



You're Invited!

In October 2020, the National Park Service (NPS) requested your input on options to restore the Meadow Run Watershed in the southern portion of Shenandoah National Park, near Crimora, Virginia. The NPS used this input and scientific research to prepare an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). We now invite your input on the preferred alternative and potential impacts.

The NPS will be accepting public comments on the EA from January 29, 2021 through February 28, 2021. We also invite you to join us for one of two virtual public meetings that will be held via Zoom. Please use the **hyperlinks below** to join the video meeting. To join by phone, dial one of the phone numbers below and enter the Webinar ID:

February 9, 2021

between 7:00 PM - 9:00 PM EST

<https://zoom.us/j/95420084349>

+1-833-548-0276 (Toll Free)

+1-301-715-8592

Webinar ID: 954-2008-4349

February 11, 2021

between 2:00 PM - 4:00 PM EST

<https://zoom.us/j/98850899086>

+1-833-548-0276 (Toll Free)

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Webinar ID: 988-5089-9086

Thank you,
Patrick M. Kenney
Superintendent
Shenandoah National Park

Background

Decades of acidic deposition (a.k.a. “acid rain”) from regional air pollution has negatively affected soil and water quality in the Meadow Run Watershed. It has altered the water chemistry, impacting the richness and abundance of aquatic insects and fish such as brook trout (*Salvelinus fontinalis*, **figure 1**). Meadow Run, a stream located in Congressionally designated wilderness in the southern portion of the park, is listed as impaired in Virginia under the Clean Water Act due to its elevated acidity (low pH). In addition to stream water, acidic deposition has been found to negatively impact song birds, plants, and forest health in nearby watersheds. These degraded conditions affect ecosystem health and visitor experience within the park.



Figure 1 | Stream life, such as fish and insects, has been harmed as a result of long-term impacts of acid rain.

While air pollution has decreased dramatically in the last two decades, many sensitive watersheds, including Meadow Run, do not have the capacity to restore themselves naturally. Computer models indicate that current air pollution reduction programs in conjunction with normal bedrock weathering will not restore the area to pre-pollution levels for well over a hundred years. The NPS needs to take action to reduce the negative effects of long-term acidic deposition in the Meadow Run Watershed.

Purpose and Need for Action

The purpose of taking action is to improve the long-term health of the terrestrial and aquatic ecosystem and mitigate the harmful effects from decades of atmospheric acidic deposition in the Meadow Run Watershed.

Action is needed because this deposition has caused soils in the project area (**figure 2**) to lose significant quantities of soil nutrients such as calcium and magnesium, known as base cations. Base cations have the capacity to naturally buffer against acidification by being able to neutralize small amounts of added acid, thereby keeping the pH level in soils and streams relatively stable. Without assistance, the aquatic and terrestrial ecosystem of the watershed would remain degraded.

Shenandoah National Park

Meadow Run Watershed Restoration

National Park Service
US Department of the Interior

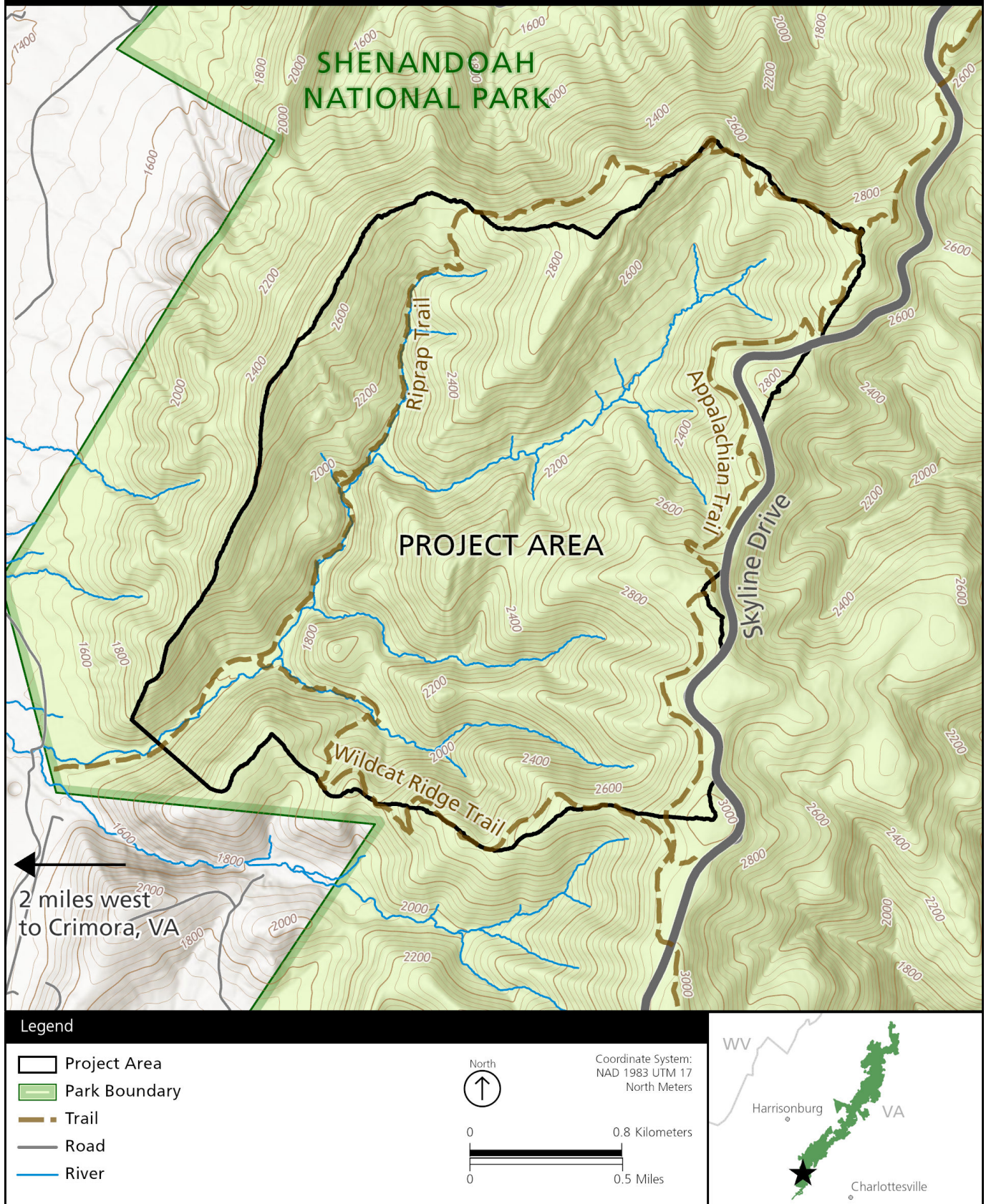


Figure 2 | Project Area

Alternatives

The EA evaluates three alternatives including a no-action alternative and two action alternatives (see below). The no-action alternative would let natural processes continue without NPS intervention. The two action alternatives would apply limestone sand (referred to as “liming”) to the project area to reduce the negative effects of acid rain. Liming has proven to be an effective method for improving soil and water chemistry in other locations. It can restore terrestrial and aquatic ecosystems and has beneficial effects for plants and wildlife. Liming at this scale would be conducted by helicopter (*figures 3 and 4*) because of the large amount of limestone sand needed and because the project area is steep and remote.

Liming via helicopter would be similar to wildfire response operations recently experienced within the park. The project could be implemented from multiple staging areas located on Skyline Drive and/or outside the park (assuming arrangements can be made with landowners and the affected neighbors) (*figure 5*). For public safety, the Riprap and Wildcat Ridge Trails and the surrounding area would be closed for the full implementation period; affected sections of the Appalachian Trail and Skyline Drive would be closed for shorter periods as needed during active periods of implementation. The staging approach and closures would be finalized after the NPS develops a detailed project implementation plan. This plan would also describe project logistics and measures to minimize impacts to visitors and potentially affected neighbors. Relevant details from this plan would be shared with the public at least a month prior to commencement of the project.

Alternative A: No-action Alternative	Natural processes would continue to determine the acidity in the soil, groundwater, and the stream. No liming would occur to mitigate past atmospheric acidic deposition.
Alternative B: Split-dose Liming (preferred alternative)	The park would conduct liming by applying limestone sand via helicopter using a split-dose liming approach. This approach implies that a higher dose (in tons per acre) of limestone sand would be applied over more depleted soils and a lower dose over less depleted soils. All liming would occur over a period of up to 3 months (December–February).
Alternative C: Uniform-dose Liming	The park would also conduct liming via helicopter, but would use a uniform-dose liming approach. This approach implies that more depleted and less depleted soils would not be distinguished, and the distribution of the limestone sand would be applied evenly across the project area. Liming would also require up to 3 months during the winter.



Figures 3 and 4 | Limestone sand application by the US Forest Service in the Monongahela National Forest in 2018

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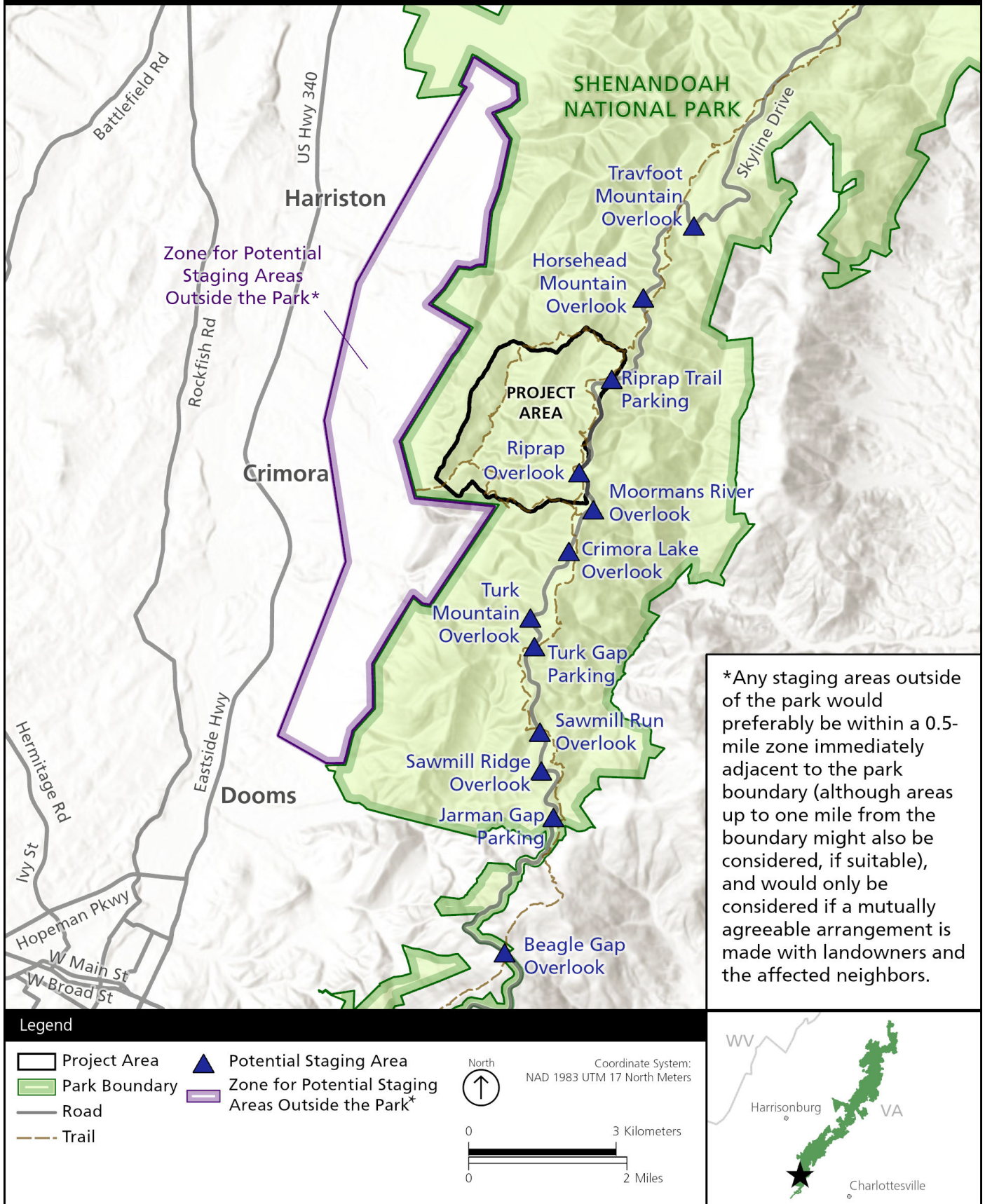


Figure 5 | Potential Staging Areas

Project Impacts

The NPS evaluated a wide range of potential impacts from the proposed liming. Meaningful anticipated impacts are summarized below. The evaluation incorporated advice from subject matter experts from the State of Virginia, US Geological Survey, and academia; and input received during civic engagement and public scoping.

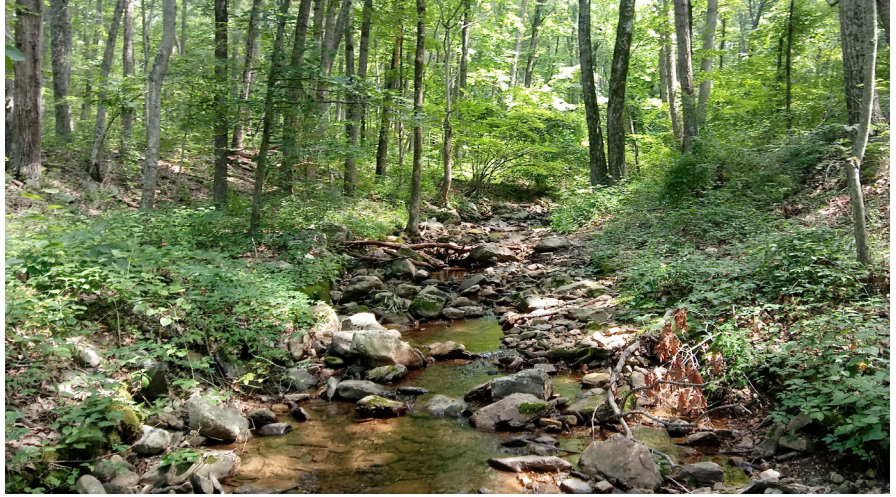


Figure 6 | *Vegetation growing along Meadow Run*

- **Soil Chemistry:** Soil acidity and toxic aluminum in the Meadow Run Watershed would be reduced. Improvements should be observable within a year and would have beneficial impacts on soils for well over 100 years.
- **Water Quality:** Meadow Run has poor water quality. Liming would have ecologically significant, beneficial impacts on water quality by measurably increasing the acid neutralizing capacity and pH, and decreasing aluminum toxicity. With a higher pH, Meadow Run could be removed from Virginia's 303d list for impaired waters.
- **Aquatic Wildlife (Fish and Macroinvertebrates):** Beneficial changes in stream water quality would result in the likely return or increased abundance of fish species (such as brook trout and blacknose dace) and macroinvertebrates (an important food source for fish).
- **Vegetation:** Changes in soil chemistry would result in long-term improvements of plant growth and the overall health of the forest. While some spread of non-native invasive plants could occur, the implementation of mitigation measures would minimize adverse impacts.
- **Terrestrial Wildlife (Birds, Salamanders, and Snails):** Birds would benefit in the long term from an increase in calcium-rich food items (e.g., snails) because birds require large amounts of calcium to produce eggshells and raise their young. Some salamanders could experience more growth and reproduction because of increased availability of invertebrates and reduced aluminum toxicity. Snails are expected to become more abundant due to calcium additions available for shell growth.
- **Wilderness Character:** Intentional manipulation of natural processes, the use of a helicopter and vehicles, as well as trail and backcountry area closures, would adversely affect wilderness character during project implementation. However, long-term, liming would help the park meet its wilderness and backcountry management goals by reducing adverse impacts on wilderness resources (soils, stream water, vegetation, and wildlife) and would benefit the natural quality of wilderness character.
- **Acoustic Environment:** Liming would have adverse impacts on the acoustic environment in terms of human and wildlife annoyance during project implementation. Noise would be generated over the project area and at staging areas by the helicopter during liming flights, by trucks delivering limestone sand, and by staging area vehicles. Impacts would occur during the daytime only. Noise impacts would be mitigated through careful planning of flight paths and staging area selection.
- **Visitor Use and Experience:** Closures of trails and sections of Skyline Drive and the Appalachian Trail of varying duration, along with visual and noise disturbances, would affect visitor use and experience. Over the long term, visitor experience in the project area would improve because better conditions of natural resources (including fish and wildlife habitat) would improve opportunities for recreational fishing and viewing wildlife.

The Planning Process

This EA public review period represents the third opportunity for you to be involved in the planning process. The comment period for the EA will be open from January 29 through February 28, 2021. Important steps in the planning process are described below.

OCTOBER 2020	Public scoping period
NOVEMBER - DECEMBER 2020	Review/analyze public scoping comments
DECEMBER 2020 - JANUARY 2021	Prepare and release draft EA
JANUARY 29 - FEBRUARY 28, 2021	Public review/comment period for the EA WE ARE HERE
FEBRUARY 9 AND 11, 2021	Virtual public meetings
APRIL 2021	NPS decision/signed Finding of No Significant Impact

How to Comment



1. Submit comments electronically at the project website link below (preferred method).



2. Submit written comments to the park's headquarters in Luray, VA, by mail to:

Meadow Run Watershed Restoration Project
Superintendent Patrick M. Kenney | Shenandoah National Park
3655 U.S. Highway 211 East | Luray, VA 22835

Project Website

For more information on this project or to submit public comments, please visit the project website at:
<https://parkplanning.nps.gov/MeadowRunRestoration>

Project Story Map

Use this visual guide to better understand the goals of restoring the Meadow Run Watershed:
<https://arcg.is/1Cam8e>

The 30-day comment period ends on February 28, 2021.

Notes: *Comments will not be accepted by fax, e-mail, or any other way than those specified above. Please also note that your entire comment—including personal identifying information such as your address, phone number, and e-mail address—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Comments submitted by individuals or organizations on behalf of other individuals or organizations will not be accepted.*