Slippery Rock Watershed:
AMD Treatment, Education, and Recreation Project
Final Report

Butler County, Pennsylvania

Abandoned Mine Land Economic Revitalization (AMLER) (aka AML Pilot Program)
Pennsylvania Department Environmental Protection Abandoned Mine Reclamation Program
Project #: AMD 10(3776,6834,7131)101.1
7C-FA-28.0

Foltz Schoolhouse

North County Trail

Barkley Road Passive Treatment System

December 2022

Stream Restoration Incorporated
Butler County, PA
www.streamrestorationinc.org

Project Narrative

1) Narrative Description of Project (please include brief answers to the following questions):

a. What was the project supposed to accomplish?

Stream Restoration Incorporated (SRI) and the Slippery Rock Watershed Coalition (SRWC) received an Abandoned Mine Land Economic Revitalization (AMLER) (previously known as the AML Pilot Program) grant in August 2020. The original grant proposal submitted in 2018, included seven sub-projects (deliverables), including significant rebuilding and maintenance of six different passive treatment systems within the Slippery Rock Creek Watershed. A separate grant was previously submitted to the Growing Greener program to complete four of these projects. The Growing Greener grant was funded to complete rehabilitation work at the Ferris, SR81, SR101A, SR114B, and SR114D passive treatment systems. The Growing Greener grant is still in progress, with an expected completion date of December 2023. The remaining three sub-projects (deliverables) received funding from the AMLER (Pilot) grant and are the focus of this report. Those sub-projects are the Barkley Road Passive Treatment System, the Jennings Environmental Education Center Foltz Schoolhouse Restoration, and the North Country National Scenic Trail (NCT).

Barkley Road Passive Treatment System

Before the creation of Lake Arthur, an extensive abandoned mine land reclamation effort was completed within Moraine State Park under Operation Scarlift to ensure that water quality in the lake would be good. Work included reclaiming coal refuse, spoil piles, and highwalls, installing mine seals and planting trees and ground cover. While the reclamation effort had spectacular results, some AMD discharges did remain. The Barkley Road passive treatment system was originally constructed by the Butler County Conservation District around 1996 on Moraine State Park property to treat at least one, possibly more AMD discharges flowing directly into Lake Arthur. After many years of operation, iron sludge and debris had accumulated within the ponds resulting in AMD overflowing the berm and bypassing treatment. The proposed tasks for this sub-project included the construction of a sludge pond to contain the sludge and debris which was to be removed from the existing treatment system, installing new piping and baffles in the various ponds, repairing spillways, and revising the O&M plan to maintain the efficacy of the system.

Jennings Environmental Education Center Foltz Schoolhouse Restoration

The oldest known passive treatment system constructed in the Slippery Rock Creek watershed is the original wetland system built at the Jennings Environmental Education Center (JEEC) around 1988. Due to the presence of an abandoned underground mine, historic structures, coal refuse, acid mine drainage, a passive treatment system, etc., the JEEC, a Pennsylvania State Park, has utilized all of these aspects of the property as both an environmental educational resource as well as an opportunity to conduct research and serve as a demonstration project for others to learn. Located next to the JEEC passive treatment system existed an old, abandoned, one-room schoolhouse operating from 1880-1963. The schoolhouse was open while the underground coal mine responsible for the discharges at JEEC was in operation next door. The JEEC has long wanted

to restore the Foltz schoolhouse, which would be utilized as a museum of early local education history and culture and environmental education.

The all-volunteer community organization The Moraine, McConnells Mill and Jennings Commission (3MJC) began to spearhead an effort around 2017 to help the park obtain funding and resources to restore the schoolhouse's interior and complete site improvements to allow public access and use of the facility. In the original proposal, funding from this grant was intended to help to install a public, two-stall, concrete pre-cast, CXT-type composting restroom facility to serve the schoolhouse and North Country National Scenic Trail visitors. Additional work was to include grading the area around the schoolhouse to facilitate drainage and the addition of stone to create a parking area. Interior renovations of the old, abandoned, one-room schoolhouse were to include insulation, wallboard, and painting. Funding was also to be utilized for artifacts and the design and fabrication of educational exhibits as feasible.

North Country National Scenic Trail (NCT)

The North Country National Scenic Trail (NCT) stretches 4,600 miles over eight states from North Dakota to Vermont. About 275 miles of the trail passes through Pennsylvania, of which a good portion of that passes through the Slippery Rock Creek watershed, including sections that traverse through McConnells Mill, Moraine, and Jennings Environmental Education Center State Parks, as well as Pennsylvania State Gamelands #95. Interestingly enough, not only does the NCT pass beside or over Slippery Rock Creek and several tributaries, but the NCT also passes beside or directly through six passive treatment systems in the watershed, including Jennings, Ferris, SR81, SR101A, SR109, and SR114D.

Building and maintenance of the trail are mostly conducted by volunteers of local chapters of the North Country Trail Association (NCTA). The Butler County Chapter is responsible for the 57-mile segment that goes through Butler County. As there is a direct link between land and water, ecotourism and a clean environment, and the fact that the trail goes through the passive treatment systems in the Slippery Rock Watershed, SRI and the SRWC wanted to secure funds to help the local Butler Chapter of the NCTA to maintain the trails for the community to utilize and enjoy.

The project was to repair or replace six 20-year-old bridges along portions of the NCT that intersect with the Slippery Rock Creek Watershed and six passive treatment systems in Butler County. Volunteers and staff would repair approximately 2,000 feet of the trail using stone, geotextile, piping, and rental equipment to replace 600 feet of boardwalk. Also proposed were upgrades to select wet and muddy areas along an 11-mile stretch of the NCT from the Rt 308 trailhead MM 72 to the Leonard Rd Trailhead at MM 82.

b. <u>What you actually did and how it differs from your plan?</u>

Barkley Road System

The Barkley Road system was not functioning correctly before rehabilitation. BioMost, Inc. provided design, permitting, construction oversight, and other consulting services, as well as completed the as-built drawings and an O&M plan. Field & Technical Services, LLC (FTS) was

selected as the low bidder to complete construction on the site. FTS cleared the site of trees, removed leftover stumps, and installed E&S controls and a construction entrance. A new sludge pond was constructed, and existing collection ponds and the wetland area were cleaned of sludge and debris. An existing culvert between the flow ponds was cleared, rehabilitated, and additional stone was laid. Geotextile and stone were laid for the construction entrance, and paths were mowed along ponds for easier access and line of sight. The project was essentially completed as intended.

Foltz Schoolhouse

The Foltz Schoolhouse area restoration plans included total rehabilitation of the abandoned one-room schoolhouse and site improvements to the land around the school. The project was essentially completed in October 2022. Pennsylvania Labor and Industry inspected the project, and an occupancy permit was awarded for the use of the space. The schoolhouse interior and exterior were renovated, and all proposed exterior work was completed. This work included the following: electric heaters, insulation in walls and ceiling, wainscoting, drywall, trim, replica antique light fixtures, shutters, interior and exterior paint, driveway, parking lot, and ADA parking space. Due to costs, a single composting trailhead toilet has been purchased instead of a two-stall, but the delivery has been delayed due to supply-chain issues. Jennings park staff will install the unit once it is delivered and weather appropriate. No other significant variation from the plan occurred. Originally the exterior painting was to be a contracted service, but the price forced this work to be done by volunteers and Jennings staff.

North Country National Scenic Trail

As part of this project, four large named bridges (Beaver Dam, Memorial, Pry, and KL24) and four smaller unnamed bridges were replaced. The new bridges were designed to be longer than the original ones to overcome past and future bank erosion issues. For example, the new Beaver Dam bridge was built to be 40 feet long compared to the previous bridge, which was 35 feet long. In addition, about 500 feet of new boardwalk were built along the trail, and approximately 4,500 feet of other trail improvements were completed, such as placing limestone in wet and muddy areas. Beaver dams newly flooded one section of the trail, so efforts included building up the low areas and installing mini bridges to allow water to flow across the trail.

c. <u>What were your successes and reasons for your success?</u>

Barkley Road System

At the Barkley Road passive system, a sludge pond was installed, and the system was cleaned and rehabilitated. The rehabilitation revived a 26-year-old, passive treatment system that should allow it to continue functioning for another 20+ years. The addition of the sludge pond will allow for the removal of sludge in the future as needed. Based on available data, the system is expected to treat about 15 million gallons of mine drainage per year, preventing about 1,800 lb/year of iron from entering Lake Arthur. The success of this project is attributed to the working partnership between nonprofits, government agencies, and private industry.

Foltz Schoolhouse
The Foltz Schoolhouse's grand opening was held on October 22, 2022. The project transformed a decaying historic building into a beautifully restored schoolhouse. A group of dedicated volunteers completed most of the restoration work, further enhancing the grant's community partnership aspects. The volunteers donated more than 4,000 hours of time during the grant period. The completed structure will provide much-needed education space for school programs conducted by Jennings Environmental Education Center staff that focus on local history – including the mining history associated with the site, abandoned mine drainage, and passive treatment of AMD. The space will also serve the community and visitors to Jennings as a museum that interprets early education in the 1910 – 1920 period and a gathering space for groups and organizations such as the North Country Trail Association and the Slippery Rock Watershed Coalition. The project also helped to enhance community connections, specifically with local government, historical societies, vocational schools, and teachers.

North Country National Scenic Trail
Proposed bridge and trail work was completed allowing safer access to trail users. During construction and maintenance work on the NCT, the trail remained open. The work was almost entirely completed by dedicated volunteers, including Boy Scouts of America members who replaced two sections of boardwalk west of Higgins Road as part of an Eagle Scout Service Project. The volunteers donated more than 2000 hours of time from 2021-2022 to complete this work.

d. <u>What problems were encountered and how you dealt with them?</u>

The most significant problem that affected the entire project was navigating the issues associated with the COVID-19 Global Pandemic, especially related to volunteers who worked on the Foltz Schoolhouse and NCT projects. At the schoolhouse, numerous shutdowns occurred as the project was located on Commonwealth property and had to abide by Commonwealth and Bureau of State Park policies to keep employees, volunteers, and visitors safe. For the NCT, some of the work had to be delayed or was completed by smaller groups of volunteers to minimize risks. All aspects of the project saw impacts from price increases and supply chain issues resulting from pandemic-related shutdowns. Additionally, price increases for some services required work originally planned to be contracted to be completed by volunteers and staff. To help deal with the anticipated rising costs of lumber for the NCT project, a large quantity of lumber was purchased upfront and stored, then used as needed.

e. <u>How your work contributed to solution of original problems?</u>

Barkley Road System
Passive systems treat over a billion gallons of mine drainage annually, eliminating over 700 tons of iron, 55 tons of aluminum, and 900 tons of acidity yearly from Slippery Rock Creek and its tributaries. The work completed through this grant program provided maintenance to help ensure that the Barkley Road system remains working to continue to provide water quality improvement.

Foltz Schoolhouse
There is no longer an abandoned and deteriorating structure located next to the North Country National Scenic Trail and the Abandoned Mine Drainage Treatment, Research, and Demonstration Area at Jennings Environmental Education Center. The problem of a lack of indoor classroom space for students exploring the Abandoned Mine Drainage Treatment, Research, and Demonstration Area has been addressed, and a valuable cultural resource for interpreting the history of Butler County has been preserved and enhanced.

North Country National Scenic Trail
Trail improvements help conserve the surrounding habitat because people stay on the trail vs. trampling the vegetation along the trails. Off-trail travel can negatively impact native plants and wildlife, cause existing trail conditions to worsen, and impact watershed quality in Slippery Rock Creek and its tributaries. These improvements will help people safely traverse the NCT system with minimized environmental damage.

f. <u>What else needs to be done and what additional efforts are underway or planned?</u>

Barkley Road System
All construction is complete for this project. Water sampling will be conducted when funding is available. Inspections will be conducted as feasible. Maintenance will be conducted as needed.

Foltz Schoolhouse
Exhibit planning, development, and installation are currently being conducted by Jennings staff, as are program development and facilitation. The composting toilet needs to be installed upon receipt of the order fulfillment.

North Country National Scenic Trail
Future maintenance work includes the removal of down trees and mowing these trail sections several times a year, and treating the existing wet, muddy areas with limestone gravel. Several small bridges have recently been identified that need repair, which will be completed in the coming year. Recently timbered sections of the trail need to be re-blazed.

g. <u>What are your plans for disseminating the results of your work?</u>

Barkley Road System
The work completed at the Barkley Road System in Moraine State Park will be shared through social media postings and as a feature in SRWC's The Catalyst newsletter. Information about the Barkley Road passive system will be updated on SRI's free public website, Datashed.org.

Foltz Schoolhouse
The Slippery Rock Watershed Coalition, Stream Restoration Incorporated, and the Jennings Environmental Education Center have issued press releases and articles about the completed work. JEEC provided continual community updates throughout the Foltz Schoolhouse

rehabilitation process, including social media engagement, and a grand opening celebration was held on October 22, 2022. For the Foltz Schoolhouse, hours of operation are to be added to park materials and website, directional and wayfinding signs added to intersections, and special events promoted through press releases, medial social posts, and The Catalyst newsletter.

North Country National Scenic Trail

Work on the NCT was shared on social media, including photos of the work throughout the project. An article on the work will be published in an upcoming bi-monthly North Star NCT Magazine issue.

h. How well did your spending align with your budget request?

All funds were spent. Overall, spending aligned fairly closely with the original budget request. Some costs exceeded original expectations and estimates within the budget but were typically balanced by savings achieved by choosing a different product, using more volunteer labor instead of a contractor, or utilizing donated services from project partners.

Project Partners

Stream Restoration Incorporated would like to thank the following organizations for their support and efforts, which made this project possible:

Anonymous Donors
BioMost, Inc
Boy Scout Troop #53
Butler County Area Vocational Technical School
Butler County Chapter of the North Country Trail Association
Butler County Commissioners
Butler Outdoor Club
Community Development Cooperation of Butler County
Foltz Schoolhouse Volunteers
Jennings Environmental Education Center
Moraine, McConnells Mill and Jennings Commission (3MJC)
Moraine State Park
Pennsylvania Department of Environmental Protection Bureau of Abandoned Mine Reclamation
Pennsylvania Game Commission and State Game Lands #95
Slippery Rock Watershed Coalition
Union Carpenter Local #432
U.S. Office of Surface Mine Reclamation and Enforcement

Appendix 1
Photographs

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

7C-FA-28.0

Barkley Road Passive System

November 2022

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

7C-FA-28.0

Barkley Road Passive System

Pre-Construction Phase

Discharge Point into Lake Arthur

Collection Pond (CP)

Overflow at CP
Caused by Sludge Accumulation

Wetland (WL) Filled with Sludge and Vegetation

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Construction Phase

Clearing and Grubbing

Placement of Geotextile for Site Entrance and Placement of AASHTO #1 aggregate

Sludge Pond Construction

Site Entrance to Sludge Pond Entryway

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Construction Phase (Wetland)

Clearing Wetland Berms and Spillway Construction

Sludge and Vegetation Removal from Wetland

Sludge Removal From Wetland

Sludge Removal From Wetland

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Construction Phase (Wetland)

Level Spreaders Across the Width of Wetland

Overview of Level Spreader
Across the Width of Wetland

Placement of Level Spreader in Wetland

Settling Pond and Wetland Cleaned and Stabilized

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Construction Phase (Sludge Pond)

Forming Interior Slopes of Sludge Pond

Sludge Line Filling Sludge Pond and Dewatering Riser

Dewatering SCH40 PVC Outlet Pipe

Dewatering Valve in Riser with Cap

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Construction Phase (Collection Pond)

Removal of Sludge and Vegetation from Collection Pond

Construction of Spillway for Wet Zone to Collection Pond

Construction of 6” 90° V-Notch Weir

As-Built 6” 90° V-Notch Weir in Spillway

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Post Construction Phase

Turf Reinforcement Mats at Outlets of Spillways

Seeding and Mulching of Collection Pond Berm

Seeding and Mulching of Wetland Berm

Rock Lined Outlet of 24” N12 Culvert Pipe

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Barkley Road Passive System

Post Construction Phase

Post Seeding and Mulching of SP

Filled Sludge Pond Post Seeding and Mulching of Sludge Pond Berm

Seeding and Mulching of Culvert Crossing between WL and Sludge Pond

Site Entrance Post Seeding and Mulching

Foltz School Restoration

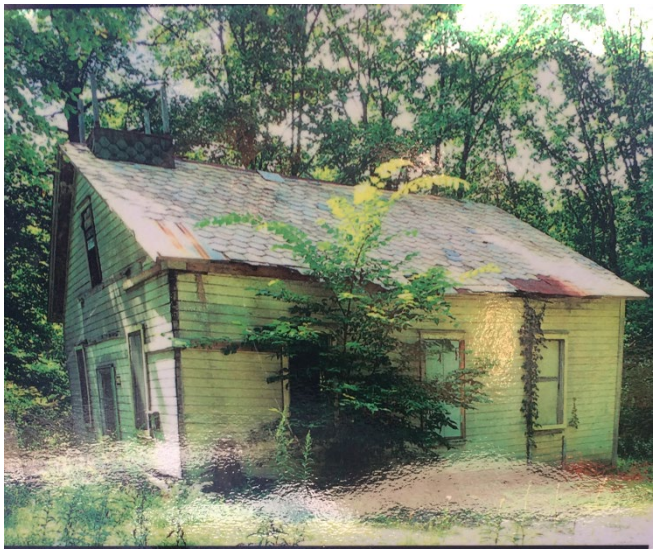
Foltz School History

Foltz School 1911

Foltz School 1939

Foltz School 1965

Foltz School 1965



Foltz School 2000

Foltz School 2008

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Foltz School Restoration Photographs

Foltz School Renovation

Foltz School Interior—Project Meeting 2018

Foltz School Interior—Electric Installation—2019

Foltz School Ceiling Installation—2020

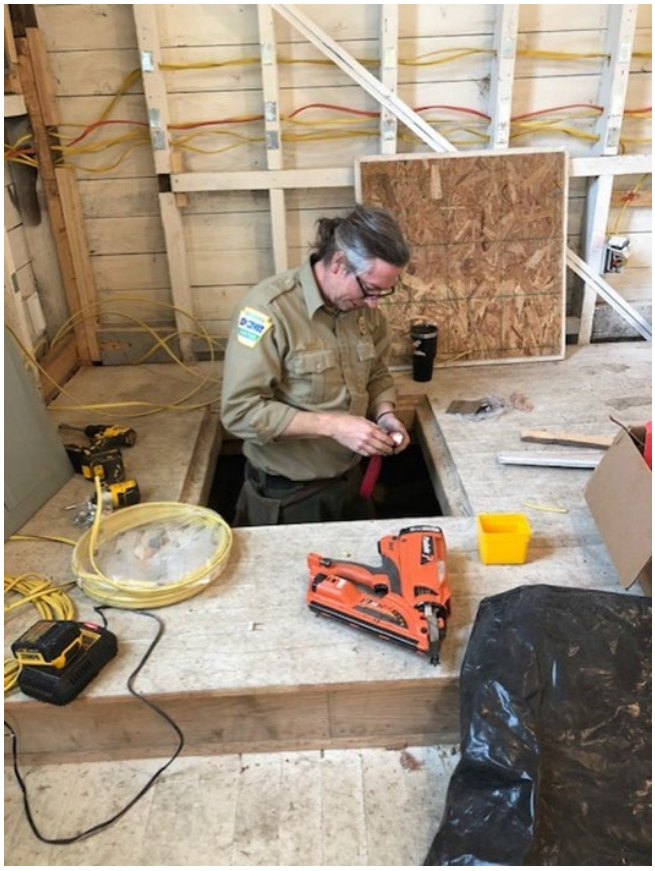
Foltz School Shutter Installation—2021

Foltz School Interior—Ceiling Installation—2020

Foltz School Restoration Photographs

Foltz School Renovation—Installing Heaters

March 2021



Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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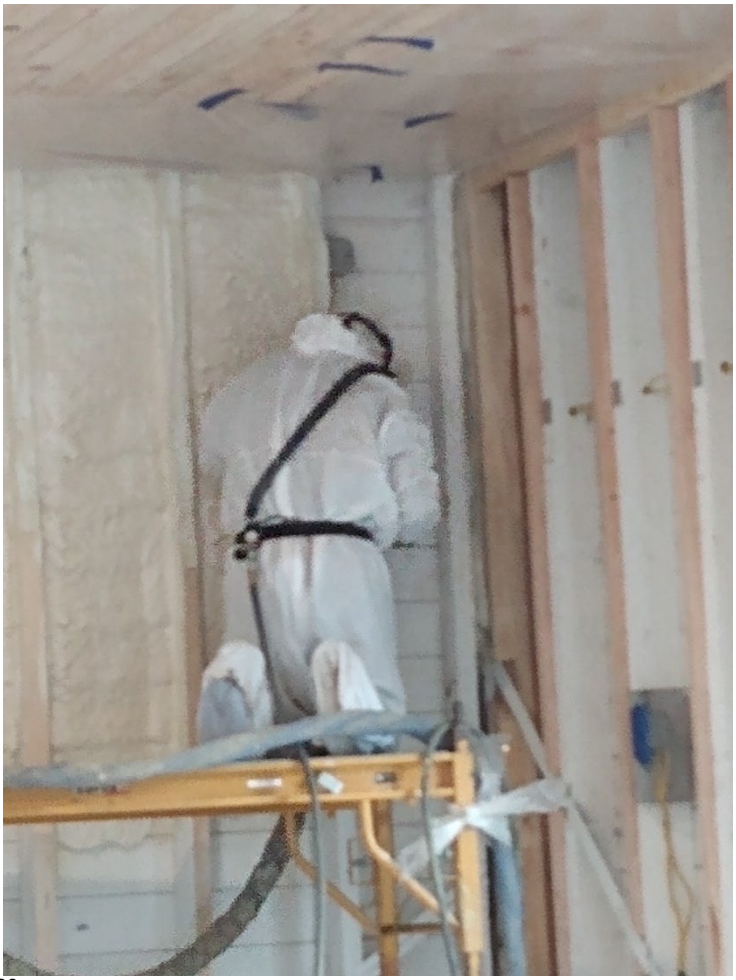
Foltz School Restoration Photographs

Foltz School Interior—Insulation Installation

January & March 2021



Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

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Foltz School Restoration Photographs

Foltz School Interior—Drywall and Wainscoting Installation

July - September 2021

Slippery Rock Creek Watershed AMD Treatment, Education and Recreation Project

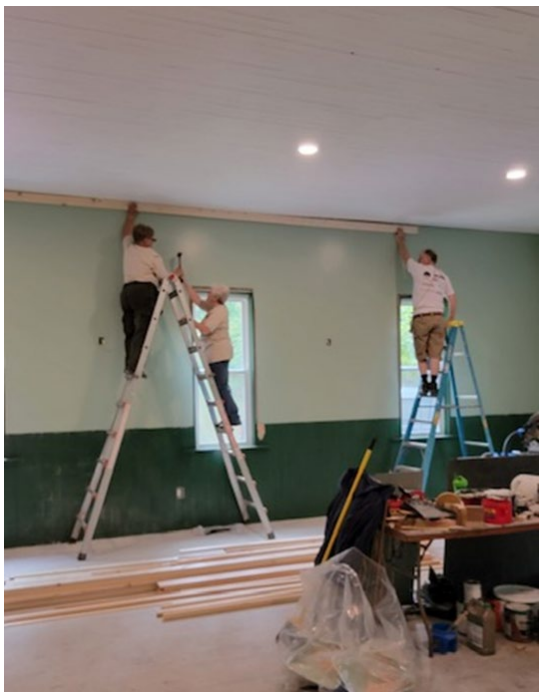
7C-FA-28.0

Foltz School Restoration Photographs

Foltz School Interior—Painting and Trim Work

Painting walls—September 2021

Painting Floor—February 2022

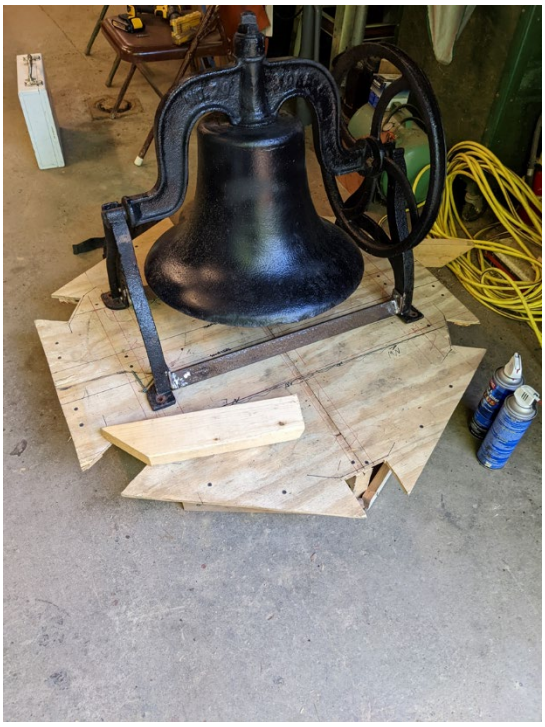


Installing trim—October 2021

Slate chalk board installation—October 2021

Foltz School Restoration Photographs

Foltz School Exterior—School Bell



Bell Purchase and Preparation—2022

Bell Installation—April 2022

Foltz School Restoration Photographs

Foltz School Exterior—Parking Lot

Phase 1 Archeological Investigation—Shovel Tests—January 4, 2022

Brush Removal—September 2021

Excavation —July 2022

Excavation —July 2022

Parking Lot Installation—July 2022

Foltz School Restoration Photographs

Foltz School Exterior

ADA Van Accessible Parking Space Installation—August 2022

Completed Driveway, ADA Space & Parking Lot—August 2022

Exterior Painting October 2022

Foltz School Restoration Photographs

Finished

Foltz School—Finished Interior—October 2022

Foltz School—Finished Exterior—October 2022

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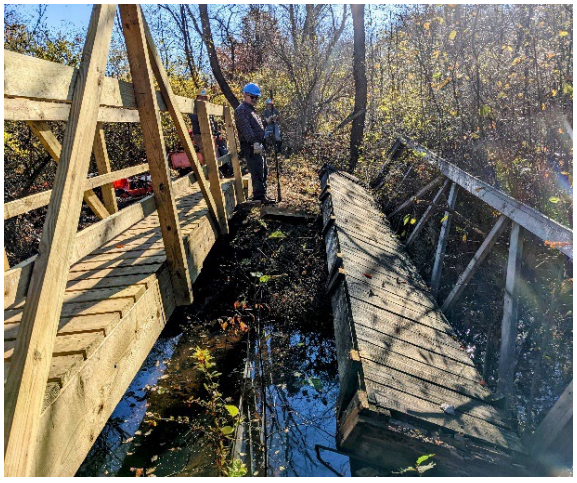
North Country National Scenic Trail

Stump removal with grip hoist.

Pulling new bridge across stream.

Removing old bridge.



Removing old bridge.

Volunteers building new boardwalk.

New boardwalk under construction.

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North Country National Scenic Trail

Original 35 ft Beaver Dam Bridge

New 40 ft Beaver Dam Bridge

Original (14ft) and replacement (19ft) unnamed bridge 0.8 mi west of Higgins Road

7C-FA-28.0

North Country National Scenic Trail

Recently flooded section of trail South of Pry Road.

Improved built-up sections with small bridges to allow future flooding to flow across the trail.

A small bridge across a small stream.

New replacement of small bridge South of Pry Road.

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North Country National Scenic Trail

Kohlmeyer Road crossing with new blaze post.

Improved trail section behind Moniteau High School.

Before and After building boardwalk 0.4 miles south of Pry Road.

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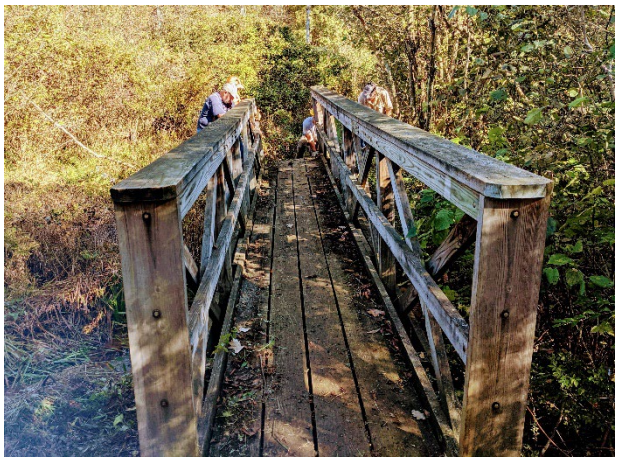
North Country National Scenic Trail

Original Memorial Bridge (26 ft)

New Memorial Bridge (32 ft)

Original Pry Road Bridge

New Pry Road (32 ft) Bridge



Original KL-24 Bridge

New KL-24 (29 ft) Bridge