National Park Service U.S. Department of the Interior Denver Service Center

Chesapeake and Ohio Canal National Historical Park



Maryland

# Access Improvements to Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

# **Draft Environmental Assessment**

March 2005

### ENVIRONMENTAL ASSESSMENT ACCESS IMPROVEMENTS TO POINT OF ROCKS, BRUNSWICK, FIFTEENMILE CREEK, AND MONOCACY AQUEDUCT

### CHESAPEAKE AND OHIO CANAL NATIONAL HISTORICAL PARK MARYLAND

#### SUMMARY

The National Park Service proposes to execute routine maintenance, repairs, and enhancements to new and existing recreational boat ramp and parking facilities within the Chesapeake and Ohio Canal National Historical Park to improve access to the Potomac River for recreational users and law enforcement and emergency services personnel, to provide protection of natural and cultural resources, and to enhance public safety and visitor experience. Enhancements are proposed for access roads, bridges, parking lots, boat ramps, biking and hiking trails, and restrooms. The National Park Service currently owns and operates 15 active boat ramps within the legislative boundaries of the park. Three of these ramps, Point of Rocks (mile 48.2), Brunswick (mile 55.0), and Fifteenmile Creek (mile 140.9) and a parking lot at Monocacy Aqueduct (mile 42.2), are being considered for substantial improvements. This environmental assessment evaluates the potential effects to the natural and human environment as a result of these improvements.

The Chesapeake and Ohio Canal was under financial ownership of the Baltimore and Ohio Railroad in 1924 when it was abandoned. In 1938, the railroad transferred ownership of the canal to the U.S. government in partial repayment of indebtedness to the Resolution Trust Corporation. The 184.5-mile long canal was soon placed under the jurisdiction of the National Park Service. Discussions about how to use the property culminated in the proposal of a scenic parkway. The foresight of Justice William O. Douglas of the Supreme Court of the United States helped to change the minds of government officials and the general public. During a publicized hike in March 1954, Justice Douglas brought attention to the unique cultural and natural resources within the boundaries of the Chesapeake and Ohio Canal.

In 1961, portions of the Chesapeake and Ohio Canal were declared a national monument, and in 1971, President Richard M. Nixon signed the legislation that established the Chesapeake and Ohio Canal National Historical Park.

Presently, the existing boat ramp and parking area at Fifteenmile Creek is unmarked and unpaved, access can be confusing, and the area is congested. Parked vehicles often restrict access to the boat ramp, block the emergency access gate for the Chesapeake and Ohio Canal towpath, and spill over to the historic railroad trace of the Western Maryland Railroad. The boat ramp, as configured, is too steep to launch deeper-draft vessels. As a result, natural resources such as wetlands and vegetation are continually impacted by visitors who improvise alternate launch sites along the edge of the river. Safety concerns were also identified at the Fifteenmile Creek boat ramp. Vehicles left overnight in the parking lot are within the floodplain and subject to damage during high-water events, and social trails developed over steep inclines between the campground and boat ramp increase the potential for visitor accidents.

The parking area at the Point of Rocks facility is unpaved and unmarked. As with Fifteenmile Creek, this leads to confusing access and, during periods of high use, congestion. Park visitors often park at the crowded Point of Rocks Rail Station lot. The station, which is very crowded, needs the parking for its patrons, and those who park at the station are required to cross the railroad tracks, which presents a safety risk.

The existing Brunswick boat ramp is located near Historic Lift Lock 30 on the canal and directly under the Maryland Highway 17 viaduct. Access at the Brunswick boat ramp is impeded by an inadequately sized, poorly designed parking area. Also, vehicle parking can restrict access to the boat ramps during periods of high visitor use.

The existing parking lot at the Monocacy Aqueduct is adequate to support visitation. However, it lies within direct view of the Monocacy Aqueduct and is considered an eyesore, diminishing enjoyment of the aqueduct. In addition, since the abandonment of the Chesapeake and Ohio Canal in 1924, trees have been allowed to overgrow the canal basin at the Monocacy Aqueduct. This leads to difficulty in historical interpretation of the area.

The proposed action alternatives would provide improved access to the river. Improved parking facilities would lead to less congestion and confusion, provide areas for multiple users, and, in the case of Monocacy Aqueduct, improve the viewshed. The development of designated parking areas and trails would reduce impacts on park resources from vehicular and hiking traffic in undesignated areas. Finally, the removal of trees from the canal basin at Monocacy Aqueduct and the canal prism at Brunswick would aid in the interpretation of these areas.

This environmental assessment analyzes the impacts of continuing current management (Alternative A, the No Action Alternative), implementing a minimal development alternative (Alternative B, Minimal Development to Improve Visitor Access), and a larger-scale facilities development program (Alternative C, Increased Development to Improve Visitor Access, the Preferred Alternative).

This analysis has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (40 CFR 1508.9), the National Park Service *Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision-making*, and the National Historic Preservation Act of 1966 (as amended).

#### **PUBLIC COMMENT**

If you wish to comment on the environmental assessment, you may mail comments to the name and address below or send electronic comments via e-mail to choh\_rfc@nps.gov. This environmental assessment will be on public review for 30 days. Please note that names and addresses of people who comment become part of the public record. **If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comment.** We will make all submissions from organizations, from businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses available for public inspection in their entirety. Please address written comments to:

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#### PURPOSE AND NEED

### 2 BACKGROUND

1

3 The Chesapeake and Ohio Canal Company was established in 1825 to construct a transportation system

- 4 connecting Georgetown, District of Columbia, with Cumberland, Maryland. The company followed the
- 5 inspiration of George Washington, who helped establish the Patowmack Canal Company in 1785 to use
- 6 the Potomac River as the basis for a navigable waterway through the Allegheny Mountains. Because the
- Potomac River was unnavigable at many locations, the company built a series of skirting canals. After
   high construction costs led to bankruptcy, the Chesapeake and Ohio Canal Company acquired the rights
- ingli construction costs led to bankrupicy, the Chesapeake and Ohio Canal Company acquired the rights
   to the Patowmack Company in 1824. In 1828, the Chesapeake and Ohio Canal Company expanded the
- scope of the project to encompass an uninterrupted, man-made waterway from Georgetown, District of
- 11 Columbia, to Cumberland, Maryland. Completed in 1850, the 184.5-mile long canal paralleled the
- 12 Potomac River between the two cities on the Maryland shoreline. Extension of the railroad west
- 13 precluded the canal's extension west from Cumberland to the headwaters of the Ohio River.
- 14 From the beginning, many challenges were met, making the construction of the canal an engineering
- 15 marvel. Masonry features, such as lift locks, culverts, waste weirs, dams, and river and guard locks were
- 16 primarily constructed by immigrant stone masons. Eleven aqueducts that spanned the Potomac River
- 17 tributaries are considered engineering masterpieces, and the Paw Paw Tunnel has been referred to as one
- 18 of the world of the world (Hahn 1999). The canal's towpath was often adjacent to the Potomac River,
- 19 with stone armor on the riverbank to reduce erosion during high-water events. Bridges spanned the canal
- 20 in numerous locations to provide area communities, farms, and tradesmen with access to the river. Many
- 21 fords connected [West] Virginia and Maryland. The canal transported many commodities, including farm
- 22 produce and western Maryland bituminous coal. At one point, over 500 canal boats were in operation.
- By the late 1870s, however, competition from the Baltimore and Ohio Railroad sent the canal operations
- into an economic downswing. Additionally, the canal's location along the Potomac River left it subject to
- the forces of nature. Numerous floods impacted the canal during its operational period. After the flood of
- 26 1924, the canal was no longer a practical form of transportation and was abandoned. Since federal
- 27 government ownership began in 1938, five major floods have impacted the historic resources of the canal.

### 28 THE CREATION OF A PARK

- 29 The Chesapeake and Ohio Canal was under financial ownership of the Baltimore and Ohio Railroad in
- 30 1924 when it was abandoned. In 1938, the railroad transferred ownership of the canal to the U.S.
- 31 government in partial repayment of indebtedness to the Resolution Trust Corporation. The 184.5-mile
- 32 long canal was soon placed under the jurisdiction of the National Park Service. Discussions about how to
- use the property culminated in the proposal of a scenic parkway. The foresight of Justice William O.
- 34 Douglas of the Supreme Court of the United States changed the minds of government officials and the
- 35 general public. During a highly publicized hike in March 1954, Justice Douglas brought attention to the
- 36 unique cultural and natural resources within the boundaries of the Chesapeake and Ohio Canal.
- 37 In 1961, portions of the Chesapeake and Ohio Canal were declared a national monument, and in 1971,
- 38 President Richard M. Nixon signed the legislation that established the Chesapeake and Ohio Canal
- 39 National Historical Park.
- 40 Today most of the canal remains unbroken, except for a break in the canal/towpath continuity at Big
- 41 Slackwater, and without substantial modification to its original character. As the most intact example of
- 42 the American canal-building era, it allows park visitors and scholars alike to study 19th-century canal-
- 43 building technology and also to reflect on social and economic history, military activities, the
- 44 Underground Railroad, and the life ways of native peoples. Its 74 lift locks, 11 stone aqueducts, seven
- 45 dams, hundreds of culverts that carry roads and streams beneath the canal, and a 3,118-foot tunnel that

- 1 carries the canal through a mountain at the Potomac's Paw Paw Bends provide insight into transportation
- 2 barriers in the United States and the solutions developed before the railroad era. The Chesapeake and
- 3 Ohio Canal is listed on the National Register of Historic Places and is recognized as a nationally
- 4 significant historic district.
- 5 In addition to the historic resources, the Chesapeake and Ohio National Historical Park is also host to a
- 6 wide variety of natural resources, some with outstanding significance. The park has 19,586 acres with
- 7 park settings ranging from densely urbanized Washington, D.C., to pastoral farm land and forests near
- 8 Cumberland, Maryland. Located along the banks of the Potomac River, the park is part of the
- 9 Chesapeake Bay ecosystem. The park protects the floodplain forests and wetlands, which help to slow
- 10 waters during flooding and absorb run-off nutrients from surrounding lands.
- 11 The canal begins on the Upper Coastal Plain and, as it winds westward, transects portions of the
- 12 Piedmont, Blue Ridge, and Ridge and Valley physiographic provinces. As a result, the park's landscape
- 13 results in a rich geological, ecological, and biological diversity. Park resources are also influenced by the
- 14 Potomac River. Significant geologic formations exist in the park, including the Great Falls of the
- 15 Potomac and limestone caves. Native plant communities such as mid-Appalachian shale barrens,
- 16 limestone forests, floodplain forests, and wetlands and some of the very best examples of scoured bedrock
- 17 terrace habitat in the eastern United States are found within the park. Plants and animals common to
- 18 these habitats as well as significant numbers of state and nationally rare species live here.

### 19 PURPOSE AND NEED

- 20 The National Park Service proposes to execute routine maintenance, repairs, and enhancements to new
- and existing recreational boat ramp and parking facilities within the Chesapeake and Ohio Canal National
- Historical Park to improve access to the Potomac River for recreational users and for law enforcement
- and emergency services personnel, to provide protection of natural and cultural resources, and to enhance
- 24 public safety and visitor experience. Facilities proposed for enhancements include access roads, bridges,
- 25 parking lots, boat ramps, biking and hiking trails, and restrooms. The National Park Service currently
- 26 owns and operates 15 active boat ramps within the legislative boundaries of the park. Three of these
- 27 ramps, Point of Rocks (mile 48.2), Brunswick (mile 55.0), and Fifteenmile Creek (mile 140.9) and a
- 28 parking lot at Monocacy Aqueduct (mile 42.2), are being considered for significant improvement in this
- 29 environmental assessment. The four project locations within the park are illustrated in Figure 1.
- 30 This project initially results from a request made by the district maintenance foreman for additional
- 31 parking to accommodate visitors to the Fifteenmile Creek boat ramp and campground. The existing boat
- 32 ramp at the confluence of Fifteenmile Creek and the Potomac River near Little Orleans, Maryland, is an
- 33 extremely attractive location for fisherman and recreational boaters. However, the extreme hydraulics
- 34 created during high-water events cause considerable site management challenges. This site is used
- 35 extensively because it is one of only three drive-in campgrounds within the park.
- 36 The Fifteenmile Creek boat ramp area consists of two boat ramps, an unpaved parking area, a
- 37 campground, and a boat ramp access road adjacent to the historic canal and towpath. One of the boat
- ramps, constructed sometime before 1988, is now underwater through parts of the year, and is no longer
- in use. The other was constructed *ca*. 1988, and is still used today. Fifteenmile Creek area is located in
- 40 the park's Long-Term Remote Zone, as identified in the General Plan (NPS 1976). The zone provides:
- 41 "the opportunity for a long-term primitive hiking, biking, or horseback experience. With
  42 limited access, high quality natural surroundings, and little development, these sections
- 43 are for those who seek a near wilderness involvement with the environment. The
- 44 objective is to ensure that these sections retain their wild character and continue to
- 45 provide this type of experience...Parking for towpath users will not be provided in Zone
- 46 E as adjacent sections will be designed to provide access. If appropriate, parking for

- river users will be provided at carefully selected locations in Zone E sections (NPS 1976)."
- 3 In recent years, the area has attracted roughly 45,000 annual visitors, offering recreational opportunities
- 4 for pedestrian and bicycle traffic on the towpath, overnight camping, and fishing. The area also is an
- 5 established put-in / take-out point for public and commercial raft and canoe trips and a river access point
- 6 for emergency and law enforcement services.
- 7 The existing boat ramp access road at Fifteenmile Creek is narrow and subject to erosion due to
- 8 inadequate drainage and a non-stabilized surface. The current parking area is unpaved, unmarked, and
- 9 undersized, leading to confusing access, parking problems, and congestion. Because of the congestion,
- 10 vehicle parking often restricts access to the boat ramp and spills over to the historic railroad trace of the
- 11 Western Maryland Railroad. Vehicles frequently block the access gate for the emergency and
- 12 maintenance access road. Another result of the confusion is the use of the river bank as a boat ramp. It is
- 13 not uncommon to observe visitors driving down the bank and backing into the water to launch their 14 vessels. This activity damages sensitive resources, including cultural resources, wetlands, and plant and
- 15 animal species in the area. Compounding these problems, the entire area is located within the 100-year
- floodplain and is frequently flooded. Visitors leaving their vehicle in the parking area have returned to
- 17 find their vehicle partially submerged. This area is maintained and repaired after high-water events and
- 18 otherwise as needed.
- 19 There is currently no safe pedestrian route between the boat ramp and the campground. Visitors must
- either walk down the boat ramp access road or use a social trail that has been created down a steep grade
  between the two areas. Either option poses a safety risk.
- 22 The existing boat ramp is too steep, making it difficult to launch larger, deeper-draft vessels. There are
- also extensive silt deposits at the confluence of the Potomac River and Fifteenmile Creek, making it very
- 24 difficult for boaters to navigate to the mainstream after launching.
- Two other boat ramps, Point of Rocks and Brunswick, were subsequently identified as needing similar upgrades and thus were added to the project.
- 27 The Point of Rocks facility is located underneath the U.S. Highway 15 bridge, near Point of Rocks,
- 28 Maryland. This location is hidden from view by dense vegetation and is considered a safety risk. The
- 29 facility consists of a boat ramp, an unpaved parking area, and an access road. The boat ramp and access
- 30 road were constructed prior to the establishment of the Chesapeake and Ohio Canal National Historical
- 31 Park. There is currently no means to count visitor access to this facility, but it does receive regular visits
- 32 throughout the summer recreation season. Uses of this facility include fishing and river access for
- 33 shallow-draft vessels such as rafts and canoes. Here, too, the boat ramp was constructed at a steep grade,
- 34 creating difficulties for those launching vessels. In addition, the ramp is in poor condition and has been
- 35 heavily scoured along the riverbank, creating steep drop-offs. There is also a perennially submerged rock
- 36 ledge approximately 240 feet downstream from the boat ramp, which presents a navigation hazard to
- 37 those launching vessels from this location.
- 38
- 39



- 1 The parking area at the Point of Rocks facility is unpaved and unmarked. As with Fifteenmile Creek, this
- 2 leads to confusion, and, during periods of high use, congestion becomes a problem. Park visitors often
- 3 park at the crowded Point of Rocks Rail Station lot. The station is very crowded and needs the parking
- 4 for its patrons, and park users who park at the station are forced to cross the railroad tracks, which
- 5 presents a safety risk.
- 6 The Point of Rocks area is in Zone D – Short-Term Remote Zone. This zone can "retain a remoteness
- 7 which produces a low density use. Through proper management, the park visitor can be assured of
- 8 finding solitude in a natural setting. The objective here is to provide those who desire it with an
- 9 undisturbed day in a natural setting (NPS 1976)."
- 10 Of the three boat ramp facilities considered in this environmental assessment, Brunswick is the newest
- 11 and in the best condition. It is located near Historic Lift Lock 30 on the canal and directly under the
- Maryland State Highway 17 viaduct, and consists of a single boat ramp, a paved parking lot, and an 12
- 13 access road. Currently, shallow-draft vessels use the facility to access the river. An estimated 30,000
- 14 visitors use the Brunswick facility annually. The boat ramp, though in considerably better shape than the
- 15 one at Point of Rocks, has been scoured and is somewhat steeper than what would be considered optimal.
- 16 The main concern at this facility is the small size and layout of the parking lot. Access at the Brunswick
- boat ramp is impeded by an inadequately sized, poorly designed parking area. The existing lot will 17
- accommodate only ten vehicles towing trailers, and there are no designated handicapped parking spaces. 18 19
- During periods of high use, vehicles parking in this lot often restrict access to the boat ramp.
- 20 Prior to 2003, vehicles traveling to and from the Brunswick wastewater treatment plant would travel
- 21 down the boat ramp access road, turn onto the towpath, and cross over the historic waste weir. To
- 22 facilitate truck traffic and protect the waste weir, the park constructed an extension to Maple Avenue.
- 23 This project alleviated heavy truck traffic traveling over the waste weir, but during 2003 a portion of the
- 24 visitors to Point of Rocks boat ramp accessed the boat ramp facility via Maple Avenue and the towpath
- 25 instead of using the intended boat ramp access road. The waste weir was not designed for this additional
- traffic and, while it is not in immediate danger, it will need to be reinforced if this level of traffic persists. 26
- 27 Moreover, vehicles mistakenly towing trailers down the Maple Avenue/towpath route find it impossible
- 28 to maneuver the tight corner formed at the intersection of the towpath and boat ramp access road.
- 29 In addition to the access and safety concerns occurring at Brunswick, the canal prism between Lock 30
- 30 and Maple Avenue has become overgrown with weedy species. This condition differs from what would
- be considered the historical landscape, and impedes interpretation efforts in the area. 31
- 32 As identified in the park's General Plan (NPS 1976), the Brunswick area is located in Zone B – Cultural
- Interpretive Zone. This zone "identifies sections of the park containing historic resources but the higher 33
- density of Zone A (National Interpretive Center Zone) is deemed to be incompatible with the desired 34
- 35 mood of the area...most of these areas do not have adequate parkland around them upon which to
- 36 construct adequate visitation facilities for a Zone A designation (NPS 1976)."
- 37 The existing parking lot at Monocacy Aqueduct is adequate to accommodate visitors. The parking lot is
- 38 located within plain view of the aqueduct and intrudes on the viewshed. The aqueduct is currently
- 39 undergoing a major stabilization project aimed at ensuring the safety of park visitors and stabilizing the
- structure so it can withstand the frequent floods of the Potomac and Monocacy Rivers. Work on the 40
- aqueduct was initiated in the fall of 2002 with completion expected in the spring of 2005. While 41
- 42 construction persists, the existing visitor parking lot has been closed and is currently occupied by heavy
- 43 machinery. A temporary gravel parking/staging area, created to accommodate visitors during this period,
- 44 is set back further from the aqueduct than the existing parking lot. Under its current contract, the
- 45 company conducting the stabilization work on the aqueduct would return the existing parking lot to
- 46 usable condition. However, it was recognized that this would be an ideal time to change the configuration
- 47 of the parking lot, removing it from the viewshed.

- 1 The Monocacy Aqueduct, like the Brunswick area, is in Zone B Cultural Interpretive Zone (NPS 1976).
- 2 Actions and potential impacts associated with the Monocacy Aqueduct stabilization project are outside
- 3 the scope of this environmental assessment.
- 4 Another consideration at the Monocacy Aqueduct is the growth of trees and other vegetation within the
- 5 canal basin. Since the abandonment of the canal in 1924, the canal basin at the aqueduct has not been
- 6 maintained and has become overgrown. As it exists now, the basin is obscured by this vegetation,
- 7 spawning interpretive confusion and detracting from the historical landscape.

### 8 **PROJECT OBJECTIVES**

- 9 The mission of Chesapeake and Ohio Canal National Historical Park is to protect and preserve the park's
- 10 cultural and natural resources, to educate the public about those resources, and to provide for public
- 11 recreation and enjoyment. The park staff considered the park's mission as it defined the primary
- 12 objectives for improvements to the four sites. Objectives are specific statements of purpose and describe
- 13 what must be accomplished, to a large degree, for an action to be considered a success. The overarching
- 14 objectives of the proposed action include:
- Maintaining and improving river access for recreational users and for law enforcement and emergency services personnel,
- Providing a defined parking design for the protection of natural resources,
- 18 Improving visual quality of the areas,
- Facilitating better interpretation of Chesapeake and Ohio Canal,
- Reducing sediment erosion, and
- Correcting and preventing unsafe conditions.

# 22 RELATIONSHIP TO OTHER PROJECTS AND PLANNING

- 23 The 1976 Chesapeake and Ohio Canal National Historical Park, District of Columbia/Maryland,
- 24 General Plan outlines the direction for proposed actions to be taken for protecting park resources and
- enhancing visitor experiences at the park. Projects and plans specific to each of the proposed project
- areas are listed below.

# 27 Fifteenmile Creek

28 No projects relative to this planning effort were identified in the vicinity of the Fifteenmile Creek site.

# 29 **Point of Rocks**

- 30 *Rail Station Improvements* A commuter train station administered by the Maryland Transit Authority is
- 31 located at Point of Rocks. Commuter use is heavy, as the train provides convenient access into
- 32 Washington, D.C. The Maryland Transit Authority prepared an environmental assessment to evaluate the
- 33 possible alternatives to upgrade the station and parking area. The final environmental assessment, issued
- in May 2003, identified the preferred alternative as the expansion and redesign of the parking lot. This
- alternative would require the acquisition of additional property to enlarge the parking lot. The existing
- 36 parking lot is located adjacent to the CSX railroad lines and within sight of the Chesapeake and Ohio
- 37 Canal National Historical Park. Park visitors accessing the Point of Rocks boat ramp facility often use
- 38 this parking area on weekends.
- 39 The preferred alternative also proposes construction of a new access road that would connect Maryland
- 40 Route 28 with the park. The existing paved access road is located very close to the Route 28 / US 15

- 1 intersection. Due to this proximity, it is extremely dangerous to either pull onto or off the access road.
- 2 The new access road would be attached to the Maryland Transit Authority's parking area, thus moving
- 3 the access road intersection further away from the Route 28 / U.S. 15 intersection. The existing access
- 4 road would be closed to the public on completion of the new road.
- 5 *Community Park* The Point of Rocks community is looking to revitalize their neighborhood. As part of
- 6 their developmental plan, a community park is proposed across the railroad tracks from the Point of
- 7 Rocks Pivot Bridge. The plans include picnic areas, a small outdoor concert venue, and concession
- 8 stands that would offer food and boat rentals to the public. This project is still in the planning phase.
- 9 Pivot Bridge Deck Replacement The Pivot Bridge at Point of Rocks requires improvement. A
- 10 December 2001 Federal Highway Administration inspection report stated that the bridge is not safe to
- 11 carry its listed load without substantial repairs. Accordingly, the Chesapeake and Ohio Canal National
- 12 Historical Park staff developed a proposal to mitigate the shortcomings found by the report. The
- 13 preferred alternative, as identified in the draft environmental assessment, proposes the following:
- Lower the stone abutments by one course, approximately 12 inches, to provide a better line of
   sight for vehicles crossing the bridge.
- Replace the bridge and super-structure decking to support a 15-ton weight loading.
- Relocate a 400-foot section of the towpath to its original location along the edge of the canal,
   thereby separating pedestrians and vehicles.

### 19 Brunswick

- 20 State of Maryland and CSX Barrier Trench In 2003, the state and CSX constructed a barrier trench
- 21 downstream of the Brunswick boat ramp. The purpose of this trench was to stop the migration of
- 22 petroleum pollutants toward the river. At this time, there are no plans to remove the contaminated soil.
- As a result, it is likely that the National Park Service will never be able to re-water this section of the
- 24 Chesapeake and Ohio Canal.
- 25 *Town of Brunswick Utility Line Upgrade* The Park Service is currently working with the town of
- 26 Brunswick regarding their request to upgrade the utility lines at the sewage plant located downstream of
- 27 the Brunswick boat ramp.

# 28 Monocacy Aqueduct

- 29 Monocacy Aqueduct Stabilization Project Monocacy Aqueduct is currently undergoing a major
- 30 stabilization project aimed at ensuring the safety of park visitors and stabilizing the structure so it can
- 31 withstand the frequent floods of the Potomac and Monocacy Rivers. This project is expected to be
- 32 complete in spring of 2005. The Monocacy Aqueduct is the largest and most impressive of the eleven
- aqueducts erected along the canal and is often described by many historians as one of the finest canal
- 34 features in the United States.

# 35 ISSUES AND IMPACT TOPICS

- 36 Internal and agency scoping identified the following potentially significant issues and impact topics to aid
- in the development of this environmental assessment. These will be discussed further in the "Affected
- 38 Environment<sup>\*</sup> and "Environmental Consequences" chapters of this environmental assessment.
- 39• Cultural Resources
- 40 Archeology
- 41 Historic Architecture

-	Cultural Landscape
• Te	errestrial Resources
-	Threatened and Endangered Species
-	Wildlife
-	Vegetation and Habitat
-	Wetlands and Floodplains
-	Soils
• W	Vater Quality
• Pu	ublic Health and Safety
• Vi	isitor Use and Experience
• Pa	ark Operations
ISSUES A	AND IMPACTS CONSIDERED BUT DISMISSED
The resour assessmen reasons fo	rce topics described in this section will not be included or evaluated in this environmental at. These impact topics were not identified during scoping as being of concern. Additional r their dismissal are provided below.
• Ai ac vi id	<b>ir quality</b> – Under the proposed action, there would be short-term, construction-related trivities. Surface disturbance would be minimal, and fugitive dust would not likely affect sitors and staff. Emissions from construction equipment would be minimized by restricting ling time. Therefore, there would be no appreciable impacts to air quality.
• So sit	<b>bundscape</b> – Other than short-term, construction-related noise, the soundscape at the project tes is not anticipated to change from existing conditions. The existing project sites' ambient bise levels include traffic and other sounds of visitor use and park maintenance and operations.
• E Ni sc	<b>cologically critical areas or other unique natural resources</b> – Chesapeake and Ohio Canal ational Historical Park does not contain any designated ecologically critical areas, wild and enic rivers, or other unique natural resources, as referenced in 40 Code of Federal Regulations 508.27.
• En Ju ad of en 19	<b>nvironmental Justice</b> – Executive Order 12898, "General Actions to Address Environmental stice in Minority Populations and Low-Income Populations," requires that all federal agencies ldress the effects of policies on minorities and low-income populations and communities. None the alternatives analyzed in this assessment would have disproportionate adverse health and avironmental effects on populations as defined by the U.S. Environmental Protection Agency's 296 guidance on environmental justice.
• Ee mi ec	<b>conomics</b> – Construction activities associated with the proposed action would not contribute easurably to the local or regional economy. Tourism and visitor contributions to the local conomy are not expected to change.
• In pr	<b>Idian Trust Resources</b> – There are no known Indian Trust resources within the proposed roject areas.
• Et str	<b>thnographic Resources</b> – Ethnographic resources, defined in Director's Order 28 as any "site, ructure, object, landscape, or natural resource feature assigned traditional legendary, religious,

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- subsistence, or other significance in the cultural system of a group traditionally associated with
   it," are not known to exist in any of the proposed project areas.
- Agricultural Lands, Prime and Unique Farmlands The proposed project sites currently
   support visitor vehicle and boat access. There are no agricultural lands or prime and unique
   farmlands at any of the four project sites.

#### ALTERNATIVES

#### 2 DESCRIPTION OF ALTERNATIVES

3 This chapter describes the range of alternatives considered, including the "No Action

4 Alternative," as required in the guidelines for environmental assessments in the National

5 Environmental Policy Act. The descriptions of alternatives are based on preliminary designs and

6 information available at the time of this writing. Specific distances, areas, and layouts used to

7 describe the alternatives are estimated based on good engineering practice and may change during

8 the actual site design. If changes during any approved site design are not consistent with the

9 intent and effects of the selected alternative, additional compliance may be required prior to

10 project implementation to ensure that National Environmental Policy Act guidelines are met.

11 Table 1 provides a summary of the elements or actions associated with each of the alternatives

12 evaluated in this environmental assessment.

13 In addition to describing a range of alternatives, this chapter provides a description of the

14 mitigation measures that have been incorporated into the proposed actions to reduce or avoid

15 adverse environmental effects. This chapter also describes alternatives considered early in the

16 process but later dismissed from further study. Those alternatives that were not realistically

17 feasible or did not adequately meet the project purpose and need were dismissed. Table 4

18 provides a summary comparison of the environmental consequences of each alternative.

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	Point of Rocks			Brunswick		Fifteenmile Creek				Monocacy Aqueduct	
ACTION	Alternative A	Alternative B	Alternative C	Alternative A	Alternatives B and C	Alternative A	Alternative B	Alternative C1	Alternatives C2	Alternative A	Alternatives B and C
GENERAL UPGRADES	AND R	EPAIRS	5								
Existing steel guardrails would be replaced with new timber guardrails		~	*		<		✓	✓	~		~
Existing towpath access gates would be replaced with new bicycle friendly gates		~	~		~		~	~	~		
Stream bank stabilization		~	~		~		~	~	~		

# TABLE 1: COMPARISON OF THE ACTIONS OF EACH ALTERNATIVE OCCURRING AT EACH PROPOSED PROJECT AREA

	Point of Rocks			Brunswick		Fifteenmile Creek				Monocacy Aqueduct	
ACTION	Alternative A	Alternative B	Alternative C	Alternative A	Alternatives B and C	Alternative A	Alternative B	Alternative C1	Alternatives C2	Alternative A	Alternatives B and C
and/or protection would be added around boat ramps											
New pedestrian trails and/or stairs would be constructed		✓	✓				✓	✓	✓		
BOAT RAMP					I						I
Existing boat ramp would be rehabilitated and used		~			~		~	~	~		
New boat ramp would be constructed			~					~	~		
Unused concrete boat ramp would be removed							~	~	~		
Boat ramp and associated facilities would receive maintenance after high- water events	✓	✓	*	~	~	✓	1	✓	<b>v</b>		
PARKING											
Existing parking would be expanded, paved, and marked		✓			~		~				
New parking area would be constructed, paved, and marked			~					~	~		

# TABLE 1: COMPARISON OF THE ACTIONS OF EACH ALTERNATIVE OCCURRING AT EACH PROPOSED PROJECT AREA

	Point of Rocks			Brunswick		F	ìifteenm	Monocacy Aqueduct			
ACTION	Alternative A	Alternative B	Alternative C	Alternative A	Alternatives B and C	Alternative A	Alternative B	Alternative C1	Alternatives C2	Alternative A	Alternatives B and C
Gravel and geotextile would be used to construct new parking area											~
Storm water runoff quality and quantity management would be employed		*	*		~		*	*	*		
OTHER ACTIONS											
Vegetation would be cleared and removed					~						~
Temporary restrooms would be replaced with permanent restrooms		~	~		~		~	~	~		~
Existing boat ramp, access road, and associated parking would be reclaimed			*								
New day-use picnic area would be developed		~	~								
Campground would be relocated									~		
Biennial (every other year)channel dredging would be conducted							~				

# TABLE 1: COMPARISON OF THE ACTIONS OF EACH ALTERNATIVE OCCURRING AT EACH PROPOSED PROJECT AREA

### 1 ALTERNATIVE A – NO ACTION / CONTINUE CURRENT MANAGEMENT

2 Alternative A (No Action) is defined as a continuation of current management at the Point of

3 Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct project sites. The No Action

4 Alternative provides a basis for comparing the management direction and environmental

5 consequences of the action alternatives. Should the No Action Alternative be selected for

6 implementation, the National Park Service would respond to future needs and conditions

7 associated with the sites without major actions or changes from the present course. Key

8 components of this alternative associated with each site are illustrated in Figure 2 (Point of

9 Rocks), Figure 3 (Brunswick), Figure 4 (Fifteenmile Creek), and Figure 5 (Monocacy Aqueduct).

10 Under Alternative A, the facilities at each site would remain unaltered in form and function.

11 Maintenance and repair would be performed on an as-needed basis, and law enforcement would

12 continue to patrol these areas. Public access to these facilities would be available year round,

13 excluding periods when high or low river levels make access unsafe or impractical. Visitors

14 launching vessels from the boat ramp facilities would continue to encounter difficulties during

15 periods of high use, when vehicle parking restricts access to the boat ramps, and the parking lot at

16 Monocacy Aqueduct would remain an intrusive feature in the viewshed. Features of Alternative

17 A unique to each of the sites are described below.

### 18 **Point of Rocks**

19 Facilities at Point of Rocks include an unpaved parking area and one boat ramp. Visitors access

20 the area via the existing boat ramp access road. The facility is currently maintained and repaired

21 on an as-needed basis. The area is used for river access by visitors with shallow-draft vessels and

22 for fishing. The following actions would occur under the No Action Alternative.

23 Alternative A would involve the continued use and maintenance of the Point of Rocks boat ramp

facility. The boat ramp configuration and location would not be changed. Visitors with deeper-

draft vessels would continue to have difficulty launching and navigating due to the steep grade of

the boat ramp and submerged rock ledge downstream. Scouring around the base of the boat ramp

27 would also continue. The current parking area would remain unpaved and would continue to be

28 inadequate to accommodate visitors during periods of high use. As a result, parking would

29 continue to overflow to the Point of Rocks Rail Station lot, and vehicle congestion in the area

30 could continue to block access to the boat ramp. This parking area would be periodically graded

to reduce rutting and potholes, and after high-water events the area would be cleared of deposited

32 debris, silt, and sediments. Existing steel guard rails at the site would remain in place and receive

33 repairs as needed.

# 34 Brunswick

The facilities at Brunswick consist of a single boat ramp, a paved parking lot, and an access road. This area is used by visitors to access the river with shallow-draft vessels and for fishing.

37 Under Alternative A, the type and level of use at Brunswick would be expected to continue for

the foreseeable future. The current parking area would remain unchanged, receiving maintenance

39 and repair as needed, and traffic congestion during periods of high use would continue to restrict

40 access to the boat ramp. Visitors would continue to use Maple Avenue and travel along the

41 towpath and cross over the historic waste weir. The boat ramp at Brunswick would not be altered

42 in any way and would continue to be used and maintained as needed. No action would be taken



FIGURE 2: POINT OF ROCKS CONDITIONS UNDER ALTERNATIVE A



FIGURE 3: BRUNSWICK CONDITIONS UNDER ALTERNATIVE A



FIGURE 4: FIFTEENMILE CREEK CONDITIONS UNDER ALTERNATIVE A



FIGURE 5: MONOCACY AQUEDUCT CONDITIONS UNDER ALTERNATIVE A

- 1 under this alternative to restore the historical landscape by removing overgrown vegetation from
- 2 the canal prism between Lock 30 and Maple Avenue.

### 3 Fifteenmile Creek

4 Currently, the Fifteenmile Creek boat ramp area consists of two boat ramps, an unpaved parking

- 5 area, a campground, the canal towpath, and a boat ramp access road. Under Alternative A,
- 6 inadequate drainage around the boat ramp would continue to result in washouts during high-water
- 7 events. Due to the steep grade of the boat ramp and the continued deposition of silt between the
- 8 ramp and the main river channel, visitors with deeper-draft vessels would continue to have
- 9 difficulty launching and navigating their vessels at this site. The unused concrete boat ramp at
- 10 this site would not be removed.
- 11 Current levels of use at the boat ramp and campground would be expected to continue for the
- 12 foreseeable future. The existing parking area would remain unpaved and inadequate. Overflow
- 13 parking would continue to occur in the historic railroad trace of the Western Maryland Railroad
- 14 and along the riverbank. Without parking upgrades, vehicle congestion in the area would
- 15 continue to block access to the boat ramp and to the emergency and maintenance access road.
- 16 The parking area would continue to be periodically graded to reduce rutting and potholes, and
- 17 after high-water events the area would be cleared of deposited debris, silt, and sediments. The
- 18 existing steel guard rails at the site would remain in place and receive repairs as needed. No
- improvements would be made to the campground or the trail leading from the campground to theboat ramp.

# 21 Monocacy Aqueduct

- 22 The company contracted to perform the stabilization work on Monocacy Aqueduct would return
- the existing parking lot to preconstruction condition under Alternative A. This lot would remain
- an intrusive feature in the viewshed from the aqueduct. The temporary gravel parking lot, used
- 25 during construction, would be reclaimed and revegetated. Trees and other vegetation growing
- 26 within the canal basin would remain, creating interpretive difficulties and detracting from the
- 27 historical landscape.

# 28 ALTERNATIVE B – MINIMAL DEVELOPMENT TO IMPROVE VISITOR ACCESS

- 29 This alternative would result in improvements to facilities at the four project sites. Alternative B
- 30 would use previously developed areas as much as possible while still accomplishing all of the
- 31 project objectives.

# 32 Features of Alternative B Common to All Project Sites

- 33 Under each of the action alternatives (Alternatives B and C), there are several elements that
- 34 would be implemented at each of the four project sites. For instance, each site would receive new
- 35 restroom facilities. Existing portable restrooms would be removed and replaced by self-
- 36 contained, pre-cast concrete structures. These new structures would occupy roughly the same
- 37 footprint as the existing portable restrooms.
- 38 Another feature common to all project sites is the installation of new timber guardrails along
- 39 access roads and parking lots. Steel guardrails throughout the project sites would be removed and
- 40 replaced by new timber guardrails. The timber guardrails are more aesthetically pleasing,
- 41 consistent with the park image, and would provide defined perimeters for vehicle use.

- 1 When necessary, stormwater management, including bioretention areas, would be employed to
- 2 mitigate storm water runoff at the project sites. A bioretention area is a vegetated depression, not
- 3 meant to be a wetland, that collects storm water and allows infiltration. Such management
- 4 improves both quality and quantity of runoff.
- 5 Features of Alternative B unique to each of the sites are described below and illustrated on Figure
- 6 (Point of Rocks), Figure 7 (Brunswick), Figure 8 (Fifteenmile Creek), and Figure 9 (Monocacy
- 7 Aqueduct).

### 8 **Point of Rocks**

- 9 Under Alternative B, the Point of Rocks boat ramp would remain in its current location; however,
- 10 it would be rehabilitated and its grade would be lessened. Rip rap or other protection would be
- 11 installed around the base of the boat ramp to protect it from scouring and to protect users from the
- 12 abrupt ledges of the current boat ramp configuration. Visitors with deeper-draft vessels would
- 13 continue to have difficulty navigating due to the submerged rock ledge located downstream.
- 14 The existing unpaved parking area and Canal Road would be resurfaced. Canal Road would be
- 15 repaired as needed and paved. Resurfacing the parking area would involve removing two mature
- 16 trees and grading, compacting, stabilizing, and surfacing the area with asphalt. Five designated
- 17 parking spaces, including one handicapped space, would then be marked to avoid the ambiguity
- 18 and confusion of the current configuration.
- 19 In addition, a new parking lot would be constructed on either side of Canal Road, west of the boat
- 20 ramp. The lot would total 7,800 square feet, providing 24 parking spaces, including four
- 21 handicapped spaces. A new day-use picnic area would be created in the area surrounding the new
- 22 parking lot. Picnic tables would be installed, and a small path connecting the towpath and new
- 23 parking and picnic area would be added to avoid social trailing.

### 24 Brunswick

- 25 The boat ramp at Brunswick would be rehabilitated and its grade lessened. Rip rap or other
- 26 protection would be installed around the base of the boat ramp to protect it from scouring and to
- 27 protect users from the abrupt ledges of the current boat ramp configuration. In addition, a dock
- 28 structure would be constructed immediately upstream of the boat ramp.
- 29 The existing parking lot is presently paved, but under Alternative B the lot would be expanded by
- 30 approximately 4,000 square feet. The area impacted by this expansion is currently maintained as
- lawn. The layout of the parking lot would also be changed to better accommodate visitors
   launching vessels from this facility. The parking area would be marked to delineate 17 parking
- launching vessels from this facility. The parking area would be marked to delineate 17 parking
   spaces, including two handicapped spaces and nine spaces designed for vehicles towing trailers.
- The existing boat ramp access road would be rehabilitated and resurfaced.
- 35 Split bicycle access gates would be installed along the towpath on either side of the access road.
- Gates would also be installed along the towpath at Maple Avenue to prevent vehicle access to that
- 37 portion of the towpath and to prevent vehicles from crossing over the historic waste weir.
- 38 As part of Alternative B, vegetation that has overgrown the canal prism from Lock 30 to Maple
- 39 Avenue would be removed to assist with historical interpretation. Manual and motorized
- 40 trimmers and saws would be used to cut back and clear out existing vegetation. Removing this
- 41 vegetation would create a setting that is much closer to the historical landscape. After the

#### FIGURE 6: POINT OF ROCKS PROPOSED ACTIONS UNDER ALTERNATIVE B





FIGURE 7: BRUNSWICK PROPOSED ACTIONS UNDER ALTERNATIVES B AND C

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- 1 vegetation is removed, the area would be seeded with grass and maintained on a regular basis to
- 2 prevent it from becoming overgrown again.

# 3 Fifteenmile Creek

4 Under Alternative B, the boat ramp and parking area would be stabilized and brought back to

- 5 correct elevation and grade. This process would begin with the installation of a 230-linear-foot
- 6 gabion retaining wall located above the existing shoreline. The gabions would be placed directly
- 7 upstream from the boat ramp, with timbers secured on top creating a dock. This structure would
- 8 protect the boat ramp by deflecting ice and debris and give boaters a place to tie off. The area
- 9 behind the wall would be backfilled to the appropriate elevation. The unused concrete boat ramp
- 10 at this location would be removed.
- 11 The parking area would be paved and striped. The area adjacent to the boat ramp would be
- 12 designed to accommodate 10 vehicle/trailer spaces and eight single vehicle spaces. Two of the 18
- 13 new spaces would be designated handicapped spaces. Paving this area would facilitate parking
- 14 lot maintenance and allow efficient removal of debris and sediment following high-water events.
- 15 The parking area perimeters would be defined using timber guardrails, eliminating vehicle
- 16 encroachment into sensitive areas. Alternative B would create a parking area of approximately
- 17 16,200 square feet.
- 18 To accommodate deeper-draft vessels, the deposited sediment accumulating at the confluence of
- 19 Fifteenmile Creek and the Potomac River would be dredged on a biennial schedule (every other
- 20 year). Dredged materials would be taken to a dry-down site and subsequently deposited at a
- 21 proper disposal area. Permits from the Maryland Department of the Environment and the U.S.
- 22 Army Corps of Engineers would be obtained prior to any dredging activities.
- 23 The boat ramp access road would be engineered to provide better drainage, and road shoulders
- would be re-established. The road would be paved from the wooden bridge, across the canal
- 25 prism, to the boat ramp parking lot. A total of 352 linear feet of roadway would receive
- treatment. A total of 457 linear feet of new timber guardrail would be installed along the access
- 27 road and parking lot perimeter to prevent unauthorized parking.
- A wooden stairway would be installed to connect the boat ramp area with the campground and parking lot areas. This would eliminate the existing social trails. No changes would be made to the existing campground under this alternative.
- 31 An additional 1,584 square feet of visitor parking would be created along the emergency and
- 32 maintenance access road. This area would serve park day users, who are interested in hiking or
- biking the canal towpath. This parking area would add seven vehicle parking spaces, two of
- 34 which would be designated handicapped.
- 35 Approximately 139 linear feet of existing steel guardrail would be removed. The three steel pipe
- 36 gates that restrict vehicle access to the towpath would be replaced by split bicycle access gates.
- The new gates would be located on either side of the access road at the towpath and across the
- 38 emergency and maintenance access road. The towpath between the access road and the
- 39 Fifteenmile Creek Aqueduct would be resurfaced for bicycle and hiker use.

# 40 Monocacy Aqueduct

- 41 Implementation of this alternative at Monocacy Aqueduct would involve the expansion and
- 42 continued use of the temporary gravel parking lot, reclamation of the existing paved parking lot,
- 43 construction of two service roads, and removal of trees from the canal basin. More specifically,

- 1 the temporary gravel parking lot established to accommodate park visitors during the Monocacy
- 2 Aqueduct stabilization project would be expanded to 8,350 square feet and would continue to be
- 3 used after the stabilization project has ended. The existing 10,000 square-foot paved parking lot,
- 4 used by park visitors prior to the stabilization project, would be demolished and removed. A
- 5 portion of the reclaimed land would be used in the construction of a gravel service road, and the
- 6 rest would be planted in grass. The service road would run down to the river and be used once or
- twice a year for the clearing of debris from the upstream side of Monocacy Aqueduct and provide access from the newly expanded gravel parking lot to the towpath and be used by park visitors
- access from the newly expanded graver parking for to the towpath and be used of
   and maintenance staff accessing the towpath.
- 10 In addition, National Park Service personnel would remove trees growing in the 0.82-acre canal
- basin to aid in historical interpretation of the basin. Approximately 140 trees would be be cut by
- 12 chainsaw flush with the ground; there would be no change in the grade in the canal basin.

# ALTERNATIVE C – INCREASED DEVELOPMENT TO IMPROVE VISITOR ACCESS (PREFERRED ALTERNATIVE)

15 Under Alternative C, facilities at the four project sites would improve existing conditions. The

16 degree of development of parking areas would increase under this alternative, and the boat ramps

- 17 at Fifteenmile Creek and Point of Rocks would be relocated and expanded to improve access to
- 18 the river.

# 19 Features of Alternative C Common to All Project Sites

20 Project elements that would be implemented at all four project sites would be the same as those

- 21 described under Alternative B in the "Features of Alternative B Common to All Project Sites"
- section. These would include new restrooms, timber guardrails, and necessary storm watermanagement.
- 24 Features of Alternative C unique to each of the facilities are defined below and are illustrated on
- 25 Figure 10 (Point of Rocks), and Figures 11 and 12 (Fifteenmile Creek). Actions proposed at

26 Brunswick and Monocacy Aqueduct are the same for Alternatives B and C; refer to Figure 7

27 (Brunswick) and Figure 9 (Monocacy Aqueduct) to view features associated with these sites.

# 28 **Point of Rocks**

- 29 Under Alternative C, the existing boat ramp would be removed and a new concrete boat ramp
- 30 would be constructed approximately 900 feet downstream. This would allow easier access to the
- river and to eliminate the navigation hazard that the submerged rock ledge approximately 240 feet
- 32 downstream from the existing boat ramp presents to those launching vessels at the existing
- location. Rip rap or other protection would be installed around the base of the new boat ramp to
- 34 protect it from scouring and in the area of the existing boat ramp to stabilize the banks and
- 35 prevent erosion when the ramp is removed.
- The area occupied by the existing boat ramp, associated parking area, and access road would be reclaimed and revegetated with native plant species.
- 38 Under this alternative, two new paved parking areas would be constructed to allow convenient
- 39 access to the boat ramp and picnic area. The lower parking area, closer to the river, would cover
- 40 approximately 48,000 square feet and be designed primarily to accommodate boat ramp access.
- 41 The circular design would allow for directional traffic flow through the area and provide 23
- 42 parking spaces, including two handicapped spaces. The upper parking area (on either side of
- 43 Canal Road) would cover 4,750 square feet and consist of 24 additional parking spaces, including

- 1 four handicapped spaces, that would provide parking for a new day-use picnic area to be
- 2 developed at the site and additional parking for the boat ramp. In addition, a stairway would be
- 3 constructed to provide access from the upper parking area to the lower parking area.

### 4 Brunswick

5 Actions taken at Brunswick under Alternative C would be the same as those described above for 6 Alternative B.

o Anternative D.

### 7 Fifteenmile Creek

8 At this site, a new boat ramp would be constructed using articulated concrete matting and would

9 extend into the main channel of the Potomac River. The unused concrete boat ramp at this

10 location would be removed. The boat ramp currently in use at this site would remain and serve as

- 11 a canoe launch.
- 12 Under this alternative, the previously unpaved parking area would be paved to create a boat ramp
- 13 launching facility. This area would provide three handicapped vehicle spaces, but the bulk of
- parking would be relocated to a new parking facility that would be established near the
- 15 campground.

16 Two sub-alternatives call for the location of a new paved parking lot, which would be located on

17 the upper terrace in the vicinity of the current campground. Under one scenario, Alternative C-1,

18 (see Figure 11), the parking lot would be located in a currently undeveloped wooded area. This

19 area was the location of the campground until it was relocated to its current location in the mid-

20 1980s. The proposed location for the parking lot under this alternative has since become

21 vegetated. The parking area would be constructed to accommodate 20 cars, including 14 with

trailers. This lot would cover 25,533 square feet. Approximately 40 trees would need to be

cleared for this development.

In the other potential scenario, Alternative C-2, the existing campground would be converted to a new parking area (see Figure 12). The size and layout would be the same as described above.

new parking area (see Figure 12). The size and layout would be the same as described above.
Approximately 10 to 15 trees would have to be cleared to build the new parking lot. The

proposed parking area would be contained within the footprint of the existing campground. The

area across the boat ramp access road would be partially cleared to accommodate a new

campground area. The exact design of the camping sites would be determined by the layout of

30 the existing mature trees. The campground design would incorporate as many trees as possible.

- 31 It is estimated that approximately 15 to 20 trees would need to be cleared for campground
- 32 development. The new campground would be 11,151 square feet. Compacted gravel material

33 would be used to construct the campground access road and designated camping sites.

34 The existing 139 linear feet of wood and steel guardrail would be removed and replaced with

35 1,274 linear feet of new timber guardrail around the perimeter of the parking lot and along the

36 boat ramp access road. The 352 linear feet of roadway from the canal to the launching area

37 would be engineered to provide better drainage. Road shoulders would be re-established. The

road would be paved from the wooden bridge, across the canal prism, to the boat ramp area.

A wooden stairway would be installed to connect the boat ramp area with the campground area.

- 40 An improved pedestrian trail of 213 linear feet would also be constructed along the Fifteenmile
- 41 Creek shoreline. This trail would also connect the campground with the boat ramp area.
- 42



FIGURE 10: POINT OF ROCKS PROPOSED ACTIONS UNDER ALTERNATIVE C


FIGURE 11: FIFTEENMILE CREEK PROPOSED ACTIONS UNDER ALTERNATIVE C-1



FIGURE 12: FIFTEENMILE CREEK PROPOSED ACTIONS UNDER ALTERNATIVE C-2

- 1 An additional 1,584 square feet of visitor parking would be created along the emergency and
- 2 maintenance access road. This area would serve park day users interested in hiking or biking the
- 3 canal towpath. This parking area would add seven vehicle parking spaces. Two of these spaces
- 4 would be designated for handicapped use.
- 5 The three steel pipe gates that restrict vehicle access to the towpath would be replaced by split
- 6 bicycle access gates. The new gates would be located on either side of the access road at the
- 7 towpath and across the emergency and maintenance access road. The towpath between the access
- 8 road and the Fifteenmile Creek Aqueduct would be resurfaced for bicycle and hiker use.

#### 9 Monocacy Aqueduct

- 10 Actions taken at Monocacy Aqueduct under Alternative C would be the same as those described
- above for Alternative B. Refer to Figure 9 for a drawing showing the proposed actions at
- 12 Monocacy Aqueduct.

#### 13 MITIGATION MEASURES

- 14 For the action alternatives, best management practices and mitigation measures would be used to
- 15 prevent or minimize potential adverse effects associated with the project. These practices and
- 16 measures would be incorporated into the project construction documents and plans.
- 17 Resource protection measures undertaken during project implementation would include, but
- 18 would not be limited to, those listed in Table 2. The impact analyses in the "Environmental
- 19 Consequences" section were performed assuming that these best management practices and
- 20 mitigation measures would be implemented as a part of Alternatives B and C.

### 21 ALTERNATIVES CONSIDERED BUT DISMISSED

- 22 Two additional alternatives were proposed for the Brunswick boat ramp. The elements of those
- alternatives, which would result in impacts to resources that the park staff thought to be unacceptable, are described below
- 24 unacceptable, are described below.
- 25 Under one dismissed alternative, illustrated in Figure 1 of Appendix A (Dismissed Alternatives:
- 26 Maps), the existing boat ramp and the causeway through the canal would be removed. A new
- 27 access road would be constructed from the towpath, at a point near the historic waste weir, to the
- 28 parking area. A concrete deck would be constructed over the historic waste weir to provide
- 29 additional support to protect the structure from continued vehicle access from Maple Avenue to
- 30 the upstream boat ramp.
- 31 In another dismissed alternative, shown in Figure 2 of Appendix A, the existing boat ramp access
- 32 road and the causeway through the canal would be removed. A new access road would be
- constructed from the towpath, at a point near the existing access road, to the parking area. A
- 34 concrete deck would be constructed over the historic waste weir to provide additional support to
- 35 protect the structure from continued vehicle access from Maple Avenue to the upstream boat
- 36 ramp.
- Both alternatives would have resulted in increased traffic on the historic towpath and would have created additional burden on the historic waste weir. These alternatives would also have introduced new roadways in the area that would have resulted in increased disturbance of potential sensitive species habitat. Because of the level of impact that would result to cultural and natural resources at this site, these alternatives were not retained for full analysis.

 TABLE 2: MITIGATION MEASURES AND BEST MANAGEMENT PRACTICES

Potential Adverse Effect	Mitigation Measure or Best Management Practice
rotential Auverse Effect	Whitigation Measure of Dest Management Fractice

Cultural Resources	
Discovery of unknown archeological resources or human remains	If previously unknown archeological resources were discovered, work would be stopped in the area of any discovery, protective measures would be implemented, and procedures outlined in 36 <i>Code of Federal Regulations</i> 800 would be followed. Because of health and safety concerns, workers would be instructed to avoid contact with human remains if any are uncovered. Work would be stopped, and the park Chief of Resources would be notified. Work would resume once approved by the superintendent.
Natural Resources	
Construction-related effects on soils and water quality	Standard best management practices to limit erosion and control sediment release would be employed. Such measures include use of silt fencing, limiting the area of vegetative disturbance, and covering banked soils to protect them until they are reused.
Effects on rare, threatened, or endangered species	Surveys for the state-threatened white trout lily ( <i>Erythronium albidum</i> ) and amphibian species would be made in the Monocacy Aqueduct canal basin prior to clearing trees.
Effects on "forest interior dwelling species" (Natural Heritage Program designation)	Tree removals in the Monocacy Aqueduct canal basin would be done outside the breeding and/or nesting seasons for "forest interior dwelling species"; removal operations would have minimal effect on breeding and nesting if implemented September to January.
Vegetation-clearing effects on wetlands	No below-grade changes would result from tree removal in the Monocacy Aqueduct canal basin (a wetland). As a result, no impacts to wetlands would be expected. If wetland impacts are determined, the park could use the Oldtown wetland bank to mitigate effects to wetlands.
Dredging-related effects on water quality	Silt curtains or gunderbooms (silt curtains made of permeable geotextile fabrics) would allow suspended sediment at the dredging site to settle out in a controlled area, minimizing the area affected by increased suspended sediment.
Dredging-related effects on aquatic resources	Any instream work would be restricted from March 1 to June 15 to reduce potential effects to the aquatic community during spawning.
Storm water quantity and quality management effects on wetlands and water quality	A bioretention area would be constructed to collect storm water runoff at each boat ramp site. Final design, not yet complete, will determine the appropriate location for the bioretention areas. The location selected will minimize impacts to resources and values.
	Another measure used to control storm water runoff would be installation of temporary silt fencing. Silt fences are made of synthetic fabric and are placed in drainage contours to trap sediments generated during construction. Asphalt removal and concrete installation would be performed during dry periods to avoid possible contamination of storm water runoff from broken asphalt and curing

<b>TABLE 2: MITIGATION MEASURES AN</b>	D BEST MANAGEMENT PRACTICES
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Potential Adverse Effect	Mitigation Measure or Best Management Practice
Public Health and Safety	
Increased public health and safety risks	Access to areas would be restricted during construction activity. These locations would be clearly marked with appropriate signage.
Visitor Use and Experience	
Direct effects from construction activities on the visitor experience	Educational materials and interpretive information regarding the need for and nature of the project would be prepared and distributed to park visitors by park staff.

#### 1 ENVIRONMENTALLY PREFERRED ALTERNATIVE

2 The environmentally preferred alternative is the alternative that will best promote national

3 environmental policy expressed in the National Environmental Policy Act. The environmentally

4 preferred alternative would cause the least damage to the biological and physical environment

5 and would best protect, preserve, and enhance historical, cultural, and natural resources.

6 Section 101(b) of the National Environmental Policy Act identifies six criteria to help determine
7 the environmentally preferred alternative. The act directs that federal plans should:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk to
   health or safety, or other undesirable and unintended consequences.
- Preserve important historical, cultural, and natural aspects of our national heritage, and
   maintain, wherever possible, an environment which supports diversity and variety of
   individual choice.
- Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities.
- Enhance the quality of renewable resources and approach the maximum attainable
   recycling of depletable resources.

Continuing the current conditions under Alternative A would have less impact on natural and cultural resources compared to the action alternatives, as no development would occur and land would not be disturbed. Alternative A, however, would not attain the widest range of beneficial uses of the area without continued risk to public health and safety.

25 Alternative B would have slightly greater impacts on the natural environment than Alternative A 26 as a result of development or expansion of parking areas and the establishment of hiking trails 27 and picnic areas. The area of development at each site would be approximately an acre or less. 28 However, this alternative would also result in long-term benefits to natural resources by 29 rehabilitating and stabilizing ramps, which would reduce erosion into the stream or river channel, 30 and by demarcating parking areas, which would eliminate parking in undesignated areas and the 31 resulting impacts on natural resources. Alternative B would also improve public health and 32 safety by lessening the grade of the boat ramps at each site, which would simultaneously increase 33 the opportunity for greater diversity of visitor activities at each site as visitors with deeper-draft 34 vessels would be able to use the launch sites.

35 Alternative C, the preferred alternative, would involve the largest amount of development at each 36 site; however, the area of impact would still only amount to an acre or less at each site and would 37 result in impacts to natural and cultural resources similar to those of Alternative B. As with 38 Alternative B, Alternative C would achieve a wider range of beneficial uses of the environment 39 than Alternative A by providing improved parking and launching facilities. Alternative C goes 40 further by relocating ramps at Fifteenmile Creek and Point of Rocks to facilitate easier access to 41 the river. This alternative, moreover, would provide the greatest benefit to public health and 42 safety compared to Alternatives A or B, as the ramp at Point of Rocks would be relocated to a 43 more visible area and would provide an area for vessels to safely launch and avoid the 44 navigational hazard associated with the downstream rock ledge. Therefore, Alternative C would

- 1 be the environmentally preferred alternative, as it provides protection of natural resources while
- 2 allowing a wide variety of uses of the park sites and enhancing to the greatest degree the
- 3 protection of public health and safety.
- 4 Table 3 provides a comparative summary of alternatives and whether each alternative would meet
- 5 the project objectives. As shown on the table, either Alternative B or Alternative C would
- 6 successfully meet all of the objectives of this project. Alternative A would, to a large degree, fail
- 7 to meet project objectives. Table 4 summarizes the environmental consequences of each
- 8 alternative on each resource.

Objective	Alternative A (No Action)	Alternative B	Alternative C (Preferred)
Maintain and improve river access for recreational users and for law enforcement and emergency services personnel	This objective would not be fully met under this alternative as vehicle congestion would continue to occur, restricting access to ramps for emergency or park personnel. Without measures to prevent erosion and grade corrections for ramps at each site, launching vessels, particularly those with deeper-drafts, would continue to be difficult or impossible.	The grade of the boat ramps would be lessened, which would improve access to the river by deeper-draft vessels at all three sites. Dredging sediment deposits in Fifteenmile Creek would also allow launching of deeper-draft vessels. Parking would be expanded at Fifteenmile Creek and Brunswick, reducing congestion at these sites, which would improve access.	Alternative C would meet this objective to the greatest degree. Under this alternative, the development of parking lots and launching facilities would be greater than under other alternatives at Fifteenmile Creek and Point of Rocks, reducing congestion and allowing access to the river for all users. Boat ramps would be relocated and expanded at Fifteenmile Creek and Point of Rocks, and the existing ramp would be rehabilitated at Brunswick. All ramps would allow easier access to the river by all users.
Provide defined parking areas to protect natural resources	Alternative A would not clearly delineate parking areas. There would be continued parking in undesignated areas, which would result in impacts to natural resources. Vegetation would continue to be impacted, and soils would continue to be compacted and rutted.	Parking areas would be clearly defined under this alternative, reducing impacts to natural resources.	Parking areas would be clearly defined under this alternative, reducing impacts to natural resources.

Objective	Alternative A (No Action)	Alternative B	Alternative C (Preferred)
Improve visual quality of the areas	This objective would not be met through continuation of the current condition. The landscape would continue to be degraded because parking in undesignated areas would continue denuding the area of vegetation.	The visual quality would be improved at each site with the removal of trees from the historical canal basin. Designated parking areas would reduce the impact on the visual landscape, particularly at Fifteenmile Creek. Steel guard rails would be replaced with timber guard rails at each site. Moving the parking lot at Monocacy Aqueduct would eliminate its adverse impact on the view from the aqueduct. This objective would be met to a large degree under this alternative.	The visual quality would be improved at each site with the removal of trees from the historical canal basin. Designated parking areas would reduce the impact on the visual landscape, particularly at Fifteenmile Creek. Steel guard rails would be replaced with timber guard rails at each site. Moving the parking lot at Monocacy Aqueduct would eliminate its adverse impact on the view from the aqueduct. This objective would be met to a large degree under this alternative.
Facilitating better interpretation of Chesapeake and Ohio Canal	This objective would not be met through the continuation of the current condition. Vegetation within the canal prism at the Brunswick project site and trees in the canal basin and a paved parking lot in direct view from the aqueduct at the Monocacy Aqueduct project site would continue to detract from the historical landscape.	Removal of vegetation from the canal prism at the Brunswick project site and the removal of trees from the canal basin and relocation of the parking lot outside the aqueduct viewshed at the Monocacy Aqueduct project site would help restore the historical landscape. This objective would be met to a large degree under this alternative.	Removal of vegetation from the canal prism at the Brunswick project site and the removal of trees from the canal basin and relocation of the parking lot outside the aqueduct viewshed at the Monocacy Aqueduct project site would help restore the historical landscape. This objective would be met to a large degree under this alternative.

Objective	Alternative A (No Action)	Alternative B	Alternative C (Preferred)
Reduce sediment erosion	This objective would not be met under the No Action Alternative. Erosion around boat ramps at all sites would continue without implementation of preventative measures. Parking in undesignated areas, particularly along the riverbank, would continue to result in erosion of sediments. Social trailing would continue to occur, resulting in erosion in these areas.	This objective would be met to a large degree. Erosion potential could increase in the short term with the development or expansion of parking areas at Point of Rocks and Brunswick. However, this alternative would provide a long-term solution to erosion problems as boat ramps would be rehabilitated and measures would be employed to prevent future erosion around the ramps. Clearly defined parking areas at all sites, particularly at Fifteenmile Creek, would prevent vehicular use in undesignated areas, eliminating soil impacts and reducing erosion at these sites. Establishment of hiking trails and picnic areas at Fifteenmile Creek and Point of Rocks would reduce soil erosion resulting from social trailing.	This alternative would meet this objective to a large degree. Erosion potential could increase in the short term with the development of boat ramps at Fifteenmile Creek and Point of Rocks. Each site, however, would employ erosion prevention measures such as rip rap to prevent long-term erosion around the ramps. Clearly defined parking areas at all sites, particularly at Fifteenmile Creek, would prevent vehicular use in undesignated areas, eliminating soil impacts and reducing erosion at these sites. Establishment of hiking trails and picnic areas at Fifteenmile Creek and Point of Rocks would reduce soil erosion resulting from social trailing.
Correct and/or avoid unsafe conditions	Unsafe conditions would continue to occur at each site as the grade of boat ramps would not be corrected, making launching of vessels difficult. Erosion around ramps would continue to increase the drop-off at Fifteenmile Creek, continuing the unsafe conditions. Continued use of the existing ramp	This objective would be met to a moderate degree under this alternative. Boat ramps would be rehabilitated to lessen their grade and reduce erosion around ramps, making it safer to launch vessels. Continued use of the existing boat ramp at Point of Rocks would not alleviate the hazard that the submerged downstream rock ledge presents to	This objective would be met to the greatest degree under this alternative. The grade of boat ramps would be lessened at each site, making it safer to launch vessels. Relocation of the boat ramp at Point of Rocks would eliminate the safety concerns associated with navigating around the submerged rock in the channel and the

Objective	Alternative A (No Action)	Alternative B	Alternative C (Preferred)
	at Point of Rocks would expose boaters to the submerged rock in the channel, and the potential safety hazard associated with the location under the bridge would not be alleviated.	boaters or that the concealed location under the bridge presents to users.	concealed location under the bridge. Development of defined trails and parking areas would reduce the potential for accidents.

Impact Topic	Alternative A No Action	Alternative B	Alternative C Preferred Alternative
Soils	Alternative A would produce negligible to minor, long-term, adverse affects on soils at the Fifteenmile Creek, Point of Rocks, and Brunswick areas. These effects would result from the continued effects of road and parking lot detritus sedimentation, soil compaction from maintenance vehicle staging and use, soil compaction from vehicle parking and unloading of boats in unauthorized areas, hydrocarbon loading in soil and in ground and surface water, soil scouring around the boat ramps, and erosion from unauthorized social trailing. There would be no impairment of soil resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative A. Overall long-term effects of all the associated projects would have negligible-to-minor, beneficial cumulative impacts on soils.	Under Alternative B, construction activities that would compact soils or increase erosion during periods of activity would produce localized, adverse, negligible, short-term effects on soils at the Point of Rocks, Brunswick, and Fifteenmile Creek areas. Rehabilitation of boat ramps at each location with implementation of mitigation measures would result in negligible loss of soils. Development of paved parking areas, resurfacing roads, and building picnic areas at the boat ramp areas would cause compaction and loss of soils, resulting in long-term, minor, adverse effects on soils. Development of designated parking areas and trails within these locations, however, would reduce vehicular access in sensitive areas and social trailing that causes erosion and compaction of soils, and would therefore have long-term, beneficial effects on soil resources. At Fifteenmile Creek, installation of a gabion wall enhancing riverbank stabilization would have long- term, negligible, beneficial effects. Biennial dredging in the channel at Fifteenmile Creek would have short-term, adverse effects on river sediments during dredging operations. Trees growing on the hydric soils in the Monocacy boat basin would be cut and this would have a local, minor	Under Alternative C, construction activities would produce localized, adverse, negligible, short-term effects on soils at the Point of Rocks, Brunswick, and Fifteenmile Creek areas. Development of facilities such as parking areas, boat ramp and launching facilities, picnic areas, and campgrounds would result in compaction and loss of soils in the area of development. These actions would have long-term, negligible-to- minor, adverse effects on soils at each location. Long-term, negligible-to-minor benefits would occur from reclamation of parking areas and roadways at Point of Rocks and the unused boat ramp at Fifteenmile Creek. Long-term, negligible- to-minor benefits to soils would also result at each site as designated parking areas and established visitor use areas are developed, which would lead to a reduction in soil compaction and erosion from vehicle access in undesignated areas and social trailing. Trees growing on the hydric soils in the Monocacy boat basin would be cut and this would have a local, minor adverse impact on soils. There would be no impairment of soil resources or values at C&O Canal National Historical Park as a result of the

Impact Topic	Alternative A No Action	Alternative B	Alternative C Preferred Alternative
		adverse impact on soils. Cumulative effects on soil resources would be minor, long term, and adverse. There would be no impairment of soil resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative B.	implementation of Alternative C. Cumulative effects on soil resources would be minor, long term, and adverse.
Vegetation	Alternative A would result in minor, localized, long-term, adverse impacts on vegetation. These impacts would include continued damage to vegetation by trampling and removal as well as the promotion of non-natives at the Fifteenmile Creek facility along the river bank and in areas between the campground and boat ramp as visitors continue launching vessels from the bank, parking outside the intended parking area, and developing social trails. There would be no impairment of vegetation resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative A. Cumulative impacts on vegetation would be negligible.	Impacts on vegetation resulting from Alternative B would be negligible to moderate, long-term, localized, and adverse, related primarily to clearing vegetation from the canal prism between Lock 30 and Maple Avenue at the Brunswick facility. Trees would be removed at the Fifteenmile Creek and Monocacy Aqueduct sites to accommodate the new parking lot and to open the canopy over the old canal boat basin, respectively. The viability of native plant communities would not be threatened by any of the actions taken under Alternative B. There would be no impairment of vegetation resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative B. Cumulative impacts on vegetation would be minor and adverse.	Impacts on native vegetation under Alternative C would be minor to moderate, long-term, localized, and both adverse and beneficial. Beneficial impacts would be those related to the reclamation and revegetation of the area currently occupied with the boat ramp and access road at the Point of Rocks facility. Adverse impacts would primarily be associated with the removal of vegetation from the canal prism between Lock 30 and Maple Avenue at the Brunswick facility. Trees would be removed at the Fifteenmile Creek and Monocacy Aqueduct sites to accommodate the new parking lot and to open the canopy over the old canal boat basin, respectively. There would be no impairment of vegetation resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative C. Cumulative impacts would be minor, long term, and adverse.
Wildlife and	Alternative A would result in negligible, local, short-term adverse impacts on	Impacts on wildlife and wildlife habitats resulting from Alternative B at Point of	Impacts on wildlife and wildlife habitat under Alternative C would be negligible-

Impact Topic	Alternative A	Alternative R	Alternative C
impact ropic	No Action	Anternative D	<b>Preferred Alternative</b>
wildlife habitat	wildlife and wildlife habitat. Cumulative impacts would be adverse but negligible. Implementation of Alternative A would not result in impairment of any wildlife, wildlife habitats, or related wildlife resources or values at C&O Canal National Historical Park.	Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct would be negligible to minor, short- and long-term, local, and adverse. Cumulative impacts would be adverse and negligible to minor. Implementation of Alternative B would not result in impairment of any wildlife, wildlife habitats, or related wildlife resources or values at C&O Canal National Historical Park.	to-moderate, short- and long-term, local, and adverse. Reclamation and revegetation of the area currently occupied by the boat ramp and access road at the Point of Rocks facility would have negligible-to-minor beneficial impacts at that particular site. Cumulatively, the effects on wildlife would be minor. Implementation of Alternative C would not result in impairment of any wildlife, wildlife habitats, or related wildlife resources or values at C&O Canal National Historical Park.
Endangered, threatened, and protected species and critical habitats	Under Alternative A, there would be no effect on threatened or endangered species or to any designated critical habitats, nor would any cumulative effects occur. Implementation of Alternative A would not result in impairment of any listed species or critical habitat resources or values at C&O Canal National Historical Park. Cumulative effects would be negligible.	Under Alternative B, there would be no effect on threatened or endangered species or to any designated critical habitats, nor would any cumulative effects occur. Implementation of Alternative B would not result in impairment of any listed species or critical habitat resources or values at C&O Canal National Historical Park. Cumulative effects would be negligible.	Under Alternative C, there would be no effect on threatened or endangered species or to any designated critical habitats, nor would any cumulative effects occur. Implementation of Alternative C would not result in impairment of any listed species or critical habitat resources or values at C&O Canal National Historical Park. Cumulative effects would be negligible.
Water quality	There would be no impacts on water quality under Alternative A. There would be no impairment of water resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative A. Cumulative effects would be negligible.	Several actions that would be taken under Alternative B would contribute to the sediment load of the Potomac River. These include biennial dredging at the confluence of the Potomac River and Fifteenmile Creek and grading and preparation of the new parking lots at all three facilities. With the employment of best management practices, regional impacts on water quality	Under Alternative C, there would be an increase in the sediment load of the Potomac River resulting from grading and site preparation of new paved parking lots at each of the facilities. With the implementation of standard construction best management practices, this would be a minor, short-term, adverse impact realized on a regional scale. In addition,

Impost Topis	Alternative A	Altornativa B	Alternative C
	No Action	Alter hauve D	<b>Preferred Alternative</b>
		would be minor, short-term, and adverse. In addition, local, negligible, long-term, adverse impacts would result from increases in impervious surfaces altering ground water recharge. There would be no impairment of water resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative B. Cumulative effects would be negligible to minor and adverse.	local, negligible, long-term, adverse impacts would result from increases in impervious surfaces altering ground water recharge. There would be no impairment of water resources or values at C&O Canal National Historical Park as a result of the implementation of Alternative C. Cumulative effects would be negligible to minor and adverse.
Wetlands and floodplains	Under Alternative A, the unmarked boat ramp parking area at the Fifteenmile Creek facility would lead to confusion, and visitors would continue to drive, park, and launch vessels from the river bank. As a result, encroachment into small, adjacent wetlands would continue. This encroachment would constitute a localized, minor, long-term, adverse impact on wetlands. There would be no impairment of wetland and floodplain resources or values at C&O Canal National Historical Park as a result of the continued implementation of Alternative A. Cumulative effects would be minor, local, and adverse.	The actions taken at Fifteenmile Creek, Brunswick, and Point of Rocks would locally result in small increases in impervious surfaces and associated increases in storm water runoff. Regionally, these incremental increases would be inconsequential and, with the implementation of storm water management, would not change wetland and floodplain functions. Impacts on wetlands and floodplains resulting from Alternative B would be local, minor, long- term, and adverse. There would be no impairment of wetland and floodplain resources or values as a result of the implementation of Alternative B. Cumulative effects would be minor, local, and adverse. Removal of trees at the Monocacy Aqueduct would affect wetlands if stumps are removed below grade. Mitigation would be implemented using wetland mitigation bank credits at the	The actions taken at Fifteenmile Creek, Brunswick, and Point of Rocks would locally result in small increases in impervious surfaces and associated increases in storm water runoff. Regionally, these incremental increases would be inconsequential and, with the implementation of storm water management, would not change wetland and floodplain functions. Impacts on wetlands and floodplains resulting from Alternative C would be local, minor, long- term, and adverse. There would be no impairment of wetland and floodplain resources or values as a result of the implementation of Alternative C. Cumulative effects would be minor, local, and adverse. Removal of trees at the Monocacy Aqueduct would affect wetlands if stumps are removed below grade. Mitigation would be implemented using wetland mitigation bank credits at

Impost Topia	Alternative A	Altownotive D	Alternative C
impact ropic	No Action	Alternative D	<b>Preferred Alternative</b>
		Oldtown wetland mitigation bank.	the Oldtown wetland mitigation bank.
Cultural resources	No impacts on cultural resources are anticipated from implementation of Alternative A. Cumulative impacts would be negligible.	Archeological impacts are estimated to be moderate, although the precise nature of these impacts cannot be known until archeological surveys are completed in each of the project areas. The archeological potential of the floodplain is high. Potential impacts on as-yet-undiscovered archeological sites include compaction of any buried sites located underneath the expanded parking lots and destruction of shallow sites during parking lot expansion. Remains, such as refuse thrown into the canal basin during the 19th century, or remains of canal boats, could be affected by removing trees from the basin. Plans to remove the trees call for cutting them off at the ground surface, rather than pulling up the roots, so tree removal should not affect remains of the canal basin lining. Architectural and landscape impacts will be minor to moderate. Visual effects on the Western Maryland Railroad trace will result in minor impacts. Impacts on the National Register of Historic Places canal property will be minor. Landscape changes will be minor. Cumulative impacts on the existing landscape could potentially result in minor- to-moderate impacts.	Archeological impacts are estimated to be moderate, although the precise nature of these impacts cannot be known until archeological surveys are completed in each of the project areas. The archeological potential of the floodplain is high. Potential impacts on as-yet- undiscovered archeological sites include compaction of any buried sites located underneath the expanded parking lots and destruction of shallow sites during parking lot expansion. Architectural and landscape impacts will range from negligible to moderate. This alternative may result in negligible-to- minor visual impacts on historic resources outside the park property that would not significantly diminish the setting of these resources. Impacts on canal-related features would not remove or adversely alter historic character-defining features of the canal, and are thus estimated to be minor. Impacts on the historic landscape are judged to be minor to moderate without adversely affecting the C&O National Register of Historic Places property as a whole, given that changes will occur within a small portion of the 184-mile corridor that is listed on the Register. Cumulative impacts on the existing landscape have the potential to

Impact Topic	Alternative A No Action	Alternative B	Alternative C Preferred Alternative
			result in minor-to-moderate impacts.
Park operations	Implementation of Alternative A would continue to strain park maintenance resources and would not meet the objectives outlined in "Purpose and Need". Cumulative impacts would be beneficial and negligible to minor.	Because Alternative B would reduce necessary maintenance at Fifteenmile Creek, Brunswick, and Point of Rocks and would improve river access for Park Service, law enforcement, and emergency services personnel, it would be preferable to Alternative A, No Action. Cumulative impacts would be beneficial and negligible to minor.	Alternative C may produce slightly more beneficial impacts on park operations due to the construction of new boat ramp facilities at Fifteenmile Creek and Point of Rocks instead of the rehabilitation of the existing, older boat ramp facilities as proposed under Alternative B. Cumulative impacts would be beneficial and negligible to minor.
Public health and safety	Alternative A would perpetuate minor, adverse, long-term impacts on public health and safety and does not meet any of the project objectives specified in "Purpose and Need". Cumulative impacts on public health and safety would be minor and adverse, with the exception of Monocacy Aqueduct, where cumulative impacts would be minor and beneficial.	Implementation of Alternative B would result in minor, beneficial, long-term effects on public health and safety. Rehabilitation and grade reduction of boat ramps would allow safer boat launches. Improved and expanded parking areas would prevent vehicles from blocking emergency access at Fifteenmile Creek and would reduce the number of visitors who cross the railroad tracks at Point of Rocks. Pedestrian trails or stairs would eliminate the use of social trails over steep inclines at Fifteenmile Creek. Cumulative impacts would be minor to moderate, beneficial and long term.	At Fifteenmile Creek, the visitor parking areas would be relocated to higher ground, lessening the risks to vehicles left overnight from high-water events. A new boat ramp would be constructed approximately 900 feet downstream from the existing ramp at Point of Rocks, avoiding navigational hazards associated with the rock ledge. Overall, implementation of Alternative C would result in minor, beneficial, long-term effects on public health and safety. Cumulative impacts would be minor to moderate, beneficial and long term.
Visitor use and experience	Alternative A would perpetuate minor, adverse, long-term impacts on visitor use and experience and does not meet any of the project objectives specified in "Purpose and Need". The cumulative impact of continuing current action at	Overall, Alternative B would enhance pedestrian, vehicle, and river access, provide additional park amenities, and improve the park's visual quality, resulting in negligible-to-minor, beneficial, long- term impacts on visitor use and experience. Cumulative impacts would be minor and	Alternative C would result in negligible- to-minor, beneficial, long-term impacts on visitor use and experience at the three boat ramp locations. At Point of Rocks, a new boat ramp would be constructed to avoid the rock ledge navigation hazard in the Potomac River. At Fifteenmile Creek, a

Impact Topic	Alternative A No Action		Alternative B	Alternative C Preferred Alternative
	these sites, combined with the other projects, would be long term, minor, and adverse.	beneficial.		new boat ramp would extend into the main channel of the Potomac River, bypassing the heavy silt deposits at the confluence of the river and Fifteenmile Creek and assuring easy river access for deeper-draft vessels. Cumulative impacts would be minor and beneficial.

#### AFFECTED ENVIRONMENT

#### 2 SOILS

1

3 At all four locations (Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct), the soils

4 in the access road rights of way, parking lots, and boat ramps have been disturbed by previous

5 construction and maintenance activities. These features have been excavated and filled to provide

6 appropriate grades and contain fill material and road base in paved areas. An impervious layer has

7 covered soils beneath the existing paved access roads, parking lots, and boat ramps since their

8 construction. The unpaved access roads and parking lots contain soils consisting of compacted road base

9 material (gravel) or native soil. Periodic floods deposit silts, sands, and gravels on the paved and unpaved

10 parking lots, boat ramps, and low lying areas. These deposits are cleared away as needed to restore

11 operations of these areas.

### 12 **Point of Rocks**

13 Soils at the Point of Rocks location are classified as Combs silt loam (NRCS 2002). This is a fine sandy

- 14 loam found in river valleys and floodplains on 0 to 3 percent slopes. Combs silt loam is formed from
- alluvium derived from limestone, sandstone, and shale. It is well drained, fertile and makes prime
- 16 farmland. The slowest permeability within the top 60 inches is moderate. Available water capacity is
- 17 very high, and the shrink/swell potential is low. The water table is deeper than 6 feet.

### 18 Brunswick

19 The Brunswick location soils are classified as Lindside silt loam (NRCS 2002). These soils form on 0 to

20 3 percent slopes in flood plains and upland depressions. Lindside silt loam is formed from alluvium

21 derived from sandstone and shale or from limestone. The subsoil may be silty clay loam or clay loam in

some places. In some areas, a few pieces of fine gravel consisting of chert, limestone, or shale are found

- 23 in the upper three soil horizons. In many places, Lindside silt loam is underlain by thick deposits of
- rounded gravel. These soils are moderately well drained. The slowest permeability within the top 60
- inches is moderately slow. Available water capacity is very high, and shrink/swell potential is low.
  These soils are fairly fertile and make prime farmland; however, Lindside soils on floodplains are very

wet and are frequently flooded. The top of the seasonal high-water table is 27 inches below the surface.

# 28 Fifteenmile Creek

29 Soils underlying the Fifteenmile Creek area consist of alluvial land (NRCS 1977). Alluvial lands are

30 deposits of clastic, detrital materials (silts, sands, and gravel) that were transported by the river and

31 deposited on the river floodplain. This soil is frequently flooded and poorly drained. Water does not

32 pond on the surface after flooding. The slowest permeability within the top 60 inches is moderate, and

the top of the seasonal high-water table is 6 inches below the surface. Available water capacity is very

34 low, and shrink/swell potential is low.

35 At Fifteenmile Creek, the existing access road is narrow and subject to washouts. This exposes the

36 underlying soils to erosion. Sediment has been deposited in drainageways associated with the access road

- and parking lots. In addition, river sediments accumulate at the confluence of Fifteenmile Creek and the
- 38 Potomac River, impeding navigation downstream from the Fifteenmile Creek boat ramp.

### 39 Monocacy Aqueduct

40 The Montgomery County soil survey (NRCS 1995) identifies soils within the canal basin and adjacent

- 41 areas as Lindside silt loam, with inclusions of Melvin silt loam. A description of Lindside silt loam is
- 42 provided above in the description of soils at the Brunswick site. Melvin silt loam consists of very deep,

- 1 poorly drained soils on floodplains with 0 to 2 percent slope and was formed in mixed medium textured
- 2 alluvium. This soil is occasionally flooded and does not pond after flooding. The top of the seasonal
- 3 high-water table is at 6 inches. In a representative profile, the surface layer is dark, grayish-brown silt
- 4 loam 7 inches thick. The subsoil is light olive-gray, friable silt loam 13 inches thick. The substratum,
- 5 from 20 to 60 inches, is light gray, friable silt loam. The profile is mottled throughout in shades of
- 6 brown, red, and olive. The slowest permeability within the top 60 inches is moderate. Available water
- 7 capacity is very high, and shrink/swell potential is low. This component is a hydric soil (saturated for
- 8 sufficient periods of time to produce anaerobic conditions) capable of supporting hydrophytic (wetland)
- 9 vegetation and currently supports a palustrine forested wetland.
- 10 Prior to conveyance of the Chesapeake and Ohio Canal to the National Park Service in 1971 (early- to
- 11 middle twentieth century), the Monocacy Aqueduct attracted many forms of recreation, and the
- 12 surrounding area was occupied by small makeshift homes and a few local vendors. This area is
- 13 crisscrossed by abandoned dirt roads, driveways, and utilities and pockmarked by building foundation
- 14 remnants. During the development and subsequent removal of structures and facilities, former resident
- 15 graded or otherwise disturbed soils throughout the area. Much of the area proposed for parking is
- 16 currently occupied by a small temporary parking area created to accommodate visitors during the
- 17 aqueduct stabilization project. The remainder of the proposed parking area has been used by the National
- 18 Park Service as a staging and stockpiling area for the stabilization project.

#### 19 VEGETATION

#### 20 **Point of Rocks**

21 There is a well developed floodplain at Point of Rocks, with floodplain terraces and a mixture of young

22 and maturing forest. Silver maple (*Acer saccharinum*), box elder (*Acer negundo*), oaks (*Quercus* spp.)

and spicebush (*Lindera benzoin*) are among the common tree and shrub species in this forest.

A separate project proposed (and now abandoned) by Duke Energy would have encompassed the same project area as the proposed action. In correspondence regarding the Duke Energy project dated January 9, 2003, the Maryland Department of Natural Resources indicated that there were several species of interest within that project site, which included the four miles between the U.S. Highway 15 bridge and

- 28 Nolands Ferry. Table 5 lists the plant species noted in this correspondence.
- 29
- 30

#### TABLE 5: PLANT SPECIES OCCURRING AT POINT OF ROCKS

Scientific Name	Common Name	Maryland State Status
Ammannia coccinea	Scarlet ammannia	Uncertain
Erythronium albidum	White trout lily	Threatened
Valeriana pauciflora	Valerian	Endangered
Smilacina stellata	Star-flowered false Solomon's-seal	Endangered
Corallorhiza wisteriana	Wister's coralroot	Endangered
Matteuccia struthiopteris	Ostrich fern	Rare

31 The area proposed for day-use picnicking in Alternatives B and C, and also for a new parking lot and boat

32 ramp in Alternative C, is located directly downstream from the existing boat ramp. This area is the

33 former location of a private residence. This structure was razed by the National Park Service, on the

request of the owner, and the area has been overtaken by weedy species (NPS 2004b).

#### 1 Brunswick

- 2 The proposed project area for the Brunswick project site consists predominantly of maintained grass.
- 3 Floodplain forests are located directly adjacent to the area. Dominant canopy species in these forests
- 4 include silver maple, American sycamore (*Platanus occidentalis*), box elder, oaks, red maple (*Acer*
- 5 rubrum), black walnut (Juglans nigra) and black locust (Robinia pseudoacacia). The shrub layer
- 6 includes species such as spicebush, paw paw (Asimina triloba), silky dogwood (Cornus amomum), and
- 7 multiflora rose (*Rosa multiflora*). The herbaceous layer is becoming weedy with exotic species such as
- 8 garlic mustard (*Alliaria petiolata*), Japanese stilt-grass (*Microstegium vimineum*), and ground ivy
- 9 (Glechoma hederacea).
- 10 As part of the action alternatives (Alternatives B and C), vegetation would be removed from the canal
- prism between Lock 30 and Maple Avenue. This area is currently overgrown with weedy species and
- 12 small trees.

#### 13 Fifteenmile Creek

- 14 According to the Richard Wiegand's 1995 rare plant survey, the area surrounding the Fifteenmile Creek
- 15 boat ramp is part of a fairly high-quality floodplain forest and one of the largest and best developed scour
- 16 bar complexes along the Potomac River. Dominant species in this area include box elder, hickory (*Carya*
- 17 spp.), silver maple, black locust, spicebush, cleaver (*Galium aparine*), garlic mustard, and golden ragwort
- 18 (Senecio aureus) (NPS 2002b). In addition, green dragon (Arisaema dracontium), a watch list species,
- 19 was documented during a 2002 survey of the project area (NPS 2002b). The Natural Heritage Program
- 20 considers a watch list species uncommon, but not rare enough in Maryland to currently warrant reporting
- and tracking. Harperella (*Ptilimnium nodosum*), a federally endangered species, also occurs at
- 22 Fifteenmile Creek but has not been observed recently in the project area.
- 23 The existing campground consists of a compacted gravel drive and maintained grass interspersed with
- 24 mature hardwoods. The area across the boat ramp access road, proposed in Alternatives C-1 and C-2 for
- 25 development as either a parking lot or campground, respectively, was also formerly a campground. As
- well as can be determined, the now-abandoned campground mirrored the existing one in size and layout.
- 27 It was closed in the late 1980s and has since been colonized as a floodplain forest with many of the same
- 28 species listed above.
- 29 The largest threat to the native habitats of the maturing floodplain and adjacent scour bar is invasive
- 30 exotic species that are brought in from floods and existing openings such as the towpath, campground,
- and boat ramp. To a lesser extent, the vegetation growing along the river bank adjacent to the boat ramp
- 32 is also vulnerable to disturbance by visitors launching vessels and parking in places other than the
- 33 intended boat ramp and parking area.

### 34 Monocacy Aqueduct

- 35 Vegetation within the canal basin at Monocacy Aqueduct has become overgrown since the abandonment
- 36 of the canal in 1924. The basin now exists as a functioning forested floodplain/wetland community
- populated with mature (30 to 50 year old) trees common to the floodplain forests of the region. Dominant
- 38 species include red maple, box elder, American sycamore, and American elm (*Ulmus americana*). These
- 39 species make up approximately 90 percent of the tree species at the site. The shrub and herb layers within
- 40 the basin include poison ivy (Toxicodendron radicans), multiflora rose, and sedges (Carex spp.). A
- 41 population of white trout lily (*Erythronium albidum*), a state threatened species, has also been
- 42 documented within a quarter mile of the aqueduct.
- 43 As noted in the "Soils" section, much of the land surrounding Monocacy Aqueduct was graded or
- 44 otherwise disturbed in the early and middle twentieth century. For the most part, large trees were left

- 1 intact but small clearings were made. The proposed parking area is one of these cleared areas. This area
- 2 has been used by the National Park Service as a staging area to stockpile gravel and other materials during
- 3 the aqueduct stabilization project and is now occupied by a small temporary gravel lot created to
- 4 accommodate visitors.

# 5 WILDLIFE

- 6 The Chesapeake and Ohio Canal provides important habitat to many terrestrial and aquatic species.
- 7 Terrestrial habitats such as forests, open fields, rocky outcrops, and developed and transition habitats
- 8 support many common species associated with deciduous woodlands. Terrestrial wildlife species include
- 9 white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), bats (suborder *Microchiroptera*),
- 10 northern flying squirrel (*Glaucomys sabrinus*), eastern gray squirrel (*Sciurus carolinensis*), eastern
- 11 chipmunk (Tamias striatus), opossum (Didelphis virginiana), eastern cottontail (Sylvilagus floridanus),
- 12 red fox (Vulpes vulpes), and a few uncommon species, such as black bear (Ursus americanus) and bobcat
- 13 (Felis rufus). In addition, many species of reptiles and amphibians such as five-lined skink (Eumeces
- 14 *fasciatus*), black rat snake (*Elaphe obsoleta*), copperhead (*Agkistrodon contortrix*), common garter snake
- 15 (*Thamnophis sirtalis*), eastern box turtle (*Terrapene carolina*), American toad (*Bufo americanus*), and
- 16 eastern red-backed salamander (*Plethodon cinereus*) are common throughout the park and region. Use of
- 17 the project sites by terrestrial species is somewhat limited due to the developed nature of the sites and the
- 18 presence of humans. As a result, the most common species using these areas are nocturnal and take
- 19 advantage of the resources available while human presence is minimal (i.e., nighttime).
- 20 Avian species include a number of waterfowl, herons, and raptors, including bald eagle (*Haliaeetus*
- 21 *leucocephalus*) and osprey (*Pandion haliaetus*), that use the habitats along the river and canal. Bird
- 22 species that migrate through or nest in the habitats along the Chesapeake and Ohio Canal include warblers
- 23 (Parulidae), thrushes (Turdidae), and numerous other neotropical migratory species. Common, year-
- 24 round avian species include Carolina chickadee (*Poecile carolinensis*), mourning dove (*Zenaida*
- 25 *macroura*), house wren (*Troglodytes aedon*), northern cardinal (*Cardinalis cardinalis*), American crow
- 26 (Corvus brachyrhynchos), and European starling (Sturnus vulgaris).
- 27 Aquatic environments in the park include rivers, streams, wetlands, springs and seeps, and open water
- habitat in the watered sections of the canal. These habitats support numerous fish, reptile, amphibian,
- 29 mammal, and avian species. In addition, there are at least 10 freshwater mussel species present in the
- 30 Potomac River. Fish species common throughout the Upper Potomac River Basin and, consequently,
- 31 within the four project sites include: smallmouth bass (Micropterus dolomieu), largemouth bass
- 32 (Micropterus salmoides), yellow bullhead (Ameiurus natalis), channel catfish (Ictalurus punctatus),
- 33 redbreast sunfish (Lepomis auritus), bluegill (Lepomis macrochirus), black crappie (Pomoxis
- 34 *nigromaculatus*), yellow perch (*Perca flavescens*), walleye (*Stizostedion vitreum*), tiger musky (*Esox*
- 35 masquinongy x Esox lucius), chain pickerel (Esox niger), American eel (Anguilla rostrata), redhorse
- 36 sucker (*Moxostoma* spp.), white sucker (*Catostomus commersoni*), northern hog sucker (*Hypentelium*
- 37 *nigricans*), and common carp (*Cyprinus carpio*). The Potomac River and its tributaries support an active
- 38 fishery, and fishing opportunities exist at each of the four project sites.
- 39 The general discussion of wildlife provided above pertains to the region and to the four project sites.
- 40 Separate discussion of each of the project sites, with site-specific information, is present below.

### 41 **Point of Rocks**

- The proposed location for the new boat ramp at Point of Rocks is a former homesite. The disturbed site is vegetated with weed species, with a relatively low value as wildlife habitat.
- 44 Breeding bird counts near the Point of Rocks site identified the following avian species in the area:
- 45 pileated woodpecker (*Dryocopus pileatus*), red-bellied woodpecker (*Melanerpes carolinus*), great crested

- 1 flycatcher (Myiarchus crinitus), eastern wood peewee (Contopus virens), American crow, Carolina
- 2 chickadee, tufted titmouse (Parus bicolor), white-breasted nuthatch (Sitta carolinensis), house wren,
- 3 American robin (*Turdus migratorius*), red-eyed vireo (*Vireo olivaceus*), northern parula (*Parula*
- 4 *americana*), Louisiana waterthrush (*Seiurus motacilla*), brown-headed cowbird (*Molothrus ater*), northern
- 5 cardinal, and American goldfinch (*Carduelis tristis*) (NPS 2004b).

#### 6 Brunswick

- 7 The following avian species were documented near the Brunswick site during breeding bird counts in
- 8 1995 and 1998: Canada goose (Branta canadensis), rock dove (Columba livia), mourning dove, chimney
- 9 swift (*Chaetura pelagica*), red-bellied woodpecker, eastern wood peewee, northern rough-winged
- 10 swallow (Stelgidopteryx serripennis), blue jay (Cyanocitta cristata), American crow, Carolina chickadee,
- 11 gray catbird (Dumetella carolinensis), American robin, warbling vireo (Vireo gilvus), European starling,
- 12 common grackle (*Quiscalus quiscula*), northern cardinal, and song sparrow (*Melospiza melodia*) (NPS
- 13 2004b).

## 14 Fifteenmile Creek

- 15 Information from park files indicates that an important salamander breeding pool is located in the canal
- approximately 550 feet downstream of the Fifteenmile Creek access point, where a number of Jefferson
- 17 salamanders (*Ambystoma jeffersonianum*) were found and where three other ambystomatid species are
- 18 known to breed (NPS 2004b). A wide variety of invertebrate species such as butterflies and moths also
- 19 inhabit the area.
- 20 Numerous fish species are found in the Potomac River and Fifteenmile Creek. The Maryland Department
- of Natural Resources provided a list of the fish species with potential to use the aquatic habitats in and
- 22 near the project site at Fifteenmile Creek; the list is included in Appendix C, "Consultation and
- 23 Correspondence."

### 24 Monocacy Aqueduct

- 25 The habitats that support wildlife at the Monocacy Aqueduct site are similar to those found at Point of
- 26 Rocks and the wildlife species that use the Monocacy site are not likely to differ substantially from those
- 27 found at Point of Rocks.

# 28 THREATENED AND ENDANGERED SPECIES

### 29 **Point of Rocks**

- 30 The U.S. Fish and Wildlife Service indicated, in a November 8, 2004 letter, (see Appendix C), that,
- 31 except for occasional transient individuals, no federally proposed or listed endangered or threatened
- 32 species are known to exist within the Point of Rocks project impact area and that a biological assessment
- for the project would not be required. A bald eagle aerie is located 1 or 2 miles south of Point of Rocks,
- 34 but the activity level is unknown. Another aerie is on Conn Island in the Potomac River, approximately
- 35 32 miles from Point of Rocks (Sauter 2005).
- 36 Additionally, two previous projects in the immediate vicinity of the Point of Rocks boat ramp site were
- 37 evaluated for the presence of threatened and endangered species by the U.S. Fish and Wildlife Service
- and the Maryland Department of Natural Resources (NPS 2004b). The U.S. Fish and Wildlife Service
- indicated that no federally proposed or listed species are known to exist in the area (NPS 2004b).
- 40 A rare dragonfly was observed near Point of Rocks along the Potomac River shoreline in 2002. The
- 41 single individual discovered is thought to be a yet-unnamed species new to science. Therefore, it is only

- 1 known as *Ophiogomphus* sp. or Potomac snaketail. Its habitat is adjacent to deep and swiftly flowing
- 2 water (NPS 2004b).
- 3 The Maryland Department of Natural Resources' review of a project within 1,000 feet of the proposed
- project site also indicated that there were no records for state-listed rare, threatened, or endangered plants
   or animals within that project site.
- 6 No critical habitat is designated for any species within or near the Point of Rocks project site.

#### 7 Brunswick

- 8 The U.S. Fish and Wildlife Service indicated, in a November 8, 2004, letter (see Appendix C), that,
- 9 except for occasional transient individuals, no federally proposed or listed endangered or threatened
- 10 species are known to exist within the Brunswick project impact area and that a biological assessment for
- 11 the project would not be required. Park staff have indicated that a bald eagle aerie is located 3 miles
- 12 upstream of Sheperdstown, West Virginia, and another aerie is located near Harper's Ferry, one mile
- 13 south of the confluence of the Shenandoah and Potomac Rivers (Sauter 2005). Also, the Maryland
- 14 Department of Natural Resources did not identify any state-listed species at the Brunswick site.

### 15 Fifteenmile Creek

- 16 The U.S. Fish and Wildlife Service indicated, in an April 10, 2003, letter (see Appendix C), that, except
- 17 for occasional transient individuals, no federally proposed or listed endangered or threatened species are
- 18 known to exist within the Fifteenmile Creek project impact area and that a biological assessment for the
- 19 project would not be required.
- Although harperella, a federally endangered plant species, has been observed growing in the vicinity, no
- 21 individuals grow where they would be affected by the proposed action.
- 22 The Maryland Department of Natural Resources Wildlife and Heritage Service was contacted to identify
- the listed species occurring in the project area (see Appendix C). They identified the species that could be
- found on or near the Fifteenmile Creek project site; these are listed in Table 6 (see also Appendix B,
- <sup>25</sup> "Threatened and Endangered Species"). A May 2002 survey of the site found none of these species.
- 26 Green dragon, a Maryland watchlist species, was the only "rare" species found during the survey (NPS
- 27 2002b).

#### 28

### 29 TABLE 6: STATE-LISTED SPECIES WITH POTENTIAL TO OCCUR AT THE FIFTEENMILE CREEK SITE

Scientific Name	Common Name	Maryland State Status
Apocynum sibiricum	Clasping-leaved dogbane	Endangered
Carex emoryi	Emory's sedge	Rare
Taenidia montana	Mountain pimpernel	Threatened
Melica nitens	Three-flowered melicgrass	Threatened
Fixsenia ontario	Northern hairstreak (butterfly)	Endangered
Papilio cresphontes	Giant swallowtail (butterfly)	In need of conservation

30

31 No critical habitat is designated for any species within or near the Fifteenmile Creek project site.

#### 1 Monocacy Aqueduct

- 2 The U.S. Fish and Wildlife Service was contacted with a request for information about listed species at
- 3 the Monocacy Aqueduct site. The service responded in a January 13, 2005, letter stating, "Except for
- 4 transient individuals, no federally proposed or listed endangered or threatened species are known to exist
- 5 within the project impact area." The letter from the U.S. Fish and Wildlife Service is included in
- 6 Appendix C.
- 7 The Maryland Department of Natural Resources, in a letter dated November 8, 2004, in response to a
- 8 request for information on the presence of finfish species in the vicinity of the proposed access
- 9 improvements to the Monocacy Aqueduct area, stated that the proposed actions would not likely impact
- 10 fisheries resources. This assumes that sediment and erosion control methods and best management
- 11 practices typically used for protection of stream resources would be implemented. Additionally, the
- 12 Maryland Wildlife and Heritage Service stated in a February 14, 2005, letter that no rare, threatened, or
- 13 endangered species are recorded for the immediate area and that the proposed project in the Monocacy
- 14 Aqueduct canal basin should have little or no direct impact on known sites for rare, threatened, or
- 15 endangered species. The letter did recommend that surveys for the state-threatened white trout lily
- 16 (*Erythronium albidum*) and amphibians be made prior to disturbance in the canal basin.

### 17 WATER QUALITY

#### 18 **Potomac River Basin**

- 19 All four facilities lie within the Potomac River Basin, which encompasses 14,670 square miles in
- 20 Virginia, Maryland, West Virginia, Pennsylvania, and the District of Columbia. In 1990, an estimated 4.6
- 21 million people lived in the Potomac River Basin. Major industries in the basin include agriculture,
- 22 forestry, coal mining, paper, chemicals, electronics, and recreation (USGS 1991).
- 23 Water quality problems have occurred historically and are still occurring in surface and ground water in
- 24 certain parts of the Potomac River Basin. Some of the major water quality issues for the freshwater
- 25 resources of the basin include:
- 26 Acid drainage from coal mines in the North Branch Potomac River; • 27 Introduction of bacteria, nutrients, and heavy metals from sewage-effluent discharges, • 28 particularly downstream of major urban areas; 29 Introduction of sediment, nutrients, and pesticides from agricultural activities, particularly in • 30 streams in the Valley and Ridge province and the Piedmont province; 31 Introduction of heavy metals, organic chemicals, and high biochemical oxygen demand from • 32 industries and businesses, particularly in the North Branch Potomac River and developed 33 areas: 34 Introduction of sediment, nutrients, heavy metals, and organic chemicals in runoff from urban • 35 and suburban areas; 36 • Degradation of ground water by nonpoint-source contaminants, such as fertilizers, manure, 37 pesticides, septic effluent, and road salt, particularly in areas underlain by limestone; 38 • Acidification of streams by atmospheric deposition, especially in reaches underlain by 39 quartzite, sandstone, and other rocks whose composition cannot neutralize acidic input; and 40 Natural radioactivity (primarily radon) in ground water in crystalline rocks of the Blue Ridge • 41 and Piedmont provinces (USGS 1991).

42 The Potomac River is designated as an American Heritage River. The American Heritage Rivers

43 initiative was established by Executive Order 13061 to help river communities that seek federal assistance

- 1 with natural resource and environmental protection, economic revitalization, and historic and cultural
- 2 preservation.

#### **3 Point of Rocks and Brunswick**

- 4 To avoid unnecessary repetition, the Point of Rocks and Brunswick project sites are discussed together
- because they are located relatively close to one another, lie within the same watershed and over the same
  principle aquifer, and would impact the same reach of the Potomac River.
- 7 Both facilities are located within the Middle Potomac-Catoctin watershed (USGS Cataloging Unit
- 8 02070008). The reported river flow on January 4, 2005 at gaging station 01638500 (maintained by the
- 9 USGS), located at the Point of Rocks boat ramp on the Potomac River, was 7,380 cubic feet per second
- 10 (cfs). The maximum reported flow at this station was 480,000 cfs on March 19, 1936, and the minimum
- 11 reported flow was 530 cfs on September 11 to 12, 1966 (USGS 2004). The Point of Rocks and
- 12 Brunswick sites are underlain by the Piedmont and Blue Ridge crystalline-rock aquifers. The quality of
- 13 water from these aquifers generally is suitable for drinking and other uses. Concentrations of dissolved
- 14 constituents, except for fluoride, iron, manganese, and locally sulfate, seldom exceed state and federal
- 15 drinking-water standards (USGS 2002).
- 16 In addition, a CSX barrier trench and groundwater monitoring wells are in place at the Brunswick site to
- 17 limit the spread of, and monitor, petroleum in groundwater at the site.

#### 18 Fifteenmile Creek

- 19 The Fifteenmile Creek project site lies within the Cacapon-Town watershed (USGS Cataloging Unit
- 20 02070003). Gaging station 01610000 (maintained by the USGS), located just upstream from the bridge
- on Maryland State Highway 51 on the Potomac River, reported river flows of 2,450 cfs on January 4,
- 22 2005. The maximum reported flow at this station was 235,000 cfs on November 5, 1985, and the
- 23 minimum reported flow was 164 cfs on September 10 to 11, 1966 (USGS 2004). Fifteenmile Creek is
- classified as a Use IV-P stream (recreational trout waters and public water supply). In-stream work is
- 25 generally not permitted in Use IV streams during the periods of March 1 through June 15, inclusive,
- 26 during any year (Maryland DNR 2003). The Fifteenmile Creek project site is underlain by the Valley and
- 27 Ridge aquifers. The water is generally suitable for drinking and other uses, but iron, manganese, and
- sulfate locally occur in concentrations that may exceed state and federal drinking water standards (USGS
   2002).

### 30 Monocacy Aqueduct

- 31 The Monocacy Aqueduct project site lies within the Monocacy watershed (USGS Cataloging Unit
- 02070009). The nearest gaging station to the site is station 01638500, at Point of Rocks. Flow data for
   this station are provided above for the Point of Rocks gaging station.
- 34 Aquifers in early Mesozoic basins underlie the Monocacy site. Water derived from this aquifer system is
- 35 generally suitable for drinking and other uses, but iron, manganese, and sulfate locally occur in
- 36 concentrations that may exceed state and federal drinking-water standards. Water hardness averages
- about 160 milligrams per liter, which is considered hard.

### 38 WETLANDS AND FLOODPLAINS

#### 39 Wetlands

- 40 Wetlands are areas that are inundated or saturated by surface or ground water at a frequency and duration
- 41 sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically

- 1 adapted for life in saturated soil conditions (hydrophytes), including swamps, marshes, bogs, and similar
- 2 areas (33 CFR section 328.3[b]; 40 CFR section 230.3[t]).
- 3 The National Park Service has directed park staff to protect wetlands from adverse impacts or, when
- adverse impacts to wetlands cannot be avoided, to minimize degradation or loss by every practicable
   effort (NPS 2002a).
- 6 Any actions that may reduce or degrade wetlands are governed by the Clean Water Act and Rivers and
- 7 the Harbors Act (33 U.S. Code Parts 1344 and 403, respectively), and are regulated by the U.S. Army
- 8 Corps of Engineers and the U.S. Environmental Protection Agency. In Maryland, wetlands are regulated
- 9 at the state level by the Maryland Department of the Environment under the Nontidal Wetlands Protection
- 10 Act and Program. Maryland has adopted the goal of achieving no net loss of its nontidal wetland
- 11 resources. Thus, any loss of nontidal wetlands regulated under state law must be offset by mitigation.
- 12 Allegany County, location of the Fifteenmile Creek project site, relies on state regulations for most
- 13 wetland and waterway issues, although an additional county requirement calls for a 25-foot buffer on all
- streams. Frederick County (Point of Rocks and Brunswick) and Montgomery County (Monocacy
- 15 Aqueduct) rely on existing state and federal laws for the protection of wetlands and waterways.

#### 16 **Point of Rocks**

- 17 The National Wetland Inventory identifies several areas downstream of the Point of Rocks boat ramp,
- 18 between the boat ramp access road and the Potomac River, as small, freshwater forested/shrub wetlands.
- 19 Based on the Frederick County soil survey, the predominant soil in this area, Combs silt loam, is not a
- 20 hydric soil, which may preclude these wetlands from jurisdictional status with the U.S. Army Corps of
- 21 Engineers (NRCS 2002). However, this does not disqualify them from protection by the National Park
- 22 Service.

#### 23 Brunswick

- 24 Several small, freshwater forested/shrub wetlands are identified by the National Wetlands Inventory
- 25 within and surrounding the Brunswick project site. The area soil is primarily Lindside silt loam which is
- 26 not a hydric soil. As with Point of Rocks, this means that these small wetlands would not be considered
- 27 for jurisdictional status with the U.S. Army Corps of Engineers, but are still offered protection by the
- 28 National Park Service.

#### 29 Fifteenmile Creek

- 30 Based on a review of the National Wetlands Inventory dataset, no wetlands have been identified within
- 31 the Fifteenmile Creek project site. However, the lowland area surrounding the boat ramp is perennially
- 32 flooded and pock-marked with wet depressions, some of which support hydrophytic vegetation. The area
- is underlain by alluvial land with hydric properties. Taking these factors into consideration, many of the
- 34 wet depressions meet wetland criteria and would be protected by the National Park Service.
- 35 An important salamander breeding pool is located in the canal directly downstream from the Fifteenmile
- 36 Creek project site. According to a recent amphibian inventory, this site is important because of the
- number of Jefferson salamanders found in the pool and because the pool provides breeding habitat for
- 38 three ambystomatid salamander species (NPS 2004b).

#### 39 Monocacy Aqueduct

- 40 Review of the National Wetland Inventory dataset revealed no mapped wetlands within the Monocacy
- 41 Aqueduct project site. However, based on soil type, vegetation, and hydrology, the canal basin meets
- 42 standard wetland criteria and functions as a palustrine forested wetland.

- 1 The canal basin soil is Lindside silt loam with inclusions of Melvin silt loam (described in the "Soils"
- 2 section). These soil series are both considered hydric (NRCS 2002). The majority of the vegetation
- 3 growing within the canal basin is considered hydrophytic (capable of growing in at least periodically
- 4 oxygen deficient conditions). Refer to the "Vegetation" section for a more detailed description of
- 5 vegetation within the project site. Standing water is commonly present within the basin for extended
- 6 periods throughout the year, and depth to ground water has been measured at between 19 and 22 inches.
- 7 Current hydrological conditions within the canal basin are artificial. These conditions are directly
- 8 attributable to the excavation, use, and subsequent dewatering of the Chesapeake and Ohio Canal.

#### 9 Floodplains

- 10 Based on a review of flood insurance rate maps for Allegany, Frederick, and Montgomery Counties, the
- 11 entire area of all four project sites lies within the 100-year floodplain of the Potomac River, and much of
- 12 the total area is flooded at a greater frequency. A "100-year floodplain" or "100-year flood" describes an
- 13 area or event subject to a 1 percent probability of a certain-size flood occurring in any given year. The
- 14 existing parking area at Fifteenmile Creek, for example, is flooded dozens of times every year.
- 15 Chesapeake and Ohio Canal National Historical Park, as part of the general area surrounding the Potomac
- 16 River, has been damaged by a number of flood events in the past; the most recent and significant occurred
- 17 in 1996 as a result of two major floods. Park-wide damage from the floods was estimated at \$68 million.
- 18 In September 2003, Hurricane Isabel created flood and wind damage estimated at \$17 million. However,
- 19 the nature of the proposed action, improving river access, makes moving the project actions outside the
- 20 floodplain infeasible.
- 21 Executive Order 11988 requires federal agencies to avoid, to the extent possible, adverse impacts
- associated with the occupancy and modification of floodplains and to avoid development in floodplains
- 23 whenever there is a practical alternative. If a proposed action is found to be in the applicable regulatory
- floodplain, the responsible agency shall prepare a floodplain assessment, known as a statement of
- 25 findings. A statement of findings has been prepared for this environmental assessment in accordance with
- 26 National Park Service Director's Order #77-2 "Floodplain Management," and is incorporated by
- 27 reference (NPS 2003).

### 28 CULTURAL RESOURCES

### 29 Prehistoric Period

- 30 The region of the Monocacy Aqueduct has been occupied for more than 10,000 years. The prehistoric
- 31 period is traditionally divided into three major temporal periods on the basis of changes in technology and
- 32 subsistence. These periods are the Paleoindian (*ca.* 10,000 B.C. to 8000 B.C.), the Archaic (*ca.* 8000 B.C.
- to 1000 B.C.) and the Woodland (*ca.* 1000 B.C. to 1600 A.D.).
- 34 During the Paleoindian Period, the region would have been characterized by open grasslands interspersed
- 35 with forested zones. These habitats would have been suitable for a high density of grazing and browsing
- 36 fauna, including the now-extinct megafauna. These herds were hunted along with smaller game, and the
- 37 Paleoindians' diet was supplemented by a variety of plant resources. The characteristic artifact of this
- 38 period is the fluted point, often made of chert, jasper, or other cryptocrystalline rock. These points, used
- to tip spears, are relatively rare in the Mid-Atlantic region, one having been recovered from the vicinity of
- 40 the study area in Arlington and two known from the District of Columbia. Their rarity indicates a sparse,
- 41 sporadic occupation during the Paleoindian Period. Paleoindian artifacts have been identified at sites
- 42 along the Potomac River (Barse and Weubber 2002; Dent 1991; Dent 1995).
- 43 Archaic Period subsistence is characterized by hunting and foraging, and an increasing population
- 44 density. There was a gradual rise in sea level during this period, accompanying the retreat of the

- 1 continental ice sheets. This transformed the open grasslands into oak-hickory forests with lowland
- 2 flooding and marsh formation. The changing environment supported a denser, more varied floral and
- 3 faunal base. The new marshes became an important focus of activity during the Middle Archaic Period,
- 4 becoming the locus of seasonally specialized procurement areas. During the Late Archaic Period, the rate
- 5 of sea level rise slowed, resulting in riverine and estuarine environments stable enough to support
- 6 significant populations of shellfish and finfish. This allowed increased sedentism, as people moved to
- 7 these riverine and estuarine environments to exploit finfish and shellfish resources. This sedentism is
- 8 characterized by the appearance of the large, heavy steatite (soapstone) bowls in the artifact assemblage.
- 9 Around 1000 B.C., pottery first appeared in the region. This innovation defined the beginning of the
- 10 Woodland Period in this region, which is characterized by increased sedentism, the development of
- 11 horticulture, and increasingly efficient resource exploitation. By the Late Woodland Period, horticulture
- 12 played a significant role in the total subsistence system and allowed the establishment and maintenance of
- 13 permanent year-round settlements. Sedentary villages were established near the fertile soils of the
- 14 riverine floodplains. Smaller, less permanent sites in a variety of settings indicated that other resources
- still were being exploited. Fish weirs and other types of special use sites indicate continued reliance on
- 16 wild resources despite increasing dependence on agriculture (Hahn 1999; Southworth *et al.* n.d.).

### 17 Historic Period

- 18 Although Europeans began settling in Maryland in 1634, they did not begin moving into the area of what
- 19 is now Frederick County until the early 1700s (Hornum 2003). The first settlement in the area of the
- 20 Monocacy Aqueduct was a trading post at the mouth of the Monocacy River run by two Frenchmen in
- 21 1700. Charles Carroll, a future signer of the Declaration of Independence, founded Carrollton Manor, a
- 22 10,000-acre property along the Monocacy and Potomac Rivers in the 1720s. German, English, and Scots-
- 23 Irish settlers moved into the area, and the population was large enough that Frederick County was created
- 24 in 1748. Prior to 1800, settlements along the Potomac River usually occurred along regional roads near
- 25 ferry or ford crossings of the Potomac. Ferries were present on the river to the northwest and south of the
- 26 site, at Nolands, Spinks/Claphams, and Whites Ferries.
- 27 The construction of the Chesapeake and Ohio (C and O) Canal and the adjacent Baltimore and Ohio (B
- and O) Railroad resulted in the prosperity of the small river towns during the nineteenth century. Villages
- 29 sprang up at basins and locks along the canal, providing a variety of services to the passing canal boats
- 30 and serving as points of entry for local products to move into the canal shipping system. Taverns, mills,
- 31 stores, and other commercial enterprises were common at these locations.
- 32 The Chesapeake and Ohio Canal began as a commercial effort to link the Potomac and Ohio River
- valleys. The ambitious canal project began at Washington, D.C,. in 1828 and eventually halted at
- 34 Cumberland, Maryland, in 1850. The construction of the canal was besieged with funding problems and
- 35 labor unrest and never realized its full potential, probably due to the construction of the Baltimore and
- 36 Ohio Railroad. The Baltimore and Ohio Railroad was the first steam-operated commercial railroad built
- in the United States. Construction of the railroad also began in 1828 from the Baltimore metropolitan
- area to Point of Rocks, Maryland, and the main line of the railroad extended from there westward along
- 39 the Potomac River.

# 40 ARCHEOLOGICAL RESOURCES

### 41 Archeological Potential

- 42 None of the immediate project areas for the boat ramps have been surveyed for archeological resources,
- 43 except for the Monocacy Aqueduct parking area. However, the results of investigations elsewhere along
- the Potomac have shown a potential for buried prehistoric archeological sites along the floodplain and

- 1 terraces of the river (Barse *et al.* 2002; Hornum 2003; Louis Berger Group 2003). Deeply buried, Late
- 2 Woodland (*ca.* 1200 A.D. to 1500 A.D.) and Late Archaic (*ca.* 2000 B.C.) land surfaces have been found
- 3 on the terraces at Broad Run. The more recent deposit was encountered between 1.5 and 2 feet below the
- 4 present surface, while the older deposits were found at 7 feet. Testing near the mouth of Tuscarora Creek
- 5 uncovered Late Woodland material at the surface, Early Woodland deposits at 3 feet below surface, and a
- 6 probable Early Archaic or Paleoindian deposit at about seven feet (Louis Berger Group 2003).
- 7 This potential for buried deposits is particularly significant because such sites offer an opportunity to
- 8 study temporally discrete cultural deposits separated from each other by several feet of alluvial deposits.
- 9 Upland archeological sites, located away from alluvial environments, tend to be temporally mixed,
- 10 making them sometimes less fruitful subjects for archeological study. The discovery of especially rare
- 11 Paleoindian and Early Archaic deposits along the Potomac River heightens the potential significance of
- 12 these areas for archaeologists (Barse and Weubber 2002; Dent 1991; Dent 1995).
- 13 There is also the potential for historic period remains throughout the Chesapeake and Ohio Canal.
- 14 Seventeenth- and eighteenth-century trading posts, fords, ferries, and farmsteads may be present.
- 15 Nineteenth-century maps testify to the potential for historic period archeological sites along the canal
- 16 itself. Anticipated resources would include temporary camps of canal workers, non- extant canal support
- 17 structures, and the remains of businesses that sprang up along the canal or the military road that preceded
- 18 it. The Chesapeake and Ohio Canal was hotly contested by the Union and Confederacy forces during the
- 19 Civil War, and *ad hoc* camps may be present in the vicinity of Monocacy Aqueduct.

### 20 Point of Rocks

### 21 Context

- 22 There are no known archeological sites within the Point of Rocks project area. While some archeological
- 23 studies have been carried out in the area, the project area itself has not been intensively examined for
- 24 archeological resources. A pedestrian survey was conducted for areas within about 1 mile of Point of
- 25 Rocks. This survey identified the mouth of Cactoctin Creek as having the highest potential for
- archeological sites. A subsequent soil boring taken approximately <sup>1</sup>/<sub>4</sub> mile downstream from the present
- 27 boat ramp found two buried land surfaces extending to 4.6 meters below the surface, the older being Mid-
- 28 Holocene in date (Louis Berger Group 2003). Archeological testing for proposed geotechnical borings
- approximately 1.5 miles downstream from the Point of Rocks boat ramp also demonstrated a potential for
- 30 buried land surfaces within the floodplain (Hornum 2003). These studies show that the Point of Rocks
- boat ramp area retains the potential for undiscovered archeological resources. Table 7 lists known
- 32 archeological sites within a mile of the Point of Rocks boat ramp. This is a much longer list than for the
- 33 other two project areas, and includes the full temporal range of sites along the Potomac River.

Maryland Archeological Sites			
Site #	Site Name	Site Description	NRHP Eligibility
18FR008	Kanawha Spring	Archaic, Woodland village	Unevaluated
18FR060	Rock Hall	Prehistoric, unknown	Unevaluated
18FR072	Heater's Island North	Contact, 17th-century Piscataway village	Unevaluated
18FR073	Heater's Island Middle	Late Archaic, traditional short-term resource procurement camps	Unevaluated

# TABLE 7: ARCHEOLOGICAL SITES WITHIN ONE MILE OF POINT OF ROCKS BOAT RAMP – MP 48.2

Maryland Archeological Sites			
Site #	Site Name	Site Description	NRHP Eligibility
18FR678	Watertank	Prehistoric, unknown	Unevaluated
18FR749	Lockhouse 28	19th- to early 20th-century canal lockhouse	Unevaluated
18FR788	Pormarc	19th- to 20th-century domestic site (townsite), prehistoric lithic scatter	Unevaluated
18FR802	Mile Marker 48	Prehistoric, isolated find	Unevaluated
	Vi	rginia Archeological Sites	
Site #	Site Name	Site Description	NRHP Eligibility
44LD015	Catoctin Creek	Paleoindian, Woodland village	Unevaluated
44LD081		Woodland, lithic scatter	Unevaluated
Site #	Site Name	Site Description	NRHP Eligibility
44LD082		Woodland, lithic and ceramic scatter	Unevaluated
44LD101		Woodland, lithic workshop	Unevaluated
44LD502		Historic industrial iron furnace, late 18th- century to 19th-century	Unevaluated
44LD677		Prehistoric, lithic scatter	Unevaluated
44LD772		Prehistoric, lithic scatter; historic 19th- century trash scatter	Unevaluated

# TABLE 7: ARCHEOLOGICAL SITES WITHIN ONE MILE OF POINT OF ROCKS BOAT RAMP – MP 48.2

#### 1 Anticipated Resources

2 In addition to the potential for buried prehistoric sites or the remains of canal work camps, there is the 3 potential for the remains of historic structures. The 1865 coast survey of the Potomac River includes the

4 area around Point of Rocks. The map shows a road leading to a ferry crossing of the Potomac roughly

along the route of the road to the present boat ramp. It also shows an unlabeled structure on the river side

6 of the canal, not far from the pivot bridge (Donn 1865). It is possible that remains of this structure

7 survive as an archeological site.

#### 8 Brunswick

#### 9 Context

10 There are no known archeological sites within the Brunswick project area. However, the project area has

11 not been inventoried for archeological resources, and it retains the potential for undiscovered

12 archeological resources. Table 8 lists known archeological sites within a mile of the Brunswick boat

ramp. Site 44LD16 in Virginia is more than 1 mile from the project area, but it is the remains of a

14 Woodland village with burials situated on the floodplain. Like other archeological sites found along the

15 Potomac River floodplain, it serves as a reminder of the as-yet-unexamined archeological potential of the

16 Brunswick project area.

# TABLE 8: ARCHEOLOGICAL SITES WITHIN ONE MILE OF BRUNSWICK BOAT RAMP – MP55.0

Maryland Archeological Sites			
Site #	Site Name	Site Description	NRHP Eligibility
18FR077	Upper Brunswick	Late Archaic and Woodland artifact scatter	Unevaluated
18FR078	Lower Brunswick	Prehistoric lithic scatter	Unevaluated

#### 1 Anticipated Resources

- 2 Brunswick has potential for buried prehistoric archeological sites associated with the region's long
- 3 prehistoric occupation and potential for historic period archeological sites such as temporary work camps
- 4 associated with construction of the lock at Brunswick. The remains of Lockhouse 30 may also be in the
- 5 vicinity of the project area. The lockhouse would most likely have been situated near the lock, on the
- 6 terrace above the present parking lot.
- 7 An 1865 coast survey of the Potomac River includes the area around Brunswick, then known as Berlin.
- 8 A ferry route is shown leading from Berlin to the Virginia side of the river, and the canal lock at
- 9 Brunswick is shown, but no other structures are shown in the project area that would exist now as
- 10 archeological sites (Donn 1865).

#### 11 Fifteenmile Creek

#### 12 Context

- 13 There are no known archeological sites within the Fifteenmile Creek project area. However, the area
- 14 holds significant potential for undiscovered archeological resources and is situated in an area of the park
- 15 that has received relatively little systematic investigation. Table 9 lists the only archeological site within
- 16 a mile of the mouth of Fifteenmile Creek in the files of the Maryland Historical Trust. The draft
- 17 Archeological Overview and Assessment: C & O Canal National Historical Park (Barse and Weubber
- 18 2002) lists among the areas meriting investigation the mouth of Fifteenmile Creek (parcel 103). Hahn
- 19 states, "Rock ledges stretching across river in this area were once converted to fishtraps by Indians,
- 20 according to archeologists. ... Indian camp sites have been located on both sides of [the] mouth of the
- 21 creek and N[orth] of the [railroad] track above the aqueduct" (1999). The latter sites have not been
- 22 formally recorded and are not listed in Table 9.
- 23

# TABLE 9: ARCHEOLOGICAL SITES WITHIN ONE MILE OF FIFTEENMILE CREEK BOAT RAMP – MP 104.9

Maryland Archeological Sites			
Site #	Site Name	Site Description	NRHP Eligibility
18AG174	Dorsey XI	Blockhouse	Unevaluated

24

25 This area of Maryland was still considered frontier during the French and Indian War. After the defeat of

26 General Braddock in 1758, colonial leaders in Maryland saw a need to construct a military road to

27 connect Fort Frederick with Fort Cumberland. Under the direction of Colonel Thomas Cresap, a road was

- 1 established through this area. The term "Fifteenmile" refers to the distance from the settlement at Little
- 2 Orleans to both Hancock and Town Creek according to the layout of the 1760 "new" road. This route
- 3 opened much of western Maryland to migration and remained in heavy use until a more direct passage
- 4 was constructed to the north. The modern road through the community of Little Orleans is a part of this
- 5 historic military road.
- 6 Development followed construction of this road. Documentary references to Kings Tavern at the mouth
- 7 of the creek have been traced to 1795. A second tavern existed by 1811. An oral history record cites that
- 8 a ferry connecting Maryland and West Virginia was in operation through 1900 or 1901. A blacksmith
- 9 shop was located on the river side of the aqueduct during the early 1900s. Other area businesses included
- 10 a store located on the berm of the canal. This building was moved in the early 1900s when the Western
- Maryland Railroad was constructed. The building continued as a store, restaurant, and canoe livery until 11
- 12 2000, when it burned. It has since been rebuilt.
- 13 The area was settled by Irish immigrants, who were employed by the canal company for the construction
- 14 and operation of the canal. St. Patrick's Catholic Church was established by the canal workers and is still
- 15 used today as a mission church. The churchyard has burials dating to as early as 1802 and includes the
- 16 remains of canal workers.
- 17 The vicinity was the scene of violent labor clashes in 1838 and 1839, eventually quelled by militia troops.
- 18 Irish workers had been protesting non-payment of wages, but the canal company replaced them with
- 19 German workers. During the ensuing riot on May 17, 1838, two German workers died. The Irish
- 20 workers armed themselves with guns and, in August, the Maryland militia was called in to restore order.
- 21 The militia burned the temporary homes of the Irish workers and confiscated a quantity of whiskey. A
- 22 second period of violence occurred in August and September 1839. Once again, militia from Washington
- 23 and Allegany Counties were called in to suppress the violence. Thirty persons were arrested and placed
- 24 on trial in Cumberland. Fifty to 60 canal worker shacks were destroyed (Hahn 1999). Many descendants 25 of canal workers became employed with the construction, operation, and maintenance of the Western
- 26 Maryland Railroad.

#### 27 **Anticipated Resources**

- 28 The archeological potential of the Fifteenmile Creek project area is high, owing to its location on the
- 29 terraces at the confluence of Fifteenmile Creek and the Potomac River. There is potential for buried,
- 30 stratified archeological sites dating from the whole period of prehistory through the 19th century.
- 31 Specific resources that may be present include the prehistoric sites referenced in Hahn's Canal Guide
- 32 (1999) as well as remains of the late 18th- to early 19th-century tavern, the blacksmith's shop, and the
- 33 ferry. A survey map prepared for construction of the Chesapeake and Ohio Canal in 1827 shows an 34
- unlabeled structure a short way downstream from the mouth of Fifteenmile Creek (Geddes and Roberts
- 35 1827). This could be the tavern or possibly another structure whose remains could survive within the
- 36 project area.

#### 37 **Monocacy Aqueduct**

#### 38 Context

- 39 Archeological investigations have taken place in the immediate area around the Monocacy Aqueduct and
- 40 on adjacent lands. Areas along the Potomac have potential for buried prehistoric archeological sites along
- the floodplain and terraces of the river (Barse et al. 2002; Hornum 2003; Louis Berger Group, Inc. 2003). 41
- 42 The Monocacy site (18FR100), located adjacent to the aqueduct at the upstream, riverside of the canal, is
- the deepest known stratified site in Maryland (according to the Maryland Historic Trust site form), with 43 44 11 feet of alternating sterile and cultural strata from the Archaic through Late Woodlands periods.
  - -61-

- 1 Testing near the mouth of Tuscarora Creek (about 2 miles upriver from the mouth of the Monocacy
- 2 River) uncovered Late Woodland material at the surface, Early Woodland deposits 3 feet below ground
- 3 surface, and a probable Early Archaic or Paleoindian deposit at *ca*. 7 feet (Louis Berger Group, Inc.
- 4 2003).
- 5 There are 36 known archeological sites within 1 mile of the Monocacy Aqueduct project area. Table 10
- 6 lists these sites. Numerous archeological studies have been carried out in the area and on adjacent
- 7 properties. Three archeological sites are known in the immediate vicinity of the proposed parking lot:
- 8 18MO577, 18MO582, and 18MO583. The latter consists of 19th-century house remains; the other two
- 9 are prehistoric sites. While not yet recorded as an archeological site, upslope and to the south of the
- 10 proposed parking lot are the remains of a historic road trace and potentially associated historic remains
- 11 along it.
- 12 A series of extant fish weirs in the Potomac River near canal mile 43 are evidence of intense use of the
- 13 area by prehistoric peoples (Hahn 1997; Southworth *et al.* n.d). Indian villages of the late prehistoric
- 14 period were present in the area, and village/homestead sites are present within 1 mile of the aqueduct,
- 15 including 18FR015, 18FR100, and 18FR102, as well as less-densely occupied Late Woodland camps,
- 16 18FR224, 18FR335, and 18MO577. While most of the prehistoric archeological resources in the area are
- 17 undifferentiated by time period, there are potentially buried sites with intact, datable cultural resources in
- 18 the area (Ayers 1967; Barse and Weubber 2002; Barse *et al.* 2002).
- 19

Maryland Archeological Sites				
Site #	Site Name	Site Description	NRHP Eligibility	
18FR015	Warfield	Early, Middle and Late Archaic, Early and Late Woodland base camp; late 18th- through early 20th-century structure	Unevaluated	
18FR100	Monocacy	Late Archaic, Early, Middle, and Late Woodland village; early-to-mid 19th-century artifact scatter	NRHP listed 1975	
18FR102	Chick Farm aka Goldsborough #27	Late Archaic, Early, Middle and Late Woodland village; possible Contact Period trading post; Civil War era	Recommended eligible (Barse <i>et al.</i> 2002)	
18FR224	Baugher Farm aka Lawless #8	Early and Late Archaic, Early and Late Woodland camp	Unevaluated	
18FR335	Chick Farm	Early, Middle, and Late Archaic; Early 19th-century tenant farm	Unevaluated	
18MO285	PEPCO-Dickerson E	Early Archaic, Late Woodland lithic procurement	Unevaluated	

#### Table 10: Archeological Sites within One Mile of Monocacy Aqueduct – MP 42.2

18MO286	PEPCO-Dickerson F	Prehistoric lithic scatter	Unevaluated
18MO287	PEPCO-Dickerson G	Prehistoric lithic scatter	Unevaluated
18MO288	PEPCO-Dickerson H	Prehistoric lithic scatter	Unevaluated
18MO289	PEPCO-Dickerson I	Prehistoric lithic scatter	Unevaluated
18MO290	PEPCO-Dickerson K	Prehistoric lithic scatter	Unevaluated
18MO291	PEPCO-Dickerson N	Prehistoric lithic scatter	Unevaluated
18MO292	PEPCO-Dickerson P	Prehistoric lithic scatter	Unevaluated
18MO294	PEPCO-Dickerson #3	Early 20th-century scatter	Unevaluated

 Table 10:
 Archeological Sites within One Mile of Monocacy Aqueduct – MP 42.2

# Maryland Archeological Sites

Site #	Site Name	Site Description	NRHP Eligibility
18MO295	PEPCO-Dickerson #4 aka Shreve house ruins	19-20th-century farmstead ruins	Unevaluated
18MO296	PEPCO-Dickerson #5 aka Emily A. Trundle farm	19-20th-century farmstead ruins	Unevaluated
18MO297	PEPCO-Dickerson #6	Late 19th-20th-century barn ruin	Unevaluated
18MO298	PEPCO-Dickerson #7	19th-century stone wall	Unevaluated
18MO299	PEPCO-Dickerson #8	19th-century stone wall	Unevaluated
18MO300	PEPCO-Dickerson #9	19th-century stone wall	Unevaluated
18MO477	Lockhouse 27	Early19th-early 20th-century C&O Canal lockhouse	Part of C&O Canal NRHP District
18MO577	Little Monocacy aka 5180-01	Late Woodland base camp	Unevaluated
18MO582	Monocacy Aqueduct parking lot aka 5180-22, MM42.0	Late Archaic base camp	Unevaluated
18MO583	Mile marker 41.80	19th-century house ruin	Unevaluated

Virginia Archeological Sites			
Site #	Site Name	Site Description	NRHP Eligibility
44LD022		Woodland terrestrial, open air	Unevaluated
44LD760	Potomac Towers A	Late Woodland terrestrial, open air lithic scatter; 19th <sup>-</sup> and 20th-century trash dump	Unevaluated
44LD761	Potomac Towers B	Unknown Prehistoric terrestrial, open air lithic scatter	Unevaluated
44LD763	Potomac Towers D	Unknown Prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD764	Potomac Towers D	Early Archaic, Early and Middle Woodland terrestrial, open air lithic workshop	Unevaluated
44LD765	Potomac Towers F	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD766	Potomac Towers G	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD767	Potomac Towers F	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD768	Potomac Towers I	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD769	Potomac Towers J	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD770	Potomac Towers K	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated
44LD771	Potomac Towers I	Unknown prehistoric terrestrial, open air lithic workshop	Unevaluated

#### Table 10: Archeological Sites within One Mile of Monocacy Aqueduct – MP 42.2

#### 1 Anticipated Resources

2 No site is known within the footprint of the proposed parking lot itself; however, previous studies show

3 that the Monocacy Aqueduct parking lot area retains the potential for undiscovered archeological

4 resources of both the prehistoric and historic periods. In addition to the potential for buried prehistoric

5 sites or the remains of canal worker camps, there is potential for the remains of historic structures around

6 the boat basin and along the canal and for sites associated with the Civil War. Canal boats would have
- 1 docked next to the granary at the side of the canal basin to load and off-load grain. It is possible that
- 2 refuse or accidentally discarded items associated with the canal operation could be found within the basin.
- 3 Excavation with the canal basin at Cumberland revealed parts of multiple canal boats. Canal boat parts
- 4 could also be present within the Monocacy basin. The Chesapeake and Ohio Canal was hotly contested
- 5 by the Union and Confederacy forces during the Civil War, and *ad hoc* camps may be present in the
- 6 vicinity of Monocacy Aqueduct.

#### 7 LANDSCAPE AND ARCHITECTURAL RESOURCES

#### 8 Overview

- 9 The Chesapeake and Ohio Canal Historical Park was listed on the National Register of Historic Places in
- 10 1966. The canal was constructed between 1828 and 1850 to facilitate commerce between the Potomac
- 11 and Ohio River valleys and extends 184 miles from Washington, D.C., to Cumberland, Maryland. The
- 12 NRHP-listed site includes the entire length of the canal and towpath and all associated canal-related
- 13 structures, including bridges, culverts, aqueducts, waste weirs, turning basins, locks, and lock houses.

#### 14 **Point of Rocks**

- 15 The Chesapeake and Ohio Canal Company was in direct competition with the Baltimore and Ohio
- 16 Railroad in the early 1800s. Point of Rocks provided the physical backdrop for litigation between the two
- 17 companies. At Point of Rocks, the Potomac River cuts into the Catoctin Mountains, creating cliffs on the
- 18 Maryland shoreline. A narrow ledge at the base of the cliffs could accommodate either the canal or the
- 19 railroad, but not both. In 1835, the courts ruled in favor of the canal company, forcing the railroad to
- 20 construct a tunnel through the cliffs just after the Civil War.
- 21 The Baltimore and Ohio Railroad gained controlling interest in the Chesapeake and Ohio Canal Company
- following the canal company's bankruptcy in 1889. When the canal was irreparably damaged during the
- 23 1924 flood, the railroad explored options at Point of Rocks. In 1938, the railroad deeded the canal
- company lands to the federal government, retaining. enough property to construct the railroad alongside
- the cliffs, thus permanently impacting the remains of the canal prism and towpath in that location. As a
- result, approximately 400 linear feet of the towpath were detoured to the boat ramp roadway.
- 27 Historic architectural resources located at Point of Rocks include the resources associated with the
- 28 Chesapeake and Ohio Canal, the Baltimore and Ohio Railroad, and the community of Point of Rocks.
- 29 The Chesapeake and Ohio Canal extends through Point of Rocks between Mile 47.4 and 49.4. Associated
- 30 structures within this area include the pivot bridge, which crosses the canal at mile 48.2. The bridge was
- originally built in 1834 and was reconstructed in 1980, leaving only the original substructure intact. The
- bridge no longer retains integrity as a historic structure. Culverts 72 through 75, located at mile 47.75,
- 48.01, 48.14, and 49.3 respectively, are also original features of the canal constructed between 1831 and
- 1832. Lock 28 and Bypass Flume Lock are both located at mile 48.9. Lock 48 was constructed in 1833
- and was extended in 1882. Bypass Flume Lock 28 was also constructed in 1833 and is currently filled in.
- Lock House 28, another original feature of the canal built in 1833, is located at mile 48.93 (Hahn 1999).
- 37 The Baltimore and Ohio Railroad extends approximately 80 feet north of the canal. The right of way of
- the railroad is not listed in the National Register of Historic Places, but is potentially eligible because of
- 39 its association with early 19th-century transportation. Associated structures along the railroad in Point of
- 40 Rocks includes box culverts south and east of the pivot bridge site, which have been determined eligible
- 41 for listing in the National Register of Historic Places. The Point of Rocks Railroad Station, which is
- 42 individually listed on the National Register of Historic Places, is over a quarter mile east of the project
- 43 area.

The community of Point of Rocks has been determined by the Maryland Historic Trust as ineligible for listing on the National Register of Historic Places. However, the community does contain a number of resources that are individually eligible for listing. The Potomac River Bridge carries U.S. Highway 15 over the Potomac River at the site of the present boat ramp. The Maryland Historic Trust has determined the bridge eligible for listing on the National Register of Historic Places. The Point of Rocks Masonic Lodge and the Point of Rocks Methodist Episcopal Church have also been determined eligible for listing. Historic buildings and structures within a mile of the Point of Rocks boat ramp are listed in Table 11.

8

Maryland Historic Structures and Districts				
Site #	Site Name	Site Description	NRHP Eligibility	
F-1-007	St. Luke's Evangelical Lutheran Church	Church	Unevaluated	
F-1-008	Holy Trinity Episcopal Church	Church	Unevaluated	
F-1-009	Castle Heirs House	House	Unevaluated	
F-1-010	Point of Rocks United Methodist Church	Church constructed in 1894	Eligible	
F-1-011	Point of Rocks Masonic Building	Two-story lodge constructed in 1898	Eligible	
F-1-129	Point of Rocks Railroad Station	Victorian Gothic Revival building constructed in the 1870s	National Register-153	
F-1-131	Frank Brown House	House	Unevaluated	
F-1-154	White Two-Story House	White two-story house	Unevaluated	
F-1-156	Baltimore and Ohio Railroad and Culvert	A small, coursed, and random ashlar and rubble box culvert from the mid-19th century	Eligible	
F-1-183	Sidney R. Hickman House	House	Unevaluated	
F-1-187	Point of Rocks Survey District	Two houses <i>ca</i> .1890s through 1920s	Determined not eligible by MHT	
F-1-206	John R. Horn Farmstead	House	Unevaluated	
F-2-011	Chesapeake and Ohio Canal National Park	Canal	National Register-12	
F-2-034	Potomac River Bridge	Metal truss bridge	Eligible	
	Point of Rocks Railroad Tunnel	Constructed 1868	Potentially eligible	

# TABLE 11: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF POINT OF ROCKS BOAT RAMP – MP 48.2

## TABLE 11: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF POINT OF ROCKS BOAT RAMP – MP 48.2

	Virginia Historic Structures and Districts			
Site #	Site Name	NRHP Eligibility		
	Beverly Smith House	House, ca. 1840	Unevaluated	

1

#### 2 Brunswick

3 Historic architectural resources located at Brunswick are associated with two National Register of

4 Historic Places listed districts, the Chesapeake and Ohio Canal and the Brunswick Historic Districts. The

5 Chesapeake and Ohio Canal contains a number of associated structures at Brunswick. The canal and

6 towpath extend through Brunswick between miles 54 and 56. Other structures located within the canal

7 right of way at this location include culverts 85 through 88, located at miles 54.05, 54.57, 54.81, and

8 54.45 respectively. These culverts are original features of the canal, all constructed in 1833. Lock 30 is

9 located at mile 55 and is another original feature of the canal, constructed in 1833. A waste weir is

10 located at mile 54.95. This structure, built in 1910, is a later feature of the canal (Hahn 1999).

11 The Brunswick Historic District was listed on the National Register of Historic Places in 1979 and

12 includes all of the original town of Berlin, located between the Baltimore and Ohio Railroad and Potomac

13 River, the Baltimore and Ohio Railroad yards, and the "boom town" railroad settlement from 1890 to

14 1910, which extends along both sides of the railroad yards (Maryland Inventory of Historic Places

15 Property Detail Report F-2-009). Berlin was laid out and settled during the late 18th Century, but only a

16 few buildings built prior to 1890 remain scattered throughout the present corporate limits of Brunswick.

17 None are extant within the floodplain south of the Baltimore and Ohio Railroad. One of the extant

buildings located within the historic district is the Gunther's Auction Gallery, situated at 24 S. Virginia
 Avenue approximately <sup>1</sup>/<sub>4</sub> mile north of the present boat ramp. The Maryland Historic Trust has

20 determined this building individually eligible for National Register of Historic Places listing. The main

20 line of the Baltimore and Ohio Railroad, while a contributing element to the Brunswick Historic District,

is potentially eligible for individual listing because of its significant association with early 19th-century

transportation. Historic buildings and structures within a mile of the Brunswick boat ramp are listed in

24 Table 12.

Maryland Historic Structures and Districts			
Site #	Site Name	Site Description	NRHP Eligibility
F-2-009	Brunswick Historic District	HD that contains all of current portion of Brunswick located along the Potomac River and the Baltimore and Ohio Railroad. Includes scattered houses from 1790 to 1890	National Register – 552

from 1890 to 1930.

and more concentrated houses dating

# TABLE 12: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF BRUNSWICK BOAT RAMP – MP 55.0

Site #	Site Name	Site Description	NRHP Eligibility
F-2-011	Chesapeake and Ohio Canal	Canal	National Register – 12
F-2-038	Gunther's Auction Gallery	House	Eligible
F-2-062	Robert Carroll House	House	Unevaluated
F-2-077	New Addition Survey District	District	Unevaluated
F-2-083	Milton H. Cannon House (Koenig House)	House	Unevaluated
F-2-084	Charles F. Wenner House	House	Unevaluated
F-2-092	Bridge 10089	Concrete beam bridge	Eligible
F-2-105	Brunswick Museum	Museum	Potentially eligible*
F-2-106	Brunswick Railway Station	Baltimore and Ohio Railroad Station	Potentially eligible*
	Brunswick Co-op Association Ruins	Mill and elevator. Original structure built 1845, abandoned 1962, burned 1972.	Unevaluated
	Brunswick Recreation Area	200-acre campground	Unevaluated
	Baltimore and Ohio Railroad Roundhouse	<i>ca.</i> 1890s to 1930s	Unevaluated

# TABLE 12: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OFBRUNSWICK BOAT RAMP – MP 55.0

#### Virginia Historic Structures/Districts

Site #	Site Name	Site Description	NRHP Eligibility
053-437	Forge Run Farm	ca 1800	Unevaluated
053-486	Tollhouse at Route 287	c <i>a</i> . 1800	Unevaluated

## TABLE 12: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF<br/>BRUNSWICK BOAT RAMP – MP 55.0

Virginia Historic Structures/Districts			
Site #Site NameSite DescriptionNRHP Eligibit			
053-668	Luten Bridge	Road/pedestrian bridge, ca. 1900	Unevaluated

1 \* Property has preservation easements, but no formal National Register DOE

#### 2 **Fifteenmile Creek**

- 3 Historic architectural resources located at Fifteenmile Creek include two linear historic districts, the
- 4 Chesapeake and Ohio Canal, and the Western Maryland Railroad right of way. At Fifteenmile Creek, the
- 5 canal right of way includes the Fifteenmile Creek Aqueduct, which carries the canal and towpath over the
- 6 creek. The stone arch structure, constructed between 1848 and 1850, is located at mile 140.90 of the
- 7 canal (Biemiller 2002). Located at mile 140.93 is a stone and concrete waste weir, which was constructed
- 8 in 1840, with portions of the structure replaced in 1900.
- 9 The Western Maryland Railroad right of way was listed on the National Register of Historic Places in
- 10 1981. Contributing to the listing eligibility are bridges, culverts, tunnels, and any other extant structure
- 11 directly associated with the railroad during its period of significance. The railroad, operated from 1903 to
- 12 1975, has regional significance for its association with early 20th-century trans-Allegheny railroad
- 13 expansion. The railroad is considered a trace, with no existing rails remaining. The railroad was located
- 14 approximately 150 to 200 feet west of the Chesapeake and Ohio Canal at Fifteenmile Creek and is
- 15 currently under NPS ownership at this location. Historic buildings and structures within a mile of the
- 16 Fifteenmile Creek boat ramp are listed in Table 13.
- 17

# TABLE 13: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF FIFTEENMILE CREEK BOAT RAMP – MP 104.9

<b>Maryland Historic Structures and Districts</b>				
Site #	Site Name	Site Description	NRHP Eligibility	
	Railroad Culvert at Little Orleans	Railroad culvert	National Register – 74	
	Indigo Railroad Tunnel	Railroad tunnel	National Register – 74	
	Western Maryland Railroad Culverts 21- 4	Railroad culvert	National Register – 74	
	Western Maryland Railroad First Potomac Bridge	Railroad bridge	National Register – 74	

# TABLE 13: HISTORIC STRUCTURES AND DISTRICTS WITHIN ONE MILE OF FIFTEENMILE CREEK BOAT RAMP – MP 104.9

Maryland Historic Structures and Districts				
Site #	Site Name	Site Description	NRHP Eligibility	
	Crossing			
	Chesapeake and Ohio Canal	National Register – 12		
	St. Patrick's Churchyard	Cemetery	Potentially Eligible	

#### 1 Monocacy Aqueduct

#### 2 Overview

- 3 Landscape and architectural resources within the vicinity of the Monocacy Aqueduct consist primarily of
- 4 the resources associated with the Chesapeake and Ohio Canal. The Chesapeake and Ohio Canal
- 5 Historical Park has been listed on the National Register of Historic Places. As a listed historic district, the
- 6 park contains associated, contributing resources which consist of individual buildings, structures, objects,
- 7 and sites that contribute to the historic significance of the canal and still retain good overall integrity.
- 8 Other significant architectural/landscape resources located in the vicinity of the Monocacy Aqueduct
- 9 include the Baltimore and Ohio Railroad and various resources associated with the settlement of the area
- 10 dating from the late 18th century.

#### 11 Chesapeake and Ohio Canal Resources

- 12 Historic architectural resources located at Monocacy Aqueduct are associated with the Chesapeake and
- 13 Ohio Canal NRHP-listed district, and with the Baltimore and Ohio Railroad. The Chesapeake and Ohio
- 14 Canal contains a number of associated structures including the canal prism and towpath, culverts, locks,
- 15 turning basins, waste weirs, and the aqueduct itself.
- 16 The Chesapeake and Ohio Canal Historical Park was listed on the National Register of Historic Places in
- 17 1966. The canal was constructed between 1828 and 1850 to facilitate commerce between the Potomac
- 18 and Ohio River valleys and extends 184 miles from Washington, D.C., to Cumberland, Maryland. The
- 19 NRHP-listed site includes the entire length of the canal and towpath and all associated canal-related
- 20 structures, including bridges, culverts, aqueducts, waste weirs, turning basins, locks, and lock houses.
- 21 Twenty-two identified structures located within the NRHP-listed canal site are located within 1 mile from
- the Monocacy Aqueduct. These resources are listed in Table 14.
- 23

#### TABLE 14: HISTORIC STRUCTURES ASSOCIATED WITH THE CHESAPEAKE AND OHIO CANAL

Resource	Mile Post	Description
Canal Towpath	Entire length of canal	The towpath is a trail that runs parallel to the canal
		prism that was historically used as the path for

Resource	Mile Post	Description
		oxen that pulled the canal barges.
Monocacy Aqueduct	42.19	Stone aqueduct carrying canal over Monocacy River.
Culvert #66	40.04	ca. 1830 stone barrel culvert 6 feet in length.
Culvert #68	41.34	<i>ca.</i> 1830 stone barrel culvert with 6-foot span. Restored in 1974.
Lock #27, Spinks Ferry Lock	41.46	Constructed in 1831 of locally quarried Seneca red sandstone.
Lock House #27	41.46	One-and-a-half story stone house with end chimneys and standing-seam metal clad, side- gabled roof (Hahn 1997).
Lock #27, Bypass flume	41.46	Dry-laid, rock-walled ditch.
Footbridge	41.48	Wooden pedestrian bridge constructed less than 50 years ago.
Waste Weir	41.52	Common three-opening waste weir with stone wing walls.
Foundation ruins	41.80	Fieldstone foundation from canal era.
Culvert #69	41.97	Stone barrel-vaulted culvert built in 1832. Rebuilt in 1972 after Hurricane Agnes weakened the structure.
Monocacy Boat Ramp	42.02	Modern boat ramp not yet 50 years old.
Monocacy Parking Lot at Boat Ramp	42.03	Paved parking lot not yet 50 years old.
Indian Flats Camp	42.05	Modern hiker-biker overnighter camp not yet 50 years old.
Charles Boyd House Foundation Ruins	42.07	Stone foundation house ruins from mill owner <i>ca</i> . 1780s.
Trundle Granary Foundation Ruins (MHT#M12-28)	42.17	Stone foundation (Seneca sandstone) part of a granary constructed by Otho Trundle during the 19th century.

### TABLE 14: HISTORIC STRUCTURES ASSOCIATED WITH THE CHESAPEAKE AND OHIO CANAL

Resource	Mile Post	Description
Access Gate	42.16	Modern gate installed on canal property.
Monocacy Boat Basin	42.17	Turning and loading basin; excavated between 1830 and 1832. Today, much of the basin no longer retains water, and dense brush and trees have grown up inside the basin.
Monocacy Parking Lot	42.17	Parking lot at the boat basin. Not yet 50 years old.
Culvert #70	42.55	Stone arch culvert constructed ca. 1832.
Culvert #71	44.04	Sixteen foot span stone arch culvert constructed <i>ca.</i> 1832.
Mouth of Monocacy ruins (MHT# M12-26)	42.11	19th-century settlement with post office. Buildings no longer extant.

 TABLE 14: HISTORIC STRUCTURES ASSOCIATED WITH THE CHESAPEAKE AND OHIO CANAL

1

2 Of these 22 resources, 15 are contributing resources to the Chesapeake and Ohio Canal NRHP-listed

3 property. The contributing resources are the canal prism, tow path and all structures associated with the

4 canal that remain extant with good overall integrity. The non-contributing resources are all modern

5 structures that do not date to the period of significance for the canal. The non-contributing resources are

6 not yet 50 years of age and therefore do not meet standard National Register of Historic Places criteria or

7 exceptional significance standards applicable to Criterion Consideration G (properties less than 50 years

8 of age).

9 The Chesapeake and Ohio Canal Historical Park is also a significant cultural landscape as an NRHP-listed

10 property, possessing both natural and man-made elements that together constitute a historic landscape.

11 Important features such as the canal prism, tow path, ancillary support structures, historic vegetation

12 patterns, and elements of the historic circulation system, such as paths, roads, and fences, are all

13 important features that make up the historic landscape. Alterations to any of these features have the

14 potential to affect the historic character of the landscape. However, alterations that were made during the

15 period of significance for the canal, which was the entire time the canal was in operation, do not distract 16 from the historic character of the landscape. Rather, such changes represent the historic evolution of the

16 from the historic character of the landscape. Rather, such changes represent the historic evolution of the 17 property. Along with the canal prism and tow path, the two cultural resources most likely to be affected

18 are the Monocacy Aqueduct and the foundation remains located at mile marker 42.10.

19 Arguably the most significant architectural feature of the canal in the vicinity of Monocacy Aqueduct is

20 the aqueduct bridge itself at mile 42.2. The aqueduct is a contributing element of the Chesapeake and

21 Ohio Canal NRHP-listed site, but it is also significant on its own account. The aqueduct is a stone arch

22 structure featuring seven 54-foot arches which carried the canal prism over the Monocacy River.

23 Benjamin Wright designed the 516-foot-long aqueduct bridge, which is the largest of the eleven

24 aqueducts along the canal. Alfred Crueger oversaw construction, which occurred between March 1829

and April 1833 (Hahn 1997). The structure was renovated between 1975 and 1979 to repair damage

26 resulting from Hurricane Agnes in 1972 (Hahn 1997). The Monocacy Aqueduct is one of the greatest

- 1 accomplishment of the Chesapeake and Ohio Canal Company and is widely considered one of the finest
- 2 examples of canal architecture in the United States.
- 3 A stone foundation is located about 20 to 30 feet south of the tow path at mile 42.17, adjacent to the

4 Monocacy boat basin. This 19th-century Seneca sandstone foundation is the remains of a granary built by

5 Otho Trundle (Hahn 1997). Locally grown wheat was stored in the granary while awaiting shipment to

6 market on the canal. As an architectural resource, the site has no structural integrity since only the

- 7 foundation remains and the National Park Service has stabilized and capped the ruins. However, the site is
- 8 a contributing resource to the Chesapeake and Ohio Canal National Historical Park, and therefore has 9
- been determined eligible for the National Register of Historic Places. There may be archeological
- 10 remains associated with the ruins that are beneath the parking lot and access road on the bank of the boat basin. 11

#### 12 Resources Outside Chesapeake and Ohio Canal Property within One mile of Project Site

13 A number of known resources are located outside the Chesapeake and Ohio Canal right of way and within

14 1 mile of the project site. Table 15 identifies these resources. Claphams Farm located across the Potomac

River in Virginia is the only one of these resources listed on the National Register of Historic Places. The 15

metropolitan branch of the Baltimore and Ohio Railroad (M37-16), located east of the Chesapeake and 16

17 Ohio Canal, and the Sugarloaf Mountain Historic District (M12-44) are the only resources that have been

18 determined eligible for NRHP-listing. None of the remaining resources have been evaluated for NRHP

- 19 eligibility.
- 20

Maryland Historical Structures and Districts				
Site #	Site Name	Site Description	NRHP Eligibility	
M: 12-24	Dickerson Quarries	Stone quarry	Unevaluated	
M: 12-25	Sellman Farm and Bank Barn Ruins	Building ruins	Unevaluated	
M: 12-29	Shreve House	Ruins?	Unevaluated	
M: 12-44	Sugarloaf Mountain Historic District	Collection of buildings and structures	Eligible	
M: 37-16	Metropolitan Branch, B&O Railroad	ca. 1890s to 1930s	Recommended eligible 2000	

#### **TABLE 15: HISTORIC STRUCTURES OUTSIDE CHESAPEAKE AND OHIO CANAL HISTORICAL** PARK WITHIN ONE MILE OF MONOCACY AQUEDUCT

#### **Virginia Historic Structures and Districts**

Site #	Site Name	Site Description	NRHP Eligibility
053-0071	Claphams Ferry aka Lost Corner Farm	<i>ca.</i> 1757 dwelling, barn and outbuildings at ferry site	NRHP-listed 1997

- 1 Probably the most significant resource located outside the Chesapeake and Ohio canal basin is the
- 2 Baltimore and Ohio Railroad right of way. The Chesapeake and Ohio Canal Company was in direct
- 3 competition with the Baltimore and Ohio Railroad in the early 1800s. The railroad gained controlling
- 4 interest in the canal company following the canal company's bankruptcy in 1889. In 1938, the railroad
- 5 deeded the canal company lands to the federal government. The Baltimore and Ohio Railroad lies
- 6 approximately 600 feet southeast of the canal. The entire right of way of the railroad is not NRHP-listed,
- <sup>7</sup> but is potentially eligible for its association with early 19th-century transportation. The right of way
- 8 includes the ballast, tracts, and associated structures such as bridges and culverts.
- 9 Claphams Ferry, also known as the Lost Corner Farm, contains the home of John Clapham, a
- 10 Revolutionary War veteran who operated a ferry across the Potomac River in the vicinity of the Potomac
- 11 and Monocacy confluence. The site contains a two-story rubble stone house constructed by Clapham in
- 12 1757, in addition to a timber constructed barn, log kitchen, and a log smokehouse (VDHR n.d.). The
- 13 property was listed on the National Register of Historic Places in 1997.

#### 14 PARK OPERATIONS

- 15 The National Park Service is responsible for maintaining the entire length of Chesapeake and Ohio Canal
- 16 National Historical Park. The park has designated access points that serve maintenance, law enforcement,
- 17 river rescue, emergency medical, interpretive ranger, and other support staff. Currently, the park has an
- 18 annual operations and maintenance budget of \$7.8 million, with little if any increase projected for the
- 19 future. There are 105 full-time-equivalent park employees, including maintenance personnel.
- 20 Appropriate district maintenance staff conduct routine maintenance and storm cleanup of park facilities.
- 21 Designated lawn areas are mowed, and park staff and visitor facilities maintained. Boat ramps and other
- facilities along the river are frequently closed due to storms and high-water events. The ramps remain
- 23 closed until they have been cleared and/or repaired.

#### 24 PUBLIC HEALTH AND SAFETY

- 25 The Chesapeake and Ohio Canal National Historical Park is responsible for maintaining safe conditions
- 26 for the health and protection of park visitors and its employees. This not only applies to providing safe
- 27 facilities, utilities, and grounds within the park, but also includes NPS program and project operations.

#### 28 **Point of Rocks**

- 29 Concerns at the Point of Rocks site result from the physical location of the boat ramp and parking area as
- 30 well as from the poor condition of the boat ramp. The boat ramp, under the U.S. Highway 15 bridge, is
- not visible, making it easy for questionable activity (e.g., applying graffiti) to go unnoticed. Also, the
- 32 ramp is located immediately upstream of a rock ledge that poses a navigational hazard to boaters. The
- 33 location of the spillover visitor parking area at the nearby rail station causes those who park there to cross
- 34 the railroad tracks to access the recreation areas. The boat ramp is steep, making boat launching difficult,
- and the sediment around the ramp has been scoured, creating steep drop-offs.

#### 36 Brunswick

- The existing public health and safety conditions at the Brunswick boat ramp are generally good, although some maintenance with regard to scouring along the banks is needed.
- 39 **Fifteenmile Creek**
- 40 At the Fifteenmile Creek boat ramp, emergency access to the towpath is often blocked by parked vehicles,
- 41 and vehicles that are left overnight are subject to damage from high-water events. The boat ramp itself is
- 42 steep, making boat launching difficult, and park visitors are using unstable, makeshift launch sites.

- 1 Pedestrian access between the campground and boat ramp, by way of social trails over steep inclines, also
- 2 creates a safety hazard.

#### 3 Monocacy Aqueduct

- 4 During the ongoing stabilization project at Monocacy Aqueduct (scheduled for completion in the spring
- 5 of 2005), visitors are exposed to public health and safety hazards inherent in a construction zone. Heavy
- 6 trucks and machinery employed by the stabilization project routinely travel on designated access roads
- 7 and a portion of the towpath. The construction zone is fenced, and signs have been posted warning
- 8 visitors of the potential danger. On completion of the stabilization project, associated public health and
- 9 safety issues would no longer exist.

#### 10 VISITOR USE AND EXPERIENCE

- 11 Chesapeake and Ohio Canal National Historical Park annually hosts millions of visitors who come to the
- 12 19,586 acres of parkland to hike, bike, ride horses, boat, fish, camp, observe wildlife, to study 19th-
- 13 century canal-building technology, and also to reflect on social and economic history, military activities,
- 14 the Underground Railroad, and native peoples. The park, paralleling the Potomac River from
- 15 Washington, D.C., to Cumberland, Maryland, provides easy access for daily users and overnight campers.
- 16 Park amenities include interpretive centers, boat ramps, campgrounds, picnic tables, and parking areas.
- 17 Although the park is open year-round, over 70 percent of visitation occurs between April and October
- 18 (NPS 2005).

#### 19 **Point of Rocks**

- 20 Point of Rocks is a popular day-use area for residents of Frederick County, Maryland, and Loudon
- 21 County, Virginia. No visitation data for the Point of Rocks site were available. It is located along a
- 22 major highway (U.S. Highway 15) and within 20 miles of an interstate highway (I-70). This access point
- 23 offers anglers the opportunity to launch boats and enjoy the Potomac River. Fishing is permitted from the
- shoreline, with an appropriate state license. Many anglers choose to walk the towpath to access favorite
- 25 fishing holes.
- 26 The towpath provides a gravel pathway for hikers and bikers and a safe riding environment for
- equestrians. Many of the visitors to this area come to study the historic aspects of the canal and its
- 28 operation, while others are through-hikers or bikers using the overnight campground on a first-come, first-
- 29 served basis.
- 30 Visitor use and experience in this area is characterized by insufficient vehicle parking, questionable
- 31 activity that occurs underneath the U.S. Highway 15 bridge, poor boat ramp conditions, and navigation
- 32 difficulties associated with a nearby, submerged rock ledge.

#### 33 Brunswick

- The Brunswick boat ramp area hosted approximately 16,000 visitors in 2003 (NPS 2004b). The boat
- 35 ramp offers a convenient access point to the river and, of the three boat ramp facilities discussed in this
- 36 environmental assessment, is in the best physical condition. Opportunities in this area include
- 37 recreational use of the towpath, interpretation of the canal and historic waste weir, and fishing. Current
- 38 visitor use and experience at Brunswick is slightly diminished due to the poorly designed boat ramp
- 39 access road, congested vehicle parking area, and the steep boat ramp. Vegetation growing in the canal
- 40 prism between Lock 30 and Maple Avenue also inhibits interpretation of the canal.

#### 1 Fifteenmile Creek

- 2 Approximately 45,000 people visit the Fifteenmile Creek boat ramp area each year (NPS 2004b). Use of
- 3 this area includes pedestrian and bicycle traffic on the towpath, day use of the boat ramp, fishing, and
- 4 overnight camping. The Fifteenmile Creek boat ramp also serves as the put-in/take-out point for public
- 5 and commercial canoe and raft trips. Currently, the quality of visitor use and experience is slightly
- 6 degraded due to inadequate and confusing vehicle parking facilities, the inability to launch deeper-draft
- 7 boats, and the continual impacts to natural resources resulting from encroachment by park visitors.

#### 8 Monocacy Aqueduct

- 9 Over the past few years visitation to Monocacy Aqueduct and its associated boat ramp has fluctuated
- 10 between 28,000 and 38,000 visitors per year as measured by park traffic counts. Use of this area includes
- 11 pedestrian and bicycle traffic on the towpath, historical interpretation of the Monocacy Aqueduct, and
- 12 fishing in the Monocacy River. The boat ramp, located just upstream from the project site (not affected
- 13 by the proposed action), is also a launching point for small vessels. Presence of the existing parking lot
- 14 within the viewshed of the aqueduct and the overgrowth of trees within the canal basin detract from the
- 15 historical landscape and degrade the visitor experience.

16

#### ENVIRONMENTAL CONSEQUENCES

#### 2 **INTRODUCTION**

1

This section describes the environmental consequences associated with the alternatives. It is organized by impact topics, allowing a standardized comparison among alternatives based on issues. Consistent with the National Environmental Policy Act, the analysis also considers the context, intensity, and duration of impacts; direct and indirect impacts; cumulative impacts; and mitigation measures. National Park Service policy also requires that "impairment" of appropriate resources be evaluated in all environmental documents.

#### 9 **METHODOLOGY**

#### 10 General Evaluation Methodology

For each impact topic, the analysis includes an evaluation of the effects of implementing each alternative. These impact analyses are based on information provided by park staff, relevant references and technical literature, and subject matter experts. The impact analyses involve the following steps:

- Define issues of concern, based on internal and external scoping.
- Identify the geographic area that could be affected.
- Define the resources within that area that could be affected.
- Impose the action on the resources within the area of potential effect.
- Identify the effects caused by the alternative compared to the baseline represented by the
   No Action Alternative to determine the relative change in resource conditions.
- 21 The effects are characterized based on the following factors:
- Whether the effect would be beneficial or adverse.
- The intensity of the effect: negligible, minor, moderate, or major. Impact-topic-specific
   thresholds for each of these classifications are provided in Table 16. Threshold values
   were developed based on federal and state standards, consultation with regulators from
   applicable agencies, and discussions with experts.
- Duration of the effect: either short term or long term. Impact-topic-specific definitions of
   these terms are provided in the tables that precede each analysis.
- Whether the effect would be a direct result of the action or would occur indirectly because of a change to another resource or impact topic. An example of an indirect impact would be increased mortality of an aquatic species that would occur because an alternative would increase soil erosion, which would reduce water quality.
- Determine whether impairment would occur to resources and values that are considered
   necessary and appropriate to fulfill the purposes of Chesapeake and Ohio Canal National
   Historical Park.
- Determine cumulative effects by evaluating the effect of a particular alternative in conjunction with the past, current, or foreseeable future actions for Chesapeake and Ohio
   Canal National Historical Park.

Impact Topic		Impact Threshold Definition			
	Negligible	Minor	Moderate	Major	-
Soils	Soils would not be affected, or the effects on soils would be below or at levels of detection. Any effects on soil productivity or fertility would be slight	The effects on soils would be detectable, but effects on soil productivity or fertility would be small. If mitigation is needed to offset adverse effects, it	The effect on soil productivity or fertility would be readily apparent and would result in a change to the soil character over a relatively wide area.	The effect on soil productivity or fertility would be readily apparent and would substantially change the character of the soils over a large area in and	Short-term – Effects occur only during project implementation activities. Recovery takes less than one year.
	and would return to normal shortly after completion of project activities.	would be relatively simple to implement and would likely be successful.	Mitigation measures to offset adverse effects would be needed, and would be somewhat complex, but their success would be likely.	out of the park. Mitigation measures to offset adverse effects would be needed, and their success would not be assured.	Long-term – Effects extend beyond project implementation activities. Recovery takes more than one year.
Vegetation	Individual native plants may occasionally be affected, but measurable or	Effects on native plants would be measurable or perceptible, but would be localized within a	A change would occur to the native plant community over a relatively large area that	Effects on native plant communities would be readily apparent and would substantially	Short-term – Recovers in less than one year.
	perceptible changes in plant community size, integrity, composition, or continuity would not occur.	small area. The viability of the plant community would not be affected, and the community, if left alone, would recover.	would be readily measurable in terms of abundance, distribution, species composition, quantity, or quality. Mitigation measures to offset or minimize adverse effects would be necessary and would likely be successful.	change vegetative community types over a large area, in and outside the park. Extensive mitigation would be necessary to offset adverse effects, and their success would not be assured.	Long-term – Takes more than one year to recover.

Impact Topic		Duration			
	Negligible	Minor	Moderate	Major	-
Wildlife	Wildlife and their habitats would not be affected, or the effects would be at or below the level of detection and would not be measurable or of perceptible consequence to wildlife populations.	Effects on wildlife or habitats would be measurable or perceptible, but local. While individual animal mortalities might occur, the viability of wildlife populations would not be affected, and the community, if left alone, would recover.	A change in wildlife populations or habitats would occur over a relatively large area. The change would be readily measurable in terms of abundance, distribution, or reproduction parameters such as fecundity or recruitment. Mitigation measures would be necessary to offset adverse effects and would likely be successful.	Effects on wildlife populations or habitats would be readily apparent, and would substantially change wildlife populations over a large area in and out of the park. Extensive mitigation would be needed to offset adverse effects, and the success of mitigation measures could not be assured.	Short-term – Habitat or population recovers in less than one year after project completion. Long-term – Habitat or population takes more than one year to recover after project is complete.
Endangered and	<i>No effect</i> : Actions	effect: ActionsMay affect / Not likelyuld not affect listedto adversely affect:protected species orEffects on special statussignated criticalspecies or designatedoitat.critical habitat would bediscountable (i.e.,adverse effects areunlikely to occur orcould not bemeaningfully measured,datacted, or avaluated)	May affect / Likely to adversely affect: Adverse effects on a listed species or designated critical habitat might occur as a direct or indirect result of the proposed action, and the effect would be neither discountable nor completely beneficial.	Likely to jeopardize the continued existence of a species / Adversely modify critical habitat: Effects could jeopardize the continued existence of a listed or proposed species or adversely modify designated critical habitat within and/or outside the park	Plants
(Note: Section 7 of the	or protected species or designated critical				Short-term – Recovers in less than one year.
Endangered Species Act requires use of the indicated specific wording [ <i>in italics</i> ] when quantifying potential effects on listed species.)	habitat.				Long-term – Takes more than one year to recover.
					Animals
		or would be entirely beneficial.	species would result in a changed distribution or local population decline due to reduced	boundaries. Major impacts would involve a disruption of habitat and breeding grounds	Short-term – Recovers in less than one year.

Impact Topic	Impact Threshold Definition				Duration
	Negligible	Minor	Moderate	Major	-
			survivorship or recruitment; no direct casualty or mortality would occur.	of a protected species such that direct casualty or mortality would result in individual mortalities and risk of extirpation/extinction.	Long-term – Takes more than one year to recover.
Water quality and hydrology	Impacts would not be detectable. Water quality parameters would be well within all water quality standards for the designated use of the water. Quality and quantity of flows would be within historical conditions.	Impacts would be measurable, but water quality parameters would be well within all water quality standards for the designated use. Quality and quantity of flows would be within the range of historical conditions, but measurable changes from normal flows could occur. State water quality and antidegradation policy would not be violated.	Changes in water quality or hydrology would be readily apparent, but water quality parameters would be within all water quality standards for the designated use. Water quality or flows would be outside historic baselines on a limited time and space basis. Mitigation would be necessary to offset adverse effects and would likely be successful. State water quality and antidegradation policy would not be violated.	Changes in water quality or hydrology would be readily measurable, and some quality parameters would periodically be approached, equaled, or exceeded. Flows would be outside the range of historic conditions and could include flow cessation or flooding. Extensive mitigation measures would be necessary, and their success would not be assured. State water quality regulations and antidegradation policy may be violated.	Short-term – Following implementation activities, recovery would take less than one year. Long-term – Following implementation activities, recovery would take longer than one year.

Impact Topic	Impact Threshold Definition				Duration
	Negligible	Minor	Moderate	Major	-
Wetlands and floodplains	Wetlands or floodplains would not be affected, or effects on the resource would be below or at the lower levels of	The effects on wetlands or floodplains would be detectable and relatively small in terms of area and the nature of the change AUS	The alternative would result in effects on wetlands or floodplains that would be readily apparent, including effects on wetland	Effects on wetlands or floodplains would be observable over a relatively large area and would require a U.S. Army Corps of	Short-term – Following treatment, recovery would take less than one year.
	detection. No long- term effects on wetlands or floodplains would occur, and any detectable effects would be slight. No U.S. Army Corps of Engineers 404 permit would be necessary.	Army Corps of Engineers 404 permit would not be required.	vegetation, such that a U.S. Army Corps of Engineers 404 permit could be required.	Engineers 404 permit. The character of the wetland or floodplain would be substantially changed.	Long-term – Following treatment, recovery would take longer than one year.
Cultural resources	The effect would be at the lowest levels of detection – barely perceptible and not measurable.	For archeological resources, the impact would affect an archeological site(s) with modest data potential and no significant ties to a living community's cultural identity. The impact would not affect the character defining	For archeological resources, the action would affect an archeological site(s) with high data potential and no significant ties to a living community's cultural identity. For a NRHP-eligible or listed structure, district, or cultural landscape_the	For archeological resources, the action would affect an archeological site(s) with exceptional data potential or that has significant ties to a living community's cultural identity. For a NRHP-eligible or listed structure district or	Short-term – Effects on the natural elements of a cultural landscape may be comparatively short-term (e.g., three to five years) until new vegetation grows or historic plantings are restored.
		features of a NRHP- eligible or listed structure, district, or cultural landscape.	action would change a character-defining feature(s) of the resource but would not diminish the integrity of the	cultural landscape, the action would change a character-defining feature(s) of the resource, diminishing	Long-term – Because most cultural resources are non-renewable, any effects on archeological, historic,

Impact Topic	Impact Threshold Definition				Duration
	Negligible	Minor	Moderate	Major	-
			resource to the extent that its NRHP-eligibility would be jeopardized.	the integrity of the resource to the extent that it would no longer be eligible for listing in the National Register.	or ethnographic resources, and on most elements of a cultural landscape, would be long-term.
Public health and safety	Public health and safety would not be affected, or the effects would be at low levels of detection and would not have an appreciable effect on public health or safety.	The effect would be detectable, but would not have an appreciable effect on public health and safety. If mitigation were needed, it would be relatively simple and likely successful.	The effects would be readily apparent, and would result in substantial, noticeable effects on public health and safety on a local scale. Changes in disease rates or injury could be measured. Mitigation measures would probably be necessary and would likely be successful.	The effects would be readily apparent and would result in substantial, noticeable effects on public health and safety on a regional scale. Changes could lead to mortality. Extensive mitigation measures would be needed, and their success would not be guaranteed.	Short-term – Effects would occur only during project implementation activities. Long-term – Effects would extend beyond project implementation activities.
Visitor use and experience	Visitors would not be affected, or changes in visitor use and/or experience would be below or at the level of detection. Visitors would not likely be aware of any effects associated with the alternative.	Changes in visitor use and/or experience would be detectable, although the changes would be slight. Visitors would be aware of some effects associated with the alternative, but the effects would be slight.	Changes in visitor use and/or experience would be readily apparent. Visitors would be aware of the effects associated with the alternative and would likely be able to express an opinion about the changes.	Changes in visitor use and/or experience would be readily apparent and have important consequences. Visitors would be aware of effects associated with the alternative and would likely express a strong opinion about the changes.	Short-term – Effects would occur only during project implementation activities. Long-term – Effects would extend beyond project implementation activities.

Impact Topic	Impact Threshold Definition				Duration
	Negligible	Minor	Moderate	Major	
Park operations	Park operations would not be affected, or the effect would be at or below the lower levels of detection and would not have an appreciable effect on park operations.	The effect would be detectable but would be of a magnitude that would not have an appreciable adverse or beneficial effect on park operations. If mitigation were needed to offset adverse effects, it would be relatively simple and likely successful.	The effects would be readily apparent and would result in a substantial change in park operations noticeable to staff and the public. Mitigation measures would probably be necessary to offset adverse effects and would likely be successful.	The effects would be readily apparent and would result in a substantial change in park operations noticeable to staff and the public and markedly different from existing operations. Mitigation measures to offset adverse effects would be necessary and extensive, and their success could not be guaranteed.	Short-term – Effects would occur only during project implementation activities. Long-term – Effects would extend beyond project implementation activities.

#### 1 GUIDING REGULATIONS AND POLICIES

2 Table 17 summarizes the regulations and policies that were considered in the analysis of impacts

associated with each alternative. The table includes key regulations or policies for each impact topic that
 was retained for analysis.

Impact Topic	Relevant Regulations or Policies
Soils	NPS Management Policies 2001
Vegetation	NPS <i>Management Policies 2001</i> ; Executive Order 13112, Invasive Species; Federal Noxious Weed Act of 1974
Wildlife	NPS <i>Management Policies 2001</i> ; Fish and Wildlife Coordination Act; Migratory Bird Treaty Act
Endangered and threatened species	NPS <i>Management Policies 2001;</i> Endangered Species Act of 1973; Bald and Golden Eagle Protection Act
Water quality	NPS <i>Management Policies 2001;</i> Clean Water Act; Executive Order 12088; Executive Order 11990
Wetlands and floodplains	NPS <i>Management Policies 2001;</i> Executive Order 11990; Clean Water Act Section 404; Director's Order #77-1 and 77-2; Executive Order 11988
Cultural resources	NPS <i>Management Policies 2001;</i> National Historic Preservation Act; 36 CFR 800 and 36 CFR 68; American Antiquities Act; Archaeological Resources Protection Act; Archaeological and Historic Preservation Act; National Environmental Policy Act; Executive Order 11593; Executive Order 13007; Executive Order 13175; Director's Order 28; Native American Graves Protection and Repatriation Act
Public health and safety	NPS <i>Management Policies 2001</i> ; American Association of State Highway and Transportation Officials (AASHTO) Design Guidelines
Visitor use and experience	Organic Act 1916; NPS Management Policies 2001
Park operations	NPS Management Policies 2001

#### **TABLE 17: IMPACT TOPICS RETAINED FOR ANALYSIS**

#### 5 Methodology for Assessing Impacts

6 Potential impacts are described in terms of type (beneficial or adverse), context (site-specific, local, or

7 even regional), duration (short-term, long-term, or permanent), and intensity (negligible, minor, moderate,

8 or major). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic,

9 intensity definitions are provided separately for each impact topic analyzed in this environmental

10 assessment; these are summarized in Table 16.

11 The Council on Environmental Quality (CEQ) regulations, which implement the National Environmental

12 Policy Act of 1969 (42 USC 4321 et seq.), require assessment of cumulative impacts in the decision-

13 making process for federal projects. Cumulative impacts are defined as "the impact on the environment

14 which results from the incremental impact of the action when added to other past, present, and reasonably

15 foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such

16 other actions" (40 Code of Federal Regulations 1508.7). Cumulative impacts are considered for the no

17 action and action alternatives.

- 1 Cumulative impacts are determined by combining the impacts of the proposed actions with other past,
- 2 present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other ongoing
- 3 or reasonably foreseeable future projects at or adjacent to the project locations in Chesapeake and Ohio
- 4 Canal National Historical Park.
- 5 In this environmental assessment, impacts on archeological resources, structures, and cultural landscapes
- 6 are described in terms of type, context, duration, and intensity, consistent with the regulations of the
- 7 Council on Environmental Quality. In accordance with the Advisory Council on Historic Preservation's
- 8 regulations implementing \$106 of the National Historic Preservation Act (36 Code of Federal Regulations
- 9 Part 800, Protection of Historic Properties), impacts on archeological resources, structures, and cultural
- 10 landscapes were identified and evaluated by: (1) determining the area of potential effect; (2) identifying
- cultural resources in the area of potential effect that are either listed in or eligible to be listed in the
   National Register of Historic Places; (3) applying the criteria of adverse effect on affected cultural
- resources either listed in or eligible to be listed in the National Register; and (4) considering ways to
- 14 avoid, minimize, or mitigate adverse effects.
- 15 Under the Advisory Council's regulations, a determination of either adverse effect or no adverse effect
- 16 must also be made for affected, National Register-eligible, cultural resources. An adverse effect occurs
- 17 whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it
- 18 for inclusion in the National Register. For example, diminishing the integrity of the resource's location,
- 19 design, setting, materials, workmanship, feeling, or association would represent an adverse effect.
- 20 Adverse effects also include reasonably foreseeable effects caused by the preferred alternative that would
- 21 occur later in time, be farther removed in distance, or be cumulative (36 Code of Federal Regulations
- 22 800.5, Assessment of Adverse Effects). A determination of no adverse effect means that there may be an
- effect, but the effect would not diminish in any way the characteristics of the cultural resource that qualify
- 24 it for inclusion in the National Register.
- 25 CEQ regulations and the National Park Service's Director's Order #12: Conservation Planning,
- 26 Environmental Impact Analysis and Decision Making also call for a discussion of the appropriateness of
- 27 mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a
- 28 potential impact (e.g., reducing the intensity of an impact from major to moderate or minor) (NPS 2001).
- Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the
- 30 effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the
- 31 level of effect as defined by \$106 is similarly reduced. Cultural resources are non-renewable resources,
- 32 and adverse effects generally consume, diminish, or destroy the original historic materials or form,
- resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions
- 34 determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse.

### 35 Cumulative Impact Scenario

- 36 To determine potential cumulative impacts, projects in the park were identified. Cumulative actions are
- 37 evaluated in conjunction with the impacts of each alternative to determine if there would be additive
- 38 effects on a particular resource, on park values, and on park uses.
- 39 Actions by other agencies taking place in the area of each project location could contribute to cumulative
- 40 effects of the proposed project. Such actions specific to each location are considered as part of the
- 41 cumulative effects evaluation for the resource topics addressed in this impact analysis. Actions that may
- 42 incrementally affect the project are described in "Relationship to Other Projects and Planning," and
- 43 include the following:

#### 1 **Point of Rocks**

- 2 Rail Station Improvements
- 3 Community Park
  - Pivot Bridge Deck Replacement

#### 5 Brunswick

4

- 6 State of Maryland and CSX Barrier Trench
- 7 Town of Brunswick Utility Line Upgrade

#### 8 Fifteenmile Creek

• No other plans or projects would contribute to cumulative impacts.

#### 10 Monocacy Aqueduct

11 • Monocacy Aqueduct Stabilization Project

### 12 Impairment of Park Resources or Values

13 National Park Service *Management Policies 2001* (NPS 2000) requires analysis of potential effects to

14 determine whether or not actions would impair park resources or values. Impairment, which is prohibited

by the Organic Act, is an impact that "would harm the integrity of park resources or values, including

16 opportunities that otherwise would be present for the enjoyment of those resources or values." The

determination whether an impact meets this definition of impairment depends on the resource(s) affected;
the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the

19 cumulative effects of the impact in conjunction with other impacts.

An impact on any park resource may constitute impairment, but an impact would be more likely to result in impairment if it affects a resource or value whose conservation is:

- Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or
- Identified as a goal in the park's general management plan or other relevant NPS planning documents.
- 27 None of the alternatives evaluated in this environmental assessment would produce major adverse

28 impacts or impairment of park resources or values that match the above criteria. A determination on

29 impairment is included in the impact analysis section for each impact topic relating to park resources and

30 values.

31

#### 1 SOILS

#### 2 Impacts of Alternative A – No Action / Continue Current Management

3 This section provides details on the effects on soils at the Point of Rocks, Brunswick, Fifteenmile Creek,

4 and Monocacy Aqueduct locations under Alternative A. These facilities would remain unaltered in form

5 and function. Maintenance and repair would continue to be performed on an as-needed basis. The public

6 would have year-round access to these facilities, pending accessibility during periods of high or low river

7 levels.

#### 8 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

9 Under continuation of existing management, the paved and unpaved surfaces (access roads, parking lots,

- 10 and boat ramps) would continue to deteriorate with rutting, settling, and cracking of surfaces. This
- 11 continued deterioration of roads and parking areas provides a continuous source of detritus that is
- 12 deposited in drainage ways along the road and parking lot rights of way and boat ramps, further inhibiting
- 13 flows and causing surface water to pond. New sub-base material would be continually added to potholes
- 14 and ruts in and along the roadways, parking lots, and boat ramps, adding additional materials to the waste
- 15 stream. The use of chip-and-seal coating and asphalt patching of paved surfaces along with bits of
- 16 crumbled asphalt would lead to an increased loading of petroleum hydrocarbons in underlying soils. The
- 17 use of road maintenance equipment can also lead to limited soil compaction and stressing of vegetation
- 18 during operation and staging along the roadway during maintenance activities.
- 19 Continued parking lot congestion and boat ramp deterioration would lead to improper boat ramp access
- 20 elsewhere and would contribute to further stressing of vegetation and increased soil compaction and
- 21 erosion in undesignated parking and boat ramp areas. A lack of defined parking areas at the parking lots
- 22 would also lead to an expansion of the parking lots and to an increasingly larger affected area.
- 23 Unauthorized social trailing from the existing campgrounds and parking lots would continue to stress
- 24 vegetation and erode soil along unprotected slopes. Scouring around the boat ramps would continue and
- 25 would further expose the base of the boat ramps. At Fifteenmile Creek, sedimentation at the confluence
- 26 with the Potomac River would continue to impede navigation.
- 27 The No Action Alternative impacts described above would result in negligible-to-minor, long-term,
- adverse effects on soil resources at the four proposed project areas.

### 29 Cumulative Effects

- 30 Alternative A would contribute negligible-to-minor, long-term, adverse effects on the soil resources in
- 31 Chesapeake and Ohio Canal National Historical Park. Effects of proposed construction activities at Point
- 32 of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct include soil disturbance (cut and fill)
- and compaction. Proposed projects contributing to the overall cumulative impacts include rail station
- 34 improvements at Point of Rocks (including enlarging the existing parking area, constructing a community
- 35 park across from the Point of Rocks pivot bridge, and replacing the deck of that bridge) and an upgrade of
- 36 the Brunswick utility line at Brunswick.
- 37 In 2003, the state of Maryland and CSX constructed a barrier trench at Brunswick downstream of the boat
- ramp to stop the migration of petroleum pollutants toward the river. Construction of this trench also
- 39 included disturbance and compaction of the surrounding soils. Soils in the access road, parking lot, and
- 40 boat ramp right of ways are occasionally affected by routine maintenance and weed management.
- 41 Disturbance occurs for repair of pavement, road grade, road signs, guardrails, bridge abutments, and
- 42 drainage basins, although these sites are rehabilitated and revegetated. Alternative A would contribute
- 43 negligible-to-minor adverse effects to the cumulative impacts on soils, but the overall long-term effect of
- 44 all the associated projects would have negligible-to-minor, beneficial cumulative impacts on soils.

#### 1 Conclusion

- 2 Alternative A would produce negligible-to-minor, long-term, adverse effects on soils at the Point of
- 3 Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct areas. These effects would result from
- 4 the continued effects of road and parking lot detritus sedimentation, soil compaction from maintenance
- 5 vehicle staging and use, soil compaction from vehicle parking and unloading of boats in unauthorized
- 6 areas, hydrocarbon loading in soil and in ground and surface water, soil scouring around the boat ramps,
- 7 and erosion from unauthorized social trailing. Alternative A would contribute negligible-to-minor
- 8 adverse effects to the cumulative impacts on soils, but the overall long-term effect of all the associated
- 9 projects would have negligible-to-minor, beneficial cumulative impacts on soils. There would be no
- 10 impairment of soil resources or values at Chesapeake and Ohio Canal National Historical Park as a result
- 11 of the implementation of Alternative A.

#### 12 Impacts of Alternative B – Minimal Development to Improve Visitor Access

- 13 Under Alternative B, the boat ramps at Point of Rocks, Brunswick, and Fifteenmile Creek would be
- 14 rehabilitated. In each case, the slope of the ramp would be decreased to improve access and ease of use.
- 15 Rip rap or other scour protection would be installed around the boat ramp to minimize scouring at the
- base. With implementation of mitigation measures and the use of best management practices during
- 17 construction and rehabilitation to reduce erosion and sedimentation into the stream and river channels, the
- 18 impacts on soils would be short term and negligible. The parking areas would be redesigned to better
- 19 accommodate vehicles and trailers and to clear up congestion. Storm water management would be
- 20 employed to mitigate increased runoff associated with the increased area of impervious surfaces. At each
- 21 location, temporary parking for construction workers and staging areas for construction equipment would
- be necessary for the duration of each project and would have potential short-term, negligible, adverse
- 23 effects on soils in designated areas. The disturbed areas would be reclaimed and replanted after project
- 24 completion.

#### 25 **Point of Rocks**

- 26 In addition to boat ramp rehabilitation described above, under Alternative B, the Point of Rocks existing
- 27 parking area and Canal Road would be resurfaced. Resurfacing the parking area would entail grading,
- compacting, and stabilizing the existing gravel surface with asphalt. Canal Road would be repaired as
- 29 needed and paved. Impacts resulting from resurfacing roads would be the same as those discussed above
- 30 under Alternative A.
- Additionally, a new parking lot totaling 7,800 square feet would be constructed on either side of Canal
- 32 Road, west of the boat ramp. The resurfacing of the roadway and development of the parking lot would
- have a long-term, minor, adverse effect on the underlying soils from compaction and loss of soils.
- 34 A new day-use picnic area would also be created in the area surrounding the new parking lot, which
- 35 would require compacting soils in a small area at this location, resulting in long-term, negligible, adverse
- 36 effects. A small path connecting the towpath and new parking and picnic areas would be added to
- 37 prevent social trailing. This would reduce soil disturbance and compaction away from designated use
- areas and would offset some of the adverse effects of development in this area.

#### 39 Brunswick

- 40 In addition to boat ramp rehabilitation, the existing paved parking lot at Brunswick would be expanded by
- 41 approximately one-tenth of an acre. The proposed expansion area is currently maintained grass; paving it
- 42 would cause a long-term, moderate, but local adverse impact to the underlying soil. The existing boat
- 43 ramp access road would be rehabilitated and resurfaced. This would lead to a short-term, minor, adverse

- 1 disturbance to the underlying road sub-base and adjacent native soils similar to the effects described
- 2 above under Alternative A.

#### 3 Fifteenmile Creek

- 4 At Fifteenmile Creek, the boat ramp and parking area would be stabilized and brought back to correct
- 5 elevation and grade. This would include the installation of 230 linear feet of gabion retaining wall, set
- 6 back from the existing shoreline. The area behind the wall would be backfilled with earthen fill to the
- 7 appropriate elevation. Short-term disturbance of underlying soils during construction of the gabion wall
- 8 would occur, but establishment of the wall would produce long-term, negligible, beneficial effects by
- 9 enhancing riverbank stabilization. Biennial dredging of Fifteenmile Creek downstream of the boat ramp
- 10 would produce short-term, adverse effects on river sediments during dredging operations.
- 11 Under this alternative, a 16,200-square-foot parking area would be created, and an additional 1,584 square
- 12 feet of visitor parking would be created along the emergency and maintenance access road. Development
- 13 of paved parking areas in this location would lead to long-term, minor, adverse disturbance to the
- 14 underlying soil due to compaction and loss of soils. With development of designated parking areas,
- 15 vehicle encroachment into areas along the river that results in soil compaction and erosion in sensitive
- 16 areas would be eliminated. The elimination of vehicle access to this area along the riverbank would be a
- 17 minor, long-term benefit to soils.
- 18 The boat ramp access road would be engineered to provide better drainage. Road shoulders would be re-
- 19 established and matched to the existing surface and drainage, which would potentially disturb native soils.
- 20 The road would be paved with asphalt from the wooden bridge, across the canal prism, to the boat ramp
- 21 parking lot. A total of 352 linear feet of roadway would receive this treatment, leading to long-term,
- 22 negligible, adverse disturbance to the underlying soils.
- A new timber guardrail would be installed along the edge of the access roadway to prevent unauthorized
- 24 parking and resulting soil compaction. A total of 457 linear feet of new timber guardrail would be
- 25 installed along the access road and parking lot perimeter. Long-term, negligible, adverse disturbance to
- the underlying soils would occur as a result of setting the guardrail posts. Some of this adverse effect
- would be offset as a result of removal and reclamation of approximately 140 linear feet of existing
- 28 guardrail.
- Additionally, a wooden stairway would be installed to connect the boat ramp area with the campground
- 30 and parking lot areas. This would eliminate the small area of existing social trails and would minimize
- 31 soil compaction and erosion, leading to long-term, negligible, beneficial effects on the underlying soils.
- 32 The unused, pre-1988 boat ramp would be removed, and the area would be rehabilitated and planted with
- 33 native plant species that would stabilize soils in that area, resulting in a long-term, negligible, beneficial
- 34 effect on the underlying soils.

#### 35 Monocacy Aqueduct

- 36 Under Alternative B, approximately 140 trees would be removed from the 0.82-acre canal basin. The
- 37 root system of these trees would remain in place and would continue to stabilize soils in this area long
- after it has been revegetated. The loss of trees would have a local, minor adverse effect on soils in the
- 39 basin.
- 40 A new 8,350-square-foot gravel parking lot would be constructed in a previously disturbed area currently
- 41 occupied by a temporary parking lot and stockpile area. The proposed parking lot site would require only
- 42 minor grading. Creation and use of the new lot would result in the compaction of soils in a very small
- 43 area and would be considered a negligible, local, long-term, adverse effect.

- 1 To offset the effect of creating a new parking lot, the area occupied by the existing 10,000-square-foot
- 2 paved parking lot would be reclaimed. A portion used for two gravel service roads, one connecting the
- 3 parking lot and the towpath, the other running down to the Monocacy River, and the remainder of the
- 4 parking lot would be reseeded in grass. The soils underlying the gravel service roads would continue to
- 5 be compacted by pedestrian, bicycle, and automobile traffic, but the reseeded area would be stabilized and
- 6 brought back into productivity, resulting in a long-term, negligible, local beneficial effect on soils.

#### 7 Cumulative Effects

- 8 Alternative B would contribute to the cumulative effects on soils in a negligible-to-minor, adverse manner
- 9 as a result of construction activities and facility development. Other construction-related projects that
- 10 have recently occurred or are proposed at or near Point of Rocks, Brunswick, and Monocacy Aqueduct
- 11 would result in additional soil disturbance (cut and fill) and compaction. The proposed projects include
- 12 rail station improvements at Point of Rocks, including enlargement of the existing parking area;
- 13 construction of a community park across from the Point of Rocks pivot bridge; deck replacement of the
- Point of Rocks pivot bridge; upgrade of the Brunswick utility line; and the stabilization project at
- 15 Monocacy Aqueduct. In 2003, the state of Maryland and CSX constructed a barrier trench at Brunswick
- 16 downstream of the boat ramp to stop the migration of petroleum pollutants toward the river. These
- 17 projects involve the long-term loss and compaction of soils with the development of impervious surfaces,
- 18 and potential for erosion during construction activity. At each site within the project area, the actions
- 19 taken would result in negligible-to-minor, localized adverse impacts on soil resources. These actions in
- 20 combination with activities identified above occurring in the park or on adjacent lands would have minor,
- 21 long-term, adverse cumulative effects on soil resources.

#### 22 Conclusion

- 23 Under Alternative B, construction activities that would compact soils or increase erosion during periods
- of activity would produce local, adverse, negligible-to-minor, short-term effects on soils at the Point of
- 25 Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct areas. Rehabilitation of the three boat
- ramps, with implementation of mitigation measures, would result in negligible loss of soils. Development
- 27 of parking areas, resurfacing roads, and building picnic areas would cause compaction and loss of soils,
- resulting in long-term, minor, adverse effects on soils. Development of designated parking areas and
- trails within these locations, however, would reduce vehicular access in sensitive areas and social trailing
- that causes erosion and compaction of soils, and would therefore have long-term, negligible, beneficial
- 31 effects on soil resources. At Fifteenmile Creek, installation of a gabion wall to stabilize the riverbank
- 32 would have long-term, negligible, beneficial effects. Biennial dredging in the channel at Fifteenmile 33 Creek would have short-term, minor, adverse effects on river sediments during dredging operations.
- Creek would have short-term, minor, adverse effects on river sediments during dredging operations.
- There would be no impairment of soil resources or values at Chesapeake and Ohio Canal NationalHistorical Park as a result of the implementation of Alternative B.

# Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred Alternative

- 38 Temporary parking for construction workers and staging areas for construction equipment would be
- 39 necessary at each project site for the duration of each project, causing potential short-term, adverse effects
- 40 on soils in designated areas. The disturbed areas would be reclaimed and replanted after completion of
- 41 work.

#### 1 **Point of Rocks**

- 2 The existing boat ramp would be removed and a new ramp would be constructed downstream, resulting in
- 3 the loss of soils as the area would be paved. Erosion into the surrounding environment, however, would
- 4 be minimal with implementation of mitigation measures and best management practices to prevent soil
- 5 movement. The existing boat ramp at Point of Rocks would be demolished and the underlying soils
- 6 rehabilitated. Rip rap or other scour protection would be set in place in the area of the existing boat ramp
- 7 to stabilize the banks and prevent erosion from the newly disturbed area. The area occupied by the
- 8 existing boat ramp, associated parking, and access road would be reclaimed and revegetated with native
- 9 species that would result in stabilization of soils in the area. This would be a long-term, minor benefit to
- 10 soil resources in the area.
- 11 Under this alternative, two new parking areas would be developed to facilitate visitor use of the area. A
- 12 new concrete boat ramp would be constructed approximately 900 feet downstream of the existing one. A
- 13 new day-use picnic area would be created near the new boat ramp. Soils on approximately one acre of
- 14 previously disturbed land would be affected. These development activities would result in compaction of
- 15 soils in the area and a loss of soils due to the creation of impervious surfaces. The overall adverse impact
- 16 on soils as a result of development would be long term and minor. The adverse effects would be offset
- 17 somewhat by the designation of parking areas, which would reduce unauthorized vehicular parking and
- 18 the resultant compaction and erosion of soils in the area.

#### 19 Brunswick

- 20 Impacts on soils at the Brunswick project site under Alternative C would be similar to those for
- 21 Alternative B.

#### 22 **Fifteenmile Creek**

- 23 Under Alternative C, a new boat ramp constructed of articulated concrete matting would extend into the
- 24 main channel of the Potomac River. The soils in this area have been compacted as a result of vehicular
- use of the area during periods of low water level to launch boats. Construction of a new ramp would
- result in minimal loss of soils with implementation of mitigation measures to prevent erosion. The
- 27 unused (pre-1988) concrete ramp would be removed, and the underlying soils would be rehabilitated and
- 28 planted with native species, leading to a long-term, negligible, beneficial effect on the underlying soils.
- 29 Under Alternative C, three areas would be developed to provide vehicle parking and a boat launching
- 30 facility at Fifteenmile Creek. The existing unpaved parking area close to the boat ramp area would be
- 31 developed into a new paved launching facility. An additional 1,584-square-foot visitor parking lot would
- 32 be created along the emergency and maintenance access road. Two scenarios have been proposed under
- this alternative for development of a new parking lot that would be located on the upper terrace. In one,
- 34 the parking lot would be located in the currently undeveloped wooded area (the area was previously
- 35 maintained as a campground but has since become overgrown). In the other, the parking lot would be
- 36 located where the campground currently exists and the wooded lot would be converted into a new
- campground using compacted gravel material of approximately 11,160 square feet for park visitors.
   Under either accessing the parking latence of the park visitors.
- 38 Under either scenario, the parking lot would cover approximately 25,200 square feet. Development of the 39 parking lots in this area would result in compaction and in a loss of organic surface layers. With
- 40 mitigation measures, the loss of soils due to erosion would be negligible. The overall development of
- new impervious surfaces at this location would have long-term, minor, adverse effects on the underlying
- 42 soils.
- 43 The 352 linear feet of roadway from the canal to the launching area would be engineered to provide better
- 44 drainage. The road shoulders would be re-established to meet the existing surface and drainage, creating

- 1 a short-term, negligible, adverse disturbance of the native soils. Replacement of guardrails and the
- 2 installation of bicycle gates within the area would result in short-term, negligible, adverse effects on the
- 3 underlying soils during construction and maintenance activities; however, long-term, negligible,
- 4 beneficial effects would be realized through the prevention of vehicular traffic and parking in
- 5 undesignated areas. The resurfacing of the towpath for bicycle and hiking use would have negligible,
- 6 short-term, adverse impacts on soils adjacent to the path during construction activity as a result of soil
- 7 compaction.

#### 8 Monocacy Aqueduct

9 Impacts on soils at the Monocacy Aqueduct project site under Alternative C would be similar to those for10 Alternative B.

#### 11 Cumulative effects

- 12 Alternative C would contribute to cumulative effects on soils in a negligible-to-minor, adverse manner at
- 13 each proposed boat ramp rehabilitation location. The cumulative effects of this alternative would result in
- 14 effects similar to those described above under Alternative B. These actions occurring under Alternative
- 15 C, in combination with activities identified above occurring in the park or on adjacent lands, would have
- 16 minor, long-term, cumulative, adverse effects on soil resources.

#### 17 Conclusion

- 18 Under Alternative C, construction activities would produce local, adverse, negligible, short-term effects
- 19 on soils at the Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct areas.
- 20 Development of facilities such as parking areas, boat ramp and launching facilities, picnic areas, and
- 21 campgrounds would result in compaction and loss of soils in the area of development. These actions
- 22 would have long-term, negligible-to-minor, adverse effects on soils at each location. Long-term,
- 23 negligible-to-minor benefits would occur from reclamation of parking areas and roadways at Point of
- 24 Rocks and the unused boat ramp at Fifteenmile Creek. Long-term, negligible-to-minor benefits to soils
- would also result at each site as designated parking areas and established visitor-use areas are developed,
- reducing soil compaction and erosion from vehicle access in undesignated areas and social trailing. There
- 27 would be no impairment of soil resources or values at Chesapeake and Ohio Canal National Historical
- 28 Park as a result of the implementation of Alternative C.

### 29 **VEGETATION**

### 30 Impacts of Alternative A – No Action / Continue Current Management

### 31 **Point of Rocks**

- 32 Vegetation within and around the Point of Rocks project site would not be impacted by Alternative A.
- 33 No development would occur, and no ground would be disturbed.

### 34 Brunswick

- 35 Lawn grass found throughout the Brunswick project area would continue to be maintained. No
- 36 development would occur, and no ground would be disturbed. Under Alternative A, there would be no
- 37 impacts on vegetation at the Brunswick project site.

#### 1 Fifteenmile Creek

- 2 Under Alternative A, there would be no new development, and facilities would be maintained and
- 3 repaired as needed. The campground would continue to be maintained as lawn grass and mowed as
- 4 needed. Use of social trails in the area would continue. Vegetation along the banks of the Potomac River
- 5 adjacent to the existing parking area would continue to be damaged or destroyed by visitors launching
- 6 vessels from the bank and parking outside the intended parking area. These activities result in damage to
- 7 individual plants and promote the growth of non-native species. Local, adverse impacts on vegetation
- 8 under this alternative would not threaten the viability of native plant communities and would be
- 9 considered minor but long-term.

#### 10 Monocacy Aqueduct

- 11 Lawn grass found throughout the Monocacy Aqueduct project site would continue to be maintained. On
- 12 completion of the aqueduct stabilization project, the temporary gravel parking lot would be reclaimed,
- 13 and the construction area would be reseeded in grass and maintained as lawn. Reclamation of the
- 14 temporary gravel lot would be considered a long-term, negligible, local, beneficial effect on vegetation.

#### 15 **Cumulative Impacts**

- 16 The construction projects discussed in the "Relationship to Other Projects and Planning" section,
- 17 including improvements to the Point of Rocks Railroad Station parking lot and creation of a community
- 18 park, would occur regardless of whether any actions were taken at the project sites. These other projects
- 19 would occur almost entirely on previously disturbed land. Few, if any, native communities would be
- 20 adversely impacted. As a result, the cumulative effect of other plans and projects on vegetation would be
- 21 negligible. Alternative A would contribute minor, local, long-term, adverse impacts to the overall
- 22 negligible cumulative impacts on vegetation associated with other plans and projects.

#### 23 Conclusion

- 24 Alternative A would result in minor, local, long-term, adverse impacts on vegetation. These impacts
- would include continued damage to vegetation by trampling and removal as well as the proliferation of
- 26 non-native species at the Fifteenmile Creek project site. These effects would occur along the river bank
- and in areas between the campground and boat ramp as visitors continue to launch vessels from the bank,
- 28 park outside the intended parking area, and develop social trails. There would be no impairment of
- 29 vegetation resources or values at Chesapeake and Ohio Canal National Historical Park as a result of the
- 30 implementation of Alternative A.

### 31 Impacts of Alternative B – Minimal Development to Improve Visitor Access

#### 32 **Point of Rocks**

- 33 Alternative B would resurface one parking lot and construct another, as well as install erosion control
- 34 measures along the boat ramp. The existing parking area near the boat ramp would be graded and
- 35 prepared before being paved with asphalt. To construct this lot, two mature trees would be removed. The
- 36 second parking lot would be constructed along Canal Road east of the boat ramp. Both sides of Canal
- Road, where this lot would be constructed, have been compacted by vehicle parking and social trails.
- 38 Erosion control would be installed on either side of the boat ramp. This would result in very little
- 39 disturbance to existing vegetation.
- 40 The total area of ground disturbance at the Point of Rocks project site under Alternative B would be less
- 41 than one-half acre. No native plant communities would be imperiled by this alternative, but the area of

- 1 disturbance would no longer be available for productivity. Therefore, impacts on vegetation resulting
- 2 from this alternative would be minor, longterm, local, and adverse.

#### 3 Brunswick

- 4 The parking lot would be expanded and vegetation removed from a section of the canal at the Brunswick
- 5 project site. As part of this alternative, the existing paved parking lot serving the boat ramp would be
- 6 expanded by approximately one tenth of an acre. The area that would be paved is currently maintained
- 7 lawn and does not support native plant communities. To aid in the historical interpretation of the canal by
- 8 park visitors, vegetation would be removed from the canal prism between Lock 30 and Maple Avenue.
- 9 Once cleared, the area would be reseeded in grass and maintained. This corridor was previously disturbed
- 10 during the construction and subsequent use of the canal.
- 11 Expansion of the parking lot onto previously disturbed lawn would cause little or no impact on native
- 12 vegetative communities. The clearing of vegetation and reseeding of the canal would result in a net loss
- 13 of weedy species and small immature trees. Alternative B would result in negligible-to-minor, long-term,
- 14 local, adverse impacts on vegetation.

#### 15 Fifteenmile Creek

- 16 There would be several areas of ground disturbance at the Fifteenmile Creek project site under
- 17 Alternative B. The existing parking area would be paved and expanded to better accommodate visitors.
- 18 This would disturb less than half an acre. Alternative B would also include construction of a new paved
- 19 visitor parking lot along the emergency and maintenance access road. This may result in the removal of
- 20 several mature trees, but every effort would be made to avoid doing so. There would be no change to the
- 21 existing campground under this alternative, and maintenance of the campground lawn would continue.
- 22 Vegetation growing between the boat ramp parking area and Fifteenmile Creek would be removed during
- 23 the installation of erosion control structures.
- 24 The ground disturbed by this alternative would be paved and consequently taken out of productivity.
- 25 However, the total area of ground disturbance for this alternative would be less than one acre. In
- addition, there would be no threat to the viability of native plant communities. Impacts on vegetation at
- 27 Fifteenmile Creek would be considered minor, long term, local, and adverse.

#### 28 Monocacy Aqueduct

- 29 To aid in the interpretation of the canal and of Monocacy Aqueduct, the canal basin would be cleared of
- 30 trees and maintained in a condition more conducive to historical interpretation. Canopy removal within
- the canal basin is not expected to negatively affect the local population of white trout lily, although, left
- 32 unchecked, invasive species would be likely to colonize the newly opened land (Wiegand, 1997). In an
- effort to control invasive species, the periphery of the basin would be mowed and the basin floor would
- 34 be mechanically trimmed to control growth and prevent invasions.
- 35 In addition, the temporary gravel parking lot would be expanded to cover approximately 8,350 square feet
- 36 of previously disturbed land. This would involve the removal of several trees. To offset the effects of
- 37 covering over this area and removing it from productivity, the existing 10,000-square-foot paved parking
- area would be reclaimed. The new parking lot would be connected to the towpath by a gravel service
- 39 road, and a second gravel service road would lead down to the Monocacy River. These roads would be
- 40 located on land disturbed during the aqueduct stabilization project.
- 41 A portion of the ground disturbed by this alternative would be surfaced with compacted gravel and taken
- 42 out of productivity. However, removal of trees from the canal basin and changes made to parking and

- 1 service roads would not jeopardize the viability of any native plant communities. Therefore, effects on
- 2 vegetation at Monocacy Aqueduct would be considered minor to moderate, long term, local, and adverse.

#### 3 Cumulative Impacts

- 4 The proposed actions that would be taken at the four project sites under Alternative B as well as other
- 5 ongoing, past, or foreseeable future projects (described under Alternative A) would not change the
- 6 character or threaten the viability of any native plant communities. These construction activities would
- 7 have very localized effects on individual plants and would not be expected to result in a loss of
- 8 populations or communities. Alternative B would contribute in a negligible-to-minor, long-term, local,
- 9 and adverse manner to the cumulative impacts of other plans and projects, which overall would be minor,
- 10 long term, and adverse.

#### 11 Conclusion

- 12 Impacts on vegetation resulting from Alternative B would be negligible to moderate, long term, local, and
- 13 adverse, related primarily to clearing vegetation from the canal prism between Lock 30 and Maple
- 14 Avenue at the Brunswick area and the removal of trees from the canal basin at Monocacy Aqueduct. The
- 15 viability of native plant communities would not be threatened by any of the actions taken under
- 16 Alternative B. There would be no impairment of vegetation resources or values at Chesapeake and Ohio
- 17 Canal National Historical Park as a result of the implementation of Alternative B.

# 18 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred 19 Alternative

#### 20 **Point of Rocks**

- 21 Under Alternative C, the existing boat ramp, parking area, and access road would be removed and
- reclaimed (put back into productivity). A day-use picnic area would be created west of the existing boat
- ramp, and a parking lot would be constructed on either side of Canal Road to accommodate visitors using
- 24 this new picnic area. A new boat ramp would be constructed and serviced by another new paved parking
- 25 lot positioned between the Canal Road lot and the river.
- 26 Reclamation and revegetation of the area currently occupied by the boat ramp and access road would be
- 27 considered a minor, long-term, local, beneficial impact on native vegetation. Construction activities
- 28 proposed at Point of Rocks for Alternative C would occur on previously disturbed land. This area was
- 29 formerly a private residence and was only recently returned to a more natural setting. Many weedy
- 30 species have colonized the area, and few, if any, native species have become established. The total area
- 31 lost to productivity under this alternative would be approximately one acre. Overall, impacts on
- 32 vegetation would be local, minor, long term, and adverse.

#### 33 Brunswick

Impacts on vegetation at the Brunswick project site under Alternative C would be similar to those forAlternative B.

#### 36 Fifteenmile Creek

- 37 Actions that would be taken at the Fifteenmile Creek project site under Alternative C include paving a
- portion of the existing parking area, installing a new boat ramp, and building a paved parking lot near the
- 39 existing campground and another small paved parking lot along the emergency and maintenance access
- 40 road.

- 1 To facilitate boat ramp access, a small, circular portion of the existing unpaved parking area would be
- 2 paved, bounded by timber guardrails, and marked with designated parking areas. In addition, a new boat
- 3 ramp would be constructed. Paving and construction activities would occur almost entirely on previously
- 4 disturbed land, the exception being the river end of the boat ramp. The newly designated parking and
- 5 boat access would prevent visitors from driving and parking on the river bank, which would protect
- 6 vegetation growing there.
- 7 Under this alternative, two scenarios have been proposed for development of a second parking area on the
- 8 upper terrace near the existing campground. Under Alternative C-1, the parking lot would be constructed
- 9 opposite the existing campground. This area was chosen because it was formerly a campground and has
- 10 been previously disturbed. To construct the new parking lot, approximately 40 mature trees would need
- 11 to be removed and understory vegetation would be cleared. Under Alternative C-2, the new parking lot
- would be constructed where the existing campground is located, and the campground would be moved to the opposite side of the boat ramp access road. Placing the campground in this area would require
- 14 removal of fewer mature trees.
- 15 The development of a third parking lot, which would accommodate seven parking spaces, along the
- 16 emergency and maintenance access road would also take place on previously disturbed land.
- 17 Construction of this lot may result in the removal of several mature trees, but every effort would be made
- 18 to avoid doing so. There would be no change to the existing campground under this alternative, and
- 19 maintenance of the campground lawn would continue.
- 20 Actions taken under Alternative C would remove approximately one acre of land from productivity, and a
- 21 number of mature trees would be removed in the process. However, there would be no threat to the
- viability of any native plant communities, and there would be no impacts outside the immediate project
- 23 area. Impacts on vegetation at the Fifteenmile Creek project site resulting from Alternative C would be
- 24 local, minor, long term, and adverse.

#### 25 Monocacy Aqueduct

- 26 Impacts on vegetation at the Monocacy Aqueduct project site under Alternative C would be similar to
- 27 those for Alternative B.

#### 28 Cumulative Impacts

- 29 The proposed actions taken at the project sites, as well as other ongoing, past, or foreseeable future
- 30 projects defined under Alternative A, would not change the character or threaten the viability of any
- 31 native plant communities. These construction activities would cause or have had very localized effects on
- 32 individual plants and would not be expected to result in loss of any vegetative populations or
- 33 communities. The other plans and projects would have minor, long-term, adverse cumulative effects on
- 34 vegetation, and Alternative C impacts would be minor, long-term, local, and adverse or beneficial.

#### 35 Conclusion

- 36 Impacts on native vegetation under Alternative C would be minor, long-term, local, and both adverse and
- beneficial. Beneficial impacts would include those related to the reclamation and revegetation of the
- areas currently occupied by the boat ramp and access road at Point of Rocks, the existing parking lot at
- 39 Monocacy Aqueduct, and the delineation of the parking area at the Fifteenmile Creek boat ramp. Adverse
- 40 impacts would primarily be associated with the removal of vegetation from the canal prism between Lock
- 41 30 and Maple Avenue at Brunswick and the removal of immature and mature trees from the Fifteenmile
- 42 Creek site and the canal basin at Monocacy Aqueduct. There would be no impairment of vegetation
- 43 resources or values at Chesapeake and Ohio Canal National Historical Park as a result of the
- 44 implementation of Alternative C.

#### 1 WILDLIFE

- 2 Any alternative implemented would result in continued low levels of wildlife disturbance similar to the
- 3 ongoing human activities in Chesapeake and Ohio Canal National Historical Park. Therefore, a baseline
- 4 condition common to all alternatives (including no action) would cause short-term and negligible, or in a
- 5 few instances negligible-to-minor, local, adverse impacts to wildlife. Analyses of more specific impacts
- 6 on wildlife and the individual alternatives follow.

#### 7 Impacts of Alternative A – No Action / Continue Current Management

#### 8 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

9 Under Alternative A, there would be no development or improvements related to the proposed project.

- 10 The campground would continue to be maintained as lawn and mowed as needed. This would result in
- 11 the continued displacement of wildlife as a result of human presence and development activities. This
- 12 would represent a local, primarily diurnal, negligible, adverse effect on wildlife populations. The adverse
- 13 effect would be reduced during evening and night hours, when human presence and activities would be
- 14 minimal.

#### 15 **Cumulative Impacts**

- 16 The construction projects discussed in the "Relationship to Other Projects and Planning" section,
- 17 including improvements to the Point of Rocks Railroad Station parking lot and creation of a community
- 18 park, would occur regardless of whether any actions were taken at the four project sites. The other
- 19 projects would occur almost entirely on previously disturbed land. Little, if any, natural wildlife habitat
- 20 would be adversely impacted. Considering the inconsequential contribution to effects on wildlife
- associated with Alternative A, cumulative impacts on wildlife would be adverse but negligible.

#### 22 Conclusion

- 23 Alternative A would result in negligible, local, short-term, adverse impacts on wildlife and wildlife
- habitat. Cumulative impacts would be adverse but negligible. Implementation of Alternative A would
- 25 not result in impairment of any wildlife, wildlife habitats, or related wildlife resources or values at
- 26 Chesapeake and Ohio Canal National Historical Park.

#### 27 Impacts of Alternative B – Minimal Development to Improve Visitor Access

- 28 The presence of construction equipment and personnel at all four sites would potentially displace wildlife
- temporarily, but considering the normally high levels of use in these areas, this potential adverse effect
- 30 would be local, negligible, and short term.

#### 31 **Point of Rocks**

- 32 Alternative B would create additional ground disturbance at the Point of Rocks site, although the total
- area of new disturbance associated with the new day-use picnic area and parking lot would be less than
- 34 one-half acre. The development of a new picnic area would affect different wildlife species in different
- 35 ways. Some wildlife are attracted to human food sources (the picnic area would be a source), while
- 36 others are wary of human presence and may be displaced (Knight and Gutzwiller 1995). On balance, the
- 37 effects of a new picnic area on wildlife would be local, long term, adverse, and negligible when
- 38 considering the overall setting within the relatively developed region.

#### 1 Brunswick

- 2 The parking lot would be expanded, and vegetation would be removed from a section of the canal at the
- 3 Brunswick project site. As part of this alternative, the existing paved parking lot serving the boat ramp
- 4 would be expanded by approximately one-tenth of an acre. The area that would be paved is currently
- 5 maintained lawn and does not support native plant communities; thus, the effect of the expansion on
- 6 wildlife habitat would be inconsequential.
- 7 Existing vegetation would be removed from the canal prism between Lock 30 and Maple Avenue to aid in
- 8 the historical interpretation of the canal by park visitors. Once cleared, the area would be reseeded in
- 9 grass and maintained. Although this corridor was previously disturbed during the construction and
- 10 subsequent use of the canal, it is possible that small mammals, birds, and other wildlife species have been
- 11 using the vegetation in the canal for foraging, as hiding and thermal cover, and as a movement corridor.
- 12 Removal of the vegetation in the canal would represent a long-term, local, negligible-to-minor, adverse
- 13 effect on wildlife.

#### 14 Fifteenmile Creek

- 15 There would be several areas of ground disturbance, including parking lot paving, construction of new
- 16 visitor parking along the emergency and maintenance access road, and the loss of vegetation between the
- 17 boat ramp parking area and Fifteenmile Creek. Construction of the new day-use parking area may result
- 18 in the removal of several mature trees, but every effort would be made to avoid doing so. These
- 19 disturbances would result in minimal impacts on existing wildlife habitat, with the potential loss of
- 20 mature trees representing the greatest potential impact. This would have a negligible-to-minor, local,
- 21 long-term, adverse impact on wildlife. The presence of construction equipment and personnel would
- 22 potentially displace wildlife temporarily, but considering the normally high levels of use in the area, this
- adverse effect would be local, negligible, and short term.
- 24 The sediment that accumulates at the confluence of Fifteenmile Creek and the Potomac River would be
- 25 dredged biennially to accommodate deeper-draft vessels. This action would have a potential adverse
- 26 impact on fish and aquatic invertebrates. The dredging would be done under permits from the U.S. Army
- 27 Corps of Engineers and the Maryland Department of the Environment. These permits would ensure that
- 28 mitigation measures and best management practices to minimize degradation of water quality were
- implemented. For example, any instream work would be restricted, per the Maryland Department of
   Natural Resources Environmental Review Unit, from March 1 to June 15 to reduce potential effects on
- the aquatic community during spawning. These measures would offset potential adverse effects on
- aquatic community species. Dredging would cause a negligible-to-minor, local, short- and long-term,
- advarte community species. Dredging would eause a negrigible-to-minor, local, short- and long-tel adverse impact on the aquatic communities at and immediately downstream from the dredge site.

#### 34 Monocacy Aqueduct

- 35 Trees would be removed from the canal basin to aid in the historical interpretation of the canal by park
- 36 visitors. Once cleared, the periphery would be mowed and vegetation on the basin floor mechanically
- trimmed. Although the basin was previously disturbed during the construction and subsequent use of the
- canal, removal of trees would eliminate high-value arboreal wildlife habitat and a movement corridor for
- 39 arboreal and avian species. Additionally, this would represent a loss of habitat for "forest interior
- 40 dwelling species," a designation assigned by the Maryland Wildlife and Heritage Service (see their
- 41 February 14, 2005 letter in Appendix C). Removal of the trees in the basin would represent a long-term,
- 42 local, minor-to-moderate, adverse effect on wildlife.
- 43 Loss of wildlife habitat resulting from expansion of the temporary gravel parking lot, reclamation of the
- 44 existing paved parking lot, and establishment of the two gravel service roads would represent a local,

- 1 long-term, negligible, adverse impact on wildlife because these areas are currently developed and provide
- 2 little usable wildlife habitat.

#### 3 **Cumulative Impacts**

- 4 Although the construction projects discussed in the "Relationship to Other Projects and Planning" section
- 5 would have relatively few adverse impacts on wildlife species or habitats individually, incremental
- 6 adverse impacts on wildlife habitat would continue to accrue with ongoing development in the region.
- 7 Additionally, the loss of mature trees at the Monocacy Aqueduct site, considered in conjunction with
- 8 other plans and projects, would have a minor, adverse, cumulative impact on wildlife and wildlife habitat.
- 9 The contribution of Alternative B to the minor cumulative impact would be negligible, with the exception
- 10 of tree removal at the Monocacy Aqueduct site, where the contribution to overall adverse cumulative
- 11 impacts would include the minor-to-moderate impact associated with the loss of arboreal and "forest
- 12 interior dwelling species" habitat.

#### 13 Conclusion

- 14 Impacts on wildlife and wildlife habitats resulting from Alternative B at Point of Rocks, Brunswick,
- 15 Fifteenmile Creek, and Monocacy Aqueduct would be negligible to moderate, short and long term, local,
- 16 and adverse. Cumulative impacts would be adverse and negligible to minor. Implementation of
- 17 Alternative B would not result in impairment of any wildlife, wildlife habitats, or related wildlife
- 18 resources or values at Chesapeake and Ohio Canal National Historical Park.

# 19 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred 20 Alternative

#### 21 **Point of Rocks**

- 22 The existing boat ramp, parking area, and access road at the Point of Rocks project site would be
- 23 removed, and the area revegetated with native plant species. This would represent a negligible-to-minor,
- 24 local, long-term, beneficial impact on wildlife with the restoration of native vegetation species and the
- 25 development of additional wildlife habitat.
- 26 The development of a new picnic area would affect different wildlife species in different ways. Some are
- attracted to human food sources, while others are wary of human presence and may be displaced (Knight
- and Gutzwiller 1995). On balance, the effects of a new picnic area on wildlife would be local, long term,
- adverse, and negligible when considering the overall setting within the relatively developed region.
- 30 Construction activities proposed at Point of Rocks for Alternative C would occur on previously disturbed
- 31 land. This area was formerly a private residence and was only recently returned to a more natural setting.
- 32 Many weedy species have colonized the area, and its wildlife value currently is minimal. As a result,
- development and construction of facilities in this area would have a negligible, local, short- and long-
- 34 term, adverse effect on wildlife and wildlife habitat.
- 35 The presence of construction equipment and personnel would potentially displace wildlife temporarily,
- but considering the normally high levels of use in the area, this potential adverse effect would be local,
- 37 negligible, and short term.

#### 38 Brunswick

- 39 The impacts on wildlife and wildlife habitats at the Brunswick project site under Alternative C would be
- 40 similar to those described for Alternative B.

#### 1 Fifteenmile Creek

- 2 Paving and construction activities associated with Alternative C would occur almost entirely on
- 3 previously disturbed land, except the river end of the new boat ramp. The new boat ramp would have a
- 4 negligible-to-minor, local, short- and long-term, adverse impact on aquatic species, although this effect
- 5 would be minimized as a result of restrictions on construction activities from March 1 to June 15.

6 Two scenarios have been proposed under this alternative for development of a new parking lot that would 7 be located on the upper terrace. Alternative C-1 would locate the parking lot in the currently undeveloped

8 wooded area that was previously maintained as a campground but has since become overgrown.

- 9 Although construction of a new parking lot opposite the existing campground would be on previously
- 10 disturbed land, approximately 40 mature trees would be removed, and understory vegetation also would
- 11 be cleared. Removal of 40 mature trees would eliminate high-value arboreal wildlife habitat and a
- 12 movement corridor for arboreal and avian species. This would cause a minor-to-moderate, local, long-
- 13 term, adverse effect on wildlife species as a result of loss of habitat. Alternative C-2 involves converting
- 14 the existing campground into a new paved parking area and converting the wooded lot into a new
- 15 campground. Under this scenario, fewer mature trees would be removed; thus, the adverse effects on
- 16 wildlife and wildlife habitat would be minor, local, and short and long term.
- 17 Development of another parking lot, along the emergency and maintenance access road, would add seven
- 18 parking spaces and would be on previously disturbed land. Construction of this lot may result in the

19 removal of several mature trees, but every effort would be made to avoid doing so. If trees would be

20 removed, wildlife would experience an additional minor, local, long-term, adverse effect. There would be

21 no change to the existing campground under this alternative, and maintenance of the campground lawn

- 22 would continue.
- 23 The presence of construction equipment and personnel would potentially displace wildlife temporarily,
- but considering the normally high levels of use in the area, this potential adverse effect would be local,
- 25 negligible, and short term.

#### 26 Monocacy Aqueduct

- 27 The impacts on wildlife and wildlife habitats at the Monocacy Aqueduct project site under Alternative C
- 28 would be similar to those described for Alternative B.

#### 29 Cumulative Impacts

- 30 Although the construction projects discussed in the "Relationship to Other Projects and Planning" section
- 31 would have relatively few adverse impacts on wildlife species or habitats individually, incremental
- 32 adverse impacts on wildlife habitat would continue to accrue with ongoing development in the region.
- Additionally, the loss of mature trees at the Fifteenmile Creek and Monocacy Aqueduct sites, considered
- in conjunction with other plans and projects, would have a minor, adverse, cumulative impact on wildlife
- 35 and wildlife habitat. Because the tree loss would be associated with Alternative C, the contribution of this
- 36 alternative to the cumulative impacts would be substantial.

#### 37 Conclusion

- 38 Impacts on wildlife and wildlife habitat under Alternative C would be negligible to moderate, short and
- 39 long term, local, and adverse. Reclamation and revegetation of the area currently occupied by the boat
- 40 ramp and access road at the Point of Rocks project site would have negligible-to-minor, beneficial
- 41 impacts at that particular site. Cumulatively, the effects on wildlife would be minor. Implementation of
- 42 Alternative C would not result in impairment of any wildlife, wildlife habitats, or related wildlife
- 43 resources or values at Chesapeake and Ohio Canal National Historical Park.
#### 1 THREATENED AND ENDANGERED SPECIES

#### 2 Impacts of Alternative A – No Action / Continue Current Management

#### 3 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

4 Under Alternative A, there would be no changes to the existing configuration at any of the four project

- 5 sites. In the event of the presence of a casual, transient, listed species (e.g., bald eagle or the newly
- 6 discovered dragonfly) in one of the project areas, it is unlikely that continuing current maintenance
- 7 activities at the sites would have any adverse effect on that species or individual. The species' transient
- 8 nature would allow it to avoid activities at the project sites with no discernable effect; thus, impacts on
- 9 these species would be discountable. Continuing current management, in combination with the typical
- 10 absence of any listed species, would cause no effects on threatened or endangered species or to any
- 11 critical habitat at any of the sites.

#### 12 Cumulative Impacts

- 13 None of the projects discussed in the "Relationship to Other Projects and Planning" section, in
- 14 combination with the proposed actions at any of the three sites, would have any cumulative effect on
- 15 threatened or endangered species or any designated critical habitat.

#### 16 Conclusion

- 17 Under Alternative A, there would be no effect on threatened or endangered species or to any designated
- 18 critical habitats, nor would any cumulative effects occur. Implementation of Alternative A would not
- 19 result in impairment of any listed species or critical habitat resources or values at Chesapeake and Ohio
- 20 Canal National Historical Park.

#### 21 Impacts of Alternative B – Minimal Development to Improve Visitor Access

#### 22 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

- 23 Although the proposed actions at the four sites differ, the absence of listed species that could be affected
- by the proposed actions is common to each site. As described for Alternative A, the presence of a casual,
- transient, listed species would be discountable, and the proposed actions would not affect a transient listed
- species. There would be no effect on threatened or endangered species or to any critical habitat at any of
- 27 the sites. Surveys for the state-threatened white trout lily would be undertaken in the Monocacy
- Aqueduct canal basin prior to tree removal to ensure that no individual lilies are present or would be
- 29 disturbed.

#### 30 Cumulative Impacts

31 Cumulative impacts would be similar to those described for Alternative A.

#### 32 Conclusion

- 33 Under Alternative B, there would be no effect on threatened or endangered species or to any designated
- 34 critical habitats, nor would any cumulative effects occur. Implementation of Alternative B would not
- result in impairment of any listed species or critical habitat resources or values at Chesapeake and Ohio
- 36 Canal National Historical Park.

#### 1 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred

2 Alternative

#### 3 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

4 The effects on threatened and endangered species and critical habitat would be similar to those described

5 for Alternatives A and B.

#### 6 Cumulative Impacts

7 Cumulative impacts would be similar to those described for Alternatives A and B.

#### 8 Conclusion

- 9 Under Alternative C, there would be no effect on threatened or endangered species or to any designated
- 10 critical habitats, nor would any cumulative effects occur. Implementation of Alternative C would not
- 11 result in impairment of any listed species or critical habitat resources or values at Chesapeake and Ohio
- 12 Canal National Historical Park.

## 13 WATER QUALITY

#### 14 Impacts of Alternative A – No Action / Continue Current Management

#### 15 Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

- 16 Alternative A would not result in any changes to water quality. Use levels at the Point of Rocks,
- 17 Brunswick, Fifteenmile Creek, and Monocacy Aqueduct project sites would not change, and water quality
- 18 and quantity would remain at historical levels.

#### 19 **Cumulative Impacts**

20 None of the projects discussed in the "Relationship to Other Projects and Planning" section would have

any impact on water quality. The Point of Rocks pivot bridge project would alter the stone abutments,

replace decking, and relocate a section of the towpath to its original location and is not expected to have

any impacts on water quality. This project does not anticipate any impacts on water resources because it

- would not alter any water course or wetland, and the historic canal prism is not rewatered in this section
   (NPS 2004a). There would be no cumulative effects on water quality or quantity as a result of continuing
- 26 current management.

## 27 Conclusion

- 28 There would be no impacts on water quality under Alternative A. There would be no impairment of
- 29 water resources or values at Chesapeake and Ohio Canal National Historical Park as a result of the
- 30 implementation of Alternative A.

## 31 Impacts of Alternative B – Minimal Development to Improve Visitor Access

#### 32 **Point of Rocks and Brunswick**

- 33 Activities associated with the construction of paved parking lots and improvements to the existing boat
- 34 ramps would result in approximately one acre of ground disturbance. During grading and preparation of
- the new parking lots, bare earth would be subject to erosion and would temporarily contribute to the
- 36 sediment load of runoff from these areas. In turn, this would contribute to the sediment load of the
- 37 Potomac River. Standard construction best management practices would reduce erosion and sediment

- 1 release. These include the use of silt fencing, limiting the area of vegetative disturbance, and covering
- 2 stored soils to protect them from erosion until they are reused. By implementing these best management
- 3 practices, adverse impacts on water quality would be minimized. Flow quantity would not change, and
- 4 water quality would be well within the range of historical conditions. Therefore, impacts on water quality
- at the Point of Rocks and Brunswick sites resulting from construction activities would be minor, short
- 6 term, and adverse.
- 7 A secondary impact on water quality would result from the increase in total impervious surface at these
- 8 sites. No substantial changes to ground water recharge would occur under this alternative because the
- 9 increase in impervious surfaces is relatively small, approximately one acre, and the project design would
- 10 include storm water management measures to maximize on-site infiltration. Changes in ground water
- 11 recharge and potential contamination, if realized at all, would constitute only negligible, long-term,
- 12 adverse impacts on ground water.

## 13 Fifteenmile Creek

- 14 Biennial dredging proposed under this alternative would temporarily increase sediment load in the
- 15 Potomac River during dredging activities and for a short period thereafter. Mitigation measures,
- 16 including silt curtains or gunderbooms (silt curtains made of permeable geotextile fabrics), would allow
- 17 suspended sediment at the dredging site to settle out in a controlled area, minimizing the impact area.
- 18 Fifteenmile Creek is designated as a Use IV-P stream (recreational trout waters and public water supply)
- 19 by the Maryland Department of Natural Resources. To protect and preserve these uses, in-stream work
- 20 would not occur between March 1 and June 15 inclusive. With the implementation of mitigation
- 21 measures, neither water quality nor quantity of flows would fluctuate outside of historical conditions.
- 22 Therefore, impacts on water quality would be minor, short-term (lasting for only a short period after
- 23 dredging is complete), local, and adverse.
- 24 Construction of the small parking lot along the emergency and maintenance access road, installation of
- erosion protection along Fifteenmile Creek, and paving of the existing unpaved boat ramp parking area
- 26 would result in less than one acre of ground disturbance. To avoid increased erosion and sediment
- 27 release, standard construction best management practices would be employed, including silt fencing,
- 28 limiting the area of vegetative disturbance, and covering stored soils to protect them until they are reused.
- 29 With the implementation of these mitigating measures, any changes to water quality would be within the
- 30 range of historical conditions, and would only last for a short period after completion of the proposed
- 31 actions. Impacts on water quality resulting from construction activities would be minor, short term, local,
- 32 and adverse.
- A secondary impact on water quality would result from the increase in total impervious surface at this project site similar to that described for the Point of Rocks and Brunswick sites above.

# 35 Monocacy Aqueduct

- 36 Construction of the new parking lot and service roads, reclamation of the existing parking lot, and
- 37 removal of trees from the canal basin would result in approximately one acre of ground disturbance. To
- avoid increased erosion and sediment release, standard construction best management practices would be
- 39 employed, including silt fencing, limiting the area of vegetative disturbance, and covering stored soils to
- 40 protect them until they are reused. With the implementation of these mitigating measures, any changes to
- 41 water quality would be within the range of historical conditions, and would only last for a short period
- 42 after completion of the proposed actions. Impacts on water quality resulting from construction activities
- 43 would be minor, short term, localized, and adverse.
- 44 Impacts on water quality would be similar to those described above for the Point of Rocks, Brunswick,
- 45 and Fifteenmile Creek sites.

#### 1 **Cumulative Impacts**

- 2 None of the projects discussed in the "Relationship to Other Projects and Planning" section would have
- 3 any impact on water quality or quantity. Therefore, other identified plans and projects would not
- 4 contribute cumulatively to the negligible-to-minor, adverse effects on water quality and quantity that
- 5 would occur at the four sites under Alternative B.

#### 6 Conclusion

- 7 Several actions that would be taken under Alternative B would contribute to the sediment load of the
- 8 Potomac River. These include biennial dredging at the confluence of the Potomac River and Fifteenmile
- 9 Creek and grading and preparation of new parking lots at all sites. With the employment of best
- 10 management practices, regional impacts on water quality would be minor, short term, and adverse. In
- 11 addition, local, negligible, long-term, adverse impacts would result from increases in impervious surfaces
- 12 altering ground water recharge. There would be no impairment of water resources or values at
- 13 Chesapeake and Ohio Canal National Historical Park as a result of the implementation of Alternative B.

# Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred Alternative

#### 16 **Point of Rocks, Brunswick, and Monocacy Aqueduct**

- 17 Alternative C's impacts on water quality and quantity at the Point of Rocks, Brunswick, and Monocacy
- 18 Aqueduct sites would be similar to those for Alternative B.

#### 19 **Fifteenmile Creek**

- 20 Construction of the small parking lot along the emergency and maintenance access road and a larger
- 21 parking lot in the upper terraced area and paving a portion of the existing unpaved boat ramp parking area
- 22 would result in less than one acre of ground disturbance. To avoid increased erosion and sediment
- 23 release, standard construction best management practices would be employed, including silt fencing,
- 24 limiting the area of vegetative disturbance, and covering stored soils to protect them until they are reused.
- 25 With the implementation of these mitigating measures, any changes to water quality would be within the
- 26 range of historical conditions and would only last for a short period after completion of the proposed
- 27 actions. Impacts on water quality resulting from construction activities would be minor, short term,
- 28 localized, and adverse.
- A secondary impact on water quality would result from the increase in total impervious surface at this
- 30 project site similar to that described above under Alternative B.

#### 31 Cumulative Impacts

32 Cumulative effects would be the same as those identified above under Alternative B.

#### 33 Conclusion

- 34 Under Alternative C, there would be an increase in the sediment load of the Potomac River resulting from
- 35 grading and site preparation of new paved parking lots at each of the sites. With the implementation of
- 36 standard construction best management practices, this would be considered a minor, short-term, adverse
- 37 impact realized on a regional scale. In addition, local, negligible, long-term, adverse impacts would result
- 38 from increases in impervious surfaces altering ground water recharge. There would be no impairment of
- 39 water resources or values at Chesapeake and Ohio Canal National Historical Park as a result of the
- 40 implementation of Alternative C.

#### 1 WETLANDS AND FLOODPLAINS

#### 2 Impacts of Alternative A – No Action / Continue Current Management

#### 3 Point of Rocks, Brunswick, and Monocacy Aqueduct

- 4 Current activities and their continuation into the future at the Point of Rocks, Brunswick, and Monocacy
- 5 Aqueduct project sites would not affect wetlands. No impacts on wetlands at these sites would result
- 6 from this alternative.
- 7 Placement of the boat ramps and parking areas in the floodplain is necessary to accommodate access to
- 8 the river. Continued use of the existing sites would have no effect on floodplains.

#### 9 Fifteenmile Creek

- 10 Under Alternative A, there would be no changes made to the existing configuration at the Fifteenmile
- 11 Creek project site. The unmarked boat ramp parking area would continue to lead to confusion, and
- 12 visitors would continue to drive, park, and launch vessels from the river bank. As a result, encroachment
- 13 into small, adjacent wetlands also would continue. This encroachment would constitute a local, minor,
- 14 long-term, adverse impact on wetlands.
- 15 Placement of the boat ramp and parking area in the floodplain is necessary to accommodate access to the
- 16 river. Continued use of the existing boat ramp and designated parking area would have no effect on
- 17 floodplain function.

#### 18 **Cumulative Impacts**

- 19 None of the projects discussed in the "Relationship to Other Projects and Planning" section would have
- 20 any impact on wetlands or floodplains. Other identified projects would not contribute cumulatively to the
- 21 minor, local, adverse effects on wetlands that would result from continuing current management at
- 22 Fifteenmile Creek.

#### 23 Conclusion

- 24 Under Alternative A, the unmarked boat ramp parking area at the Fifteenmile Creek project site would
- continue to lead to confusion, and visitors would continue to drive, park, and launch vessels from the river
- bank. As a result, encroachment into small, adjacent wetlands would continue. This encroachment would
- 27 constitute a local, minor, long-term, adverse impact on wetlands. There would be no impairment of
- 28 wetland and floodplain resources or values at Chesapeake and Ohio Canal National Historical Park as a
- result of the continued implementation of Alternative A.

#### 30 Impacts of Alternative B – Minimal Development to Improve Visitor Access

#### 31 **Point of Rocks**

- 32 Under Alternative B, approximately one acre of land would be developed, which would involve paving
- 33 the existing parking area and constructing a new paved parking lot along Canal Road, resulting in an
- 34 increase in impervious surface. Consequent increases in runoff may change the hydrology of nearby
- 35 wetlands and the local floodplain; however, the use of storm water management measures would ensure
- that local wetland and floodplain function would not change. In addition, actions also would be taken to
- 37 replant approximately one-half acre with native vegetation. The overall effects of development activities
- 38 under Alternative B at Point of Rocks would result in minor, long-term, adverse impacts on wetlands and
- 39 floodplains.

#### 1 Brunswick

- 2 Expansion of the existing paved parking lot would result in an increase in impervious surface no greater
- 3 than one-half acre. Consequent increases in runoff may change the hydrology of nearby wetlands and the
- 4 local floodplain; however, the use of storm water management measures would ensure that local wetland
- 5 and floodplain functions would not change. Actions taken during the implementation of Alternative B at
- 6 Brunswick would result in minor, long-term, adverse impacts on wetlands and floodplains.

#### 7 Fifteenmile Creek

- 8 Paving the existing parking area and demarcating intended parking spaces and boundaries would
- 9 eliminate vehicle encroachment into adjacent wetlands. Keeping vehicles within a designated parking
- 10 area and out of adjacent wetlands would result in a detectable change to a relatively small area. However,
- 11 creating an impervious surface by paving the parking area would result in increased runoff and may
- 12 change the hydrology of adjacent wetlands and the local floodplain. Under this alternative, two paved
- 13 parking areas totaling about one-half acre would be developed. Incorporation of storm water
- 14 management elements into the design of the parking areas would ensure that there would be no change in
- 15 wetland and floodplain functions. Development of parking areas under Alternative B at Fifteenmile
- 16 Creek would result in minor, long-term, adverse impacts to wetlands and floodplains.

#### 17 Monocacy Aqueduct

- 18 Removal of approximately 140 trees from the canal basin at Monocacy Aqueduct would likely result in
- 19 the reclassification of a 0.82-acre portion of the associated palustrine forested wetland to a palustrine
- 20 emergent wetland (Dan Coperhaver 2005). Transpiration within this area would decrease as a result of
- 21 the loss of trees, but this would be offset (at least somewhat) by an increase in evaporation as the basin
- 22 floor is opened up. This would represent a local, minor, long-term, adverse impact on wetlands.
- 23 The existing paved parking lot at Monocacy Aqueduct would be reclaimed, providing for a decrease in
- 24 impervious surface and a small increase in local infiltration. The replacement lot and the two service
- roads that would be constructed under Alternative B would be gravel and would allow proper infiltration
- of storm water. Hydrology of the project site would not likely be affected as a result of the changes to
- 27 infrastructure.
- 28 Consultation with the Maryland Department of Environmental Protection and the U.S. Army Corps of
- 29 Engineers indicated that if no regrading occurs and heavy equipment is not be placed in waterways or
- 30 wetlands, then no wetland permits would be required (Coperhaver 2005).

## 31 Cumulative Impacts

- 32 None of the projects discussed in the "Relationship to Other Projects and Planning" section would have
- any impact on wetlands or floodplains. Therefore, other identified projects would not contribute
- 34 cumulatively to the minor, adverse effects on wetlands and floodplains that would occur under
- 35 Alternative B.

# 36 Conclusion

- 37 The actions taken at Point of Rocks, Brunswick, and Fifteenmile Creek would locally result in small
- 38 increases in impervious surface and associated increases in storm water runoff. Regionally, these
- 39 incremental increases would be inconsequential and, with the implementation of storm water
- 40 management, would not change wetland and floodplain functions.
- 41 Actions at the Monocacy Aqueduct site (i.e., tree removal) would affect a palustrine forested wetland,
- 42 essentially changing it to a palustrine emergent wetland. However, so long as the site would not be

- 1 regraded and no heavy equipment would be used in waterways or wetlands, no state or federal wetland
- 2 permits would be needed.
- 3 Overall, impacts on wetlands and floodplains resulting from Alternative B would be local, minor, long
- 4 term, and adverse. There would be no impairment of wetland and floodplain resources or values at
- 5 Chesapeake and Ohio Canal National Historical Park as a result of the implementation of Alternative B.

# 6 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred

7 Alternative

## 8 **Point of Rocks**

- 9 Construction of the two new paved parking lots at the Point of Rocks project site would increase
- 10 impervious surface by approximately one acre. Consequent increases in storm water runoff would change
- 11 local surface hydrology if left unmitigated. To remedy this, storm water management measures would be
- 12 taken. Resultant impacts on wetlands would be local, minor, long term, and adverse.

## 13 Brunswick

- 14 Impacts on wetlands and floodplains at the Brunswick project site under Alternative C would be similar
- 15 to those for Alternative B.

#### 16 Fifteenmile Creek

- 17 Constructing a new paved parking lot and paving a portion of the existing boat ramp parking area at
- 18 Fifteenmile Creek would increase impervious surface by less than one acre. This would increase runoff
- and may change the surface hydrology, which could affect neighboring wetlands. However, with the
- 20 implementation of storm water management measures, the function of local wetlands and floodplains
- 21 would not change, and potential adverse impacts would be local, minor, long term, and adverse.

## 22 Monocacy Aqueduct

- 23 Impacts on wetlands and floodplains at the Monocacy Aqueduct project site under Alternative C would be
- 24 similar to those for Alternative B.

## 25 **Cumulative Impacts**

- 26 Cumulative effects on wetlands and floodplains would be similar to those discussed above under
- 27 Alternative B.

## 28 Conclusion

- 29 The actions taken at Point of Rocks, Brunswick, and Fifteenmile Creek would locally result in small
- 30 increases in impervious surface and associated increases in storm water runoff that could affect wetlands.
- 31 Regionally, these incremental increases would be insignificant and, with the implementation of storm
- 32 water management, would not change wetland and floodplain functions. The removal of trees from the
- canal basin at the Monocacy Aqueduct site would affect wetlands because of the change from a palustrine
- 34 forested wetland to a palustrine emergent wetland. Impacts on wetlands and floodplains resulting from
- 35 Alternative C would be local, minor, long term, and adverse. There would be no impairment of wetland
- 36 and floodplain resources or values at Chesapeake and Ohio Canal National Historical Park as a result of
- 37 the implementation of Alternative C.
- 38

#### 1 CULTURAL RESOURCES

#### 2 Impacts of Alternative A – No Action / Continue Current Management

#### 3 **Point of Rocks, Brunswick, and Fifteenmile Creek**

4 Alternative A would have no impacts on significant historic sites, buildings, structures, districts, or 5 objects. The No Action Alternative would result in no physical changes to the existing landscape.

#### 6 Monocacy Aqueduct

Alternative A would have no impacts on significant historic sites, buildings, structures, districts, or
 objects. The No-Action Alternative would result in no physical changes to the existing landscape.

9 Alternative A would have impacts to architectural and landscape resources within the project area. 10 Maintaining the parking lot at its present location represents a impact to the Chesapeake and Ohio Canal 11 NRHP-listed property. The parking lot with the small building containing the rest rooms represents modern development within the historic property that physically impacts the historic landscape, a 12 13 contributing component of the canal site listed on the National Register of Historic Places. However, the 14 area of potential effects occurs within only a small portion of the Chesapeake and Ohio Canal NRHP-15 listed property and thus would most likely result in minor effects to the NRHP-listed resource. As such, the impact to the landscape would be insufficient in scale to jeopardize the Chesapeake and Ohio Canal's 16 17 NRHP listing. Furthermore, there should be no impact on individual canal-related features. The canal 18 prism, towpath, or other canal-related structures such as locks, lock houses, aqueducts, and bridges, would 19 not be directly impacted by retaining the parking lot and access roads as they presently exist.

The granary foundation located at mile 42.17 is situated approximately 20 feet east of the parking lot and would not be physically impacted. Visual effects on the Monocacy Aqueduct may result in minor impacts and would not be intrusive given the size and distance of the parking lot from the aqueduct. As such, these impacts would not diminish the integrity of the aqueduct's setting.

#### 24 **Cumulative Impacts**

Because Alternative A involves no activities that would impact historic resources, archeological sites, or cultural landscapes, it would make no contribution to cumulative impacts in the project areas.

#### 27 Conclusion

28 There is potential for minor-to-moderate impacts due to the visual impact of the parking lot.

#### 29 Impacts of Alternative B – Minimal Development to Improve Visitor Access

#### 30 **Point of Rocks**

31 Archeological Resources

Archeological impacts are estimated to be moderate. The archeological potential of the floodplain is high. Potential impacts on as-yet-undiscovered archeological sites include compaction of any buried sites

34 located underneath the expanded parking lot and destruction of shallow sites during parking lot

35 expansion. In particular, construction of a new parking lot on the terrace between the towpath and the

36 river has potential to impact archeological remains of structures shown on the 1865 coast survey map

37 (Donn 1865).

#### 1 Architectural and Landscape Resources

- 2 As part of this alternative, a parking area would be added to Canal Road, about 70 to 80 feet south of the
- canal but still within the historic district. The construction of this parking area would not alter surviving
   features of the canal but would result in changes to the existing cultural landscape within the park. The
- 5 boat ramp and adjacent parking lot would also be rehabilitated under Alternative B. Impacts from the
- 6 additional parking lot and rehabilitated boat ramp and parking lot would be negligible to minor. The
- 7 historic towpath would also be restored, resulting in a minor, beneficial effect. This would reintroduce a
- 8 historic element that would enhance the historic character of the Chesapeake and Ohio Canal.
- 9 Alternative B may have a visual impact on the Baltimore and Ohio Railroad right of way. But because the
- railroad right of way extends about 240 feet north of improvement areas under Alternative B, construction
- 11 would result in negligible impacts.
- 12 Alternative B would have negligible impacts on the Point of Rocks Railroad Station, Point of Rocks
- Masonic Lodge, and the Point of Rocks Methodist Episcopal Church, as are all located over <sup>1</sup>/<sub>4</sub> mile from the project area location. At this distance, actions under Alternative B would not impact the immediate
- 15 setting of these resources.

#### 16 Brunswick Boat Ramp

#### 17 Archeological Resources

18 The archeological potential of the floodplain is high; however, the area to be affected by the proposed 19 action is very small. Potential impacts on as-yet-undiscovered archeological sites include compaction of 20 any sites underneath the expanded parking lot and destruction of shallow sites during parking lot 21 expansion. Plans to remove trees call for them to be cut off at the ground surface, rather than pulling up 22 the roots. Therefore, tree removal should not affect remains of the canal basin lining. Because the project 23 site has received little systematic investigation, and the potential in the region for finding archeological 24 resources is high, impacts are estimated to be minor to moderate. If resources would be discovered, work 25 would be stopped, protective measures would be implemented, and procedures outlined in 36 CFR Part

26 800 would be followed.

#### 27 Architectural and Landscape Resources

Alternative B would introduce changes to the existing landscape without affecting character-defining elements of the Chesapeake and Ohio Canal Historic District and the Brunswick Historic District, resulting in minor, long-term impacts that may be either adverse or beneficial. The installation of the bicycle gates along the towpath would be the only proposed improvement that would impact canal-related features. The historic alignment and features of the towpath would not be altered by the proposed alternative.

The expansion of the present parking lot for the boat access ramp represents the only other new construction under the alternative, which would result in minor impacts on the Chesapeake and Ohio Canal Historic District. The parking lot improvements may cause visual impacts on contributing resources of the canal or Brunswick Historic District. Upgrades to existing roads would follow their present alignments. The replacing of the present steel guardrails with the proposed timber guardrails would enhance historic aesthetics.

- 40 Trees and vegetation scheduled to be removed within the canal prism north of a historic canal waste weir
- 41 as part of Alternative B would alter the existing landscape, but would not impact structures associated
- 42 with the canal or the Brunswick Historic District. The resulting impact on the cultural landscape would
- 43 be minor because the vegetation within the canal prism has grown after the canal was abandoned and is

thus not a historic component of the landscape. Removing this vegetation would enhance the historic character of the landscape and better restore this portion of the canal to its historic condition. Furthermore, the affected environment occurs within only a small portion of the Chesapeake and Ohio

- 4 Canal National Register of Historic Places-listed property. As such, the potential changes to the landscape
- 5 would be insufficient in scale to jeopardize the Chesapeake and Ohio Canal's listing.

6 Tree and vegetation removal, as planned under Alternative B, would have an impact on the Baltimore and 7 Ohio Railroad. The forestation changes would result in landscape changes surrounding the railroad, but 8 would not physically impact the railroad right of way. The vegetation is not a historic component of the 9 landscape, and the B&O Railroad, like the C&O Canal, is a linear resource; the affected environment 10 occurs near one small section of the resource. As such, these changes would only affect a portion of the

11 property's setting, resulting in minor impacts on the resource's overall setting and no adverse effects.

Alternative B would negligibly impact Gunter's Auction Gallery's immediate setting, since the buildingis located over 300 feet north of the areas where improvement would occur.

# 14 Fifteenmile Creek

## 15 Archeological Resources

The potential for unrecorded archeological sites at the Fifteenmile Creek area is very high. Potential 16 impacts on as-yet-undiscovered archeological sites include compaction of any sites located underneath 17 18 the parking lot and destruction of shallow sites during parking lot expansion. Removal of the existing boat 19 ramp may damage subsurface sites in the floodplain. Dredging the channel may impact potential 20 submerged features associated with prehistoric sites (such as fish weirs) or associated with the 19thcentury ferry. Construction of stairs leading up from the lower parking lot may impact shallow sites on 21 22 terrace edges. Because the project site has received little systematic investigation, and the potential in the region for finding archeological resources is high, impacts are estimated to be moderate. If resources 23 24 would be discovered, work would be stopped, protective measures would be implemented, and procedures outlined in 36 CFR Part 800 would be followed. 25

# 26 Architectural and Landscape Resources

27 The visitor parking area and new bicycle gates added to the towpath would have a minor, adverse effect

28 on the Chesapeake and Ohio Canal Historic District and the Western Maryland Railroad, both of which

are NRHP-listed. Although the canal towpath is a contributing resource within this listed district, these

30 changes would not remove the historic alignment and features of the tow path and canal.

Plans for the additional parking area at the existing boat ramp, improvements to the access road leading to the boat ramp, and the addition of steps leading from the boat ramp parking area to the campsite would result in minor, adverse effects without affecting character-defining elements of the canal.

Activities related to Alternative B would have minor, adverse effects on the Western Maryland Railroad due to visual impacts and would not alter the historic features of the railroad grade.

# 36 Monocacy Aqueduct

# 37 Archeological Resources

38 Moving the parking lot east around the turning basin and removing trees from the basin would not affect

39 the recorded archeological sites in the project vicinity; however, the potential remains for unrecorded

- 40 archeological sites at Monocacy Aqueduct area. Relocating and expanding the parking lot could affect 41 unrecorded archeological deposits associated with archeological site 18MO583 (19th-century house
- 42 remains) outside the site's presently known boundaries. Expanding the parking lot could also affect

1 remains associated with the granary foundations, or with the canal basin. This area would have been 2 intensively used during the active years of the canal for loading and off-loading canal boats, and remains 3 associated with this activity could be present. Such remains, such as refuse thrown into the canal basin 4 during the 19th century or remains of canal boats, could be affected by removing trees from the basin. 5 Plans to remove the trees call for them to be cut off at the ground surface, rather than pulling up the roots, 6 so tree removal should not affect remains of the canal basin lining. Although it is not a military 7 earthwork, maintenance of the boat basin has certain features in common with the preservation of military 8 earthworks. Removal of trees and replanting of the boat basin should follow the guidelines developed by 9 the NPS for management of earthworks (NPS n.d.). These guidelines include procedures for removing

10 trees, replanting, and controlling invasive species and minimizing mechanical work.

#### 11 Architectural and Landscape Resources

12 The visitor parking area improvements, tree-clearing within the turning basin and canal prism, and the 13 installation of new bike gates along the towpath would result primarily in minor, beneficial impacts to the 14 Chesapeake and Ohio Canal Historic District and component landscape. Any negative impacts are 15 anticipated to be minor. The resulting impact on the cultural landscape would be minor because the vegetation within the canal prism grew after the canal was abandoned and is thus not a historic 16 component of the landscape. Removal of this vegetation would enhance the historic character of the 17 18 landscape and better restore this portion of the canal to its historic condition. Furthermore, the area of 19 potential effect occurs within only a small portion of the C&O Canal NRHP property. As such, the 20 potential changes to the landscape would be insufficient in scale to jeopardize the C&O Canal's NRHP 21 listing. The boat basin at Monocacy Aqueduct contributes to the eligibility of the canal as a whole, and 22 treatment of the basin would need to conform to the Secretary of the Interior's Standards for the 23 Treatment of Historic Properties: Standards for Rehabilitation.

24 As part of Alternative B, the current parking area would be relocated south, along the western edge of the 25 turning basin. The construction of this parking area would not alter individual cultural features of the 26 canal. The creation of the new parking area and restrooms would have a minor, adverse effect on the 27 historic landscape, as well as a minor, beneficial effect because the new parking area's location, 80 feet 28 farther away from the aqueduct than the current location, would have less of an effect on many 29 surrounding, historic structures, particularly the Monocacy Aqueduct. However, these improvements 30 would result in changes to the existing cultural landscape. These changes would replace the existing parking area on the western side of the turning basin with a new maintenance access road and landscape 31 32 elements. The majority of the existing parking lot would be returned to a natural state that corresponds more closely with the historic setting of the property. 33

The relocation of the parking lot and construction of the new maintenance access road would circumvent the location of the granary foundation, located at mile marker 42.10. These activities would also have negligible impacts on the Mouth of Monocacy ruins (M12-26), located only a few hundred feet north of the project site.

#### 38 **Cumulative Impacts**

39 The existing cultural landscape associated with National Park Service land is diminished by the 40 cumulative effect of these improvements occurring within close vicinity to one another. The minor-tomoderate effect of these improvements, taken together with other actions being undertaken or proposed 41 for the future within the park and surrounding areas, could potentially result in the development of 42 additional acres of historic greenways within the vicinity of Point of Rocks, Brunswick, Fifteenmile 43 Creek, or the Monocacy Aqueduct. The nature of the development may result in minor-to-moderate, 44 45 adverse impacts on the cultural landscape thereby diminishing character-defining landscape features.. Such improvements would not adversely affect the integrity of the Chesapeake and Ohio Canal landscape. 46

- 1 Furthermore, cumulative activities would occur within only a small portion of the Chesapeake and Ohio
- 2 Canal NRHP property. As such, the potential changes to the landscape would be insufficient in scale to
- 3 jeopardize the Chesapeake and Ohio Canal's NRHP listing.

#### 4 Conclusion

- 5 Archeological impacts are estimated to be minor to moderate and adverse, although the precise nature of
- 6 these impacts cannot be known until archeological surveys are completed in each of the project areas. The
- 7 archeological potential of the floodplain is high. Potential impacts on as-yet-undiscovered archeological
- 8 sites include compaction of any buried sites located underneath the expanded parking lots and destruction
- 9 of shallow sites during parking lot expansion.
- 10 Architectural and landscape impacts would be minor to moderate and adverse. Visual effects on the 11 Western Maryland Railroad trace would result in minor impacts. Impacts on the NRHP Chesapeake and 12 Ohio canal property would be minor, since they would not remove or adversely alter historic character-
- 12 defining features of the canal. Landscape changes would be minor, as elements removed as part of
- Alternative B would not be part of the historic landscape. Cumulative impacts on the existing landscape
- 15 could potentially be minor to moderate and adverse if additional acreage within the park is developed in
- 16 the future because of the action.

# Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred Alternative

18 Alternative

## 19 **Point of Rocks Boat Ramp**

#### 20 Archeological Resources

21 Potential impacts include compaction of undiscovered sites beneath the parking lot and destruction of 22 shallow sites during parking lot construction. As with Alternative B, construction of a new parking lot on 23 the terrace between the tow path and the river has the potential to impact archeological remains of 24 structures shown on the 1865 coast survey map (Donn 1865). In addition, the broad floodplain at this location has a high potential for presence for archeological sites. Ground disturbance during reclamation 25 26 of the existing parking lot and road may disturb unrecorded shallow sites. Because the project site has 27 received little systematic investigation, and the potential in the region for finding archeological resources 28 is high, impacts are estimated to be moderate. If resources would be discovered, work would be stopped, 29 protective measures would be implemented, and procedures outlined in 36 CFR Part 800 would be 30 followed.

## 31 Architectural and Landscape Resources

A parking area would be added to Canal Road, about 70 to 80 feet south of the canal, but still within Chesapeake and Ohio Canal Historic District boundaries. The alternative would have minor impacts, both

adverse and beneficial, on the C&O Canal. The construction of this parking area would not alter surviving

35 features of the canal. The original towpath would also be restored as part of the alternative, which would

- 36 enhance the historic character of the canal.
- 37 The existing boat ramp area would be demolished and reclaimed as park land. The new boat ramp
- 38 complex planned downstream from the present boat ramp would include new dock structures and a large
- 39 parking lot. The construction of these features would not alter or demolish character-defining features of
- the canal, but would alter existing natural features within the park that are part of the cultural landscape.
   The changes to the existing cultural landscape are mitigated by improvements that would add to the
- The changes to the existing cultural landscape are mitigated by improvements that would add to the historic character of the park, such as the restoration of the original towpath and reclamation of developed

- 1 area at the current boat ramp location. Maintaining historic features of the canal and reclaiming
- 2 landscape features would offset land developed as a result of the proposed boat ramp modifications.
- 3 Therefore, impacts on the C&O Canal Historic District and corresponding cultural landscape would be 4
- minor and adverse.
- 5 Alternative C may have an viewshed impact on the Baltimore and Ohio Railroad right of way, but would
- 6 not physically alter the historic features of the railroad grade as they exist at present. Construction would
- 7 result in negligible impacts, since the railroad right of way extends about 240 feet north of the proposed
- 8 parking lot.
- 9 Alternative C would result in minor, beneficial impacts on the Potomac River Bridge. The present boat
- 10 ramp and parking lot would be reclaimed as parkland. The area would be restored to a natural state, which
- 11 would enhance the historic and natural setting of the bridge.
- 12 Alternative C would have a negligible visual impact on three significant resources: the Point of Rocks
- 13 Railroad Station, the Point of Rocks Masonic Lodge, and the Point of Rocks Methodist Episcopal Church.
- All are located over one-quarter mile from the project area location. At this distance, any potential visual 14
- impact from Alternative C would not significantly impact the immediate setting of these resources. 15

#### 16 **Brunswick Boat Ramp**

17 Impacts on archeological, architectural and landscape resources would be the same as those described 18 above under Alternative B.

#### 19 **Fifteenmile Creek**

#### 20 Archeological Resources

21 The archeological potential of the floodplain and terraces at Fifteenmile Creek is very high. Potential 22 impacts on as-yet-undiscovered archeological sites include compaction of any buried sites and destruction 23 of shallow sites during construction of the new parking lots on the floodplain and terrace. Removal of the 24 old boat ramp may damage subsurface sites in the floodplain. Construction of stairs and trail leading up 25 from the lower parking lot may impact shallow sites on terrace edges. The new boat ramp may disturb or 26 destroy shallow sites on the floodplain. Because the project site has received little systematic 27 investigation, and the potential in the region for finding archeological resources is high, impacts are 28 estimated to be moderate. If resources would be discovered, work would be stopped, protective measures 29 would be implemented, and procedures outlined in 36 CFR Part 800 would be followed.

#### 30 Architectural and Landscape Resources

- 31 The boat ramp parking facility is planned less than 100 feet east of the canal, just north of the access road 32 leading to the existing boat ramp. The parking lot would be a new landscape feature, but would not 33 introduce impacts on canal-related features. The same is true of the construction of the new boat ramp and 34 launching facility, improved pedestrian trail, access road to the boat launch facility, and improvements to 35 the existing boat ramp. These improvements would present visual intrusions on the existing landscape that would result in minor, adverse impacts on the C&O Canal Historic District. 36
- 37 The construction of the new parking lot would pave over greenery. Impacts on the cultural landscape 38 would be moderate, since the alterations would change existing landscape features. However, such 39 changes would not significantly diminish integrity of the Chesapeake and Ohio Canal landscape. 40 Furthermore, cumulative activities would occur within only a small portion of the Chesapeake and Ohio Canal NRHP property. As such, the potential changes to the landscape would be insufficient in scale to 41 jeopardize the Chesapeake and Ohio Canal's NRHP listing. 42

#### 1 Monocacy Aqueduct

2 Impacts on archeological, architectural, and landscape resources would be the same as those described 3 above under Alternative B.

#### 4 **Cumulative Impacts**

5 The existing cultural landscape associated with National Park Service land is diminished by the 6 cumulative effect of these improvements occurring within close vicinity to one another. The minor-to-7 moderate effect of these improvements, taken together with other actions being undertaken or proposed 8 for the future within the park and surrounding areas, could potentially result in the development of 9 additional acres of historic greenways within the vicinity of Point of Rocks, Brunswick, Fifteenmile 10 Creek, or the Monocacy Aqueduct. The nature of the development may result in minor-to-moderate, 11 adverse impacts on the cultural landscape thereby diminishing character-defining landscape features. Such improvements would not adversely affect the integrity of the Chesapeake and Ohio Canal landscape. 12 Furthermore, cumulative activities would occur within only a small portion of the Chesapeake and Ohio 13 14 Canal NRHP property. As such, the potential changes to the landscape would be insufficient in scale to 15 jeopardize the Chesapeake and Ohio Canal's NRHP listing.

#### 16 Conclusion

17 Archeological impacts are estimated to be moderate and adverse, although the precise nature of these

18 impacts cannot be known until archeological surveys are completed in each of the project areas. The

19 archeological potential of the floodplain is high. Potential impacts on as-yet-undiscovered archeological

20 sites include compaction of any buried sites located beneath the expanded parking lots and destruction of

21 shallow sites during parking lot expansion.

22 Architectural and landscape impacts would range from negligible to moderate. This alternative may 23 result in negligible-to-minor, visual impacts on historic resources outside the park property that would not 24 significantly diminish the setting of these resources. Impacts on canal-related features would not remove 25 or adversely alter historic character-defining features of the canal, and are thus would be minor. Features 26 that are part of the historic landscape may be removed by construction as part of Alternative C. However, 27 some of these changes would be mitigated by removal of non-historic development and reintroduction of 28 historic features as part of other changes under the alternative. Impacts on the historic landscape would 29 be minor to moderate without adversely affecting the C&O National Register of Historic Places property as a whole, because changes would occur within a small portion of the 184-mile corridor that is listed on 30 31 the Register. Cumulative impacts on the existing landscape have the potential to result in minor-to-32 moderate, adverse impacts if additional acreage within the park is developed in the future because of the 33 action.

#### 34 PARK OPERATIONS

#### 35 Impacts of Alternative A – No Action / Continue Current Management

#### 36 **Point of Rocks, Brunswick, and Fifteenmile Creek**

37 As the existing facilities and infrastructure continue to age and deteriorate at these three locations, it is

- 38 likely that additional labor and money would be required to maintain the park assets. Continuing current
- 39 management at the Point of Rocks, Brunswick, and Fifteenmile Creek sites would exacerbate the
- 40 negligible-to-minor, adverse, long-term impacts on park operations. Current park maintenance
- 41 requirements would continue into the future. These requirements include:

- Clearing and maintaining the boat ramps and associated parking areas following high-water
   events;.
- 3 Regrading unpaved parking areas to smooth out potholes and ruts.
  - Repairing access roads prone to washouts as a result of poor drainage.

5 Additionally, it would still be difficult for National Park Service, law enforcement, and emergency

- 6 services personnel to access the river due to the steep grade of the existing boat ramps and the congestion
- 7 that often occurs at the sites.
- 8 At the Fifteenmile Creek site, National Park Service personnel would need to continue restoring and/or
- 9 repairing natural resources damage caused by visitor encroachment in unauthorized areas.

#### 10 Monocacy Aqueduct

4

There are currently no park operations issues at Monocacy Aqueduct. The continuation of current
 management at Monocacy Aqueduct would not affect park operations.

## 13 Cumulative Impacts

- 14 Over the long-term, the negligible-to-minor, adverse impacts on park operations associated with
- 15 implementation of Alternative A would likely offset any negligible-to-minor cumulative, beneficial,
- 16 impacts derived from rehabilitating the Point of Rocks pivot bridge.

#### 17 Conclusion

- 18 Implementation of Alternative A at Point of Rocks, Brunswick, and Fifteenmile Creek would continue to
- 19 strain park maintenance resources and would not meet the objectives identified in this environmental
- 20 assessment. Park operations at Monocacy Aqueduct would not be affected by this alternative. Overall,
- 21 the adverse and beneficial effects of Alternative A and other plans and projects would cancel each other,
- 22 resulting in no cumulative impacts.

## 23 Impacts of Alternative B – Minimal Development to Improve Visitor Access

- 24 There would be negligible-to-minor, adverse, short-term impacts beginning in fiscal year 2005 (October
- 25 2004 through September 2005) at all four sites resulting from partial closings during the construction
- 26 period. Estimated construction time ranges from four to eight months, with the proposed work performed
- 27 by park and contract employees. The partial closure of the sites could temporarily overburden park
- 28 facilities and infrastructure at other locations, and the time demands of the construction activities may
- 29 strain park labor resources.

## 30 **Point of Rocks**

- 31 The new paved parking areas and rehabilitated boat ramp at Point of Rocks would require less frequent
- 32 and intensive maintenance by National Park Service personnel. Installation of rip rap or other scour
- 33 protection would lessen the need for erosion-related repair. Lessening the grade of the ramp would
- 34 improve response times for National Park Service, law enforcement, and emergency services personnel.
- 35 These actions would represent a minor, long-term benefit to park operations.

#### 36 Brunswick

- 37 Paving the parking areas would enable quicker, less labor-intensive clean-up after high-water events and
- 38 would eliminate the need for periodic regrading. Additionally, the marked and defined (with timber
- 39 guardrails) parking areas would allow park personnel to spend less time on parking enforcement and

- 1 subsequently more on restoration of natural resources. Improved boat ramp and road access would allow
- 2 quicker response times for National Park Service, law enforcement, and emergency services personnel.
- 3 Also, it is likely that maintenance requirements on the rehabilitated facilities would be less. These actions
- 4 would represent a long-term, minor, beneficial effect on park operations.

#### 5 Fifteenmile Creek

- 6 Potential impacts on park operations at the Fifteenmile Creek site would be similar to those identified for
- 7 the Brunswick site except that trash collection requirements would increase. As a result, the effects on
- 8 park operations would be long term, negligible-to-minor and beneficial.

#### 9 Monocacy Aqueduct

- 10 There are currently no park operations issues at Monocacy Aqueduct. Implementation of Alternative B at
- 11 Monocacy Aqueduct would not affect park operations.

#### 12 Cumulative Impacts

- 13 Depending on the timing of Alternative B implementation, the Point of Rocks pivot bridge deck
- 14 replacement and the Town of Brunswick's utility line upgrade, the negligible-to-minor, short-term
- 15 impacts associated with closing the park areas during construction activities could be cumulatively
- 16 exacerbated. Once the construction activities were completed, however, there would be cumulative,
- 17 negligible-to-minor, beneficial, long-term impacts on park operations resulting from reduced maintenance
- 18 requirements.

#### 19 Conclusion

- 20 Because Alternative B would reduce necessary maintenance at the sites and would improve river access
- 21 for National Park Service, law enforcement, and emergency services personnel, it would represent a long-
- 22 term, minor, beneficial effect on park operations. However, there would be short-term, local negligible-
- 23 to-minor, adverse impacts associated with the closure of the sites during rehabilitation and construction.

# Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred Alternative

## 26 **Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct**

- 27 Implementation of Alternative C would result in negligible-to-minor, beneficial, long-term impacts
- similar to those described for Alternative B. Any differences would occur in the short term resulting from
- 29 more labor- and time-intensive scope of activities proposed at Fifteenmile Creek and Point of Rocks. At
- 30 Fifteenmile Creek, a new boat ramp and a new paved parking area are proposed for construction. At
- 31 Point of Rocks, a new ramp and two new parking areas are proposed, with the land occupied by the
- 32 existing ramp, parking area, and access road being reclaimed and revegetated. Due to the larger scope of
- 33 projects proposed, it is likely that the two project sites would be closed for a longer time than under
- 34 Alternative B. Nonetheless, the intensity of the impacts on park operations would not be substantially
- 35 different from Alternative B.

## 36 Cumulative Impacts

37 Implementation of Alternative C would result in cumulative impacts similar to those identified above for

38 Alternative B.

#### 1 Conclusion

- 2 Alternative C may produce slightly more beneficial impacts on park operations due to the construction of
- 3 new boat ramp facilities at Fifteenmile Creek and Point of Rocks instead of the rehabilitation of the
- 4 existing, older boat ramp facilities as proposed under Alternative B. However, this may be offset by the
- 5 longer times that facilities would be closed for rehabilitation and construction. On balance, the impacts of
- 6 Alternative C and the cumulative impacts of other plans and projects combined with Alternative C would
- 7 not be noticeably different from those described for Alternative B.

#### 8 PUBLIC HEALTH AND SAFETY

#### 9 Impacts of Alternative A – No Action / Continue Current Management

- 10 Under Alternative A, the condition of the boat ramps and associated facilities at Point of Rocks,
- 11 Brunswick, Fifteenmile Creek, and Monocacy Aqueduct would remain unchanged other than slight
- 12 improvements made by routine, regularly scheduled maintenance.

#### 13 **Point of Rocks**

- 14 Continuing current management at Point of Rocks would perpetuate minor, adverse, long-term impacts on
- 15 public health and safety. The boat ramp would remain too steep to safely launch deeper-draft vessels, and
- 16 the area around the existing ramp would not be stabilized, thus exacerbating the hazardous condition
- 17 already present. The location of the ramp immediately upstream from the rock ledge would not change,
- 18 and boaters would still be subjected to a navigational hazard. Finally, park visitors who park at the rail
- 19 station would still be required to cross the railroad tracks to access the recreation areas.

#### 20 Brunswick

- 21 The negligible-to-minor, adverse, long-term safety impact at the Brunswick site would continue if no
- 22 action were taken. This includes the fact that the boat ramp would remain too steep to safely launch
- 23 deeper-draft vessels.

## 24 Fifteenmile Creek

- 25 At Fifteenmile Creek, minor, adverse, long-term public health and safety impacts would continue to exist.
- 26 The boat ramp would still be too steep to safely launch deeper-draft vessels. Park visitors would continue
- to use makeshift boat launch sites and social trails over steep inclines and thus subject themselves to trip-
- and-fall hazards. Parked vehicles would still periodically block emergency access to the towpath and be
- 29 susceptible to high-water events when left overnight.

## 30 Monocacy Aqueduct

- 31 Continuing current management at Monocacy Aqueduct would not have any appreciable impacts on
- 32 public health and safety because the issues identified at this site do not include any concerns related to
- health and safety.

## 34 Cumulative Impacts

- 35 The adverse effects of no action at any of the four project sites would cumulatively detract from the
- 36 overall beneficial impacts associated with the deck replacement project at Point of Rocks pivot bridge and
- 37 the barrier trench previously constructed to prevent petroleum products from reaching the Potomac River.
- 38 The Monocacy Aqueduct stabilization project would represent a beneficial cumulative effect on public
- 39 health and safety. The adverse, cumulative effects on public health and safety as a result of continuing
- 40 current management at the three other sites combined with these other projects would be minor.

#### 1 Conclusion

2 Alternative A would perpetuate minor, adverse, long-term impacts on public health and safety and does

3 not meet any of the specified project objectives. Cumulative impacts on public health and safety would

4 be minor and adverse, with the exception of Monocacy Aqueduct, where cumulative impacts would be

5 minor and beneficial.

#### 6 Impacts of Alternative B – Minimal Development to Improve Visitor Access

7 Implementation of Alternative B would result in overall minor, beneficial, long-term impacts on public

- 8 health and safety at Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct. Short-term
- 9 risks to public safety posed during the proposed activities at all four sites would be negated by the
- 10 temporary closure of these sites while construction activities take place.

#### 11 **Point of Rocks**

- 12 At Point of Rocks, the existing boat ramp would be rehabilitated and its grade would be lessened. Rip rap
- 13 or other scour protection would be used to stabilize the area around the base of the boat ramp, making it
- 14 safer for those visitors launching boats. A new parking area providing 24 marked spaces would be
- 15 constructed along Canal Road to reduce the number of visitors crossing the railroad tracks to access the
- 16 recreation areas. A small path would be created adjoining the new parking area to the towpath to prevent
- 17 the establishment of social trails that may pose future safety risks. Under this alternative, the location of
- 18 the boat ramp would not change; thus, there would still be a minor, adverse, long-term health and safety
- 19 impact associated with the rock ledge immediately downstream from the ramp.

#### 20 Brunswick

- 21 Similar to the actions to be taken at Point of Rocks, the Brunswick boat ramp would also be rehabilitated
- and its grade would be lessened. Rip rap or other scour protection would be used to stabilize the area
- around the base of the boat ramp to increase safety for those launching boats. Effects on public health
- 24 and safety at this site would be long-term, beneficial, and minor.

## 25 Fifteenmile Creek

The Fifteenmile Creek ramp and parking area would be brought to correct elevation and grade with the

- 27 installation of a gabion retaining wall and backfill, permitting the safe launch of deeper-draft vessels. The
- vehicle parking area would be paved and marked, eliminating the haphazard visitor parking that can block emergency access to the towpath. A wooden stairway would be constructed to connect the boat ramp area
- emergency access to the towpath. A wooden stairway would be constructed to connect the boat ramp area and campground with the parking lot areas. As a result, safety issues associated with pedestrian use of
- social trails would be eliminated. However, one minor, adverse, long-term impact would still exist, as
- social trails would be eliminated. However, one minor, adverse, long-term impact would still exist, as
- 32 vehicles left in the parking area overnight would still be subject to high-water events.

## 33 Monocacy Aqueduct

- Removal of trees from the canal basin at Monocacy Aqueduct could pose potential safety hazards to the
- 35 public as trees are felled and heavy machinery and trucks are used to transport them. However, the area
- 36 would be off-limits to the public during this operation and would be closely monitored by park personnel.
- The construction of the new parking lot and service roads and reclamation of the existing parking lot
- 38 would also be closely monitored, and a temporary closing would be implemented to keep the public out of
- harm's way. Effects to public health and safety resulting from Alternative B would, therefore, be short-
- 40 term, lasting only as long as construction and tree removal activities persist and would be minor, local,
- 41 and adverse.

#### 1 **Cumulative Impacts**

- 2 The beneficial health and safety impacts described above, when added to the beneficial impacts
- 3 associated with the projects and plans earlier identified in "Relationship to Other Projects and Planning,"
- 4 would cumulatively result in minor-to-moderate, beneficial, long-term impacts on public health and
- 5 safety. Specific projects include deck replacement at the Point of Rocks pivot bridge, which would
- 6 increase drivers' ability to see oncoming traffic when exiting the park, and the previous construction of a
- 7 barrier trench to prevent petroleum contaminants from reaching the Potomac River. These projects, when
- 8 considered in conjunction with Alternative B, would create a healthier and safer environment for the
- 9 public.

#### 10 Conclusion

- 11 Implementation of Alternative B would result in minor, beneficial, long-term effects on public health and
- safety. Rehabilitation and grade reduction of boat ramps would allow safer boat launches. Improved and 12
- 13 expanded parking areas would make vehicle access safer and prevent vehicles from blocking emergency
- 14 access. Improvements also would reduce the number of visitors who cross the railroad tracks at Point of
- 15 Rocks. Pedestrian trails or stairs would eliminate the use of social trails over steep inclines at Fifteenmile
- 16 Creek. Cumulative impacts would be minor to moderate, beneficial, and long term.

#### 17 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred

- 18 Alternative
- 19 Alternative C would also result in minor, beneficial, long-term impacts at the Point of Rocks, Brunswick,
- 20 Fifteenmile Creek, and Monocacy Aqueduct sites.

#### 21 Point of Rocks

- 22 The existing boat ramp at Point of Rocks would be demolished under Alternative C. A new,
- 23 appropriately graded concrete boat ramp would be constructed approximately 900 feet downstream of the
- 24 existing ramp's location. This would allow deeper-draft vessels to be safely launched and would avoid
- 25 the navigational hazard associated with the rock ledge. Two new paved parking areas would allow
- 26 convenient access to the proposed new boat ramp and day-use picnic area. These new parking areas
- 27 would increase parking availability and could lessen visitors' reliance on parking at the rail station. This,
- 28 in turn, would reduce the number of people crossing the railroad tracks to access the recreation areas.
- 29 These improvements would represent local, long-term, minor beneficial effects on public health and
- 30 safety.

#### 31 Brunswick

32 The effects of the proposed improvements at the Brunswick site would be similar to those described under

33 Alternative B above.

#### 34 **Fifteenmile Creek**

35 At Fifteenmile Creek, a new, appropriately graded boat ramp would be constructed that would enable the

36 safe launch of deeper-draft vessels. The existing *circa*-1988 boat ramp would be retained and used for

canoe/raft launches only. A new, larger, paved parking area would be constructed on higher ground north 37

- 38 of the boat ramp access road. This would not only eliminate the opportunity for parked vehicles to block
- 39 emergency access to the towpath, but would also mitigate the potential risks caused by high-water events.
- 40 Although development of the new parking area would require felling approximately 40 trees, potential
- health and safety impacts on park visitors would be negligible, as the area would be off limits to the 41

- 1 public during clearing activities and would be closely monitored by park personnel. Overall, the effects
- 2 on public health and safety would be beneficial, long term, and minor.

#### 3 Monocacy Aqueduct

- 4 The proposed improvements and resulting effects to public health and safety at the Monocacy Aqueduct
- 5 site would be similar to as those described under Alternative B.

#### 6 **Cumulative Impacts**

- 7 The beneficial impacts to public health and safety described above, when added to the beneficial impacts
- 8 associated with the projects and plans identified in "Relationship to Other Projects And Planning," would
- 9 cumulatively result in minor-to-moderate, beneficial, long-term impacts. Specifically, the proposal to
- 10 lower the Point of Rocks pivot bridge to increase a driver's ability to see oncoming traffic when exiting
- 11 the park, and the previous construction of a barrier trench to prevent petroleum contaminants from
- 12 reaching the Potomac River, combined with the benefits of Alternative C, would create a healthier and
- 13 safer environment for the park visitor.

#### 14 **Conclusion**

- 15 At Fifteenmile Creek, the visitor parking areas would be relocated to higher ground, lessening the risks to
- 16 vehicles left overnight from high-water events. Construction of a new boat ramp at Point of Rocks would
- 17 eliminate navigational hazards associated with the rock ledge that is downstream of the existing ramp.
- 18 Overall, implementation of Alternative C would result in minor, beneficial, long-term effects on public
- 19 health and safety, and the cumulative impact also would be beneficial, long-term, and minor.

#### 20 VISITOR USE AND EXPERIENCE

## 21 Impacts of Alternative A – No Action / Continue Current Management

- 22 Under Alternative A, the four project sites would remain unaltered from their current form. Suboptimal
- 23 conditions at the Brunswick, Point of Rocks, and Fifteenmile Creek boat ramps and associated parking
- areas would continue to impede river access at these locations. In addition, aesthetically unpleasing steel
- 25 guardrails would remain in place at all four sites.

## 26 **Point of Rocks**

- 27 The Point of Rocks project site is currently in very poor condition. The boat ramp is too steep, has been
- 28 heavily scoured, and is located directly upstream from a large rock ledge. The parking area is deeply
- rutted and maneuvering is difficult. Under Alternative A, the condition of the boat ramp would continue
- 30 to deteriorate, and the ramp would remain too steep for easy river access. Insufficient boat ramp parking
- 31 would perpetuate visitor parking at the nearby rail station. This, in turn, diminishes the amount of
- 32 available parking for rail patrons. This alternative would not address the adverse effects to visitor use of
- having the boat ramp located directly upstream from a large rock ledge and under the U.S. Route 15
- 34 bridge. A continuation of the current conditions at Point of Rocks would be considered a local, minor,
- 35 long-term, adverse effect to visitor use and experience.

## 36 Brunswick

- 37 The Brunswick project site is generally in good condition. However, the current configuration of the boat
- ramp and access road do not readily accommodate periods of heavy use, and congestion in the parking lot
- 39 leads to difficulty launching from this location. The boat ramp is too steep to accommodate deeper-draft
- 40 vessels and has been scoured. In addition, vegetation growing within the canal prism between Lock 30

- 1 and Maple Avenue detracts from the historical landscape and discourages proper interpretation of the
- 2 canal by park visitors. Under Alternative A, these conditions would be perpetuated and would result in a
- 3 local, minor, long-term, adverse effect on visitor use and experience.

#### 4 Fifteenmile Creek

- 5 At Fifteenmile Creek, the boat ramp would remain unmarked, unpaved, confusing, and congested.
- 6 Deeper-draft boats would continue to have difficulty accessing the creek due to the steepness of the boat
- 7 ramp. Access for deeper-draft vessels, once in the creek, would remain impeded by the extensive silt
- 8 deposits at the confluence of the Potomac River and Fifteenmile Creek. Vehicles would continue to park
- 9 in a haphazard fashion, restricting access to the boat ramp and emergency access to the towpath.
- 10 Additionally, the natural resources surrounding the parking area would continue to be degraded by visitor
- 11 encroachment. Use of the informal social trails to traverse between the boat ramp and campground also
- 12 would continue. Effects to visitor use and experience resulting from the implementation of Alternative A
- 13 would be local, minor, long-term, and adverse.

#### 14 Monocacy Aqueduct

- 15 Under Alternative A, the existing paved parking lot at the Monocacy Aqueduct would be brought back to
- 16 working condition by the contractor, following the completion of the aqueduct stabilization project.
- 17 Currently, there is a temporary gravel parking lot that provides for visitor use. The existing parking lot
- 18 lies within direct view from the aqueduct. There are also trees growing within the canal basin. These two
- 19 factors detract from the historical landscape of the area and inhibit proper interpretation of the canal by
- 20 park visitors. Implementation of this alternative would result in local, minor, long term, adverse effects to
- 21 visitor use and experience.

#### 22 Cumulative Impacts

- 23 The adverse impacts of Alternative A at the proposed project sites would cumulatively detract from the
- 24 beneficial impacts associated with other past, present, and future projects discussed in the "Relationship
- to Other Projects and Planning" section. These include the proposed deck replacement at the Point of
- 26 Rocks pivot bridge, the town of Brunswick's proposal to develop a community park in the area, and the
- 27 barrier trench constructed by the state of Maryland near Brunswick. The cumulative impact of continuing
- 28 current action at these sites, combined with the effects of other projects, would be long term, minor, and
- adverse.

#### 30 Conclusion

- 31 Alternative A would perpetuate minor, adverse, long-term impacts on visitor use and experience related to
- 32 poor facility conditions at Point of Rocks, Brunswick, and Fifteenmile Creek. The overgrowth of
- vegetation and trees within the canal at the Brunswick and Monocacy Aqueduct project sites would
- 34 contribute to the adverse effects. This alternative would not meet any of the project objectives. The
- 35 cumulative impact of continuing current action at these sites, combined with the other projects, would be
- 36 long term, minor, and adverse.

#### 37 Impacts of Alternative B – Minimal Development to Improve Visitor Access

- 38 Enhancements would be made to the infrastructure (parking lots, access roads) at all four proposed project
- 39 sites to better accommodate park visitor use. In addition, new, more natural-looking timber guardrails
- 40 would replace damaged steel guardrails along access roads and parking area perimeters at each of the four
- 41 sites, thereby improving overall park appearance.

#### 1 **Point of Rocks**

- 2 At Point of Rocks, river access would be made easier with the reduction in grade and stabilization of the
- 3 existing boat ramp. The parking area would be graded, expanded, paved, and marked, creating additional
- 4 vehicle parking, including one handicapped space, and increasing ease of use. A new day-use picnic area
- 5 would be created west of the boat ramp. To enhance visitor use of the new picnic area, a new parking
- 6 area with 24 parking spaces, including four handicapped spaces, would be constructed. This new parking
- 7 area would also help reduce the number of visitors who park at the rail station. A small connecting
- 8 pathway would provide easy pedestrian access between the new parking area and the towpath.
- 9 Enhancements to the Point of Rocks boat ramp and associated facilities would be considered a local,
- 10 minor, long-term beneficial effect to visitor use and experience. This alternative does not address adverse
- 11 effects associated with the boat ramp's location directly upstream from a large rock ledge and under the
- 12 U.S. Route 15 bridge.

#### 13 Brunswick

- 14 Improvements to river access at the Brunswick site would include the rehabilitation and reduction in
- 15 grade of the existing boat ramp; allowing it to accommodate deeper-draft boats. The existing parking
- area would be expanded by approximately 4,000 square feet. The expansion would provide 17 designated
- 17 and marked parking spaces, including two handicapped spaces and nine spaces designated for vehicles
- 18 towing trailers. The expansion and redesign of the parking area would better accommodate those visitors
- 19 launching vessels. The visual quality and historical landscape of the area would be improved with the
- 20 removal of non-native vegetation from the canal prism. Implementation of Alternative B would result in
- 21 local, minor, long-term, beneficial effects to visitor use and experience.

## 22 Fifteenmile Creek

- 23 The boat ramp and parking area at Fifteenmile Creek would be brought to correct elevation and grade
- 24 with the installation of a gabion basket retaining wall and backfill, providing easier boat access to the
- creek as well as a level parking area that would be paved and striped. Handicapped parking spaces would
- 26 be provided with the new parking design. Marking the parking area, in concert with installation of new
- 27 timber guardrails around the perimeter, would prevent visitor encroachment on valuable natural resources.
- The addition of seven new parking spaces along the emergency and maintenance access road would help alleviate parking congestion and reduce the amount of spillover parking that occurs at the historic railroad
- alleviate parking congestion and reduce the amount of spillover parking that occurs at the historic railroad trace of the Western Maryland Railroad. Pedestrian access would be improved between the campground
- and the boat ramp via construction of a wooden stairway. Enhancements at the Fifteenmile Creek site
- and the boat ramp via construction of a wooden stan way. Enhancements at the Priteeninine Creek
   under Alternative B would result in local, minor, beneficial effects to visitor use and experience.

## 33 Monocacy Aqueduct

- 34 The temporary gravel parking area constructed to accommodate visitors while the Monocacy Aqueduct
- 35 stabilization project occurs would be retained and expanded. The existing paved parking lot would be
- 36 removed and reclaimed. This would eliminate the parking lot from view to visitors on the aqueduct.
- Trees that have grown in the basin would also be removed. Together, removal of the paved parking lot
- 38 and trees from the canal basin would re-create a more accurate depiction of the historical landscape.
  30 Project actions proposed for the Monecessy Aguaduat site under Alternative Provella result in a local
- 39 Project actions proposed for the Monocacy Aqueduct site under Alternative B would result in a local,
- 40 minor, long-term, beneficial effect to visitor use and experience.

## 41 **Cumulative Impacts**

- 42 When considered in conjunction with the beneficial impacts that have resulted or would result from past,
- 43 present, and future projects and plans discussed in the "Relationship to Other Projects and Planning"

section, Alternative B would contribute to the minor, beneficial cumulative impacts on visitor use and
 experience.

#### 3 Conclusion

4 Overall, Alternative B would enhance pedestrian, vehicle, and river access, provide additional park

5 amenities, and improve the park's visual quality, resulting in minor, beneficial, long-term impacts on 6 visitor use and experience. Cumulative impacts would be minor and beneficial.

# 7 Impacts of Alternative C – Increased Development to Improve Visitor Access: Preferred 8 Alternative

- 9 Like Alternative B, Alternative C would result in functional and aesthetic enhancements at the four
- 10 project sites. Alternative C would implement other measures to create additional facilities and address
- 11 more of the existing issues at Point of Rocks and Fifteenmile Creek.

#### 12 **Point of Rocks**

- 13 The existing boat ramp at Point of Rocks would be demolished under Alternative C. A new,
- 14 appropriately graded boat ramp would be constructed approximately 900 feet downstream of the existing

15 ramp location. Relocating the boat ramp would ease river access for deeper-draft boats, eliminate

- 16 navigational difficulties associated with the rock ledge, and move the boat ramp out from under the U.S.
- 17 Route 15 bridge. This would represent a minor, local, long-term, beneficial effect on visitor use and
- 18 experience.
- 19 A new day use picnic area would be created near the proposed boat ramp, and two new parking areas
- 20 would allow convenient access to the boat ramp and picnic area. The parking area closer to the river
- 21 would enhance boat ramp access with a circular design providing 23 parking spaces, including two
- 22 handicapped spaces. The upper parking area would provide 24 additional parking spaces, including four
- handicapped spaces, and would accommodate picnic area and boat ramp users. The new parking areas
- 24 would reduce visitor parking at the nearby rail station. A negligible to minor, adverse impact on the
- 25 natural park setting would result from the establishment of the two new paved parking areas. However,
- this impact would be offset by the reclamation and revegetation of the areas currently occupied by the
- 27 boat ramp, parking area, and access road.

#### 28 Brunswick

- 29 The proposed improvements and resulting effects to visitor use and experience at the Brunswick site
- 30 under Alternative C would be similar to those described for Alternative B above.

#### 31 Fifteenmile Creek

- 32 A new, appropriately graded boat ramp at the Fifteenmile Creek site would extend into the main channel
- of the Potomac River. The new ramp would avoid the heavy silt deposits at the confluence of the river
- and Fifteenmile Creek and would assure easy river access for deeper-draft vessels. The *circa*-1988 ramp
- 35 would be retained to serve as a canoe and raft launching point.
- 36 A new paved parking area providing 14 car and trailer spaces and six car spaces would be constructed to
- 37 simplify and expand vehicle access. Installation of new timber guardrails around the perimeter would
- 38 prevent visitor encroachment on natural resources. Locating the parking area in the wooded area across
- from the existing campground would require removing approximately 40 trees. The negligible-to-minor
- 40 impact on the park's natural setting would be offset by the improved visitor access. An additional new
- 41 parking area along the emergency and maintenance access road would provide seven new parking spaces,

- 1 including two that would be designated for handicapped parking. The new parking areas would reduce
- 2 the amount of visitor parking that spills over into the historic railroad trace.
- 3 Pedestrian access would be enhanced with the installation of a wooden stairway between the boat ramp
- 4 and campground areas, the construction of a 213-linear-foot, improved pedestrian trail along the
- 5 Fifteenmile Creek shoreline, and the resurfacing of the towpath between the access road and the
- 6 Fifteenmile Creek Aqueduct. Alternative C would result in long-term, local, beneficial, and minor effects
- 7 on visitor use and experience at the Fifteenmile Creek site.

#### 8 Monocacy Aqueduct

- 9 The proposed improvements and resulting impacts to visitor use and experience at the Monocacy
- 10 Aqueduct site under Alternative C would be similar to those described for Alternative B above.

#### 11 Cumulative Impacts

- 12 Implementation of Alternative C would beneficially address current issues that affect visitor use and
- 13 experience at the four project sites. When considered in conjunction with the beneficial impacts that have
- 14 resulted or would result from past, present, and future projects and plans discussed in the "Relationship to
- 15 Other Projects and Planning" section, this alternative would result in minor, long-term, beneficial
- 16 cumulative impacts to visitor use and experience.

#### 17 Conclusion

- 18 Alternative C would result in minor, beneficial, long-term impacts on public use and experience at the
- 19 four proposed project sites. In addition to the functional and aesthetic enhancements that would result
- 20 from Alternative C, a new boat ramp at Point of Rocks would eliminate the rock ledge navigation hazard,
- and at Fifteenmile Creek, a new boat ramp would extend into the main channel of the Potomac River,
- 22 bypassing the heavy silt deposits at the confluence of the river and Fifteenmile Creek and assuring easy
- river access for deeper-draft vessels. Alternative C would result in minor, long-term, beneficial
- 24 cumulative impacts to visitor use and experience.
- 25

#### 1

#### CONSULTATION AND COORDINATION

2 Internal National Park Service discussions led to identification of the main issues and impact topics to be

3 addressed in this environmental assessment. Park personnel conducted site visits with personnel from the

4 U.S. Fish and Wildlife Service, the Maryland Department of Environment, and the Maryland Department

5 of Natural Resources at the Brunswick and Fifteenmile Creek boat ramp sites. Discussions at the

6 Brunswick site centered on the potential increases to storm water run-off and the need for a bioretention

7 area.

8 At Fifteenmile Creek, discussions focused on the temporary benefits of dredging, the use of fill at and/or

9 paving the parking area in its current location within the floodplain, and the removal of vegetation at the

10 former campground site to accommodate a new parking area. During the site visit discussions, Maryland

11 Department of Environment personnel indicated that they were not in favor of elevating the existing

12 parking area or repeated dredging.

13 In 2003, the U.S. Fish and Wildlife Service and the Maryland Department of Natural Resources provided

14 letter responses to National Park Service inquiries regarding the proposed improvements at Fifteenmile

- 15 Creek (see Appendix C). The Chesapeake Bay Field Office of the U.S. Fish and Wildlife Service stated
- 16 that "except for transient individuals, no federally proposed or listed endangered or threatened species are
- 17 known to exist within the project impact area. Therefore, no Biological Assessment or further Section 7

18 Consultation with the U.S. Fish and Wildlife Service is required." A similar response was received in a

19 November 8, 2004, letter from the U.S. Fish and Wildlife Service regarding the presence of proposed or

20 listed species at the Brunswick and Point of Rocks sites (see Appendix C).

21 The Maryland Department of Natural Resources indicated that the Wildlife and Heritage Service had a

22 recent record for the state-listed endangered clasping-leaved dogbane occurring on park property at the

23 mouth of Fifteenmile Creek near the river shoreline (see Appendix C). They also stated that the Wildlife

24 and Heritage Service's Natural Heritage database identifies five species of concern within the vicinity of

- the project site. Regarding the presence of finfish species, the Maryland Department of Natural
- 26 Resources indicated that the Fifteenmile Creek (Upper Potomac River Drainage Area) is classified as a
- 27 Use IV-P stream (recreational trout waters and public water supply) and that in-stream work is generally

28 not permitted from March 1 through June 15 during any year. Any of the finfish species that may occur

in or near the project site would be adequately protected by the Use IV-P in-stream work restriction

30 period, appropriate sediment and erosion control methods, and other best management practices typically

31 used for the protection of stream resources.

32 Consultation regarding the Monocacy Aqueduct site was initiated with the transmittal of letters to the

- 33 Maryland Department of Natural Resources and U.S. Fish and Wildlife Service requesting information
- 34 about the presence of proposed or listed species at that site. The Maryland Department of Natural
- 35 Resources response, dated November 8, 2004 (see Appendix C), indicated the drainages in the Monocacy

36 Aqueduct area are classified as Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public

- 37 Water Supply). In-stream work restrictions for Use I-P waters would be from March 1 to June 15,
- inclusive. Additionally, a February 14, 2005, the park received a response from the Maryland Wildlife

39 and Heritage Service Natural Heritage Program, included in Appendix C. This letter indicates that no

40 rare, threatened, or endangered species are recorded for the immediate project area, but does recommend

41 that surveys to determine the presence of the state-threatened white trout lily and amphibians be

- 42 performed. The letter also presents mitigation measures to minimize impacts to "forest interior dwelling43 species."
- 44 The U.S. Fish and Wildlife Service responded in a January 13, 2005 letter that stated, "Except for
- 45 transient individuals, no federally proposed or listed endangered or threatened species are known to exist

- 1 within the project impact area." The letter from the U.S. Fish and Wildlife Service is included in
- 2 Appendix C.
- 3 Additionally, actions that would be taken at the Monocacy Aqueduct canal basin, including removal of
- 4 trees at grade, were discussed with the Maryland Department of the Environment and U.S. Army Corps of
- 5 Engineers (Copenhaver 2005). These discussions indicated that if no grade alterations were going to
- 6 occur, no wetland permits would be needed.
- 7 Prior to project implementation at any of the four project sites, coordination would be required with the
- 8 Maryland State Historic Preservation Office and the U.S. Army Corps of Engineers. This environmental
- 9 assessment would be sent to both agencies, and any comments received would be reflected in the final
- 10 compliance documents.

#### 11 PLANNING TEAM PARTICIPANTS

Name	Organization	Position
Dan Copenhaver	C and O Canal NHP	Park Engineer
Lynne Wigfield	C and O Canal NHP	Compliance Officer
Tina Orcutt	C and O Canal NHP	Chief of Resource Management
Dianne Ingram	C and O Canal NHP	Natural Resources
Robert Hartman	C and O Canal NHP	Chief of Maintenance

12

#### 13 **PREPARERS**

Name	Organization	Position
Mark Norman	Parsons	Environmental Scientist
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Don Kellett	Parsons	Environmental Scientist
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14

#### 15 **LIST OF RECIPIENTS**

16

17 ///Park to provide

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APPENDIXES

# APPENDIX A DISMISSED ALTERNATIVES: MAPS

FIGURE 1: ALTERNATIVE 3 BRUNSWICK BOAT RAMP (DISMISSED)





FIGURE 2: ALTERNATIVE 4 BRUNSWICK BOAT RAMP (DISMISSED)
# APPENDIX B THREATENED AND ENDANGERED SPECIES

## **EXPLANATION OF RANK AND STATUS CODES**

January 26, 2001

Originally developed and instituted by The Nature Conservancy, an international conservation

organization, the global and state ranking system is used by all 50 state Natural Heritage programs and numerous Conservation Data Centers in other countries in this hemisphere. Because they are assigned based upon standard criteria, the ranks can be used to assess the range-wide status of a species as well as the status within portions of the species' range. The primary criterion used to define these ranks are the number of known distinct occurrences with consideration given to the total number of individuals at each locality. Additional factors considered include the current level of protection, the types and degree of threats, ecological vulnerability, and population trends. Global and state ranks are used in combination to set inventory, protection, and management priorities for species both at the state as well as regional level.

### **GLOBAL RANK**

- G1 Highly globally rare. Critically imperiled globally because of extreme rarity (typically 5 or fewer estimated occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
- G2 Globally rare. Imperiled globally because of rarity (typically 6 to 20 estimated occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
- G3 Either very rare and local throughout its range or distributed locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; typically with 21 to 100 estimated occurrences.
- G4 Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery.
- G5 Demonstrably secure globally, although it may be quite rare in parts of its range, especially at the periphery.
- GH No known extant occurrences (i.e., formerly part of the established biota, with the expectation that it may be rediscovered).
- GU Possibly in peril range-wide, but its status is uncertain; more information is needed.
- GX Believed to be extinct throughout its range (e.g., passenger pigeon) with virtually no likelihood that it will be rediscovered.
- G? The species has not yet been ranked.
- \_Q Species containing a "Q" in the rank indicates that the taxon is of questionable or uncertain taxonomic standing (i.e., some taxonomists regard it as a full species, while others treat it at an infraspecific level).
- \_T Ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species.

# STATE RANK

- S1 Highly State rare. Critically imperiled in Maryland because of extreme rarity (typically 5 or fewer estimated occurrences or very few remaining individuals or acres in the State) or because of some factor(s) making it especially vulnerable to extirpation. Species with this rank are actively tracked by the Natural Heritage Program.
- S2 State rare. Imperiled in Maryland because of rarity (typically 6 to 20 estimated occurrences or few remaining individuals or acres in the State) or because of some factor(s) making it vulnerable to becoming extirpated. Species with this rank are actively tracked by the Natural Heritage Program.
- S3 Rare to uncommon with the number of occurrences typically in the range of 21 to 100 in

Maryland. It may have fewer occurrences but with a large number of individuals in some

populations, and it may be susceptible to large-scale disturbances. Species with this rank are not actively tracked by the Natural Heritage Program.

S3.1 A species that is actively tracked by the Natural Heritage Program because of the global

significance of Maryland occurrences. For instance, a G3 S3 species is globally rare to

uncommon, and although it may not be currently threatened with extirpation in Maryland, its occurrences in Maryland may be critical to the long term security of the species. Therefore, its status in the State is being monitored.

- S4 Apparently secure in Maryland with typically more than 100 occurrences in the State or may have fewer occurrences if they contain large numbers of individuals. It is apparently secure under present conditions, although it may be restricted to only a portion of the State.
- S5 Demonstrably secure in Maryland under present conditions.
- SA Accidental or considered to be a vagrant in Maryland.
- SE Established, but not native to Maryland; it may be native elsewhere in North America.
- SH Historically known from Maryland, but not verified for an extended period (usually 20 or more years), with the expectation that it may be rediscovered.
- SP Potentially occurring in Maryland or likely to have occurred in Maryland (but without persuasive documentation).
- SR Reported from Maryland, but without persuasive documentation that would provide a basis for either accepting or rejecting the report (e.g., no voucher specimen exists).
- SRF Reported falsely (in error) from Maryland, and the error may persist in the literature.
- SU Possibly rare in Maryland, but of uncertain status for reasons including lack of historical records, low search effort, cryptic nature of the species, or concerns that the species may not be native to the State. Uncertainty spans a range of 4 or 5 ranks as defined above.
- SX Believed to be extirpated in Maryland with virtually no chance of rediscovery.
- SYN Currently considered synonymous with another taxon and, therefore, not a valid entity.
- SZ A migratory species which does not inhabit specific locations for long periods of time.
- S? The species has not yet been ranked.
- -B This species is migratory and the rank refers only to the breeding status of the species. Such a migrant may have a different rarity rank for non-breeding populations.

# STATE STATUS

This is the status of a species as determined by the Maryland Department of Natural Resources, in accordance with the Nongame and Endangered Species Conservation Act. Definitions for the following categories have been taken from Code of Maryland Regulations (COMAR) 08.03.08.

- E Endangered; a species whose continued existence as a viable component of the State's flora or fauna is determined to be in jeopardy.
- I In Need of Conservation; an animal species whose population is limited or declining in the State such that it may become threatened in the foreseeable future if current trends or conditions persist.
- T Threatened; a species of flora or fauna which appears likely, within the foreseeable future, to become endangered in the State.
- X Endangered Extirpated; a species that was once a viable component of the flora or fauna of the State, but for which no naturally occurring populations are known to exist in the State.
- \* A qualifier denoting the species is listed in a limited geographic area only.
- PE Proposed Endangered; a species whose continued existence as a viable component of the State's flora or fauna is determined to be in jeopardy.
- PT Proposed Threatened; a species of flora or fauna which appears likely, within the foreseeable future, to become endangered in the State.
- PX Proposed Endangered Extirpated; a species that was once a viable component of the flora or fauna of the State, but for which no naturally occurring populations are known to exist in the State.
- PD Proposed to be deleted or removed from the State Threatened & Endangered Species list.

## FEDERAL STATUS

This is the status of a species as determined by the U.S. Fish and Wildlife Service's Office of Endangered Species, in accordance with the Endangered Species Act. Definitions for the following categories have been modified from 50 CRF 17.

- LE Taxa listed as endangered; in danger of extinction throughout all or a significant portion of their range.
- LT Taxa listed as threatened; likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
- PE Taxa proposed to be listed as endangered.
- PT Taxa proposed to be listed as threatened.
- C Candidate taxa for listing for which the Service has on file enough substantial information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened.

# Current and Historical Rare, Threatened, and Endangered Species of Allegany County, Maryland\* May 10, 2004 Maryland Department of Natural Resources Wildlife and Heritage Service Global State St

	WIIGHTE and heritage bervice	Global	State	State	Federal
Scientific Name	Common Name	Rank	Rank	Status	Status
Animals					
Accipiter gentilis	Northern goshawk	G5	S1B	E*	
Accipiter striatus	Sharp-shinned hawk	G5	S1S2B		
Aegolius acadicus	Northern saw-whet owl	G5	S1B		
Aimophila aestivalis	Bachman's sparrow	G3	SHB	Х	
Alasmidonta undulata	Triangle floater	G4	S1	Е	
Alasmidonta varicosa	Brook floater	G3	S1	Е	
Amblyscirtes hegon	Pepper and salt skipper	G5	S2	I	
Ammodramus henslowii	Henslow's sparrow	G4	S1S2B	Т	
Caecidotea franzi	Franz's cave isopod	G2G3	S1	Е	
Calephelis borealis	Northern metalmark	G3G4	S2	Т	
Cicindela ancocisconensis	A tiger beetle	G3	S1	Е	
Cicindela patruela	Green-patterned tiger beetle	G3	S1	Е	
Dendroica fusca	Blackburnian warbler	G5	S1S2B	Т	
Elliptio producta	Atlantic spike	G4Q	S2S3		
Erethizon dorsatum	Porcupine	G5	S1S2	I	
Erynnis martialis	Mottled duskywing	G3G4	S1	Е	
Erynnis persius persius	Persius duskywing	G5T2T3	SH		
Euchloe olympia	Olympia marble	G4G5	S2	I	
Eumeces anthracinus	Northern coal skink	G5	SU	Е	
Fixsenia ontario	Northern hairstreak	G4T4	S1S2	Е	
Fontigens bottimeri	Appalachian spring snail	G2	S2		
Glaucopsyche lygdamus	Silvery blue	G5	S2	I	
Glyphyalinia raderi	Rader's snail (Maryland glyph	)G2	SH	Х	
Hendersonia occulta	Cherrydrop snail	G4	S2	I	
Lasmigona subviridis	Green floater	G3	S1	Е	
Lepus americanus	Snowshoe hare	G5	SH	х	
Mustela nivalis	Least weasel	G5	S2S3	I	
Myotis leibii	Eastern small-footed bat	G3	S1B	I	
Myotis sodalis	Indiana bat	G2	S1	Е	LE
Neotoma magister	Allegheny woodrat	G3G4	S1	Е	
Nymphalis vaualbum	Compton tortoiseshell	G5	S1B	Е	
Papilio cresphontes	Giant swallowtail	G5	S2	I	
Plethodon wehrlei	Wehrle's salamander	G5	S2	I	
Porhomma cavernicola	Appalachian cave spider	G4G5	S2		
Porzana carolina	Sora	G5	S1B		
Pseudacris brachyphona	Mountain chorus frog	G5	S2	Т	
Pyrgus wyandot	Southern grizzled skipper	G2	S1	Е	
Satyrium caryaevorum	Hickory hairstreak	G4	S1	Е	
Satyrium edwardsii	Edwards' hairstreak	G4	S1	Е	
Sorex dispar	Long-tailed shrew	G4	S2	I	
Sorex fumeus	Smoky shrew	G5	S2S3	I	
Sphalloplana sp 1	A planarian	G?	S1S2		
Spilogale putorius	Eastern spotted skunk	G5	S1		
Strophitus undulatus	Squawfoot	G5	S2	I	
Stygobromus allegheniensis	Allegheny cave amphipod	G4	S2S3	I	
Stygobromus franzi	Franz's cave amphipod	G2G3	S2S3	I	
Stygobromus sp 5	Barrelville amphipod	G?	S1		
Stygobromus sp 6	An amphipod	G?	S1		
Thryomanes bewickii altus	Bewick's wren	G5T2Q	S1B	Е	
Plants					
Adlumia fungosa	Climbing fumitory	G4	S2	т	
Agalinis obtusifolia	Blunt-leaved gerardia	G4G50	S1	E	
Agrimonia striata	Woodland agrimony	G5	s1	3	
Amelanchier humilis	Running serviceberry	G5	S1	T	
Amelanchier sanguinea	Roundleaf serviceberry	G5	S1		
Amelanchier stolonifera	Running juneberry	G5	S2	Т	
Apocynum sibiricum	Clasping-leaved dogbane	G5?	SH	Х	
Arctostaphylos uva-ursi	Bearberry	G5	S1	Е	
Aristida curtissii	Curtiss' three-awn	G5T5	SU		
Aristolochia macrophylla	Pipevine	G5	S1	Т	
Asplenium pinnatifidum	Lobed spleenwort	G4	S1	Е	
Aster praealtus	Willow aster	G5	S1		

Astragalus canadensis	Canada milkvetch	G5	S1	E Astragalus
distortus Bent m	lkvetch G5	S2	Т	
Azolla caroliniana	Mosquito fern	G5	SU	
Bouteloua curtipendula	Side-oats grama	G5	S2	
Bromus ciliatus	Fringed brome	G5	SU	Х
Bromus latiglumis	Broad-glumed brome	G5	S1	Е
Calystegia spithamaea	Low bindweed	G4G5	S2	
Campanula divaricata	Southern harebell	G4	SU	х
Campanula rotundifolia	Harebell	G5	52	
Carex eburnea	Ebony sedge	G5	S1	E
Carex emoryi	Emory's sedge	G5	S1S2	_
Carex pedunculata	Long-stalked sedge	G5	S1	E
Carex pellita	Woolly sedge	G5	522	-
Carex shortiana	Short's sedge	G5	S2.	म
Castilleja coccinea	Indian paintbrush	G5	S1	<u>п</u>
Chenopodium gigantospermum	Maple-leaved googefoot	GJ G4G5	S1 91	r r
Chenopodium standlevanum	Standley's goosefoot	G1G5 C5	S1 91	r r
Cippo latifolia	Slander wood roodgrada	GJ CE	51	т Т
Computer museum	Bound-loawed dogwood	G5 CF	52 C1	I T
Cornus rugosa	Round-leaved dogwood	GS	51	E.
Cyperus noughtonii	Houghlon's unbreila-seage	G4:	SI	
Delphinium exaltatum	Tall larkspur	G3	SI	E
Diarrhena americana	Twin oats	G4?	SI	E
Dicentra eximia	Wild bleeding-heart	G4	S2	T
Diplazium pycnocarpon	Glade tern	G5	S2	Т
Dryopteris campyloptera	Mountain wood-fern	G5	S1	E
Erythronium albidum	White trout lily	G5	S2	Т
Euphorbia obtusata	Blunt-leaved spurge	G5	S1	E
Festuca paradoxa	Cluster fescue	G5	SH	X
Gentiana andrewsii	Fringe-tip closed gentian	G5?	S2	Т
Hasteola suaveolens	Sweet-scented indian-plantain	G3	S1	E
Helianthus laevigatus	Smooth sunflower	G4	S1	E
Heuchera villosa	Rough heuchera	G5	SH	Х
Iris cristata	Crested iris	G5	S1	Е
Juglans cinerea	Butternut	G3G4	S2S3	
Juncus trifidus	Highland rush	G5	S1	Е
Lemna trisulca	Star duckweed	G5	S1	E
Liatris turgida	Robust blazing-star	G3	SH	Х
Lilium philadelphicum	Wood lily	G5	SH	Х
Lithospermum latifolium	American gromwell	G4	S1	Е
Lonicera canadensis	Canada honeysuckle	G5	S1	Е
Lupinus perennis	Wild lupine	G5	S2	Т
Lysimachia hybrida	Lowland loosestrife	G5	S2	Т
Matelea obligua	Climbing milkweed	G4?	S1	Е
Matteuccia struthiopteris	Ostrich fern	G5	S2	
Melica nitens	Three-flowered melicgrass	G5	s2	Т
Minuartia michauxii	Rock sandwort	G5	S2	- T
Onosmodium molle	Shagay false-gromwell	G4G5	S1	- Э
Oryzongis asperifolia	White-fruited mountainrice	G5	S2 S2	т Т
Oryzopsis racemosa	Black-fruited mountainrice	G5	S2 S2	т т
Paronychia wirginica war	Vellow nailwort	C4T10	91 91	r r
virginica	TELLOW HALLWOLD	GHIIQ	51	15
Parthenium integrifolium	American feverfew	C5	<b>C</b> 1	r.
Paristina sanbui	Conbulg mountain lower	G3	S1	5
Dhloy latifolia	Mountain phlox	G2 C4	CU CU	V
Platanthera flava	Dala groop orghid	G4	51	Δ
Platanthera naramaana	Pare green ording	G4 CE	54	m
	Guara mandar manag	GJ	31	1
Poa alsodes	Grove meadow-grass	G4G5	52	
Poa saltuensis	Drooping bluegrass	G5	SI	E
Polygala polygama	Racemed milkwort	G5	SI	Т
Polygala senega	Seneca snakeroot	G4G5	S2	Т.
Potamogeton illinoensis	Illinois pondweed	G5	SI	
Prunus alleghaniensis	Alleghany plum	G4	S2	Т
Ptilimnium nodosum	Harperella	G2	S1	E LE
Pycnanthemum virginianum	Virginia mountain-mint	G5	S2	
Quercus macrocarpa	Mossy-cup oak	G5	S1	
Ruellia strepens	Rustling wild-petunia	G4G5	S1	E
Salix exigua	Sandbar willow	G5	S1	E
Scutellaria leonardii	Leonard's skullcap	G4T4	S2	Т
Sedum glaucophyllum	Cliff stonecrop	G4	S1	E
Sida hermaphrodita	Virginia mallow	G2	S1	E
Silene nivea	Snowy campion	G4?	S1	E

Smilacina stellata	Star-flowered false Solomon's-	-seal G5	S1	Е
Solidago hispida	Hairy goldenrod	G5	SH	Х
Solidago rupestris	Rock goldenrod	G4?	S1	Х
Spiranthes ochroleuca	Yellow nodding ladys' tresses	G4	S1	Е
Stachys cordata	Nuttall's hedge-nettle	G5?	S1	
Stellaria alsine	Trailing stitchwort	G5	S1	Е
Symphoricarpos albus	Snowberry	G5	S1	Т
Taenidia montana	Mountain pimpernel	G4	S2	Τ
Talinum teretifolium	Fameflower	G4	S1	Т
Thuja occidentalis	Arbor-vitae	G5	S1	Т
Trichostema setaceum	Narrow-leaved bluecurls	G5	S1	
Trifolium virginicum	Kate's-mountain clover	G3	S2S3	Т
Triosteum angustifolium	Narrow-leaved horse-gentian	G5	S1	Е
Valerianella chenopodiifolia	Goose-foot cornsalad	G5	S1	Е
Veronica scutellata	Marsh speedwell	G5	S1	Е
Woodsia ilvensis	Rusty woodsia	G5	S1	Т
Zanthoxylum americanum	Northern prickly-ash	G5	S1	Е

\* This report represents a compilation of information in the Wildlife and Heritage Service's Biological and Conservation Data system as of the date on the report. It does not include species considered to be "watchlist" or more common species.

#### Current and Historical Rare, Threatened, and Endangered Species of Frederick County, Maryland\* May 10, 2004 Maryland Department of Natural Resources Wildlife and Heritage Service

Scientific NameCommon NameRankRankStatusStatusAnimaisAnamaidonts varicosaBrock floaterG3S1EBartrania longicaudaUpland sandpiperG5S18ECaccidotes gn 4An isopodG7S1EDendroics fuscaPlackburnian varienterG3S1EElliptio lanceolataYellow lanceG23S223TElliptio productaAtlancio spikeG40S223TLTIndepsitisEast bitternG5S253TLTIzamigona subviridisCommon moorbenG3S1ELamius ludoviciamusLoggerhead shrikeG4S18BLasmigona subviridisGreen floaterG3S1EPorishinus undulatusLoggerhead shrikeG4S18EPorishinus undulatusEquation of thistreakG4S18EStypobromus sp 14Roundop amplipodG204S1EPorishinus inducosClimbing fumitoryG4S12TAgatache scrophulariifoliaAurield geratiG3S1EAgainnia suricolariCoasal juncherryG5S2TAgainnia suricolariAurield greaterG5S12TAgainfa suricolariAurield geratiG3S1EAgainfa suricolariAurield geratiG5S2TAgainfa suricolariAurield greatiG5S2TAgainfa su			Global	State	State	Federal
Avimals Alasmidonta varicosa Bartamia Iongicauda Upland sandpiper G S 18 E E Caecidota sp 4 An isopod G S S18 E Caecidota sp 4 An isopod G S S18 E Dendroica fusca Hackburnian warbler G S S124 F Dendroica fusca Hackburnian warbler G S S124 F Dendroica fusca Hackburnian warbler G S S25 I E Elliptio lancelata Y Ellow lance G G S25 I E Elliptio lancelata Y Ellow lance G S S25 I Elliptio schemes Hackburnian warbler G S S25 I Elliptio schemes Hackburnian Commonophen G S S25 I Lanus ludvicianus Loggethead shrike G S S25 I Lanus ludvicianus Loggethead shrike G S S18 E Estimation of the schemes Hackburnian Commonophen G S S25 I Lanus ludvicianus Loggethead shrike G S S18 E Estimation of the schemes Hackburnian Commonophen G S S28 I Lanus ludvicianus Loggethead shrike G S S18 E Estimation of the schemes Commonophen G S S28 I Lanus ludvicianus Loggethead shrike G S S18 E Estimation Estimation D S18 Estimation Esti	Scientific Name	Common Name	Rank	Rank	Status	Status
Name Alassistoria varicosaFrock flasserG3G1FAlassistoria varicosaGreen-patterned tiger beetleG3G1FCicindela patruelaGreen-patterned tiger beetleG3S1FElliptio lanceolataYellow lanceG233SUFElliptio lanceolataYellow lanceG233SUFElliptio lanceolataYellow lanceG3S1KHaliacetta BelucocephalaGamon moorhenG5S128.7ITRabiacetta SuccosaYellow langenselG304S1KLamsigina subviridisGreen floaterG3S1EIxobrychus exilisLeast bitternG3G34S1ELassigona subviridisGreen floaterG3G34S1EPodilymbus podicepsPied-billed grebeG5S128FFPortana corolinaSoraG34S1EFStryptim edwardsiiEdwards' hairstreakG4S1EFStryptim edwardsiiBewick's wrenG570S1FPortana corolinaSoraG35IFStryptim edwardsiiHiring amplipodG7 <g1< td="">IAgainia suriculataAuricid greatingG3S1EAgainia suriculataAuricid greatingG3S1EAgainia suriculatiSuriculationG3S1EAgainia suriculatiAuricid greatingG3S1EAgainia suriculati<th></th><th></th><th></th><th></th><th></th><th></th></g1<>						
Annals Anasaudonta varicosa Brook floater G3 S1 E Bartrania longicauda Upland sandpiper G5 S1B E Cleinédes ge 4 An isopod Cleinéela patruela Green-patismed tiger betle G S1 E Elliptio producta Bellouinare warbler G3 S12B T Elliptio producta Nellantic spike G40 S13 Elliptio producta Nellantic spike G40 S123 Elliptio cariosa Y ellow langmussel G3 S1 E Lamius ludvicianus Longerhead shrinke G4 S12SB T Lamius ludvicianus Longerhead shrinke G5 S22SB T Lamius ludvicianus Longerhead shrinke G4 S1 B E Lamius ludvicianus Longerhead shrinke G4 S1 B E Lamius ludvicianus Longerhead shrinke G5 S22S I Lamius ludvicianus Longerhead shrinke G5 S22S I Lamius ludvicianus Longerhead shrinke G5 S22S I Portana carolina Sora S1 E Strophitus undulatus Squardoot G5 S2 I Strophitus undulatus Squardoot G5 S2 I Strygohromus sp 14 Roundtop amphipod G7 S1 Strygohromus sp 14 Roundtop amphipod G4 S1 Z Againing auriculata Auricled gerardia G3 S1 R Againing auricularis Constal juncberry G4 S1 T Againing auricularis Constal juncberry G4 S1 T Againing auricularis Constal juncberry G4 S1 T Againing auricularis Constal juncberry G4 S1 Z Againing auricularis Auricled gerardia G3 S1 R Againing auricularis Constal juncberry G45 S1 Analschier chovalis Accare activalis Constal juncberry G45 S1 E Acter radula Auricled gerardia G5 S1 B Strophitus undularis S1 R Againing auricularis Ruberry G45 S1 R Acter radula Rough-Leaved acter G5 S1 B Acter radula Rough-Leaved acter G5 S1 B Accares activalis Summer sedge G5 S1 B Corres dovisis Auricled orchis G5 S1 E Corres dovisis Auricled orchis G5 S1 E Corres totala S1 R Accares activalis Conder Hernicober G5 S1 E Corres dovisis Merice S1 S1 E Corres activalis Conder Hernicober G5 S1 E Corres termessensis Termessee bladder-fern G5 S1 E Corres termessensis Termessee bladder-fern G5 S1 E Corres acti	<b>1</b>					
AlaSmichonica Varioosa Brook Hoster G3 S1 B Bartramia Longicauda Upland sandpiper G3 S1 B Cascidotea sp 4 An isopod G7 S1 Cascidotea sp 4 An isopod G7 S1 Elliptic longicauda Upland sandpiper G5 S152B T Elliptic lancelatar Yellow lance G2G3 S1 Elliptic producta Atlantic spike G6 S23B T L Elliptic loncopus Common moorhem G7 S35 T Elliptic loncopus Value languages G7 S12B T Elliptic loncopus Plied-billed grabe G5 S2AS I Elliptic loncopus Plied-billed grabe G5 S2AS I Elliptic loncopus Plied-billed grabe G5 S2A I Strophitus undulatus SquarGot G5 S1A Strophitus undulatus SquarGot G5 S1A Elliptic languages G7 S1 Thryomanes bewicki altus Bewick's wren G5T2Q S1B E Plants Allumia fungosa Climbing fumitory G4 S2 T Agalinis auriculata Auricled gerandia G3 S1 E Agrimonia microcarpa Small-fruited agrimony G4 S1 T Agalanchier stolonifera Running juneberry G4 S12 T Agalanchier stolonifera Running juneberry G5 S1 A Asplenium bradleyi Bradley's spleamort G4 S1 E Acolla carolinian Mosquito fern G5 S1 E Acolla carolinian Mosquito fern G5 S1 E Carex davisii Davis' sadge G4 S1 E Carex davisii Davis' sadge G4 S1 E Carex davisii Davis' sadge G5 S1 E Carex davisii Da	Animais		~ ~	<b>a</b> 1	-	
Bartrania Longiczuda Dpiand sandpiper 65 Sli E Cacidotas gp 4 An isopod 77 Sl E Dendroics fueca Blackburnian warbler 63 Sl22B T Elliptio lanceolata Tellow Lance 640 Sl23B T Elliptio generative An Lantic spike 640 Sl23B T Tobrychne skilis Least bittern 65 Sl23B T Lamisa Ludvictanus Loggerhead shrike 64 Sl3 B T Lamisa Ludvictanus Loggerhead shrike 64 Sl3 E Portana carolina Sora 65 Sl3 Stryphitus podiceps Pied-billed grabe 65 Sl3 Stryphitus undulatus Squawfoot 65 Sl3 Stryphitus undulatus Squawfoot 65 Sl3 I Stryphitus undulatus Squawfoot 65 Sl3 I Stryphytone pizzini Pizzini's amphipod 677 Sl Thryomanes bewicki altus Bewick's wren 65T20 Sl8 E Plants Adlunia fungosa Climbing funitory 64 Sl I E Agailnia aurolulat Auroled granom 65 Sl Sl I Agailnia aurolulat Auroled granom 65 Sl Sl I Amelanchier ebovalis Casati juneberry 64 Sl I E Agailnia aurolulat Auroled granom 65 Sl I E Agailnia aurolulation Bewick's wren 65T20 Sl I E Agailnia aurolulation Running juneberry 64 Sl I E Agailnia aurolulation Running juneberry 64 Sl I E Agailnia aurolulation Running juneberry 64 Sl I E Agailnia carolina Running juneberry 65 Sl I E Amelanchier ebovalis Casati juneberry 65 Sl I E Amelanchier dotonifera Running juneberry 65 Sl I E Carex aetivalis Summer sedge 64 Sl I E Carex aetivalis Summer sedge 65 Sl I E Carex aetivalis Comp-braved orchis 65 Sl I E Carex aetivalis Comp-braved orchis 65 Sl I E Cores field aurole Runci Summer sedge 65 Sl I E Carex aetivalis Summer sedge 65 Sl I E Carex aetivalis Comp-braved orchis 65 Sl I E Cores field aurole Runci Summer sedge 64 Sl I T Coelogosum viride Comp-braved 65 Sl I E Cores and visiterian Rusterian 65 Sl I E Cores andisterian Rusterian 75 Sl I E	Alasmidonta varicosa	Brook floater	G3	SI	E	
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Elliptio lanceolata Yellow lance 6263 SU Elliptio producta Allanic spike 640 S283 Gallinula chloropus Common morthen 65 S28 T Ixobrychus exilis Least bittern 65 S283 T Ixobrychus exilis Least bittern 65 S283 T Lampilic cariosa Yellow lampnuscel 3364 S1 X Lambing Lampilic Common morther 63 S1 E Hambing Least bittern 63 S1 E Mustela nivalis Least weasel 65 S283 T Nectoma magniter Allegheny woodrat 3364 S1 R Podlymbus podiceps Pied-billed grebe 65 S28 T Potlymbus podiceps Pied-billed grebe 65 S28 T Strophitus undulatus Squawfoot 65 S2 I Strophitus undulatus Squawfoot 65 S2 I Strophitus undulatus Squawfoot 65 S2 I Strophitus undulatus Squawfoot 65 S2 I Thryomanes bewickii altus Bewick's wren 65T20 S1B E Plancs Adaptating ungosa Climbing funitory 64 S2 T Agalinis auriculata Auricled gerardia 63 S1 E Agatache scrophulariifola Purple giant hysop 64 S1S2 T Agatache scrophulariifola Purple giant hysop 64 S1S T Agalanis auriculata Running jumberry 64 S1 Z Amelanchier oboxilis Costal juneberry 64 S1 Z Agalanim hartifdum Lobed gelemvort 64 S1 Z Agalanim suriculata Running jumberry 64 S1 Z Agalanim pinnatifdum Lobed gelemvort 64 S1 Z Agalanim badit S1 S Strophitus Strophitus S3 S3 S Calogogon tuberosus Grass-pink 65 S1 E Carex advisii Davis' sedge 65 S12 Carex shortiana Mosquito fern 65 S1 E Carex davisii Davis' sedge 65 S12 Carex shortiana Short's sedge 65 S12 Carex shortiana Short's sedge 65 S12 Carex shortiana Short's sedge 65 S1 E Coralistis visteriana Wister's coralroot 65 S1 E Coralistis wisteriana Wister's coralroot 65 S1 E Coral contina wisteriana Wister's coralroot 65 S1 E Coral cordina Pinter 48 S1 E Coral cordina Pinter 48 S1 E Coral subus Primed brone 55 S1 E Coral subus Pinese bladder-fern 65 S1 E Coral subus Size T Dypoteris campiloptera Round-leaved dogwood 65 S1 E Coral subus wisteriana Wister's coralroot 65 S1 E E Coral subu	Dendroica fusca	Blackburnian warbler	G5	S1S2B	Т	
Elliptio producta Atlantic spike G4Q S23 Gallinula chloropus Common morhen G5 S28 I LT Haliaeetus leucocephalus Bald eagle G4 S233 T LT Lampellis cariosa Yellov lampmussel G3G S233 I L Lamius ludovicianus Loggerhead shrike G4 S18 E Lamius ludovicianus G7 een floater G3 S1 E Mustela nivalis Least weasel G5 S233 I Neotoma magister Allegheny woodrat G3G S1 E Porzana carolina Sora G5 S18 Stryphitus undulatus Squawfoot G5 S2 I Stryphitus undulatus Squawfoot G5 S2 I Strypobromus pizzini Pizzini's amphipod G7G S1 Strypobromus pizzini Pizzini's amphipod G7 S1 Agalinia fungosa Climbing fumitory G4 S1 E Agastache scrophularifolia Purple giant hyssop G4 S1S2 T Agrimonia microcarpa Small-fruited agrimony G5 SU Amelanchier obvalis Coastal juneberry G5 S2 T Applenium bradleyi Bradley's spleenwort G4 S1 E Aster radula Rough-leaved aster G5 S1 E Aster radula Rough-leaved aster G5 S1 E Aster radula Rough-leaved aster G5 S1 E Aster radula Sumer sedge G4 S1 E Carex advisii Davis' sedge G5 S1 E Carex advisii Bart's soralroot G5 S1 E Carex advisi Bart's sedge G5 S1 E Carex advisi Bart's adge G5 S1 E Corelolosous Viride Loop-practed crisi G5 S1 E Corelosous Viride Loop-praced Crisi G5 S1 E Corelosous Viride Loop-praced Crisi G5 S1 E Corelosous Viride Loop-praced Crisi G5 S1 E Corelosous Viride Loop-pracewed S1 S2 Carex ashortiana Mister's coralroot G5 S1 E Corelosous Viride Loop-pracewed S1 S2 S1 E Cirelosous Viride Loop-pracewed S1	Elliptio lanceolata	Yellow lance	G2G3	SU		
Gallingla chloropusCommon morhenG5S2B IIxobrychus exilisLeast bitternG5S233B IIxobrychus exilisLeast bitternG5S233B ILangeilis cariosaYellov langmusselG3d S1 ELamius ludovicianusLoggerhead shrikeG4S1 ELamius ludovicianusLoggerhead shrikeG4S1 EMustela nivalisLeast weaselG5S23Podilymbus podicepsPied-billed grebeG5S2 EPodilymbus podicepsPied-billed grebeG5S2 EStrophitus undulatusSquawfootG5S2 IStrophitus undulatusSquawfootG5S2 IStrophonus splainiPizzini's amphipodG204S1Thryomanes bewickii altusBewick's wrenG5S2 IAgalinis auriculataAuricled gerardiaG3S1 EAgastache scrophularifoliaPurple giant hyssopG4S12 TAggitache scrophularificiaRungherryG5S2 TAnglenium indicrocarpaSmall-fruited agrimonyG5S2 TAgelenium bradleyiBradley's spleenwortG4S1 EApplenium bradleyiBradley's spleenwortG4S1 EApplenium pinatifidumLobe gpleenwortG4S1 EActor raduaRough-leaved asterG5S0 VApplenium pinatifidumLobe gpleenwortG4S1 ECarex advisiGruss-gplnkG5S1 ECarex advisiDavis' sedgeG4S1 E<	Elliptio producta	Atlantic spike	G4Q	S2S3		
Haliaestus leucocephalus Bald eagle G4 S253B T LT Ixobrychus exilis Least bittern G5 S253B T L Lampsilis cariosa Yellov lampmussel G3G4 S1 X Lanius ludovicianus Logerhead shrike G4 S1B E Lasmigona subviridis Green floater G3 S1 E Lasmigona subviridis Green floater G3 S1 E Lasmigona subviridis Green floater G3 S25B T Porzana carolina Sora G5 S2B Porzana carolina Sora G5 S2 I Strophitus undulatus Squawfoot G5 S2 I Strophitus undulatus Squawfoot G5 S2 I Strophitus undulatus Squawfoot G5 S2 I Stryobronus pizinii Pizzini s amphipod G7 S1 Thryomanes bewicki altus Bewick's wren G5 S1B F Againis auriculata Auricled gerardia G3 S1 E Agatache scrophularifolia Purgle giant hysoop G4 S12 T Agatache scrophularifolia Purgle giant hysoop G4 S12 T Agatache scrophularifolia Purgle giant hysoop G4 S12 T Agatache scrophularifolia Purgle giant hysoop G4 S12 T Agalenin bradleyi Bradleyis pleenwort G4 S1 E Aster radula Rough-leaved aater G5 S1 E Auster radula Rough-leaved aater G5 S1 E Actino pinatifidum Lobed spleenwort G4 S1 E Aster radula Rough-leaved aater G5 S1 E Actino pinatifidum Lobed spleenwort G4 S1 E Aster radula Rough-leaved aater G5 S1 E Carex davisii Davis' sedge G5 S12 C Gate davisii Davis' sedge G5 S12 E Gatex devisii Davis' sedge G5 S12 E Gatex devisii Davis' sedge G5 S1 E Garex davisii Pringed brome G5 S1 E Garex davisii Reinesensis Tennessee bladder-fern G5 S1 E Garex davisii Davis' sedge G5 S1 E Garex davisii Miter's coralroot G5 S1 E Garex davisii Davis' sedge G5 S1 E Garex davisii Davis' sedge G5 S1 E Garex davisii Davis' sedge G5 S1 E Gordin G5 S1 E Cornus rugosa Round-leaved dogwood G5 S1 E Cornus rugosa Round-leaved dogwood G5 S1 E Cornus rugosa Round-leaved dogwood G5 S1 E Equitation witter a Coralroot G5 S1 E Equitation witter a Coralroot G5 S1 E Equin	Gallinula chloropus	Common moorhen	G5	S2B I		
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Lampsilis cariosa Yellov Lampmusel G.304 S1 X Lamius ludovicianus Logenhead shrike G4 S1B E Lamiugona subviridis Green floater G3 S1 E Neotona magister Allegheny woodrat G3 S2 S1 Porzana carolina S07A G5 S2B Porzana carolina S07A G5 S2B Porzana carolina S07A G5 S2B Strophitus undulatus Squawfoot G5 S2 I Stygobronus pizzinii Pizzini's amphipod G7 S1 Thryomanes bewicki altus Bewick's wren G5 Q2 S1 Porzana bewicki altus Bewick's wren G5 Q2 S1 Porzana carolina Climbing funitory G4 S2 T Agalinis auriculata Auricled gerardia G3 S1 E Agastache scrophularifolia Purgle giant hyssop G4 S1S2 T Agastache scrophularifolia Purgle giant hyssop G4 S1S2 T Agastache scrophularifolia Purgle giant hyssop G4 S1S2 T Agalinis auriculata Auricled agrimony G5 S2 T Asplenium bradleyi Bradley's pleenwort G4 S1S2 T Asplenium bradleyi Bradley's pleenwort G4 S1S2 T Asplenium bradleyi Bradley's pleenwort G4 S1S2 T Asplenium pinatifidum Lobed spleenwort G4 S1 E Atter radula Rough-leaved atter G5 S1 E Dotrychium cenidense Blunchoberng G5 S1 E Datter S1 Actor adula Rough-leaved atter G5 S1 E Carex davisii Davis' sedge G4 S1 E Carex davisii Davis' sedge G5 S12 C Carex davisii Davis' sedge G5 S12 C Carex davisii Davis' sedge G5 S12 C Carex davisii Davis' sedge G5 S12 E Carex davisii Davis' sedge G5 S1 E Cornus rugosa Round-leaved dogwood G5 S1 E E Dirichen albidum White trout lijy G5 S2 T Cystopris campiopteria Montain wood-fern G5 S1 E Epilobium albidum White trout lijy G5 S2 T Epilobium albidum White trout lijy G5 S2	Ixobrychus exilis	Least bittern	G5	S2S3B	I	
Lamigona subwiridis Green floater 63 S1 E Mustela nivalis Least weasel 65 S23 I Mustela nivalis Least weasel 65 S23 I Potlymbus policeps Pied-billed grebe 65 S2E Porzana carolina Sora 64 S1 E Strophitus undulatus Squavfoot 65 S2 I Strophitus undulatus Squavfoot 65 S2 I Strygobromus pizzini Pizzini's amphipod 6264 S1 Strygobromus pizzini Pizzini's amphipod 67 S1 Thryomanes bewicki altus Bewick's wren 65T20 S1B E Palents Adlunia fungosa Climbing fumitory 64 S2 T Agalinis auriculata Auricled gerardia 63 S1 E Agastache scrophulariffolia Purple giant hysop 64 S122 T Againinis auriculata Auricled gerardia 63 S1 E Agastache scrophulariffolia Purple giant hysop 64 S122 T Agalenis auriculata Auricled gerardia 63 S1 E Agalenis tolonifera Running jumeberry 64 S5 S2 T Applenium bradleyi Bradley's spleenwort 64 S1 E Aster radula Rough-leaved aster 65 S1 E Dortychium oneidense Blunt-lobe grape-fern 64Q S1 E Dortychium oneidense Blunt-lobe grape-fern 64Q S1 E Carex davisii Davis' sedge 64 S1 E Carex davisii Davis' sedge 64 S1 E Carex davisii Davis' sedge 65 S12 Carex davisii Davis' sedge 65 S12 Carex davisii Davis' sedge 65 S12 Carex davisii Davis' sedge 65 S1 E Cornus rugosa Round-leaved dogwood 65 S1 E	Lampsilis cariosa	Yellow lampmussel	G3G4	S1	Х	
Lamidgona subviridisGreen floaterG3S1EMustela nivalisLeast wavelG5S283INeotoma magisterAllegheny woodratG364S1EPorzana carolinaSoraG5S1BSatyrium edwardsiiEdwards' hairstreakG4S1EStrophitus undulatusSquawfootG5S2IStygobromus pizziniPizzini's amphipodG7S1Thryomanes bewickii altusBewick's wrenG5T2QS1BEPlantsAuricled gerardiaG3S1EAgainini auriculataAuricled gerardiaG3S1EAgginonia microcarpaSmall-fruited agrimonyG5S2TAgginonia microcarpaSmall-fruited agrimonyG5S2TAgplenium bradleyiBradley's spleenwortG4S1EAsplenium pinatifiduLobed spleenwortG4S1EAscolia carolinianaMoeguito fernG5SUXAgolacoriniatusFringed bromeG5S1ECarex aestivalisSummer sedgeG4S1ECarex aestivalisBunt-lobe grape-fernG4QS1ECarex davisiiDavis' sedgeG5S12CCarex aestivalisSummer sedgeG5S12ECarex aestivalisDavis' sedgeG5S1ECarex aestivalisDavis' sedgeG5S1ECarex aestivalisCand-leaved	Lanius ludovicianus	Loggerhead shrike	G4	S1B	Е	
Numetical nivalisLeast weasel0552.33TNeotoma magisterAllegheny woodratG3G4S1EPodilymbus podicepspied-billed grebeG5S2BPorzana carolinaSoraG5S1BSatyrium devardsiiEdwards' hairstreakG4S1EStrophitus undulatusSquawfootG5S2IStygobromus pizziniPizzini's amphipodG2G4S1Stygobromus pizziniBewick's wrenG5T2QS1BPharcsPalatsClimbing fumitoryG4S2TAgastache scrophulariifoliaAuricled gerardiaG3S1EAgastache scrophulariifoliaCostal juneberryG4G5SRAmelanchier stoloniferaAmelanchier stoloniferaRunning juneberryG4S2TApslenium pinnatifidumLobed spleenwortG4S1EArter radulaRough-leaved asterG5S1EBotrychium oneidenseBlunt-lobe grape-fernG4QS1EBotrychium oneidenseBlumt-lobe grape-fernG4QS1ECarex aestivalisDavis' sedgeG5S12CCarex ashortianaShort's sedgeG5S1ECarex ashortianaShort's sedgeG5S1ECarex ashortianaShort's sedgeG5S1ECarex astivalisLong-bracted orchisG5S1ECarex astivalisLong-bracted orchisG5S1	Lasmigona subviridis	Green floater	G3	S1	Е	
Nectoma magister Allegheny woodrat G3G4 SI E Podilymbus podiceps Pied-billed grebe G5 S2B Porzana carolina Sora G5 S1B Satyrium edwardsii Edwards' hairstreak G4 S1 E Strophitus undulatus Squawfoot G5 S2 I Stygobromus pizinii Pizzini's amphipod G2G4 S1 Stygobromus sp14 Roundtop amphipod G7 S1 Thryomanes bewickii altus Bewick's wren G5T2Q S1B E Plants Adlumia fungosa Climbing fumitory G4 S2 T Agalinia auriculata Auricled gerardia G3 S1 E Agastache scrophularifolia Purple giant hyssop G4 S1 Stygobromus transform G5 S2 T Agalinia auriculata Auricled gerardia G3 S1 E Agastache scrophularifolia Purple giant hyssop G4 S1 Amelanchier obvalis Coastal juneberry G5 S2 T Asplenium pinatifidum Lobed spleenwort G4 S1 E Aster radula Rough-leaved aster G5 S1 E Aster radula Rough-leaved aster G5 S1 E Aster radula Rough-leaved aster G5 S1 E Bornychium onsidense Blunt-lobe grape-fern G4Q S1 E Bromus clinitus Grass-pink G5 S1 E Carex aevisii Davis' sedge G4 S1 E Carex aevisii Davis' sedge G5 S12 Carex davisii Davis' sedge G5 S1 E Carex davisii Davis' sedge G5 S1 E Coreallorhiza wisteriana Wister's coralroot G5 S1 E Dirca palustris Leatherwood G5 S1 E Dirca palustris Leatherwood G5 S1 E Dirca palustris Leatherwood G5 S1 E Epilobium leptophyllum Linear-leaved willowherb G5 S23 Equisetum sylvaticum Wood horsetail G5 S1 E Epilobium leptophyllum Linear-leaved willowherb G5 S2	Mustela nivalis	Least weasel	G5	5253	т	
Podilymbus podicepsPied-billed grebeGSS2Porzana carolinaSoraGSS1BPorzana carolinaSoraGSS1BSatyriun edwardsiEdwards' hairstreakG4S1EStrophitus undulatusSquawfootGSS2IStryobromus pizziniPizzini's amphipodG2C44S1Stygobromus pizziniBexick's wrenGST2QS1BPhantsPurple giant hyssopG4S12TAgastache scrophulariifoliaAuricled gerardiaG3S1Agastache scrophulariifoliaSmall-fruited agrimonyG4SS2TAgaloni a microcarpaSmall-fruited agrimonyG4SS2TAmelanchier stoloniferaRunning juneberryG5S2TAsplenium pinnatifidumLobed spleenwortG4S1EActer radulaRough-leaved asterG5S1EBotrychum oneidenseBlunt-lobe grape-fernG4S1EBornous ciliatusFringed bromeG5S1ECarex activalisSummer sedgeG4S1ECarex activalisDavis' sedgeG5S2ECarex activalisDavis' sedgeG5S1ECarex activalisDavis' sedgeG5S1ECarex activalisGumer sedgeG4S1ECarex activalisGumer sedgeG5S1ECarex activalisGumer sedgeG5S1E<	Neotoma magister	Allegheny woodrat	G3G4	S1	т Э	
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Fol zama calorinaSolaGFSiteSatyriun edwardsiEdwards' hairstreakG4S1EStrophitus undulatusSquawfootG5S2IStrygobromus pizziniPizzini's amphipodG7S1Thryomanes bewickii altusBewick's wrenG5T2QS1BPlants	Pouriymbus pourceps	Pieu-billed grebe	G5 CE	525 C1D		
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Helianthus hirsutus Hirsute sunflower G5 SU	Hasteola suaveolens	Sweet-scented indian-plantain	G3	S1	Е	
	Helianthus hirsutus	Hirsute sunflower	G5	SU		

Helianthus microcephalus	Small-headed sunflower	G5	S1	Е
Houstonia tenuifolia	Slender-leaved bluets	G4G5Q	S1	
Hydrastis canadensis	Goldenseal	G4	S2	т
Juglans cinerea	Butternut	G3G4	S2S3	
Krigia dandelion	Potato dandelion	G5	S1	Е
Ligusticum canadense	American lovage	G4	SH	Х
Lycopodiella inundata	Bog clubmoss	G5	S2	
Lythrum alatum	Winged loosestrife	G5	S1	Е
 Melanthium latifolium	Broad-leaved bunchflower	G5	S1	Е
Minuartia glabra	Mountain sandwort	G4	S1	Е
Nymphoides cordata	Floating-heart	G5	S1	Е
Oryzopsis racemosa	Black-fruited mountainrice	G5	S2	Т
Platanthera ciliaris	Yellow fringed orchid	G5	S2	т
Platanthera flava	Pale green orchid	G4	S2	
Platanthera grandiflora	Large purple fringed orchid	G5	S2	Т
Platanthera peramoena	Purple fringeless orchid	G5	S1	Т
Platanthera psycodes	Small purple fringed orchid	G5	SU	Х
Pycnanthemum pycnanthemoides	Southern mountain-mint	G5	SH	Х
Pycnanthemum torrei	Torrey's mountain-mint	G2	S1	Е
Quercus macrocarpa	Mossy-cup oak	G5	S1	
Quercus shumardii	Shumard's oak	G5	S2	Т
Rhododendron calendulaceum	Flame azalea	G5	S1	
Rumex altissimus	Tall dock	G5	S1	Е
Sagittaria rigida	Sessile-fruited arrowhead	G5	S1	Е
Scirpus smithii	Smith's clubrush	G5?	SU	Х
Scirpus verecundus	Bashful bulrush	G4G5	S2S3	
Scutellaria leonardii	Leonard's skullcap	G4T4	S2	т
Scutellaria nervosa	Veined skullcap	G5	S1	Е
Scutellaria saxatilis	Rock skullcap	G3	S1	Е
Sida hermaphrodita	Virginia mallow	G2	S1	Е
Smilacina stellata	Star-flowered false Solomon's	-seal G	5 S1	Е
Solidago rigida	Hard-leaved goldenrod	G5	SH	Х
Spiranthes ochroleuca	Yellow nodding ladys' tresses	G4	S1	Е
Stenanthium gramineum	Featherbells	G4G5	S1	т
Triosteum angustifolium	Narrow-leaved horse-gentian	G5	S1	Е
Vernonia gigantea	Giant ironweed	G5	SU	
Viola incognita	Large-leaved white violet	G4G5	S1	
Zanthoxylum americanum	Northern prickly-ash	G5	S1	Е

• This report represents a compilation of information in the Wildlife and Heritage Service's Biological and Conservation Data system as of the date on the report. It does not include species considered to be "watchlist" or more common species.

# APPENDIX C CONSULTATION CORRESPONDENCE

D2215 (CHOH) February 26, 2003

Mr. Ray Dintaman Maryland Department of Natural Resources Environmental Review Unit Tawes State Office Building 580 Taylor Avenue Annapolis, Maryland 21401

Dear Mr. Dintaman:

The National Park Service is exploring various alternatives for improvements to the existing parking lot and campground area at the confluence of Fifteenmile Creek and the Potomac River. This area is located at Little Orleans, Allegany County, Maryland. The boat ramp and campground are features of the Chesapeake and Ohio Canal National Historical Park (NHP) and are maintained by the National Park Service.

We are currently developing an environmental assessment that will assist in the determination of the best management plan for the area. The existing conditions of the boat ramp and associated parking lot have deteriorated since the flooding of 1996. Additionally, this area receives heavy visitor usage for both the C&O Canal NHP and the Potomac River.

As a part of our environmental assessment, we will need to include information on threatened or endangered species and unique habitat within the area outlined on the enclosed map.

If you have any questions, please contact Lynne Wigfield, Compliance Officer, at (301) 745-5802.

Sincerely,

Douglas D. Faris Superintendent Enclosure bcc: CHOH, RHartman CHOH, LWigfield CHOH, TOrcutt D2215 (CHOH) February 25, 2003

Ms. Charisa Morris U.S. Fish and Wildlife Service Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, Maryland 21401

Dear Ms. Morris:

The National Park Service is exploring various alternatives for improvements to the existing parking lot and campground area at the confluence of Fifteenmile Creek and the Potomac River. This area is located at Little Orleans, Allegany County, Maryland. The boat ramp and campground are features of the Chesapeake and Ohio Canal National Historical Park (NHP) and are maintained by the National Park Service.

We are currently developing an environmental assessment that will assist in the determination of the best management plan for the area. The existing conditions of the boat ramp and associated parking lot have deteriorated since the flooding of 1996. Additionally, this area receives heavy visitor usage for both the C&O Canal NHP and the Potomac River.

As a part of our environmental assessment, we will need to include information on threatened or endangered species and unique habitat within the area outlined on the enclosed map.

If you have any questions, please contact Lynne Wigfield, Compliance Officer, at (301) 745-5802.

Sincerely,

Douglas D. Faris Superintendent Enclosure bcc: CHOH, RHartman CHOH, LWigfield CHOH, TOrcutt D2215(CHOH) February 26, 2003

Mike Slattery, Associate Director Maryland Department of Natural Resources Wildlife and Heritage Division Tawes State Office Building, E-1 Annapolis, Maryland 21401

Dear Mr. Slattery:

The National Park Service is exploring various alternatives for improvements to the existing parking lot and campground area at the confluence of Fifteenmile Creek and the Potomac River. This area is located at Little Orleans, Allegany County, Maryland. The boat ramp and campground are features of the Chesapeake and Ohio Canal National Historical Park (NHP) and are maintained by the National Park Service.

We are currently developing an environmental assessment that will assist in the determination of the best management plan for the area. The existing conditions of the boat ramp and associated parking lot have deteriorated since the flooding of 1996. Additionally, this area receives heavy visitor usage for both the C&O Canal NHP and the Potomac River.

As a part of our environmental assessment, we will need to include information on threatened or endangered species and unique habitat within the area outlined on the enclosed map.

If you have any questions, please contact Lynne Wigfield, Compliance Officer, at (301) 745-5802.

Sincerely,

Douglas D. Faris Superintendent Enclosure bcc: CHOH, RHartman CHOH, LWigfield CHOH, TOrcutt



Maryland Department of Natural Resources

Environmental Review Tawes State Office Building 580 Taylor Avenue Annapolis, Maryland 21401 W. P. Jensen Deputy Secretary

March 26, 2003

Mr. Douglas D. Faris United States Department of the Interior National Park Service C&O Canal National Historic Park 1850 Dual Highway, Suite 100 Hagerstown MD 21740

Dear Mr. Faris:

Michael S. Steele

Lt Governor

This letter is in response to your letter of request, dated February 26, 2003, for information on the presence of finfish species in the vicinity of the proposed improvements to the existing parking lot and campground area at the confluence of Fifteenmile Creek and the Potomac River in Allegany County.

Fifteen Creek (Upper Potomac River Drainage Area) is classified as a Use IV-P stream (Recreational Trout Waters and Public Water Supply). Instream work is generally not permitted in Use IV streams during the periods of March 1 through May 31, inclusive, during any year.

There are no natural populations of trout in Fifteenmile Creek. However, the stream is currently stocked with trout by the Department for recreational purposes. Additionally, Table F2-3 (attached) list fish species documented by our Maryland Biological Stream Survey Program in the Upper Potomac River Basin. Many of these species could be found in Fifteenmile Creek and the Potomac River near your project site. The spawning periods for all fish species likely to be found in Fifteenmile Creek and the Potomac River should be adequately protected by the Use IV instream work restriction period referenced above, appropriate sediment and erosion control methods and other Best Management Practices typically used for the protection of stream resources.

If you have any questions concerning these comments, you may contact me at 410-260-8331.

Sincerely,

Ray C. Distaman, Jr., Director Environmental Review Unit

RCD Attachment

> TTY via Maryland Relay: 711 (within MD) (800) 735-2258 (Out of State) Toll Free in MD#: 1-877-620-8DNR ext. 8331

Table F2-3. Species found in 1995 MBSS Study vs Qualitative Study, Upper Potomac Basin

# Species Found in 1995 MBSS Study vs Qualitative Study By Basin

 BASNAME=UPPS	a Poronac	
	in MBSS	in Qual.
Tish Species	study-	Study
ARERICAN EEL	X	X.
CHAIN PICKEREL	x	X
BLACKNOSE DACE	X	X
BLUNTNOSE MINNOW	x	x
CENTRAL STONEROLLER	x	T.
COMELY SHINER		X
COMMON CARP	x	x
COMMON SHINER	X	x
CREEK CHUR	X	X
CUTLIPS MINNOW	x	x
FALLFISH	X	x
PATHEAD MENNOW	x	
GOLDEN SHINER	1002	¥
GOLDFISH		÷.
LONGNOSE DACE	x	
PEARL DACE	X	A:
SIVER CHUS	x	
BOSTFACE SHINEB		÷
BOSYSIDE DACE	14	Q
SPOTFIN SHINES		
SPOTTALL SHINER	Ŷ	
CREEK CNUBSUCKER	2	
GOLDEN REDWORSE		0
NORTHERN ROGSUCKER	×	÷.
WRITE SUCKER	2	A A
CHANNEL CATTICH	~	<u>^</u>
HANGINED HADTOM		A.
VELLOW BULLWEAD	14	2
BROOK CHOUSE	1	\$
SPOUR PROUP	4	<u>b</u>
CITEDRALM MEANIN	÷.	A
BITURAL FRAME		A
ANNON EXITERED	· A	X
CURRENT STUDIES	14	A
CONTRACTOR SCHEFT	~	X
BONGHLE PRICEST	~	×
POTONAC SCOLPIN	*	A
SLACK CRAFFIL		*
STORGIPT	x	x
GREEN SUNFISH	X	X
LANGENOUTH BASS	X	X.
LONGEAR SUNFISH		X
PURPKINGLED	x	X
REDBREAST SUNFISH	X	X
ROCK BASS	X	× .
SMALLHOUTH BASS	x	*
TWEOWIS HYBRID	X	X
PANTAIL DARTER	X	X
GREENSIDE DARTER	X	X
PAIDBON DARTER		Z.
TRESELLATED DARTER		T.

F-57





# United States Department of the Interior

FISH AND WILDLIFE SERVICE Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401

By iva (car)

April 10, 2003

Mr. Douglas D. Faris National Park Service C&O Canal National Historic Park 1850 Dual Highway, Suite 100 Hagerstown, Maryland 21740

RE: Improvements to Existing Parking Lot and Campground Area at Confluence of Fifteenmile Creek the Potomac River, Little Orleans, Allegany County, MD

Dear Mr. Faris:

This responds to your letter, received March 5, 2003, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with Section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further Section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

#### continued

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Maricela Constantino at (410) 573-4542.

Sincerely,

Mary J. Ratnaswamy, Ph.D. Program Supervisor, Threatened and Endangered Species



Michael S. Steele Li Governor

#### Maryland Department of Natural Resources Tawes State Office Building 580 Taylor Avenue Annapolis, Maryland 21401

W. P. Jensen Deputy Secretary

May 20, 2003

Mr. Douglas D. Faris, Superintendent United States Department of the Interior National Park Service C & O Canal National Historical Park 1850 Dual Highway, Suite 100 Hagerstown, MD 21740

#### Environmental Review for Alternatives for Improvements to Existing RE: Parking Lot and Campground Area at Confluence of Fifteenmile Creek and the Potomac River, Little Orleans, Allegany County, Maryland.

Dear Mr. Faris:

The Wildlife and Heritage Service has a recent record for state listed endangered Clasping-leaved Dogbane (Apocynum sibiricum) known to occur on C & O Canal NHP property at the mouth of Fifteenmile Creek near the river shoreline. You should coordinate with our staff to ensure that there are no adverse impacts to this occurrence as a result of this project.

Also, the Wildlife and Heritage Service's Natural Heritage database indicates that there are recent records for the following species of concern known to occur within the vicinity of the project site:

Scientific Name Carex emoryi Taenidia montana Melica nitens Fixsenia ontario Papilio cresphontes Common Name Emory's Sedge Mountain Pimpernel Three-flowered Melicgrass Northern Hairstreak Giant Swallowtail

State Status Rare Threatened Threatened Endangered In Need of Conservation

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continued

Page 2 May 20, 2003

These species could potentially occur on the project site itself, especially in areas of appropriate habitat. Please contact Richard Wiegand of the Wildlife and Heritage Service at (301) 845-8997 for further coordination regarding RT&E species.

Sincerely,

dowa. By

Lori A. Byrne Environmental Review Coordinator, Wildlife and Heritage Service Maryland Department of Natural Resources

ER# 2003.0396.al Cc: E.L. Thompson, DNR R. Wiegand, DNR



# United States Department of the Interior



FISH AND WILDLIFE SERVICE Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401

January 13, 2005

Kevin D. Brandt Superintendent National Park Service C&O Canal National Historical Park 1850 Dual Highway, Suite 100 Hagerstown, Maryland 21740

## RE: C&O Canal NHP, Monocacy Aqueduct Area, Frederick and Montgomery Counties, MD

Dear Mr. Brandt:

This responds to your letter, received November 5, 2004, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally-protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Maricela Constantino at (410) 573-4542.

Sincerely,

G.A. Mor

Mary J. Ratnaswamy, Ph.D. Program Supervisor, Threatened and Endangered Species



Robert L. Ehrlich, Jr. Governor Michael S. Steele

Lt. Governor

#### Maryland Department of Natural Resources Environmental Review Tawes State Office Building 580 Taylor Avenue Annapolis, Maryland 21401

November 8, 2004

C. Ronald Franks Secretary

> W. P. Jensen Deputy Secretary

Mr. Kevin D. Brandt National Park Service C&O Canal National Historical Park 1850 Dual Highway, suite 100 Hagerstown MD 21740

Dear Mr. Brandt:

This letter is in response to your letter of request, dated November 2, 2004, for information on the presence of finfish species in the vicinity of the proposed access improvements to the Monocacy Aqueduct area located on the Frederick/Montgomery County line in Maryland.

From a review of the information provided with your request it does not appear that the proposed work will impact fisheries resources, especially if sediment and erosion control methods, and other Best Management Practices typically used for protection of stream resources are utilized. Any drainages within the project area would be classified as Use I-P waters (Water Contact Recreation, Protection of Aquatic Life and Public Water Supply). Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

' If you have any questions concerning these comments, you may contact me at 410-260-8331.

Sincerely,

Kay C. Dinteman, J

Ray C. Dintaman, Jr., Director Environmental Review Unit

TTY via Maryland Relay: 711 (within MD) (800) 735-2258 (Out of State) Toll Free in MD#: 1-877-620-8DNR ext. 8331

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# United States Department of the Interior

FISH AND WILDLIFE SERVICE Chesapeake Bay Field Office 177 Admiral Cochrane Drive Annapolis, MD 21401





Mr. Kevin D. Brandt Superintendent U.S. DOI/National Park Service C&O Canal Nat. Historical Park 1850 Dual Highway, Suite 100 Hagerstown, MD 21740

RE: D2215 (CHOH), Boat Ramp Facilities at Brunswick & Pt. of Rocks, Frederick County, MD

#### Dear Mr. Brandt:

This responds to your letter, received August 6, 2004, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

continued

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Maricela Constantino at (410) 573-4542.

Sincerely,

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G.A.Moser

G. Andrew Moser Acting Program Supervisor, Threatened and Endangered Species

#### MARYLAND DEPARTMENT OF NATURAL RESOURCES

Maryland Wildlife and Heritage Service Natural Heritage Program Tawes State Office Building E-1 Annapolis, Maryland 21401

ت ت ت D2215 (CHOH) Februar 4, 2005 ت ت Kevin D. Brandt, Superintendent National Park Service C&O Canal National Historical Park 1850 Dual Highway, Suite 100 Hagerstown, Maryland 21740

#### RE: Improved access to the Monocacy Aqueduct – parking area, boat basin and access roads.

Dear Mr. Brandt:

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Per your request for information regarding rare, threatened and endangered (r,t&e) species occurring in the vicinity of this project area, following are a few comments.

I visited the project area on February 11, 2005. The immediate vicinity of the project is a highly disturbed and maintained area of grassy field, parking facility and canal towpath. It is mostly open-canopy, devoid of woody vegetation and is dominated by non-native weedy plant species. No rare, threatened or endangered (r,t&e) species are recorded for the immediate area and the artificial habitats are not expected to support any. The proposed project should have little or no direct impact on known sites for r,t&e species.

The only area of concern is the forested historic canal basin. This area may contain suitable habitat for the state threatened white trout lily (*Erythronium albidum*). A population of this lily occurs in nearby sandy woods on the floodplain of the Potomac River and could occur at the boat basin as well. We recommend a field survey in late March or early April to ascertain if this species is present in the boat basin. Also, the boat basin is an extension of surrounding forest which is suitable habitat for Forest Interior Dwelling Species (FIDS). Populations of many FIDS species are declining in Maryland and throughout the eastern United States. The conservation of FIDS habitat is strongly encouraged by the Department of Natural Resources. In order to do so, the following guidelines could be incorporated into the site design to help minimize the project's impacts on FIDS and other native forest plants and wildlife:

- Restrict development to nonforested areas.
- Minimize forest isolation. Generally, forests that are adjacent, close to, or connected to other forests provide higher quiality FIDS habitat than more isolated forest.
- Maintain forest habitat up to the edges of roads and fields; do not create or maintain mowed grassy berms.

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- Do not remove or disturb forest habitat during April-August, the breeding season for most FIDS. This seasonal restriction may be expanded to February-August if certain early nesting FIDS are present.
- 5. Landscape the project area with native trees, shrubs and other plants.
  - Promote development of a diverse forest understory by controlling white-tailed deer populations. Do not mow the forest understory or remove woody debris and snags.

Soil and canopy disturbances in the immediate vicinity of the project area are likely to increase non-native weed problems in adjacent natural habitats. Developing long-term weed control strategies for the adjacent areas prior to the start of this project is recommended. Determining methods and executing management strategies for controlling invasive weeds during and following the project are important for the protection of floodplain forest habitats.

Also of some concern is the presence in the boat basin of a large vernal pool and several ground water emergences. Alluvial vernal pools are considered to be a significant and uncommon habitat type in Maryland. These pools often provide important breeding habitat for many species of amphibians. Although thorough surveys for amphibians have not been conducted in these pools, there is a reasonable probability that rare species may breed here. Surveys for amphibian species are highly recommended. Also recommended are surveys of the ground water emergences to determine if any rare subterranean macroinvertebrates occur here.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (301) 845-8997.

Kind Regards,

C

6.

Richard Wiegand, Central Region Ecologist Maryland Wildlife & Heritage Service 8831 Eureka Lane Walkersville, MD. 21793 (Email: rhwiegand26@aol.com)

CC: David Brinker Lori Byrne Tim Larney

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# APPENDIX D STATEMENT OF FINDINGS: FLOODPLAINS

# STATEMENT OF FINDINGS FOR

# **EXECUTIVE ORDER 11988 (FLOODPLAIN MANAGEMENT)**

Access Improvements to Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct

**Environmental Assessment** 

Chesapeake and Ohio Canal National Historical Park

# Recommended

Superintendent, Chesapeake and Ohio Canal National Historical Park Date

Certification of Technical Adequacy and Servicewide Consistency:

> Chief, Water Resources Division

Date

**Approved:** 

Director, National Capital Region Office Date

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# INTRODUCTION

Pursuant to Executive Order 11988 (Floodplain Management), and the National Park Service Director's Order #77-2 (2003) Floodplain Management, the National Park Service has evaluated flooding hazards for access improvements to four existing boat ramp and parking area facilities located within Chesapeake and Ohio Canal National Historical Park. This statement of findings describes the proposed action, project site, floodplain determination, use of floodplain, investigation of alternatives, flood risks, and mitigation for the continued use of facilities within the floodplain.

# **PROPOSED** ACTION

The National Park Service proposes to execute needed repairs and enhancements at four existing recreational boat ramp and parking area facilities within Chesapeake and Ohio Canal National Historical Park. Each of the facilities is located within the 100-year floodplain of the Potomac River. A "100-year floodplain" or "100-year flood" describes an area or event subject to a 1 percent probability of a certain size flood occurring in any given year.

Undertakings proposed for each of the four project areas, located at Brunswick, Fifteenmile Creek, Monocacy Aqueduct and Point of Rocks (see Figure 1), are different. To avoid superfluous discussion of undertakings that would be considered "excepted actions" under Director's Order #77-2, the proposed project areas will be discussed separately and the undertakings at each will either be classified as excepted actions, and not carried forward in further discussion, or a determination will be made as to which "action class" (Director's Order #77-2) the undertakings fall into, and they will be analyzed further in this Statement of Findings. For a graphical representation of the proposed action please refer to Figures 6, 8, 9A, and 9B in the *Access Improvements to Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct* Environmental Assessment.

## Brunswick

As part of the proposed action, the boat ramp at Brunswick would be rehabilitated and its grade lessened. Rip rap or other protection would be installed around the base of the boat ramp to protect it from scouring and to protect users from the abrupt ledges associated with the current boat ramp configuration. In addition, a dock structure would be constructed immediately upstream of the boat ramp.

The existing parking lot at Brunswick would be expanded by approximately 4,000 square feet. The area impacted by this expansion is currently maintained lawn. The existing boat ramp access road would be rehabilitated and resurfaced.



Vegetation that has become overgrown in the canal prism from Lock 30 to Maple Avenue would be removed for interpretive purposes. Removing this vegetation would create a setting that is much closer to the historical landscape. After the vegetation is removed, the area would be seeded with grass and maintained on a regular basis to prevent it from becoming overgrown again.

Undertakings proposed at Brunswick would facilitate a park function, public access to the Potomac River, that inherently needs to be located near water and, in this case, within the floodplain. They also apply to the preservation of historic structures (waste weir and towpath) and the historic landscape of the Chesapeake and Ohio Canal. Because the undertakings proposed for Brunswick would require little physical development and would not involve overnight occupancy of this facility, they would be considered excepted actions.

# **Fifteenmile Creek**

At this proposed project area, a new boat ramp would be constructed using articulated concrete matting and would extend into the main channel of the Potomac River. The unused concrete boat ramp at this location would be removed. The boat ramp currently in use at this site would remain and serve as a canoe launch.

The previously unpaved parking area would be paved to create a boat ramp launching facility. This area would be limited to a few handicapped vehicle spaces, and the bulk of parking (discussed below) would be relocated to a new parking facility established near the campground in an area set back and elevated approximately 15 feet above the river that is less prone to flooding.

Two options are being considered for the location of the new paved parking lot. Under one scenario, a parking lot encompassing 25,533 square feet would be located in a currently undeveloped wooded area. Approximately 40 trees would need to be cleared for this development.

In the other potential scenario, the existing campground would be converted to a new parking lot with the same size and layout as described above and the undeveloped wooded area would be converted into a new campground. Approximately 10 to 15 trees would have to be cleared for the proposed parking lot that would be contained within the footprint of the existing campground. The new campground design would incorporate as many trees as possible. It is estimated that approximately 15 to 20 trees would need to be cleared for campground development. The new campground would be approximately 11,151 square feet. Compacted gravel material would be used to construct the campground access road and designated camping sites.

The 352 linear feet of roadway from the canal to the launching area would be engineered to provide better drainage. Road shoulders would be re-established. The road would be paved from the wooden bridge, across the canal prism, to the boat ramp area.

A wooden stairway would be installed to connect the boat ramp area with the campground area. An improved pedestrian trail, 213 feet in length, also would be constructed along the Fifteenmile Creek shoreline. This trail also would connect the campground with the boat ramp area.

An additional 1,584 square feet of visitor parking would be created along the emergency and maintenance access road. This area would serve park day users who would be interested in hiking or biking the canal towpath.

Proposed changes to the Fifteenmile Creek campground preclude the classification of undertakings at this location as excepted actions. The campground and park facility would allow for overnight use at this location. Retaining the campground and associated parking within the 100-year floodplain increases the risk posed to personal safety and property damage. Undertakings at Fifteenmile Creek would, therefore, be considered Class I Actions, and will be carried on in this Statement of Findings for further analysis.

# **Monocacy Aqueduct**

A new gravel parking lot would be constructed just east of the historic grainery foundation at Monocacy Aqueduct. This 8,350 square-foot parking area would provide 24 parking spaces, including three handicapped spaces. The existing paved parking lot would be removed in its entirety and the area reseeded with grass. A gravel service road also would be constructed from the new parking area to the towpath.

In an effort to reinstate the historic landscape and facilitate correct interpretation of the Monocacy Aqueduct, trees and vegetation that have become overgrown in the canal basin at the aqueduct would be removed. Once trees and vegetation have been removed the area would be replanted with grass, mowed, and maintained.

Undertakings proposed at Monocacy Aqueduct would apply to the preservation and interpretation of the historic landscape of the Chesapeake and Ohio Canal. Because these undertakings would require little physical development and would not involve overnight occupancy of this facility, they would be considered excepted actions.

## **Point of Rocks**

Under the proposed action, the existing boat ramp would be removed and a new concrete boat ramp would be constructed approximately 900 feet downstream to allow easier access to the river. Rip rap or other protection would be installed around the base of the new boat ramp to protect it from scouring and in the area of the existing boat ramp to stabilize the banks and prevent erosion when the ramp is removed.

The area occupied by the existing boat ramp, associated parking, and access road would be reclaimed and revegetated with native plant species.

Two new paved parking areas would be constructed to allow convenient access to the boat ramp and picnic area. The lower parking area, closer to the river, would cover approximately 47,947 square feet and be designed primarily to accommodate boat ramp access. The circular design would allow for directional traffic flow through the area and provide 23 parking spaces, including two handicapped spaces. The upper parking area (on either side of Canal Road) would cover 4,750 square feet and consist of 24 additional parking spaces, including four handicapped spaces, that would provide parking for a new day use picnic area to be developed at the site and additional parking for the boat ramp. In addition, a stairway would be constructed to provide access from the upper to the lower parking area.

Undertakings proposed at Point of Rocks would facilitate NPS functions, including public access to and enjoyment of the Potomac River, which inherently need to be located near water and, in this case, within the floodplain. Because these undertakings would require little physical development and would not involve overnight occupancy of this facility, they would be considered excepted actions.

## **Undertakings Analyzed in this Statement of Finding**

Undertakings proposed at Fifteenmile Creek are analyzed further in this Statement of Findings. All other undertakings are considered excepted actions and, therefore, are not retained for further analysis.

# **PROJECT SITE**

Chesapeake and Ohio Canal National Historical Park covers over 19,500 acres along the Chesapeake and Ohio Canal within the District of Columbia, West Virginia, and Maryland. The canal, and consequently the Park, generally follows the Potomac River from Cumberland, Maryland to Georgetown in the District of Columbia. Flooding has always been associated with the Potomac River, and 85 percent of the Park is located within the 50-year floodplain. A 50-year floodplain is an area subject to a 2 percent probability of
flooding within any given year. As a result, flood-adapted habitats such as floodplain forests and scourbars are prevalent throughout the Park.

The proposed project area at Fifteenmile Creek is located at the confluence, and within the floodplain, of Fifteenmile Creek and the Potomac River. Richard Wiegand's 1995 rare plant survey documents a fairly high quality floodplain forest and one of the largest and best developed scourbar complexes along the river at Fifteenmile Creek.

## FLOODPLAIN DETERMINATION

Eighty five percent of Chesapeake and Ohio Canal National Historical Park lies within the 50-year floodplain. The Park, as part of the general area surrounding the Potomac River, has been damaged by a number of flood events in the past; the most recent and significant occurred in 1996 with two major floods. Park-wide damage from the floods was estimated at \$68 million. In September 2003, Hurricane Isabel created flood and wind damage estimated at \$17 million.

Based on a review of Flood Insurance Rate Map community panels 240001 0300 A and 240001 0125 A (both revised February 18, 1981), produced by the Federal Emergency Management Agency, the Fifteenmile Creek boat ramp and camping facilities are located within Zone A. Zone A is defined as an area within the 100-year floodplain that has not had base flood elevations or flood hazard factors determined.

### **USE OF THE FLOODPLAIN**

# HISTORICAL USE

Since the establishment of Chesapeake and Ohio Canal National Historical Park in 1971, the Park's mission has been to protect and preserve the Park's cultural and natural resources, to educate the public about those resources, and to provide public recreation and enjoyment.

When possible, the Park's mission has been accomplished while avoiding impacts to the floodplain and by allowing natural fluvial processes to proceed unimpeded. However, because most of the Park's total area lies within the floodplain of the Potomac River, this type of management is not often possible, particularly when projects have involved public access to the river. Such has been the case at Fifteenmile Creek.

Since the introduction of facilities at Fifteenmile Creek, they have provided recreational access to the river and camping opportunities for the enjoyment of park visitors.

### **PROPOSED USE**

Continued access to the Potomac River and utilization of the Fifteenmile Creek camping facilities is viewed by the Park and the public it serves as necessary and in holding with the Park's mission. The undertakings at this location were developed to provide for safe, convenient, future access to the river, and an aesthetically pleasing camping environment.

# INVESTIGATION OF ALTERNATIVES

Because nearly all of the Park's land near Fifteenmile creek lies within the floodplain of the Potomac River, and because proposed actions at this boat ramp facility to improve visitor use and emergency personnel river access, alternative locations outside of the floodplain are not possible. The draft Environmental Assessment considers one other action alternative along with the proposed action. Both involve developments within the floodplain. Please refer to Figure 7 in the *Access Improvements to Point* 

of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct Environmental Assessment for a graphical representation of this other alternative.

Under the other alternative for improving access at this site, the existing boat ramp and parking area at Fifteenmile Creek would be stabilized and brought back to correct elevation and grade. This process would begin with the installation of a 230 linear foot gabion retaining wall located back from the existing shoreline. The gabions would be placed directly upstream from the boat ramp, with timbers secured on top to create a dock. This structure would protect the boat ramp by deflecting ice and debris and give boaters a place to tie off. The area behind the wall would be backfilled to the appropriate elevation. The parking area would be paved and striped and its perimeter would be defined using timber guardrails, eliminating vehicle encroachment into sensitive areas. The alternative action would create a parking area of approximately 16,200 square feet. An additional 1,584 square feet of visitor parking would be created along the emergency and maintenance access road.

To accommodate deeper draft vessels, the deposited sediment accumulating at the confluence of Fifteenmile Creek and the Potomac River would be dredged on a biennial schedule (every other year).

The boat ramp access road would be engineered to provide better drainage. Road shoulders would be reestablished. The existing gravel road would be paved from the wooden bridge, across the canal prism, to the boat ramp parking lot. A total of 352 linear feet of roadway would receive treatment. New timber guardrail would be installed (457 linear feet) along the access road and parking lot perimeter to prevent unauthorized parking.

A wooden stairway would be installed to connect the boat ramp area with the campground and parking lot areas. This would eliminate the existing social trails. Improvements to the existing campground would not be included in this alternative.

### WHY THE PROPOSED ACTION IS PREFERABLE

As with the proposed action, undertakings proposed under this other alternative would be located within the 100-year floodplain. However, installation of the gabion baskets and subsequent grade and elevation corrections would more significantly alter the nature of the floodplain, and would not provide any additional public safety benefits over the proposed action. Considering this, the other alternative would be less preferable to the proposed action.

No reasonable, aesthetically desirable alternative location for the campground at Fifteenmile Creek exists outside of the floodplain. According to the Director's Order #77-2 Procedural Manual, in the case of campgrounds in non high-hazard floodplains, the requirement of first attempting to locate an action outside of the regulatory floodplain may be relaxed to permit the use of aesthetically desirable locations near water. Therefore, further investigations into alternative locations were not pursued.

### FLOOD RISK OF THE PROPOSED PROJECT AREA

Eighty-five percent of Chesapeake and Ohio Canal National Historical Park lies within the 50-year floodplain of the Potomac River. The Park experiences a major flood every 12 years on average (NPS 2004). Flood-related damage along the Potomac River is often highly variable due to differences in gradient, channel sinuosity, channel width and channel depth, along with channel obstruction. Depending on the characteristics of a flood event, each flood impacts resources at Chesapeake and Ohio Canal National Historical Park differently, producing flood damage at different locations in the Park (NPS 2001).

Open-File Report 97-200 "Flood-Hydrology Data for The Potomac River and Selected Tributaries in the Vicinity of the Chesapeake and Ohio Canal National Historical Park, Maryland, West Virginia, and The District Of Columbia" produced by the United States Geological Survey in 1997, is incorporated into this

Statement of Findings by reference. This report discusses in detail hydraulic and hydrologic data for high-flow events including: recurrence interval, and peak flow depth, discharge and velocity.

Figures 2 through 5 depict peak flows and associated recurrence intervals from the United States Geological Survey's gaging stations 01610000 located on the Potomac River at Paw Paw, West Virginia and 01613000 located on the Potomac River at Hancock, Maryland. Gaging station 01610000 is located seven miles south, upstream from the proposed project area, and gaging station 01613000 is located approximately eight miles northeast, downstream from the proposed project area.

The existing boat ramp and associated parking area at Fifteenmile Creek is flooded a few dozen times every year (recurrence interval <1 year) (Dan Copenhaver, personal communication, June 2004). The campground is set back and elevated approximately 15 feet above the river and consequently floods at a greater recurrence interval (less frequently). By using historic peak flow data, calculated recurrence intervals, and a knowledge of recent (past 30 years) floods at the campground, it is estimated that the recurrence interval for flood events that directly affect the campground is on the order of 10-15 years.







# **MITIGATION MEASURES**

The design of structures within the floodplain would incorporate methods for minimizing flood damage, as contained in the National Flood Insurance Program "Floodplain Management Criteria for Flood-Prone Areas" (CFR 44, 60.3) and in accordance with any state or county requirements for flood-prone areas.

Floodplain infiltration and conveyance would not be significantly affected by the proposed action due to the fact that the majority of the floodplain in the proposed project area would not have any significant floodplain altering development. The proposed paved parking lot would not significantly increase total impervious surface within the floodplain, and a new bioretention area would be created to accommodate storm water runoff from this parking lot.

Chesapeake and Ohio Canal National Historical Park has developed and currently implements an Emergency Flood Response Plan. This plan designates priorities and details emergency procedures to be followed during flood events. All members of the park staff are instructed to remain vigilant of river levels as they go about performing their routine duties. The Park Communication Center has a specific responsibility for maintaining communications with the River Forecast Office of the National Weather Service in Sterling, Virginia. If the River Forecast Office projects a crest (high water event) at or above an "Action" or "Flood Level" at any of the identified stations, the Chief Ranger may recommend to the Superintendent that a Flood Emergency be declared. A Flood Emergency may also be declared at any time any other Potomac River or tributary gaging station adjacent to the Chesapeake and Ohio Canal is predicted to go to flood stage or higher.

Prior to a predicted crest, the area from Fifteenmile Creek to Dam 5 is patrolled and park visitors at access points are advised of hazardous river conditions and the potential for towpath/hiker-biker campsite flooding. "Area Closed" signs are posted where needed and boat ramp access at Fifteenmile Creek is barricaded. These closures are enforced, and river and road conditions are monitored throughout the event. Impacts to park resources are documented during and immediately following the event.

### SUMMARY

Necessary repairs and enhancements to the boat ramp and campground facilities at Fifteenmile Creek, Chesapeake and Ohio Canal National Historical Park are detailed in the *Access Improvements to Point of Rocks, Brunswick, Fifteenmile Creek, and Monocacy Aqueduct* Environmental Assessment. These actions would occur within the 100-year floodplain of the Potomac River. Undertakings proposed at Brunswick, Monocacy Aqueduct, and Point of Rocks would be considered "excepted actions" under Director's Order #77-2. The undertakings proposed for Fifteenmile Creek would not significantly alter floodplain attributes, or increase potential flooding risks to human safety or property damage. The facilities at Fifteenmile Creek would continue to be operated within the floodplain, and flood elevations are not expected to change as a result of the proposed action. The proposed action would, therefore, constitute a negligible impact to the floodplain. The National Park Service finds the proposed action to be acceptable under Executive Order 11988 for the protection of floodplains.

# REFERENCES

## Doheny, E.J.

1997 Flood-Hydrology Data for the Potomac River and Selected Tributaries in the Vicinity of the Chesapeake and Ohio Canal National Historical Park, Maryland, West Virginia, and the District of Columbia. USGS Open-File Report 97-200. Baltimore, MD. 33 pp.

### **Federal Emergency Management Agency**

Allegany County, Maryland (Unincorporated Areas) Flood Insurance Rate Map 240001 0300A, revised February 18, 1981.

Allegany County, Maryland (Unincorporated Areas) Flood Insurance Rate Map 240001 0125 A, revised February 18, 1981.

### **National Park Service**

- 1993 Floodplain Management Guideline. 14 pp.
- 1998 Chesapeake and Ohio Canal National Historical Park Emergency Flood Response Plan. 6 pp.
- 2001 Water Resources Scoping Report. 73 pp.
- 2002 Floodplain Management Procedural Manual #77-2.
- 2003 Director's Order #77-2 Floodplain Management. 6 pp.
- 2004 State of the Park Chesapeake and Ohio Canal National Historical Park. 24 pp.





As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

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