National Park Service U.S. Department of the Interior

Chesapeake and Ohio Canal National Historical Park



Maryland

Catoctin Aqueduct Restoration Public Review Draft Environmental Assessment

March 2008



DRAFT ENVIRONMENTAL ASSESSMENT CATOCTIN AQUEDUCT RESTORATION, CHESAPEAKE AND OHIO CANAL NATIONAL HISTORICAL PARK, MARYLAND SUMMARY

The National Park Service proposes to restore the Catoctin Aqueduct (also referred to as the Catoctin Creek Aqueduct), which is located at Milepost 51.5 of the Chesapeake and Ohio Canal National Historical Park (C&O Canal NHP) near Lander, in Frederick County, Maryland. Stretching 184.5 miles alongside the Potomac River between the nation's capital and Cumberland, Maryland, the C&O Canal NHP preserves remnants of America's transportation history, including 11 stone aqueducts designed to carry the canal across the major tributaries that drain into the Potomac River. Completed in 1834, the Catoctin Aqueduct contributes to the park's historic significance, but it fell into disrepair when the C&O Canal Company ceased operations in 1924. A considerable portion of the structure collapsed in 1973. Objectives of the proposed restoration include:

- Preserve the historic integrity of the Catoctin Aqueduct ruins and restore the structure to the original design, to the extent feasible, and in a manner that is structurally sound and sustainable.
- Enhance the cultural landscape, continuity of the C&O Canal towpath, interpretive values, and visitors' understanding of the canal's history.
- Maintain safe towpath access for visitors and park maintenance, law enforcement, and emergency response vehicles.

This environmental assessment provides decision-makers and the public with information and analysis on three alternatives for the proposed restoration:

- Alternative A, the No Action Alternative This alternative is the continuation of current maintenance of the Catoctin Aqueduct. The National Park Service would respond to future needs and conditions associated with the aqueduct without major actions or changes from the present course if this alternative were selected.
- Alternative B, Stone Masonry Arches This alternative would involve restoring the Catoctin Aqueduct by re-constructing the collapsed center and west

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arches with stone masonry construction similar to the original, including barrel arch stones. Original stones recovered following the collapse would be used to the maximum extent possible.

• Alternative C, the Preferred Alternative, Reinforced Concrete Arches – This alternative would involve restoring the Catoctin Aqueduct by reconstructing the collapsed center and west arches with reinforced concrete and facing them with stones. Original stones recovered following the collapse would also be used to the maximum extent possible, but the undersides of the concrete arches would be textured with a form-liner and stained to provide visual compatibility. From a distance, the undersides of the arches would have the general appearance of stone, but the concrete would be readily recognizable up close. The treatments applied to the undersides of the concrete arches are not intended to mimic stone work.

Both Alternatives B and C would involve restoring the Catoctin Aqueduct in accordance with *The Secretary of the Interior's Standards for the Treatment of Historic Properties*. The alternatives analyzed in this environmental assessment would not result in major environmental impacts or impairment of park resources or values.

PUBLIC COMMENT

You may submit comments on this environmental assessment by mail to the Superintendent at the address below or over the internet at <u>http://parkplanning.nps.gov</u>. This environmental assessment will be on public review for a minimum of 30 days, as required by the National Environmental Policy Act. 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, businesses, and 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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LIST OF ACRONYMS

B&O	Baltimore and Ohio
CFR	Code of Federal Regulations
C&O	Chesapeake and Ohio
C&O Canal NHP	Chesapeake and Ohio Canal National Historical Park
COMAR	Code of Maryland Regulations
EA	environmental assessment
ft	feet
MD DNR	Maryland Department of Natural Resources
MDE	Maryland Department of the Environment
MDSHA	Maryland State Highway Administration
NEPA	National Environmental Policy Act
NPS	National Park Service

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SECTION 1

PURPOSE AND NEED FOR ACTION

1.1 BACKGROUND

The National Park Service (NPS) proposes to restore the Catoctin Aqueduct (also referred to as the Catoctin Creek Aqueduct), which is located at Milepost 51.5 of the

Chesapeake and Ohio Canal National Historical Park (C&O NHP) near Lander, in Frederick County, Maryland (Figure 1-1). The restoration would be accomplished in partnership Catoctin with Aqueduct Restoration, Inc. and the Community Foundation of Frederick County, who are conducting fundraising to assist in the restoration.



FIGURE 1-1 CATOCTIN AQUEDUCT PROJECT LOCATION

Stretching 184.5 miles alongside the Potomac River between the nation's capital and Cumberland, Maryland, the C&O Canal NHP preserves remnants of America's transportation history. For nearly a century, the C&O Canal was the lifeline for communities and businesses along its route as it floated coal, lumber, grain, and other products to market. The canal was used until floods damaged it in 1924; in 1938 it was sold to the U.S. government. The first 22 miles of the C&O Canal were restored, and the canal and its towpath were proclaimed a national monument in 1961 and in 1971 became a national historical park. The park and the surrounding area are rich in cultural and natural history, with an abundance of scenic and recreational opportunities.

Aqueducts are bridges that hold water. The C&O Canal system included 11 stone aqueducts designed to carry the canal across the major tributaries that drain into the Potomac River along the canal's route. While the C&O Canal in the vicinity of Lander, Maryland no longer contains water, the Catoctin Aqueduct once carried the canal's waters over Catoctin Creek. Completed in 1834, the aqueduct contributes to the park's historic significance. The Catoctin Aqueduct, along with many other components of the C&O Canal, fell into disrepair when the C&O Canal Company ceased operations in 1924. A considerable portion of the aqueduct collapsed in 1973.

This document presents an environmental assessment (EA) prepared by the NPS for the proposed Catoctin Aqueduct restoration. This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, regulations of the Council on Environmental Quality (40 Code of Federal Regulations [CFR] 1508.9), the National Historic Preservation Act of 1966 (as amended), and NPS *Director's Order #12: Conservation Planning, Environmental Impact Analysis and Decision-making.*

1.2 PURPOSE AND NEED

The purpose of the action is to preserve the historic integrity of the Catoctin Aqueduct ruins and to enhance the continuity of the C&O Canal towpath, the interpretive value of the Catoctin Aqueduct, and the understanding of the canal's history by visitors. The action is needed to help fulfill the overall purpose of the NPS and C&O Canal NHP. The 1916 NPS Organic Act specifies that the purpose and intent of the NPS is to preserve, protect, interpret, and manage the National Park System for the benefit, education, and enjoyment of the people of the United States. The purpose of the C&O Canal NHP is to provide, in perpetuity, the opportunity for mankind to understand the canal's reason for being; its construction; its role in transportation, economic development, and westward expansion; the way of life which evolved upon it; the history of the region through which it passes; and to gain an insight into the era of canal building in the country (NPS 1976). In addition, management objectives for C&O Canal NHP are to:

• Preserve the atmosphere of past times and enduring natural beauty and safeguard historic remains and natural features.

- Impart to visitors an understanding and appreciation of a historic way of life blended into the natural setting of the Potomac Valley.
- Develop the potential of the park's recreational resources for safe yet stimulating enjoyment by the visitors within limits compatible with the other two management objectives.

The C&O Canal is the most intact example of the American canal-building era and is listed in the National Register of Historic Places as a historic district. The Catoctin Aqueduct,

which was constructed from 1832 to 1834, served as part of the C&O Canal system. It is listed in the National Register of Historic Places as a ruin and is on the NPS List of Classified Structures (identification number 011663). The stone masonry aqueduct contributes to the C&O Canal Historic District for its architecture, engineering, commerce. transportation, conservation, and military histories. The Catoctin Aqueduct is unique among canal Figure 1-2 Catoctin Aqueduct (Jack E. Boucher, aqueducts because of its "crooked" approach



Photographer, April 1959)

and the fact that it was the site of the first concurrent and adjacent crossing of a major Potomac River tributary by arch rivals, the Chesapeake and Ohio Canal Company and the Baltimore and Ohio (B&O) Railroad. The proximity of the two crossings can provide visitors with a true sense of the historic competition between the canal and railroad.

Only portions of the Catoctin Aqueduct remain intact today. The center arch began sagging in the 1920s reportedly because of problems with the west pier. Repairs were made, but the berm parapet, spandrels, and part of the arches collapsed in the early 1950s. By 1960, the center arch continued to sag until September 30, 1973 when it fell and caused the consequent collapse of the west arch. The east arch, wing walls, and east and west abutments



Figure 1-3 Catoctin Aqueduct's remaining east arch and Bailey bridge above (2006).

remained standing and were stabilized in 1974 and 1975, but are vulnerable to further deterioration (McMullan and Associates 2006). The apparent movement of the west pier undoubtedly aggravated the stability of the structure, but a recent analysis conducted by McMullan and Associates, Inc. (2006) indicates that the elliptical shape of the center arch has an inherent structural weakness. Recent inspections also indicate scour under the remaining abutments and piers, and further collapse is possible.

Collapse of the Catoctin Aqueduct in 1973 resulted in diminished historic integrity of the structure and caused a break in the continuity of the towpath. Of the 11 C&O Canal aqueducts, the Catoctin Aqueduct and Seneca Aqueduct, which has one collapsed arch, are the only ones that are currently collapsed. Accordingly, the proposed action is needed to preserve the historic aqueduct structure, prevent further deterioration of the structure, enhance towpath continuity, and enhance the aqueduct's interpretive value.

In addition to the collapse of the Catoctin Aqueduct, the surrounding cultural landscape has been altered since the C&O Canal Company ceased operations in 1924. The canal prism lacks permanent water and contains natural forest vegetation that has grown since canal operations ceased. This vegetation currently obscures the visual continuity of the aqueduct and canal prism, and diminishes their interpretive value. A pedestrian bridge was constructed over Catoctin Creek by the NPS immediately upstream of the Catoctin Aqueduct in the 1970s. This bridge was destroyed by a flood shortly after construction, but its abutments remain and diminish visual quality. A metal Bailey bridge (portable pre-fabricated bridge, designed for use by military engineering units) was erected across Catoctin Creek at the aqueduct in the late 1970s to allow towpath users, park maintenance vehicles, and emergency vehicles to cross the creek. Visitors crossing the Bailey bridge are not likely to fully notice and appreciate the aqueduct beneath. While the existing bridge is structurally sound and functional, it alters the cultural landscape and detracts from the visual quality and interpretive value of the Catoctin Aqueduct. Consequently, opportunities to understand and appreciate the canal's history are being missed. Therefore, the proposed action is needed to enhance the cultural landscape and interpretive value of the Catoctin Aqueduct.

The action is also needed to correct and prevent potentially unsafe conditions at the Catoctin Aqueduct ruins. While park policies prohibit direct visitor access to historic ruins, unauthorized access to unstable portions of the ruins is a safety risk.

1.3 PROJECT OBJECTIVES

Objectives are specific statements of purpose and describe what must be accomplished, to a large degree, for an action to be considered a success. The overarching objectives of the proposed action include:

- Preserve the historic integrity of the Catoctin Aqueduct ruins and restore the structure to the original design, to the extent feasible, and in a manner that is structurally sound and sustainable.
- Enhance the continuity of the C&O Canal towpath, the interpretive value of the Catoctin Aqueduct, and visitors' understanding of the canal's history.
- Enhance the cultural landscape and improve the visual quality of the Catoctin Aqueduct area.
- Correct and prevent unsafe conditions at the Catoctin Aqueduct.
- Maintain towpath access for visitors, park maintenance vehicles, and emergency vehicles.

1.4 RELATIONSHIP TO OTHER PROJECTS AND PLANNING

The 1976 *Chesapeake and Ohio Canal National Historical Park, District of Columbia/Maryland, General Plan* outlines the direction for proposed actions to be taken for protecting park resources and enhancing visitor experiences at the park. The Catoctin Aqueduct is located in Section 11 of the park, which is classified as Zone D – Short-Term Remote Zone. This zone can "retain a remoteness which produces a low density use. Through proper management, the park visitor can be assured of finding solitude in a natural setting. The objective here is to provide those who desire it with an undisturbed day in a natural setting" (NPS 1976).

Cumulative actions are those that have additive impacts on a particular environmental resource. Past, present, or reasonably foreseeable future actions that were identified as being potentially relevant to this EA during the scoping process include the following:

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- The Lander Lock House was recently rehabilitated to allow occasional use as an interpretive center, which is manned by volunteers from the area. Interior and exterior work was accomplished. This project had no adverse effects on the resources and impact topics being addressed in this EA, but resulted in long-term, minor benefits to visitor use and experience. Therefore, analysis of cumulative effects of this past action is limited to visitor use and experience.
- Restoration of the Monocacy Aqueduct, located at C&O Canal Milepost 42.2, was completed in 2005. Cumulative adverse impacts of this past action and Catoctin Aqueduct restoration are not a concern based on timing and distance, and are not analyzed in this EA. However, the Monocacy Aqueduct did result in long-term, beneficial effects to the cultural landscape, architectural resources, and visitor use and experience. Accordingly, this EA considers the cumulative effects of the Monocacy Aqueduct restoration on the cultural landscape, architectural resources, architectural resources, and visitor use and experience.
- Stones recovered following collapse of the Catoctin Aqueduct were stockpiled in the canal prism immediately east of the aqueduct. The NPS completed an inventory of the stockpiled stones and recovered a limited number of additional stones in late 2006. This EA analyzes the cumulative effects of this action.
- Catoctin Power LLC has applied to the NPS for a water right-of-way. If authorized, the right-of-way would cross the park south of the Catoctin Aqueduct, either near Point of Rocks or the Bald Eagle Island hiker-biker campsite (between Locks 28 and 29). The NPS has prepared an EA for this project and the NEPA process has been completed, with a Finding of No Significant Impact Finding (FONSI), dated February 7, 2008. Construction aspects of this project could temporally affect visitor use and experience.

1.5 ISSUES AND IMPACT TOPICS

1.5.1 Issues and Impact Topics Retained for Analysis

Specific impact topics were developed to address potential natural, cultural, and social issues that might result from the proposed work. These topics were derived from internal and agency scoping, federal laws, regulations, Executive Orders, C&O Canal NHP management documents, and NPS knowledge of the resources. They are used to focus the information

presented and discussed in the affected environment and environmental consequences sections of this EA. The impact topics and associated issues analyzed in this EA are listed below and a brief description of the rationale for retaining them for analysis is provided.

Natural Resources

Under the National Environmental Policy Act, numerous federal laws, regulations, and orders require federal agencies to consider the effects of their proposed actions on natural resources, including the Endangered Species Act, the Clean Water Act, the Migratory Bird Treaty Act, Executive Order 13186 *Responsibilities of Federal Agencies to Protect Migratory Birds*, Executive Order 11990 *Protection of Wetlands*, and Executive Order 11988 *Floodplain Management*. State regulations that also apply to the proposed action include Nontidal Wetlands (Code of Maryland Regulations [COMAR] 26.03.00), Water Quality (COMAR 26.08.02), Erosion and Sediment Control (COMAR 26.17.01), and Construction on Nontidal Waters and Floodplains (COMAR 26.17.04). Specific natural resources topics retained for analysis in this EA include:

- Soils Restoration activities would result in soil disturbance and compaction.
- **Geology** The site geology could affect structural design elements for the aqueduct. However, no impacts to the site's geology are anticipated.
- **Surface Water Quality** Stormwater runoff during restoration and instream construction work could affect water quality.
- **Floodplains** The aqueduct is located within the 100-year floodplain. Restoration of the original aqueduct geometry could affect water surface elevations, stream velocities, and stream morphology.
- Vegetation Vegetation in the project footprint would be disturbed and/or converted to other cover types.
- Wetlands In-stream work and the access causeway crossing the canal prism would require placement of fill in waters of the United States. If present, wetlands in the project footprint would be disturbed.
- Wildlife and Aquatic Life Terrestrial and aquatic habitats in the project footprint would be disturbed and/or altered.

• Rare, Threatened, and Endangered Species – Rare, threatened, and endangered species and their habitats are known to occur near the project area and could be affected.

Cultural Resources

The National Historic Preservation Act of 1966, the NEPA, the 1916 NPS Organic Act, NPS *Management Policies*, and NPS *Director's Order #28: Cultural Resource Management* require federal agencies to consider the effects of their proposed actions on cultural resources. Specific cultural resources topics retained for analysis in this EA include:

- Archaeological Resources The action includes ground disturbing activities that could impact prehistoric and historic archaeological resources, if present.
- **Cultural Landscape** The C&O Canal NHP possesses both natural and manmade elements that together constitute a cultural landscape. Important features such as the Catoctin Aqueduct, canal prism, towpath, and historic vegetation patterns are all important features that make up the cultural landscape. Some elements of the cultural landscape would be altered by the action.
- Architectural Resources The C&O Canal is listed in the National Register of Historic Places as a historic district. The Catoctin Aqueduct, which is a contributing element to the C&O Canal Historic District and is on the NPS List of Classified Structures, would be altered by the action. Other historic architectural resources are located in the project area.
- **Historic Material** Historic material is defined in the NPS *Management Policies* as, "the physical elements that were combined or deposed to form a property." Stones salvaged following collapse of the Catoctin Aqueduct would be used in the restoration to the maximum extent possible and are considered historic materials.

Other Topics

• Visitor Use and Experience - Proposed aqueduct restoration work is expected to affect visitors, with short-term disruptions to towpath use during certain

periods of the project. The restored aqueduct could also affect visitation rates and visitor experience.

- **Park Operations** The proposed aqueduct restoration and removal of the existing Bailey bridge would affect park maintenance requirements and the load rating of the Catoctin Creek crossing. The existing Bailey bridge has a load rating of 9 tons, while the reconstructed aqueduct would have a minimum load rating of 15 tons.
- **Public Health and Safety** Proposed restoration would alter current site conditions with respect to public safety, including the stability of the aqueduct ruins and configuration of the creek crossing. Restoration work would involve the use of heavy equipment in an area used by visitors.
- **Socioeconomic Environment** The restored aqueduct could affect visitation rates, which could affect local tourism and businesses.

1.5.2 Issues and Impact Topics Considered but Dismissed

The following impact topics are not addressed in detail in this EA because they were not identified as being of concern during scoping:

- Air quality The proposed action would result in short-term and localized air pollutant emissions (e.g., emissions for construction equipment and fugitive dust from ground disturbance). Effects to air quality would be negligible because emissions would be low and resource protection measures would be implemented.
- **Groundwater** The action does include groundwater withdrawals or activities that would appreciably alter recharge or the potential for contamination.
- **Soundscape** Other than short-term, construction-related noise, the soundscape in the project area would not change from existing conditions. The primary existing noise source is the railroad approximately 190 feet north of the aqueduct.
- Ecologically critical areas or other unique natural resources The C&O Canal NHP does not contain any designated ecologically critical areas, wild and

scenic rivers, or other unique natural resources, as referenced in the Wild and Scenic Rivers Act, NPS *Management Policies*, 40 CFR 1508.27, or the 62 criteria for national natural landmarks.

- Environmental Justice Executive Order 12898 General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations requires that all federal agencies address the effects of policies on minorities and low-income populations and communities. None of the alternatives analyzed in this EA would have disproportionate adverse health and environmental effects on populations as defined by the U.S. Environmental Protection Agency's 1996 guidance on environmental justice.
- **Indian Trust Resources** There are no known Indian Trust resources within the proposed project area.
- Ethnographic Resources Ethnographic resources, defined in the NPS *Management Policies* as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it," are not known to exist in the proposed project area.
- Agricultural Lands, Prime and Unique Farmlands No agricultural lands or prime and unique farmlands are located in the project area.