the historic district—forest stands at Langley Fork Park, and Alternative 3 would introduce new elements to the built environment at the park

that would alter the existing character of the historic direct. These adverse impacts would be avoided or minimized through multiple mitigation measures.

Cumulative Impacts. Cumulative impacts under Alternative 3 would be the same as under Alternative 2. Alternative 3 would have a noticeable contribution to overall minor to moderate adverse cumulative impacts. However, the addition of Langley Oaks Park to the George Washington Memorial Parkway may partially offset these impacts by adding lands that are more consistent with the overall plan and land use for the George Washington Memorial Parkway Historic District.

Conclusion. Implementation of Alternative 3 would result in long-term minor to moderate adverse impacts on historic districts and structures as well long-term beneficial impacts from the transfer of Langley Oaks Park to NPS ownership. These adverse impacts would be avoided or minimized through multiple mitigation measures. Alternative 3 would have a noticeable contribution to overall cumulative adverse impacts on the George Washington Memorial Parkway Historic District.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. This alternative would have minor adverse impacts on historic structures and districts. The development of new areas under this alternative would occur a sufficient distance from the Langley Fork Historic District and Georgetown Pike that there would be minor impacts on these resources. The primary impact on the Langley Fork Historic District would come from the installation of field lighting immediately outside the Langley Fork Historic Overlay District. However, given the distance between the proposed placement of the lighting and the historic districts, the visual intrusion of these lights should be minimal. The Langley Fork Historic Overlay District would continue to provide protection to the historic district through covenants restricting certain activities, such as the placement of field lighting within the overlay district. Therefore, the transfer of this area should not lead to long-term impacts to the Langley Fork Historic District. Alternative 4 would make minor alterations to the setting of Georgetown Pike, primarily thought a new trail connection in the southwest corner of the study area. The character of the roadway would not be altered substantially from present conditions. There would be minor adverse impacts to Georgetown Pike under this alternative.

Similar to Alternatives 2 and 3, a portion of the George Washington Memorial Parkway Historic District would be transferred out of federal ownership, with deed restrictions protecting forest stands at Langley Fork Park outside the development area. The lands would still fall within the current boundaries of the George Washington Memorial Parkway Historic District and there would be no impact to the overall eligibility of the resource. The clearing of 1.9 acres of forested area for increased development reconfiguration of athletic fields and parking would have minor impacts on the George Washington Memorial Parkway Historic District. The impacts to the George Washington Memorial Parkway Historic District, specifically the clearing of vegetation, would be mitigated through one or more of the following measures: historical interpretation within Langley Fork Park and/or the development of web-based resources, tree replacement plantings, historical and archeological research pertinent to Langley Fork Park, Langley Oaks Park, and/or the George Washington Memorial Parkway, and similar strategies to resolve adverse effects.

Future impacts at Langley Fork Park would be avoided and minimized through the maintenance of a 250-foot wide forested buffer along the north and western boundaries of the park adjacent to the George Washington Memorial Parkway, deed restrictions that protect forested land outside the development area from future removal, and the development of a landscape plan in accordance with FCPA's master planning process, to ensure that the character of the George Washington Memorial Parkway would be maintained. These mitigation and protection measures, along with a process for reviewing the impacts of

future undertakings on cultural resources, would be finalized in formal deed restrictions and a memorandum of agreement as detailed in chapter 2.

Cumulative Impacts. Cumulative impacts under Alternative 4 would be the same as under Alternatives 2 and 3. Alternative 4 would have a contribution to overall minor to moderate adverse cumulative impacts. However, the potential addition of new lands from Langley Oaks Park may partially offset these impacts by adding lands that are more consistent with the overall plan and land use for the George Washington Memorial Parkway Historic District.

Conclusion. Implementation of Alternative 4 would result in long-term minor adverse impacts on historic districts and structures. Alternative 4 would have a minor contribution to cumulative adverse impacts on the George Washington Memorial Parkway Historic District.

Archeological Resources

Methodology and Assumptions

Because archeological resources exist in subsurface contexts, potential impacts on archeological resources are typically assessed according to the extent to which proposed alternatives would involve ground-disturbing activities such as excavation or grading. However, the sale, transfer, or lease of property out of federal ownership is in itself considered an adverse effect under Section 106 of the NHPA, unless there are "adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance" (36 CFR 800.5.a.2).

As indicated in the affected environment for archeological resources (chapter 3), nine archeological sites and an archeological district were identified in the study area. In terms of NRHP status, there are three eligible or contributing sites (44FX3635, 44FX3637, and 44FX3639) that are within the NRHP-eligible Langley Fork Park Quartz Workshop District. The study area also includes three sites that are unevaluated for NRHP status that are considered potentially significant resources (44FX3636, 44FX3642, and 44FX3643). These six eligible or potentially eligible archeological sites and the archaeological district are assessed for potential impacts. Three additional sites within the study area have been determined not eligible for listing on the NRHP and do not contribute to the district (44FX3638, 44FX3640, and 44FX3641); these sites are not significant resources and impacts on them do not need to be assessed.

The analysis of possible impacts on archeological resources was based on a review of previous archeological studies, consideration of the proposed design concepts under each alternative, discussions that occurred during the separate and parallel Section 106 consultation process, and other information provided by FCPA and NPS.

Study Area

The study area for archeological resources is the entirety of the approximately 52 acres comprising Langley Fork Park. This study area encompasses the limits of disturbance for all action alternatives, and encompasses known and potential archeological resources that could be impacted by transfer of Langley Fork Park out of federal ownership.

Impacts of Alternative 1: No Action

Analysis. Alternative 1 would have no impacts on archeological resources. The continued use of Langley Fork Park would not result in beneficial or adverse impacts on archeological resources. Given the existing

conditions of the park, there is no active erosion or degradation of the archeological site areas. In addition, there are no current threats to the sites beyond the possibility of looting. Looting is a threat to most sites in the national park system, and looting prevention does not require special measures at this facility.

Cumulative Impacts. Alternative 1 would result in no impacts on archeological resources; therefore, there would be no cumulative impacts.

Conclusion. Implementation of Alternative 1 would result in no impacts on archeological resources. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Alternative 2 would have minimal change in existing conditions but would nonetheless have long-term minor to moderate adverse impacts on archeological resources. There would be improvements to the parking lot and athletic field upgrades at Langley Fork Park that would occur within the general footprint of the existing facilities; however, the 0.5-acre increase in developed area would directly impact Site 44FX3635 and the Langley Fork Quartz Workshop District. In addition, Site 44FX3643 extends underneath an existing athletic field, and improvements to the athletic field would have impacts to the site. Project mitigations include formal deed restrictions for the Langley Fork Park property. These restrictions would minimize impacts from the land transfer by protecting archeological resources from future ground disturbing activities.

Under Alternative 2, two archeological sites and a site district could be directly impacted by the proposed development activities. The resources include portions of Site 44FX3643, an unevaluated resource considered potentially significant, and 44FX3635, a site determined eligible for listing in on the National register. Site 44FX3635 contributes to the National Register-eligible Langley Fork Quartz Workshop District. Direct construction impacts would be moderate and adverse. Impacts to resources arising from the land transfer would be mitigated through deed restrictions. Deed restrictions would stipulate that FCPA not make any future improvements that would directly impact archeological resources. In addition, a memorandum of agreement will be signed by consulting parties addressing site protection measures during future construction. Site protection during construction may include fencing of site areas and implementation of a monitoring or inspection regime.

Cumulative Impacts. There are a number of future projects that could affect archeological resources within George Washington Memorial Parkway, potentially resulting in minor adverse impacts. These projects include construction of the Potomac Yards Metrorail Station, expansion at Arlington National Cemetery, rehabilitation of the George Washington Memorial Parkway North Parkway, rehabilitation of Arlington Memorial Bridge, and safety improvements to Memorial Circle. Additionally, the Dyke Marsh Restoration project may have adverse impacts on maritime (submerged) archeological resources. Alternative 2 would contribute minor to moderate impacts on two archeological sites and a site district. Overall cumulative impacts to archeological resources would be minor to moderate and adverse.

Conclusion. Implementation of Alternative 2 would result in long-term minor to moderate adverse impacts on two of the six eligible or potentially eligible archeological sites within Langley Fork Park and to an archeological district. Impacts would be mitigated through actions stipulated in deed restrictions and a memorandum of agreement.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Alternative 3, with more extensive development, would have long-term moderate adverse impacts on archeological resources. As described in chapter 2, construction activities would take place in approximately half of park. Parking lot and entrance improvements would take place, improvements would be made to existing ball fields, and new facility construction would occur in the eastern portion of the park.

Under Alternative 3, four archeological sites could be directly impacted by development activities within the park (44FX3635, 44FX3637, 44FX3639, and 44FX3643). The limits-of-disturbance from construction activities would also include large portions of the Langley Fork Park Quartz Workshop District. Mitigation measures would be needed to offset major adverse impacts. The FCPA has proposed a combination of data recovery and research as mitigation for these impacts; however, the exact mitigation measures would be determined in consultation with the SHPO and other consulting parties, and would be detailed and finalized in an agreement document. The agreements would reduce the direct adverse impacts from major to moderate.

In addition to being potentially impacted by ground disturbing activities, Site 44FX3643 may also be directly impacted by reforestation activities. If the other areas within the park are developed, portions of this site could be reforested as a mitigation measure for impacts to the George Washington Memorial Parkway Historic District. Both development and reforestation could affect this resource. The agreement document developed under Alternative 3 would need to address potential impacts from reforestation.

Two eligible or potentially eligible archeological sites are outside the areas proposed for development (44FX3636 and 44FX3642). These sites would not be impacted by construction activities but could be impacted by their transfer out of federal ownership. The potential impacts from the land transfer would be would be reduced through mitigation by deed restrictions for the Langley Fork Park property. In addition, a memorandum of agreement would be signed by consulting parties addressing site protection measures during future construction. Site protection during construction may include fencing of site areas and implementation of a monitoring or inspection regime.

In sum, this alternative would result in moderate adverse impacts on the three eligible archeological sites that comprise the Langley Fork Park Quartz Workshop District, moderate adverse impacts on the district itself, and moderate adverse impacts on Site 44FX3643.

Cumulative Impacts. A number of future projects could affect archeological resources through ground-disturbing activity within George Washington Memorial Parkway, potentially resulting in minor adverse impacts. These projects include construction of the Potomac Yards Metrorail Station, expansion at Arlington National Cemetery, rehabilitation of the George Washington Memorial Parkway North Parkway, rehabilitation of Arlington Memorial Bridge, and safety improvements to Memorial Circle. Additionally, the Dyke Marsh Restoration project may have adverse impacts on maritime (submerged) archeological resources. Alternative 3 would result in long-term moderate adverse impacts to one archeological district, as well as moderate adverse impacts on four archeological sites. Alternative 3 would have a noticeable adverse contribution to overall minor adverse cumulative impacts on archeological resources within George Washington Memorial Parkway.

Conclusion. There are seven archeological resources within Langley Fork Park (six sites and one district). Implementation of Alternative 3 would result in long-term moderate adverse impacts on five of these resources. Alternative 3 would have a noticeable contribution to overall cumulative impacts on archeological resources within George Washington Memorial Parkway.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. This alternative would have no impacts on archeological resources. As described in chapter 2, construction activities would take place almost entirely in areas that are currently developed. Undeveloped areas have been surveyed and do not contain archeological resources.

Site 44FX3643 encompasses a portion of the western ballfields, an area that would be improved. However adverse impacts would be avoided through deed restrictions that restrict ground disturbance in the site area, while allowing routine grounds maintenance like aeration, discing, seed drilling, watering, and mowing. Improved lighting and irrigation systems would not be allowed in the site area.

The Langley Fork Park Quartz Workshop District would have no impacts from development, and neither would the five other archeological sites of concern (44FX3635, 44FX3636, 44FX3637, 44FX3639, and 44FX3642).

Deed restrictions would provide protection for all archeological resources at Langley Fork Park. These protections are sufficient to ensure that there would be no adverse effects associated with the transfer of property out of federal ownership. In addition, a memorandum of agreement would be signed by consulting parties addressing site protection measures during future construction. Site protection may include fencing of site areas and implementation of a monitoring or inspection regime.

In sum, this alternative would result in no impacts on archeological resources.

Cumulative Impacts. Implementation of Alternative 4 would result in no impacts on archeological resources. There would be no cumulative impacts.

Conclusion. Implementation of Alternative 4 would result in no impacts on archeological resources. There would be no cumulative impacts.

VISITOR USE AND EXPERIENCE

Methodology and Assumptions

Impacts on visitor use and experience were determined by considering the effect of the existing conditions and the proposed land exchange and development of Langley Fork Park and its surrounding area.

The determination of impacts on visitor use and experience considered the possible alteration to park resources and recreational sites, as well as potential expansion of the recreational area footprint. Impacts on immediate visitor amenities, such as existing athletic fields and multi-use trails, and visitor experience, including the aesthetics and noise environment of the area, were considered.

Study Area

The study area for visitor experience includes Langley Fork Park and Langley Oaks Parks.

Impacts of Alternative 1: No Action

Analysis. Under Alternative 1, no exchange of land would occur between NPS and FCPA, and no development or expansion to recreation areas would be made in Langley Fork Park. The park would remain NPS property, and the management of the park by FCPA would continue under special use permits issued by NPS. No improvements would be made to the existing athletic fields or existing multi-use trails. Under this alternative, no lighting would be added to the existing athletic fields, resulting in long-term negligible adverse impacts on visitor use. There would be no expansion of the parking facilities that currently are inadequate to support the visitor use of the park. The lack of appropriate parking would continue to have an adverse effect on visitor experience. As a result, Alternative 1 would have long-term negligible adverse impacts on visitor use and experience.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on visitor use and experience at Langley Fork Park, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 1.

Conclusion. Under Alternative 1, conditions at the park would continue to exist without the appropriate amount of parking and lighting, as well as the lack of any improvements to the existing athletic fields and multi-use trails. As a result of the continuation of these conditions, there would be long-term negligible adverse impacts on visitor use and experience at Langley Oaks Park. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under this alternative, a land exchange would occur between NPS and FCPA. The approximately 52 acres of land at Langley Fork Park, currently owned by the federal government and administered by NPS, would come under the management of FCPA, and minimal development would occur. This development has the potential to impact visitor use and experience through renovations of existing athletic fields, expanded public spaces, and the addition of a pavilion and athletic field lighting.

Under Alternative 2, minimal development or improvements at Langley Fork Park would occur. Portions of the park would most likely close during the renovations, resulting in short-term minor adverse impacts on visitor use and experience. The renovations would occur within the general footprint of existing facilities at Langley Fork Park to minimize disturbance and impacts on natural and cultural resources.

After construction is complete, impacts to visitor use and experience would primarily be beneficial resulting from the increased recreational facilities that would be available for public use. In addition, proposed trail enhancements would improve accessibility and provide better circulation and improved lighting and synthetic turf development would provide users with a safer environment, improved aesthetics, and expanded opportunities for use of the facilities daily and year-round. As a result, there would be long-term beneficial impacts on visitor use and experience.

The addition of a pavilion would provide a place for rest and shade not currently available to park visitors. Although the construction of the pavilion and additional parking would result in a slight increase in impervious surface at the park, it would also alleviate insufficient parking issues and improve the visitor experience.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on visitor use and experience at Langley Fork Park, Langley Oaks Park, or lands

immediately adjacent to these parks. Therefore, there would be no cumulative impacts under Alternative 2.

Conclusion. Under Alternative 2, the land exchange along with the addition of expanded parking, a pavilion, lighting, and synthetic turf would provide the park with an enhanced visitor use and experience. In addition, the proposed trail enhancements would improve accessibility. As a result, there would long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure. There would be no cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Similar to Alternative 2, Alternative 3 would result in a land exchange between NPS and FCPA. As a result of this exchange, there would be an increase in development that would result in a greater variety of new amenities offered to visitors in Langley Fork Park, including newly constructed athletic fields in the southern portion of the park and a new diamond field in the northeast portion of the park. Visitors would be able to enjoy newly developed athletic fields to serve a variety of sports, enhanced with synthetic turf and the addition of new lighting. These amenities would provide users with enhanced surrounding aesthetics as well as providing more visitor experience opportunities.

The newly developed area at Langley Fork Park would provide users with a dog park, trail enhancements, and pavilions. This would further diversify visitor experience opportunities at the park and provide better circulation throughout. Expanded parking and the proposed traffic improvements would result in benefits to park users.

Additional development or improvements at Langley Fork Park would occur. Portions of the park would most likely close during the renovations, resulting in short-term minor adverse impacts on visitor use and experience. Overall, under Alternative 3 there would be short-term minor adverse and long-term beneficial impacts on visitor use and experience at Langley Fork Park.

There would be no impacts on visitor use and experience at Langley Oaks Park as the park would be maintained by NPS in its existing natural condition with no development. Visitors to Langley Oaks Park would continue to enjoy the park and engage in passive recreational activities.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on visitor use and experience at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 3.

Conclusion. Under Alternative 3, the expansion of the developed land allows for improvements to the park including additional athletic fields in the southern and northeast portions of the park, a dog park, and park lighting as well as enhanced synthetic turf and multi-use trails, and enhanced access. The overall result would be long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure. There would be no cumulative impacts.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. Similar to the other action alternatives, Alternative 4 would result in a land exchange between NPS and FCPA. As a result of this exchange, there would be a moderate increase in the developed area beyond the existing footprint at Langley Fork Park, which would result in a notable increase of new and diverse amenities offered to visitors in Langley Fork Park.

Similar to Alternatives 2 and 3, visitors would be able to enjoy improved athletic fields to serve a variety of sports, some of which would be enhanced with synthetic turf, and the addition of new lighting. These amenities would provide users with similar levels of improvement to surrounding aesthetics and visitor experience opportunities. The developed area under Alternative 4 would also provide users with construction of new athletic fields in the southern portion of the park, trail enhancements, a pavilion, and expanded parking. The modification of existing facilities coupled with new development would result in long-term beneficial impacts for visitors. Under Alternative 4, visitors would not have access to an off-leash dog facility or a diamond field on the northeast portion of the park in comparison with Alternative 3.

The development area would be slightly greater than the proposed area under Alternative 2, as it would moderately extend beyond the existing developed footprint, but would be significantly less than the proposed development area under Alternative 3. Similar to both action alternatives, portions of the park would most likely close during the renovations, resulting in short-term minor adverse impacts on visitor use and experience.

Overall, under Alternative 4, there would be short-term, minor, adverse and long-term beneficial impacts on visitor use and experience at Langley Fork Park.

There would be no impacts on visitor use and experience at Langley Oaks Park as the park would be maintained by NPS in its existing natural condition with no proposed development. Visitors to Langley Oaks Park would continue to enjoy the park and engage in passive recreational activities.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on visitor use and experience at Langley Fork, Langley Oaks Park, or lands immediately adjacent to the parks. Therefore, there would be no cumulative impacts under Alternative 4.

Conclusion. Under Alternative 4, beneficial impacts for visitors would be greater than those described under Alternative 2, and less beneficial than those described under Alternative 3. The moderate expansion of developed land will allow for improvements to the park including additional athletic fields in the southern portion of the park, park lighting, as well as enhanced synthetic turf and multi-use trails, and enhanced access. The overall result would be long-term beneficial impacts on visitor use and experience, as well as short-term minor adverse impacts during construction due to park closure. There would be no cumulative impacts.

NEIGHBORING PROPERTIES

Methodology and Assumptions

The purpose of this analysis is to assess the impacts of each alternative on the neighborhoods surrounding Langley Fork Park and Langley Oaks Park. While the land exchange between NPS and FCPA would not result in direct impacts on neighboring properties; the indirect impacts of this action on neighboring properties as a result of the subsequent development of Langley Fork Park by FCPA is analyzed in this section. This analysis reviews the impacts on neighboring properties from changes in traffic conditions, lighting, noise and air quality as a result of the land transfer and expansion of recreation facilities at Langley Fork Park.

Study Area

The study area for this section includes those areas and neighboring properties near Langley Fork Park and Langley Oaks Park including Claude Moore Colonial Farm, Langley High School, various residential neighborhoods, Clemyjontri Park, and federal agencies including the Central Intelligence Agency and the Federal Highway Administration.

Impacts of Alternative 1: No Action

Analysis. Under Alternative 1, no exchange of land would occur between NPS and FCPA; therefore, no management changes would occur at Langley Oaks Park. Recreational areas at Langley Fork Park would remain at current use levels. Additionally, current traffic conditions would be maintained. Under this alternative, no additional lighting would be added to the existing fields and no additional noise from more intensive use of Langley Fork Park would occur. No impacts on neighboring properties would result from the No-Action Alternative.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the neighboring properties of Langley Fork or Langley Oaks Park. Therefore, there would be no cumulative impacts under Alternative 1.

Conclusion. The implementation of Alternative 1 would result in no impacts on neighboring properties of Langley Fork Park and Langley Oaks Park. Under this alternative, both parks would remain in their current state and no additional traffic, noise or amenities would occur. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under Alternative 2, a land exchange would occur between NPS and FCPA. Approximately 52 acres of federal land would be transferred to FCPA and in return, FCPA would transfer Langley Oaks Park to NPS. No impacts on neighboring properties of Langley Oaks Park are anticipated, as NPS would continue to manage Langley Oaks Park in a natural and undeveloped condition. Under this alternative, minimal development of recreational facilities at Langley Fork Park would occur. This development could have an impact on neighboring properties of Langley Fork Park as a result of the improvement of recreational fields in addition to the construction of additional lighting, and a pavilion.

Under Alternative 2, traffic is anticipated to slightly increase on Georgetown Pike and Colonial Farm Road as described in the “Traffic and Transportation” analysis section. The traffic would increase primarily later in the evening and possibly on weekends when local traffic is not strained by high congestion. A few additional peak hour trips may result from the increase in the amount of parking available, but these adverse impacts would be negligible (i.e., impacts would be barely perceptible by most motorists). Therefore, the increase in traffic would most likely result in negligible adverse impacts on neighboring properties. If minor adverse impacts were perceptible, FCPA in coordination with Virginia Department of Transportation would determine if mitigation was necessary and implement mitigation measures as needed to reduce overall impacts such as delay.

Neighboring properties could experience long-term minor adverse impacts as a result of the construction of lighting on recreational fields on the eastern side of Langley Fork Park and the construction of lighting within the parking lot for the park. However, as this lighting would be located on the eastern side of the park and would be turned off no later than 11:00 p.m. nightly, it is anticipated that adverse impacts would

be minor. Neighboring properties may experience long-term minor adverse impacts as a result of increased noise, caused by of additional use of recreational facilities at the park. However, these impacts are anticipated to be minor because they would not be detectable outside properties directly adjacent to the park. In the long-term, there would be some benefits as a result of improved recreation opportunities at Langley Fork Park.

During the construction period, neighboring properties are anticipated to experience short-term negligible to minor adverse impacts as a result of construction traffic, noise, and air quality impacts. It is anticipated that construction of facilities at Langley Fork Park would occur during daytime hours, limiting impacts to nearby residents because many residents would not be home during the daytime. Some negligible to minor construction-related impacts could occur to employees of the Central Intelligence Agency and the Federal Highway Administration, however the implementation of construction best practices would largely avoid these impacts. There are no additional air quality impacts expected from traffic-related emissions in the area-wide transportation network during the construction phase. Therefore, there would be short-term minor adverse impacts under Alternative 2.

Cumulative Impacts. No past, present or reasonably foreseeable projects were identified that would have an impact on the neighboring properties of Langley Fork Park or Langley Oaks Park. Therefore, there would be no cumulative impacts under the Alternative 2.

Conclusion. Long-term minor adverse impacts may occur to neighboring properties under this alternative. Although the land exchange between NPS and FCPA would not have direct impacts on neighboring properties it may result in indirect short-term minor adverse impacts as an increase on traffic, noise, and lighting is expected to occur. Some long-term benefits would result from improved recreation opportunities at Langley Fork Park. There would be no cumulative impacts.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Similar to Alternative 2, this alternative would involve a land exchange between NPS and FCPA; however, FCPA would more fully develop recreational facilities at Langley Fork Park under Alternative 3. This alternative would involve the construction of more athletic fields and involve a greater expansion of the parking area relative to Alternative 2, likely resulting in a longer construction period and greater visitation to the park. Alternative 3 is anticipated to benefit neighboring properties to a greater degree than Alternative 2 by providing a greater selection of recreation opportunities and amenities at Langley Fork Park when compared to Alternative 2. In particular, neighboring properties would have access to an off-leash dog park under Alternative 3, possibly resulting in increased visitation to the park by those residing in neighboring properties and providing long-term beneficial impacts.

As a result of this increased development, it is likely that neighboring properties would be impacted to a greater degree when compared to the impacts experienced under Alternative 2 due to the anticipated increase in visitation, traffic, lighting, and noise within and around Langley Fork Park. The establishment of a 250-foot wide forested buffer on the north and west sides of the park, including the reforestation of the athletic field in the corner of this buffer, and adherence to the lighting and other restrictions in the Langley Fork Historic Overlay District would reduce visual and noise impacts to the community to the west and to Claude Moore Colonial Farm. Placement of new facilities mostly on the eastern side of the park, adjacent to the non-residential, federal properties would also serves to limit adverse impacts related to noise and lighting. While long-term minor adverse impacts on neighboring properties are anticipated to be greater than those identified under Alternative 2, impacts are still anticipated to be minor as they would not be detectable beyond the properties directly bordering the park.

During the construction period, it is anticipated that impacts on neighboring properties would be similar to, but greater than those identified under Alternative 2 as the construction period would likely be longer, and more intensive development of Langley Fork Park would occur. However, impacts are still anticipated to be minor and adverse, occurring only during the short-term period of construction. Small, but detectable impacts on neighboring properties are anticipated during this time with no detectable impacts outside lands that neighbor Langley Fork Park.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the neighboring properties of Langley Fork Park or Langley Oaks Park. Therefore, there would be no cumulative impacts under the Alternative 3.

Conclusion. Under Alternative 3, beneficial impacts would be greater than those described under Alternative 2; however, there would be still be short-term minor adverse impacts during the period of construction and long-term minor adverse impacts during the operation of parks. There would be no cumulative impacts.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. As with Alternatives 2 and 3, this alternative would involve a land exchange between NPS and FCPA. The proposed development at Langley Fork Park under Alternative 4 includes moderate extensions beyond the existing footprint, with additional development occurring primarily along the northern and eastern boundaries of the existing baseball diamonds and eastern athletic field. The 17-acre developed area, would be slightly greater than under Alternative 2, and substantially less than the proposed area under Alternative 3. While moderate, this development could have an impact on neighboring properties of Langley Fork Park as a result of the improvement of recreational fields in addition to the construction of additional lighting and a pavilion.

As a result of the proposed increase in development, it is likely that neighboring properties would be impacted to a slightly greater degree when compared to the impacts experienced under Alternative 2 due to the anticipated moderate increase in the park's capacity for visitors and associated traffic, lighting, and noise. Long-term adverse impacts on neighboring properties are anticipated to be similar to Alternative 2, which are anticipated to be minor and not be detectable beyond the properties directly bordering the park.

During the construction period, it is anticipated that impacts on neighboring properties would be slightly greater than those identified under Alternative 2, but would occur to a significantly lesser degree when compared to Alternative 3. Impacts are still anticipated to be minor, adverse and temporary, occurring only during the period of construction.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the neighboring properties of Langley Fork Park or Langley Oaks Park. Therefore, there would be no cumulative impacts under the Alternative 4.

Conclusion. Under Alternative 4, beneficial impacts from improved recreation opportunities are anticipated to be greater than those described under Alternative 2 and less than those described under Alternative 3. There would be still be short-term minor adverse impacts during the period of construction and long-term minor adverse impacts from a moderate increase in traffic, noise, and lighting during the operation of parks. There would be no cumulative impacts.

TRAFFIC AND TRANSPORTATION

Methodology and Assumptions

Potential impacts on transportation systems and local traffic patterns were determined by considering the effect of the existing conditions and the proposed land exchange and development of Langley Fork Park and its surrounding area. As the proposed development for Langley Fork Park is in conceptual stages at the moment and will be refined in the future to determine the exact amount of improvements that will be made, only a qualitative analysis of the impacts on transportation systems and traffic is possible at this time. Furthermore, more detailed transportation studies may need to be conducted in the future at the time of site plan decision and approval.

The qualitative evaluation of the impacts considered the change in recreational offerings and amenities, such as parking, to determine the approximate change in number of users and trips to Langley Fork Park. The impact of the estimated change in number of trips was then evaluated based on the roadway volumes, hours of park usage, surrounding area roadway usage patterns, physical roadway characteristics and geometry, and roadway operations. It was assumed that the majority of visitors to Langley Fork Park would access the larger parking areas off of Colonial Farm Road.

Study Area

The main study area for traffic and transportation is focused on Colonial Farm Road between the rear entrance to the Central Intelligence Agency facility and Georgetown Pike, residential streets that provide access to Langley Oaks Park, and Georgetown Pike between Route 123 (Dolley Madison Boulevard) and Chain Bridge Road. General impacts that may also be attributable to the project along Georgetown Pike extending west to the intersection with I-495 are also discussed.

Impacts of Alternative 1: No Action

Analysis. Under Alternative 1, no exchange of land would occur between NPS and FCPA, and no development or expansion to recreation areas would be made in Langley Fork Park. Langley Fork Park would remain in federal ownership and administered by NPS and the management of the park by FCPA would continue under special use permits issued by NPS. Langley Oaks Park would remain in FCPA ownership and managed in its current state. Under this alternative, there would be no impacts on the local traffic condition or the transportation systems as a result of no increased programmed uses at either park.

Cumulative Impacts. No projects included in the cumulative impact analysis would have an impact on the transportation systems and local traffic patterns. Therefore, there would be no cumulative impacts under Alternative 1.

Conclusion. No impacts would result from Alternative 1 since there would be no increase in programmed uses at either park location. There would be no cumulative impacts.

Impacts of Alternative 2: Land Exchange with Minimal Development at Langley Fork Park by FCPA

Analysis. Under Alternative 2, a land exchange would occur between federally owned and NPS-administered lands in Langley Fork Park and FCPA-owned lands in Langley Oaks Park to facilitate the improvement and development of recreational facilities currently located on Langley Fork Park. Under Alternative 2, the amount of developed area of Langley Fork Park would increase slightly; various

improvements such as field lighting, synthetic turf on athletic fields, and a pavilion may be added and the addition of approximately 65 parking spaces would help to address existing parking shortages. With field lighting, the number of players accommodated throughout the day would increase, but the number of players at the peak hour would remain the same. The incorporation of additional features and park upgrades at Langley Fork Park are envisioned to primarily serve the existing players and their families, but may draw a few additional users or drivers to the park during the peak hours of traffic due to the additional parking spaces that would be provided. Langley Oaks Park would see no change in traffic patterns or congestion because the proposed use of land would be almost identical as the existing use, which includes few users and minimal maintenance vehicles.

Currently the highest periods of park use are when the recreational fields are scheduled for public use on weekday evenings (typically 5:00 to 8:00 p.m., and later), Saturday mornings and afternoons, and Sunday afternoons and some mornings, based on Fairfax County's Field Allocation Policy (Fairfax County 2011). It is assumed that the high traffic time periods along Georgetown Pike are similar to regional travel patterns where there are higher traffic volumes weekdays 7:00 to 9:00 a.m. and 4:00 to 6:30 p.m. Increased park use from additional programming would potentially cause additional volume; however additional delays during the evening rush hour due to the possibility of a few additional users during that time frame would likely be negligible. There would be possibly slightly more on-the-hour arrivals and departures in park visitors (due to increased parking in the cases where field start times are not staggered) and overlapping park use on weekends between Clemyjontri Park and Langley Fork Park. However, the usage of the park at all other times besides evening rush hour would not likely cause congestion levels that impact travel time, safety, or travel patterns.

Weekday Evening Park Access. Incoming vehicles would access the main parking lot for Langley Fork Park via Colonial Farm Road. Westbound traffic on Georgetown Pike would turn right on Colonial Farm Road without delay to other vehicles. Eastbound traffic on Georgetown Pike would enter the dedicated left turn lane at the Georgetown Pike/Colonial Farm intersection, wait for a break in westbound traffic, and proceed to make the left turn. Depending on the volume of traffic heading westbound on Georgetown Pike and the volume of cars making the free-flow (not stop controlled) right turn from Dolley Madison Boulevard to Georgetown Pike, finding gaps to turn may cause minor delays for eastbound traffic arriving at the park. The left turn lane appears to have queuing room for about eight vehicles, so any queue longer than eight vehicles would necessitate lengthening the turning lane using the additional space available within the center island so that traffic would not begin to occupy a lane of through-bound traffic and cause safety concerns.

Once park visitors are on Colonial Farm Road, the short distance between the Georgetown Pike/Colonial Farm Road intersection and the entrance to the Langley Fork Park may cause brief delays for incoming vehicles if outbound vehicles on Colonial Farm Road form a queue line of more than 100–150 feet and do not leave a gap in the queuing line. Although a very minor concern under Alternative 2, if large numbers of vehicles experience a slight delay entering the park parking lot, it could mean entering traffic from Georgetown Pike would need to wait before turning to have sufficient clear space, causing further delays.

Weekday Evening Park Exit. Exiting park visitors heading westbound on Georgetown Pike have a dedicated lane to turn right and merely have to wait for a break in traffic to exit Colonial Farm Road. Alternatively, with a dedicated left turn lane from Colonial Farm Road to Georgetown Pike, exiting park visitors heading eastbound on Georgetown Pike would likely have delays due to the need to find a gap in both directions of traffic. Exiting park visitors heading eastbound on Georgetown Pike may have delays at times other than weekday evenings, but delays will likely not be as long. Depending on the number of visitors and other vehicles on Colonial Farm Road turning left onto Georgetown Pike on weekday evenings, the increase in delays could be negligible to minor but could be slightly higher depending on the prevalence and extent of existing delays.

Sight Line and Safety. Although the intersection of Colonial Farm Road and Georgetown Pike is on a wide curve, the curve also limits sight lines. This reduced visibility may cause safety issues at the intersection, particularly if more vehicles are turning at the intersection. Overall, impacts on traffic and transportation under Alternative 2 would be negligible to minor adverse at Langley Fork Park in the form of increased overall traffic volumes and the possibility of minor additional delays during peak evening traffic hours when southbound existing traffic volumes on Colonial Farm Road are high. Under Alternative 2 there would be no adverse traffic and transportation impacts at Langley Oaks Park.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the transportation systems and local traffic patterns. Therefore, there would be no cumulative impacts under Alternative 2.

Conclusion. Long-term negligible to minor adverse impacts may result from Alternative 2 due to a slight increase in trips generated from additional programming and parking spaces. Impacts would be primarily evident when park activities overlap with weekday evening rush hour volumes and high southbound exiting volumes on Colonial Farm Road, as well as during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Minor delays would mainly accrue to approaching and departing eastbound drivers.

Impacts of Alternative 3: Land Exchange with More Extensive Development at Langley Fork Park by FCPA

Analysis. Similar to Alternative 2, under Alternative 3 the same land exchange would occur between NPS and FCPA in order to renovate and expand FCPA managed lands and facilities at Langley Fork Park. In return, the land exchange would dedicate forested park land owned by FCPA to NPS. Alternative 3 proposes more extensive development of Langley Fork Park; in addition to improvements to the existing athletic fields, possible improvements include the installation of new features such as a dog park, athletic field lighting, pavilions, additional athletic fields, trail enhancements, and additional parking. Alternative 3 would add approximately 210 parking spaces. The expanded number of athletic fields and the dog park would bring a larger number of new trips to Langley Fork Park than Alternative 2 and thereby have an increased level of impacts. Langley Oaks Park would see no perceptible change in traffic patterns or congestion because the proposed use of land would be almost identical as the existing use.

Impacts from the increased trips to Langley Fork Park due to the expansion of facilities would be similar in character as those for Alternative 2 (occur at similar times and at similar locations), except the impacts would be more perceptible and likely cause longer delays. Again, the left turning movement onto Colonial Farm Road from Georgetown Pike and the left turning movement back onto Georgetown Pike from Colonial Farm Road would see the largest impact, experiencing longer delays and likely needing mitigation of these two movements. The addition of a second and third access into the park along Colonial Farm Road would aid the flow of cars entering and leaving the park, particularly due to the greater separation from the Georgetown Pike/Colonial Farm Road intersection. Additional traffic may be perceptible at certain times of day on Georgetown Pike depending on the increase in the number of playing fields and other facilities, but such traffic would be minor compared to overall traffic volumes. The extent of the impacts of Alternative 3 would be further analyzed after the master plan for Langley Fork Park is approved and at the time site planning and engineering of the proposed improvements are performed.

Overall, impacts on traffic and transportation under Alternative 3 would be minor adverse impacts at Langley Fork Park in the form of increased delay during peak evening traffic hours and there would be no adverse impacts at Langley Oaks Park.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the transportation systems and local traffic patterns. Therefore, there would be no cumulative impacts under Alternative 3.

Conclusion. Long-term minor adverse impacts may result from Alternative 3 due to an increase in trips generated from additional facilities and programming. Impacts on congestion or delay would likely be perceptible when high park usage overlapped with weekday evening rush hour volumes and during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Delays would mainly accrue to approaching and departing eastbound trips. Impacts would be more intense than Alternative 2, but would likely not elevate impacts beyond the moderate threshold.

Impacts of Alternative 4: Land Exchange with Mid-Level Development at Langley Fork Park by FCPA (Preferred)

Analysis. Similar to Alternatives 2 and 3, under Alternative 4 the same land exchange would occur between NPS and FCPA in order to renovate and expand FCPA managed lands and facilities at Langley Fork Park. In return, the land exchange would dedicate forested park land owned by FCPA to NPS, land that would remain undeveloped, act as a buffer to George Washington Memorial Parkway, and provide enhanced protection of the new Potomac Gorge resources areas. Alternative 4 proposes development of the existing Langley Fork Park recreational footprint, but in a more compact configuration than Alternative 3. In addition to improvements to the existing athletic fields, possible improvements include an expansion in the number of additional athletic fields to serve a variety of sports, increased signage and trail infrastructure, improvement of some athletic fields with synthetic turf, improvement of fields outside the historic overlay district with lighting, trail enhancements, a pavilion, and expanded and reconfigured parking with a turnaround for emergency vehicles. Alternative 4 would add approximately 210 parking spaces. The additional athletic fields would bring a larger number of new trips to Langley Fork Park than Alternative 2, but less trips than Alternative 3, where additional trips would be generated by a proposed dog park. Langley Oaks Park would see no perceptible change in traffic patterns or congestion because the proposed use of land would be almost identical as the existing use.

Impacts from the increased trips to Langley Fork Park due to the expansion of facilities would be similar to those for Alternative 3. Again, the left turning movement onto Colonial Farm Road from Georgetown Pike and the left turning movement back onto Georgetown Pike from Colonial Farm Road would see the largest impact, experiencing longer delays and likely needing mitigation of these two movements. The addition of a second and third access into the park along Colonial Farm Road would aid the flow of cars entering and leaving the park, particularly due to the greater separation from the Georgetown Pike/Colonial Farm Road intersection. Additional traffic may be perceptible at certain times of day on Georgetown Pike depending on the increase in the number of playing fields and other facilities, but such traffic would be minor compared to overall traffic volumes. The extent of the impacts of Alternative 3 would be further analyzed after the master plan for Langley Fork Park is approved and at the time site planning and engineering of the proposed improvements are performed.

Overall, impacts on traffic and transportation under Alternative 4 would be minor adverse impacts at Langley Fork Park in the form of increased delay during peak evening traffic hours and there would be no adverse impacts at Langley Oaks Park.

Cumulative Impacts. No past, present, or reasonably foreseeable projects were identified that would have an impact on the transportation systems and local traffic patterns. Therefore, there would be no cumulative impacts under Alternative 4.

Conclusion. Long-term minor adverse impacts may result from Alternative 4 due to an increase in trips generated from additional facilities and programming. Impacts on congestion or delay would likely be perceptible when high park usage overlapped with weekday evening rush hour volumes and during overlapping use of neighboring Clemyjontri Park on evenings and weekends. Delays would mainly accrue to approaching and departing eastbound trips. Impacts would be more intense than Alternative 2, but would likely not elevate impacts beyond the moderate threshold.

CHAPTER 5: CONSULTATION AND COORDINATION

The National Park Service (NPS) places a high priority on public involvement in the National Environmental Policy Act (NEPA) process and on giving the public an opportunity to provide input and comment on proposed actions. As part of NPS NEPA and Section 106 process, issues associated with the proposed action were identified during the internal scoping meeting held with NPS staff and have been communicated to other affected agencies and stakeholders. Coordination with local and federal agencies was conducted during the NEPA process to identify issues or concerns related to natural and cultural resources at the Langley Fork Park project location. NPS conducted a public meeting to solicit input and comment from members of the public. The meeting was held on January 14, 2014, at the Franklin Sherman Elementary School, 6633 Brawner Street, McLean, Virginia 22101 from 6:30 p.m. to 8:30 p.m. to discuss with the public the purpose and need, site characteristics, and other project information. Twenty-two people signed into the meeting.

Compliance with Section 106 of the National Historic Preservation Act (NHPA), as amended, included consultation with the Virginia Department of Historic Resources (state historic preservation office (SHPO)). The assessment of effect will be completed and documented separately from this environmental assessment (EA). NPS began formal consultation with the SHPO on December 22, 2011 (appendix A); SHPO concurred on the assessment of effect on December 20, 2017. Coordination and consultation with SHPO are ongoing. A copy of this EA and the assessment of effect will be sent to the Virginia Department of Historic Resources when completed. NPS Section 106 compliance will be satisfied when the assessment of effect with a memorandum of agreement document is completed and the necessary provisions and stipulations are carried out.

A search on the US Fish and Wildlife Service Information, Planning, and Conservation System was conducted for the list of rare, threatened, and endangered species known to be present in the project area. The results indicated the northern long-eared bat, which was listed as threatened in May 2015, could be found in the vicinity of the project area.

Discussions with the Virginia Department of Conservation and Recreation Natural Heritage Program yielded historical records of the presence of one species of special concern at Langley Fork Park: one-sided wintergreen (*Orthilia secunda*), and three species at Langley Oaks Park: buttercup scorpionweed (*Phacelia covellei*), one-sided wintergreen, and tall thistle (*Cirsium altissimum*).

A rare plant survey was conducted at Langley Fork Park for the one-sided wintergreen. According to the Department of Conservation and Recreation Natural Heritage Program database, the historical record from the Washington, DC herbarium specimens collected by W.R. Maxon in 1902 ([Collection #540] and F.W. Layton in 1915 [no collection number]) for the one-sided wintergreen noted that the species was last observed at the site of Langley Fork Park in 1915 (FCPA 2013a). The park was surveyed twice over the dates of June 11–12, 2012 and August 6–7, 2012. These dates coincide with the potential bloom season of the one-sided wintergreen, generally occurring from June through August.

Despite some potentially suitable habitat, no specimens of one-sided wintergreen were located and it was determined that it is highly unlikely that the species occur at the site at this time. The rare plant survey was incorporated into a natural resources report for Langley Fork Park and Langley Oaks Park (FCPA 2013a), which was forwarded to the Department of Conservation and Recreation Natural Heritage Program for review and file.

Public Comment Period

To comment on this EA, you may mail comments or submit them online at http://parkplanning.nps.gov/GWMP and follow the appropriate links. Please be aware that your comments and personal identifying information may be made publicly available at any time. While you may request that NPS withhold your personal information, we cannot guarantee our ability to do so. Please mail comments to the following address:

> Superintendent
> Attn: Langley Fork Park and Langley Oaks Park Land Transfer
> George Washington Memorial Parkway
> Turkey Run Park Headquarters
> 700 George Washington Memorial Parkway
> McLean, Virginia 22101

One intent of NEPA is to encourage the participation of federal and state-involved agencies and affected citizens in the assessment procedure, as appropriate. This section describes the consultation that occurred during development of this draft EA, including consultation with scientific experts and other agencies. This chapter also includes a description of the public involvement process and a list of the recipients of the draft document.

CHAPTER 6: PREPARERS AND CONTRIBUTORS

PREPARERS

Name	Title	Education/Responsibility
Louis Berger Group, Inc.		
Julia Yuan	Senior Environmental Scientist	MPS Forest and Natural Resources Management, State University of New York College of Environmental Science and Forestry *Project manager (Former)*
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CHAPTER 8: GLOSSARY

best management practices — Methods that have been determined to be the most effective, practical means of preventing or reducing pollution or other adverse environmental impacts.

contributing resource — A building, site, structure, or object that adds to the historic significance of a property or district.

Council on Environmental Quality (CEQ) — Established by Congress within the Executive Office of the President with passage of the National Environmental Policy Act (NEPA) of 1969. The CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

cultural landscape — Environments that include natural and cultural resources associated with a historical context.

cultural resources — Prehistoric and historic districts, sites, buildings, objects, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reason.

cumulative impacts — Under National Environmental Policy Act regulations, the incremental environmental impact or effect of an action together with the effects of past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions (40 CFR §1508.7).

enabling legislation — Legislation that gives appropriate officials the authority to implement or enforce the law.

endangered species — Any species that is in danger of extinction throughout all or a significant portion of its range. The lead federal agency for the listing of a species as endangered is the US Fish and Wildlife Service, and it is responsible for reviewing the status of the species on a five-year basis.

environmental assessment — An environmental analysis prepared pursuant to the National Environmental Policy Act to determine whether a federal action would significantly affect the environment and thus require a more detailed environmental impact statement.

Executive Order — Official proclamation issued by the President that may set forth policy or direction or establish specific duties in connection with the execution of federal laws and programs.

floodplain — The flat or nearly flat land along a river or stream or in a tidal area that is covered by water during a flood.

impairment — The National Park Service (NPS) requires an analysis of potential effects to determine whether actions would impact or impair Park resources. The NPS is empowered with the management discretion to allow impacts on Park resources and values (when necessary and appropriate) to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values.

National Environmental Policy Act (NEPA) — The act, as amended, articulates the federal law that mandates protecting the quality of the human environment. It requires federal agencies to systematically

assess the environmental impacts of their proposed activities, programs, and projects including the no-action alternative of not pursuing the proposed action. NEPA requires agencies to consider alternative ways of accomplishing their missions in ways which are less damaging to the environment.

National Historic Preservation Act of 1966 (NHPA) (16 USC 470 et seq.) — An act to establish a program for the (PL 89-665; 80 STAT. 915; 16 USC 470, as amended by PL 91-243, PL 93-54, PL 94-422, PL 94-458, PL 96-199, PL 96-244, PL 96-515, PL 98-483, PL 99-514, PL 100-127, and PL 102-575).

National Register of Historic Places (NRHP) — A register of districts, sites, buildings, structures, and objects important in American history, architecture, archeology, and culture, maintained by the Secretary of the Interior under authority of section 2(b) of the Historic Sites Act of 1935 and section 101(a)(1) of the National Historic Preservation Act of 1966, as amended.

scoping — Scoping, as part of the National Environmental Policy Act, requires examining a proposed action and its possible effects; establishing the depth of environmental analysis needed; and determining analysis procedures, data needed, and task assignments. The public is encouraged to participate and submit comments on proposed projects during the scoping period.

threatened species — Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

viewshed — A viewshed includes a total visible area from a particular fixed vantage point.

vista — A distant or long view, especially one seen through some opening such as an avenue or trees that form an avenue.