

# ALONG THE TOWPATH

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## CHESAPEAKE & OHIO CANAL ASSOCIATION

*An independent, non-profit, all-volunteer citizens association established in 1954 supporting the conservation of the natural and historical environment of the C&O Canal and the Potomac River Basin.*

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## Building Blocks of the Canal: The Log Wall

By Stephanie Spencer

There are many different elements of the Chesapeake and Ohio Canal National Historical Park (C&O Canal NHP) that are not as visible to the average towpath user as are lift locks, aqueducts, and lockhouses. But they still play a vital role in maintaining both the towpath and the park's story.

These elements include structures like culverts, waste weirs, and the historic Log Wall near Mile 11 of the C&O Canal. In November 2022, the C&O Canal NHP awarded a project contract – funded through the Great American Outdoors Act – to address the Log Wall's critical needs.

### **What is the *Log Wall*?**

The Log Wall is a dry-laid stone wall located in the lower (eastern) portion of the park. This approximately 1,015-foot-long wall supports the towpath and the canal prism, and also protects them both from the waters of the Potomac River.

The Log Wall was originally constructed between 1828 and 1831 and varies in heights of up to 35 feet. This section of the canal is significantly higher in elevation than the Potomac River, which in this area curves around two islands. The building of this large stone wall gave the contractors working on the canal a way to utilize and dispose of the stone removed from the canal prism.

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*The building of the Log Wall upstream riprap buttress – Photo by C&O Canal NHP Professional Services Division*





# Building Blocks of the Canal: The Log Wall (Continued)

*Lock 15 at the upstream end of Widewater (Mile 13) – Photo by Stephanie Spencer*

## *Log Wall – Continued from Page 1*

Although the actual origin of the name “Log Wall” is a bit of a mystery, some sources speculate that it originates from higher parts of the wall having rows of plank piling on the inside, perhaps put in place as part of repairs conducted following the 1889 flood.

### **What is the Great American Outdoors Act?**

Implemented on August 4, 2020, the National Park Service’s Great American Outdoors Act – Legacy Restoration Fund Program (GAOA LRF) was established to address deferred maintenance and repair (DM&R) requirements. DM&R refers to maintenance and repairs delayed due to limited resources or not performed when scheduled.

As of September 30, 2023, the Department of the Interior’s DM&R total was \$32.4 billion. Prior to the establishment of GAOA, many large projects were unable to be funded. Thanks to GAOA, 326 projects are planned, ongoing, or have been completed within fiscal years 2021 through 2024 across every state and multiple territories.

The National Park Service receives 70% of the GAOA LRF funding, which provides \$1.9 billion annually across five years – from fiscal years 2021 to 2025. While this will not address all the DM&R backlog, it will slow the growth of the needs over time, while also making GAOA the single largest investment in public lands in United States history.



*A 2020 upstream view of Log Wall before project work began – Photo by C&O Canal Professional Services Division*



*A March 2024 upstream view of Log Wall after repairs – Photo by C&O Canal Professional Services Division*



## Why is the Construction Project Needed?

Around 2015 and 2016, sinkholes began to form in the canal above Log Wall. The area was temporarily stabilized by dewatering this stretch of the canal and by using sandbags to prevent water from further infiltrating into the sinkholes and stone wall. The dewatering efforts impacted a 4-mile stretch of the canal from Lock 14 at Mile 9.47 upstream to Lock 15 at Mile 13.45. This stretch of the canal includes the Widewater area at Mile 13, which is a relic channel of the Potomac River and ranges anywhere from 50 to 80 feet wide.

The portion of the canal within this stretch was altered in the 1960s by the installation of the Potomac Interceptor Combined Sewer (PI), which is operated and maintained by D.C. Water. It is an 84-inch diameter pipe that carries about 60 million gallons of combined sewage daily from the Dulles Airport area to the wastewater treatment plant in Washington, D.C. Since it is a combined sewer system, it carries fluctuating levels that are impacted by stormwater systems. Subsequent canal liner systems were also installed by D.C. Water to retain water in the canal and limit leakage out of it.

The existing canal liner system required restoration to facilitate rewatering of four miles of canal, prevent further growth of the sinkholes, and minimize infiltration of water into the dry-laid stone masonry retaining wall.

Repairs were also needed to restore connectivity of the canal due to the amount of accumulated sediment blocking



*Top: A pedestrian bypass detour around the project site.*

*Middle: Tree removal along Log Wall.*

*Bottom: Repairs to the stone masonry.*

*All photos by C&O Canal Professional Services Division*

the waterway. This sediment put pressure on the wall and required removal. There was such a large amount of sediment at the upstream end of the canal within the project area that the adjacent tributaries were prone to overtopping the canal during rainfall events. This resulted in erosion of the river side of the towpath during overtopping events. If left unaddressed, such impacts could breach the towpath, similar to a breach at the Angler's area of the towpath at Mile 12.2 over a decade ago.

## What Does the Project Include?

The main goals for the stabilization of the Log Wall are to maintain towpath continuity, restore water flow in the canal prism, reduce risks to adjacent infrastructure – such as the PI, canal and towpath – and reduce the sediment load of a small portion of the tributaries within the park limits that empty into the canal.

As part of the stabilization project work, the masonry of the stone wall was repaired to reduce future instability. Earlier site visits indicated that there was movement of the stone masonry units comprising the wall. Repairs and stabilization efforts included providing stone infill and repairs to the face of the existing stone wall. In addition, a small section of the dry-laid stone masonry buttress supporting the upstream side of the wall was rebuilt. Once repairs to the wall were completed, a crushed stone gravel “core” was installed and armored with heavy dumped stone (riprap) to prevent erosion during flood events.

This dumped stone at the face of the wall provides a resisting pressure to stabilize lower



courses of the wall and buttress it from further movement. Dumped stone buttressing was the primary method used to reduce the effective height of the retaining wall and pressures within it. Historically, this method was used at the site and kept reaches of the wall in-place. During design development, a series of options were considered with buttressing being the most effective, in lieu other more intrusive methods such as full wall disassembly and reassembly.

To restore water flow in the canal prism, sediment within the prism was excavated. This effort also reduced the weight at the Log Wall. Accumulated sediment is denser than air. Portions of two tributaries between MacArthur Boulevard and the canal were also stabilized to minimize future erosion and sediment transport into the canal.



*The stabilization of a tributary leading into the canal prism – Photo by C&O Canal Professional Services Division*

To stop the growth of the sinkholes and their impacts to the wall and towpath, a specially designed gradation of materials – sands and gravels – infilled the existing sinkholes. The canal liner was also replaced with a geosynthetic system. The new 40-mil High Density Polyethylene (HDPE) liner limits leakage through the towpath and the wall.

The HDPE liner is protected between layers of sand and geotextile and is covered with a blanket of clay. Internal drains – comprised of clean gravel, perforated drainage pipe, and geotextile – are also included to intercept any groundwater or control any leakage under the liner system if there is future damage.

### **What are the Project Impacts?**

The project work is anticipated to continue through late 2024. During this time, the towpath between Miles 11 and 11.5 is closed with an approximately 0.7-mile detour on a pedestrian bypass. The detour uses a temporary causeway across the canal and a temporary mulch trail through the woods leading to another mulch trail along the shoulder of MacArthur Boulevard and the existing Marsden Tract bridge over the canal. During construction, the Carderock Recreation Area Parking



*The installation of an underdrain system within the canal prism – Photo by C&O Canal Professional Services Division*



*Panorama view of the construction of the upstream buttress – Photo by C&O Canal Professional Services Division*



Lot B (Mile 10.75) is closed. All remaining parking lots remain open.

Following completion of the project, overall safety in this stretch of the canal will be improved. Historic structures will be preserved with a more sustainable system, reducing the impacts of future flood events. The impacted four miles of canal will also once again see water, allowing for the scenic views and recreational activities that visitors have come to enjoy!

*Stephanie Spencer is a professional photographer and journalist from Pennsylvania. She works at the C&O Canal National Historical Park headquarters as a Facility Operations Specialist for the Maintenance Division.*



*The installation of the canal prism liner – Photo by C&O Canal Professional Services Division*

## 3M Challenge

By Bill Holdsworth

A team of six Association cyclists competed against a railroad locomotive in the 6th Annual “3M” Challenge (Muscle vs Machine vs Mountain) September 14 in Cumberland.

Denny Sloppy, Kathy Merchant, Missy Pope, Patrick Pope, Emil Moskovich, and Melody Miles competed for the Association.

The race was a timed challenge between cyclists and the train. Riders followed a 15.3-mile stretch of the Great Allegheny Passage (GAP) Trail alongside the Western Maryland Scenic Railroad uphill from Cumberland to Frostburg. Twenty

teams of riders departed from the Cumberland station every 10 minutes, starting at 8 a.m. The train departed at 11:30 a.m. with cyclists challenged to have a better climb time than the train.

Emil had the best time of 1:16:00.5 among the Association team. Sadly, his time was nine minutes slower than the 3,150-horsepower diesel locomotive, which made the climb in 1:07:02.9. Just under half of the 102 riders competing had a better time than the locomotive.



*Association participants before the start – Photos by Bill Holdsworth*



*At the start of the 3M Challenge*