

FINDING OF NO SIGNIFICANT IMPACT

Meadow Run Watershed Restoration Project Environmental Assessment

**US Department of the Interior
National Park Service
Shenandoah National Park**

April 2021

BACKGROUND

For many decades, acidic deposition from emissions of fossil-fuel-burning industrial facilities, power plants, and other sources in the region have acidified soils and streams in Shenandoah National Park (the park). Acidification has depleted important elements in the soil, such as calcium and magnesium (referred to as base cations) that are important to ecological health.

In August 2016, the US District Court for the District of Maryland responded to complaints against Westvaco Corporation over air quality permitting violations at the company's Luke Mill, which resulted in an alleged 200,000 tons of highly acidic "excess" sulfur dioxide emissions (Consent Decree No. MJG 00-CV-2602, US v. Westvaco Corporation). The court approved a settlement agreement where Westvaco Corporation agreed to fund mitigation/restoration projects in the park and nearby US Forest Service areas potentially affected by emissions from the Luke Mill. The consent decree and settlement stated that "...Westvaco shall pay \$800,000 to the National Park Service to be used in accordance with 54 [United States Code] U.S.C. § 100724 for the restoration of land, watersheds, vegetation, and forests in Shenandoah National Park using techniques designed to improve ecosystem health and mitigate harmful effects from air pollution."

Meadow Run is a stream located on the west side of the park's South District. The stream's watershed is underlain by silica-rich bedrock, which is particularly poor in base cations. Soils that form on this type of bedrock have limited capacity to neutralize acidic deposition. The resulting acidic groundwater within these soils eventually flows into the tributaries of Meadow Run, affecting its water quality. Consequently, some fish species (including brook trout), many insect species, and other aquatic organisms struggle to survive in Meadow Run. Acidification also adversely affects songbird, plant, and forest health. Degraded ecosystem health in turn diminishes the visitor experience. Because low pH is affecting Meadow Run's aquatic life, the Virginia Department of Environmental Quality (VADEQ) formally lists the stream as impaired waters under Section 303(d) of the Clean Water Act (VADEQ 2020).

The National Park Service (NPS) proposes to mitigate acidic deposition by applying limestone sand on the terrestrial watershed (referred to as limestone sand application or liming hereafter) using a helicopter (proposed action). Watershed liming is a type of project identified in the 2016 Consent Decree as an appropriate use of the settlement funds.

The public was provided three opportunities to comment. The National Park Service accepted public comments for the Meadow Run Watershed Restoration Project from June 5 to July 28, 2019, and again from October 30 to November 15, 2020. The *Meadow Run Watershed Restoration Project Environmental*

Assessment (environmental assessment) was released to the public for review on January 29, 2021 and was open for comment until February 28, 2021.

Comments received by the National Park Service on the environmental assessment included input from park neighbors. Based on one of these comments, the National Park Service made a revision to the project area. The public comments received and responses by the National Park Service are summarized in appendix A. Minor modifications to the environmental assessment are provided in appendix B.

SELECTED ALTERNATIVE AND RATIONALE FOR DECISION

The National Park Service analyzed three alternatives in detail in the environmental assessment. Based on this analysis, the National Park Service selected *Alternative B: Split-dose Liming* as the alternative for implementation because it best meets the purpose of, and need for, action without causing significant impacts on park resources. Alternative B will resolve the degraded existing conditions that would continue under *Alternative A: No Action* and provide spatially more consistent benefits throughout the Meadow Run project area than *Alternative C: Uniform-dose liming*. Alternative B will also be more closely tailored to site-specific soil conditions, which in turn will have more site-specific benefits on other resources such as water quality, wildlife, and vegetation. The project is expected to improve the water quality in Meadow Run, allowing the Commonwealth of Virginia to remove the stream from the Section 303(d) list of the Clean Water Act. The targeted split-dose approach was developed based on conditions in the project area determined in multiple studies.

Under the selected alternative, the park will use two doses (split-dose) for different parts of the project area to replace base cations lost from soils and increase the acid neutralizing capacity (ANC) in the stream. Parts of the project area with soils more depleted in base cations will receive a higher dose of limestone sand (3.0 tons/acre); generally, these parts include soils in the eastern half of the Meadow Run project area, closest to Skyline Drive. Other parts of the project area with soils less depleted in base cations will received a lower dose of limestone sand (2.25 tons/acre).

In total, approximately 5,250 tons of limestone sand will be applied via helicopter in the project area under the selected alternative. Using a helicopter provides an efficient and effective way to access the steep terrain and avoid ground disturbance in the wilderness area, which spans 80% of the project area. The limestone sand will be obtained from local quarries. Prior to taking action, an implementation plan will be developed containing logistical details, plans for communication with the public, safety measures, and other aspects relevant for the implementation of the project.

No more than two limestone sand applications will be implemented as part of this project under the selected alternative. A second application, if needed, will be conducted in a similar manner as the first application and will include public notices.

Details of the selected alternative and other alternatives considered are described in chapter 2 and appendix A of the environmental assessment. In keeping with the NPS Management Policies 2006, a *Determination of No Impairment* for the selected alternative was also prepared (appendix C).

MITIGATION MEASURES

The National Park Service places strong emphasis on avoiding, minimizing, and mitigating potentially adverse environmental impacts. Therefore, the National Park Service will implement multiple mitigation measures and best management practices to protect the natural and cultural resources that the project could affect: water quality, vegetation, terrestrial wildlife, wilderness character, acoustic environment, visitor use and

experience, historic resources and archeological sites, air quality, and public health and safety. These measures and practices are described in chapter 2 of the environmental assessment.

The authority for mitigation for this project comes from the following laws and policies:

- NPS Organic Act (16 United States Code [U.S.C.] 1)
- The Redwood Act (H.R. 3813 [95th])
- The Wilderness Act [16 U.S.C. 1131 et seq.]
- Director's Order 41: Wilderness Stewardship (NPS 2013)
- The National Park Service Management Policies (chapters 4, 5, and 6) (NPS 2006)

SIGNIFICANCE CRITERIA REVIEW

Potentially Affected Environment

The project area covers 2,150 acres within the 199,234-acre park; it includes approximately 1,700 acres of designated wilderness. Meadow Run is a stream listed as impaired under Section 303(d) of the Clean Water Act because of its elevated acidity (low pH) caused by acidic deposition. Impacts from acidic deposition have been more severe in this stream because the bedrock in its upper watershed (i.e., the project area) is poor in base cations, limiting the natural replenishment of base cations to the soil through weathering of the bedrock.

Some impacts of the proposed action will extend beyond the Meadow Run project area for the period of project implementation (i.e., for up to three months, or up to six months in the event of a second application in another year). Such impacts include noise from the helicopter and operations at potential staging area(s) outside the park, and temporary closures of Skyline Drive and some trails for safety.

The selected alternative excludes liming in areas with rare plants and in an area where a predatory beetle (*Laricobius nigrinus*) was released for biological control of hemlock woolly adelgid (*Adelges tsugae*). No federally threatened or endangered plant species are known to occur within the project area during the period of project implementation. Additionally, the National Park Service has determined that the selected alternative will have no adverse effect on state and federally listed bat, avian, and amphibian species in the park.

Degree of Effects of the Action

The National Park Service considered the following actual or potential project effects in evaluating the degree of the effects (40 CFR 1501.3(b)(2)) for this proposed action.

a. Beneficial and adverse, and short- and long-term effects of the proposed action.

The selected action will result in mostly long-term beneficial impacts, along with a few short-term adverse impacts, as described below.

Liming will reduce soil acidity and toxic aluminum in the Meadow Run watershed. Improvements should be observable within a year and are expected to have beneficial impacts on soils for well over 100 years.

Liming will have ecologically beneficial impacts on water quality by measurably increasing the ANC and pH and decreasing aluminum toxicity. The pH in the stream water is expected to increase to > 6.0, allowing Meadow Run to be removed from VADEQ's Section 303(d) list for impaired waters. Beneficial changes in

stream water quality are expected to 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).

Changes in soil chemistry are expected to result in long-term improvements to plant growth, which will improve the overall health of the forest, including improved growth of acid-sensitive plants in the project area, giving them a slight competitive advantage over acid-dependent plants. While the spread of non-native invasive plants could occur, the implementation of mitigation measures is expected to minimize adverse impacts.

Snails are expected to become more abundant due to calcium additions available for shell growth. Birds, especially ground- and understory-foraging species, are expected to 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 young. Some salamanders could experience more growth and reproduction because of increased availability of invertebrates and reduced aluminum toxicity.

Liming will manipulate natural processes in the project area, require the use of a helicopter over wilderness and vehicles outside of wilderness that generate noise and produce visual impacts, and require trail and area closures—all of which will adversely affect wilderness character during the application period of up to three months (or up to six months in the event of a second application in another year). However, liming will help the park meet its wilderness and backcountry management goals by reducing adverse impacts on wilderness resources (soil, stream water, vegetation, and wildlife) and is expected to have long-term, beneficial impacts on the natural quality of wilderness character.

Liming will have adverse impacts on the acoustic environment in terms of human and wildlife annoyance during the application period of up to three months (or up to six months in the event of a second application in another year). More intense impacts will occur near staging areas with low-elevation helicopter activity and truck deliveries of limestone sand (although specific staging areas outside the park [if any] have not been specified). Impacts will occur during the daytime only. Noise impacts will be mitigated through careful planning of flight paths and staging areas.

During the application period (or periods in case of a second application in another year), there will be closures of varying duration of trails (Riprap and Wildcat Ridge Trails and a section of the Appalachian Trail), backcountry areas, and a section of Skyline Drive. Closures, along with visual and noise disturbances, will affect visitor use and experience. Over the long term, visitor experience in the project area is expected to improve because opportunities for recreational fishing and experiencing wildlife will benefit from improved natural resource conditions.

b. Degree to which the proposed action effects public health and safety.

The selected alternative considers public health and safety during project implementation. Any risks to public health and safety from heavy equipment and the hovering helicopter at active staging areas for a period of up to three months (or a total of up to six months in the event of a second application in another year) will be minimized or avoided by closures, maintaining safety distances from the operation, appropriate planning, and suitable mitigation measures. Details on health and safety measures (including emergency management procedures) will be specified in the implementation plan.

c. Effects that would violate federal, state, tribal, or local law protecting the environment.

The selected alternative does not threaten or violate applicable federal, state, or local environmental laws or requirements imposed for the protection of the environment.

The National Park Service coordinated with the US Fish and Wildlife Service's Virginia Field Office to ensure compliance with section 7 of the Endangered Species Act. The Indiana bat (*Myotis sodalist*) and northern long-eared bat (*Myotis septentrionalis*) could potentially occur in the Meadow Run watershed, although winter-season liming is not expected to have an adverse effect on either species or on the designated critical habitat of Indiana bat. The US Fish and Wildlife Service concurred with the NPS's listed species determinations of "Not Likely to Adversely Affect" for Indiana bat, incidental take not prohibited under the Endangered Species Act 4(d) rule for northern long-eared bat, and "No Effect" (species not present) for Madison Cave isopod, northeastern bulrush, and Virginia sneezeweed.

The National Park Service initiated early section 106 consultation with the Virginia Department of Historic Resources (VDHR) on February 20, 2021. On September 25, 2020, VDHR notified the park of their determination that no historic properties will be affected by the proposed action as long as proposed mitigations for cultural resource protection are implemented. These mitigations are listed in chapter 2 of the environmental assessment.

The National Park Service initiated early section 106 consultation with 11 Native American tribes on February 21, 2020, to identify tribes with an interest in the undertaking. Three tribes responded stating that they did not wish to consult at this time, either because the area was outside their area of interest (Cherokee Nation) or because the project as described would not adversely affect traditional cultural properties, sacred sites, or archeological resources important to them (Catawba Nation and Monacan Indian Nation). No tribes identified historic properties with religious or cultural significance within the area of potential effects.

In accordance with National Environmental Policy Act regulations, the National Park Service notified the tribes when the environmental assessment was released to the public and followed-up with phone calls. Three Tribes responded stating that they did not wish to consult at this time, either because the area was outside of their area of interest (Cherokee Nation) or because the project as described would not adversely impact traditional cultural properties, sacred sites, or archeological resources important to them (Catawba Nation, Monacan Indian Nation). No Tribes identified historic properties with religious or cultural significance within the APE that may be affected by the undertaking. The National Park Service's section 106 determination of "No Historic Properties Affected" was disclosed in the environmental assessment. No comments on the proposed action were received from tribes during the public comment period.

FINDING OF NO SIGNIFICANT IMPACT

- Based on the information contained in the environmental assessment, I have determined that the proposed action does not constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement will not be required.
- This finding is based on consideration of the Council on Environmental Quality criteria for significance (40 Code of Federal Regulations [CFR] 1501.3 [b] [2020]), regarding the *potentially affected environment* and *degrees of effects* of the impacts described in the environmental assessment (which is hereby incorporated by reference) and as summarized below.

Recommended:

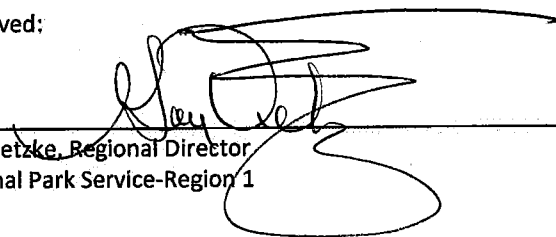


4-8-2021

Patrick M. Kenney, Superintendent
Shenandoah National Park
National Park Service

Date

Approved:



28 April 2021

Gay Vietzke, Regional Director
National Park Service-Region 1

Date

REFERENCES

NPS (National Park Service)

- 2006 *Management Policies 2006*. The Guide to Managing the National Park System. (August 31, 2006). <https://www.nps.gov/policy/mp/policies.html>
- 2013 Director's Order 41. *Wilderness Stewardship*, National Park Service, Washington, DC. Effective date: May 13, 2013. https://www.nps.gov/policy/dorders/do_41.pdf
- 2021 *Meadow Run Watershed Restoration Project Environmental Assessment*. <https://parkplanning.nps.gov/document.cfm?parkID=274&projectID=74048&documentID=109570>

VADEQ (Virginia Department of Environmental Quality)

- 2020 *Final 2020 305(b)/303(d) Water Quality Assessment Integrated Report*. <https://www.deq.virginia.gov/home/showpublisheddocument?id=2251>

APPENDIX A

Public Comment Response Report
for the
Meadow Run Watershed Restoration Project
Environmental Assessment

April 2021



Shenandoah National Park

Watershed Restoration Project
To Mitigate the Effects of Acid Deposition

Environmental Assessment

Public Comment Response Report

April 2021

CONTENTS

INTRODUCTION	A-1
DEFINITION OF TERMS	A-1
COMMENT ANALYSIS METHODOLOGY	A-1
CONTENT ANALYSIS TABLES	A-2
COMMENT RESPONSES	A-3
AGENCY RESPONSES TO PUBLIC COMMENTS RECEIVED ON THE ENVIRONMENTAL ASSESSMENT	A-4

LIST OF TABLES

Table 1.	Correspondence Distribution by Correspondence Type.....	2
Table 2.	Correspondence Distribution by Organization Type.....	2
Table 3.	Correspondence Distribution by State.....	3
Table 4.	Correspondence Distribution by Correspondence Type.....	3
Table 5.	Correspondence Distribution by Code.....	3
Table 6.	AL1000 – Support Watershed Restoration	4
Table 7.	AL2000 – Oppose Watershed Restoration.....	4
Table 8.	AL3500 – Alternatives: General Comments	5
Table 9.	CC1000 – Consultation and Coordination: Civic Engagement	5
Table 10.	IS1000 – Issues: Private Property.....	5
Table 11.	IT1000 – Impact Topics: General Comments	6
Table 12.	IT3000 – Impact Topics: Soil Chemistry	6
Table 13.	IT3500 – Impact Topics: Air Quality	7
Table 14.	IT4000 – Impact Topics: Water Resources.....	8
Table 15.	IT4500 – Impact Topics: Public Health and Safety	9
Table 16.	IT5000 – Impact Topics: Fish and Wildlife.....	9
Table 17.	IT7000 – Impact Topics: Visitor Use and Experience	12
Table 18.	PN3500 – Staging Areas	12

INTRODUCTION

The National Park Service (NPS) has embarked on a process to improve aquatic and terrestrial ecosystem health in the degraded Meadow Run watershed of Shenandoah National Park (the park). Years of acid rain in and around the park has negatively affected soil and water quality in the Meadow Run watershed, resulting in impacts to overall forest health. While pollution has decreased substantially in the last two decades, many sensitive areas like the Meadow Run watershed do not have the capacity to restore themselves naturally for well over a century. For this project, one option being considered to reduce the negative effects of acid rain is to apply limestone sand to the Meadow Run watershed via helicopter or other methods.

The park released an environmental assessment (EA) for the project on January 29, 2021. The EA provided the public with background on the project, the purpose and need for the project, a description of the proposed alternatives, an impact analysis of the alternatives, and a summary of the civic engagement and agency consultation processes. The EA was published on the NPS Planning, Environment, and Public Comment (PEPC) website at:

<https://parkplanning.nps.gov/projectHome.cfm?projectID=74048>.

Any comments entered into PEPC by members of the general public, as well as any written comments mailed to park headquarters, were considered and included in the overall project record. This *Public Comment Summary Report* provides a summary of the concerns expressed during the public comment period.

DEFINITION OF TERMS

Correspondence: A correspondence is the entire document received from a commenter and includes letters; written comment forms; comments entered directly into the PEPC database; and any other written comments provided either at the public meetings, by postal mail, or in person at the park.

Comment: A comment is a portion of text within a correspondence that addresses a single subject such as visual resources or mitigation measures. The comment could also question the accuracy of the information provided in the newsletter, question the adequacy of any background information, or present reasonable alternatives other than the potential actions presented in the newsletter.

Code: A code is a grouping centered on a common subject, such as "Support Watershed Restoration." The codes were developed during the civic engagement process and are used to track major subjects found in the public scoping newsletter. In cases where no comments are received on an issue, the code is not identified or discussed in this report.

Concern Statements: Concern statements summarize the issues identified by each code. Each code was characterized by concern statements to provide a better focus on the content of comments. Some codes require multiple concern statements, such as those supporting watershed restoration.

COMMENT ANALYSIS METHODOLOGY

Comment analysis is a process used to compile and correlate similar comments into a usable format for decision makers and the project interdisciplinary planning team. Comment analysis assists the NPS in organizing, clarifying, and addressing information pursuant to National Environmental Policy Act regulations. It also aids in identifying the topics and issues to be evaluated and considered throughout the planning process.

The process includes five main components:

- developing a coding structure
- employing a comment database for comment management
- reading and coding of comments
- interpreting and analyzing the comments to identify issues and themes
- preparing a comment summary.

A coding structure was developed to help sort comments into logical groups by topic and issue. The NPS derived the coding structure from an analysis of the range of topics discussed during civic engagement, past planning documents, and the comments themselves. The coding structure was designed to capture the content of the comments rather than to restrict or exclude any ideas.

The NPS PEPC database was used to manage the comments. The database stores the full text of all correspondence and allows each comment to be coded by topic and issue. The database tallies the total number of correspondences and comments received, can sort and report comments by a particular topic or issue, and provides demographic information on the sources of each comment.

Analysis of the public comments involved assigning codes to statements made in letters and comment forms submitted via the PEPC database. All comments were read and analyzed, including those of a technical nature, opinions, suggestions, and comments of a personal or philosophical nature.

Under each code, all comments were grouped by similar themes, and those groups were summarized with a concern statement. Although the analysis process attempts to capture the full range of public concerns, this report should be used with caution. *Comments from people who chose to respond do not necessarily represent the sentiments of the entire public.*

CONTENT ANALYSIS TABLES

The following tables were produced by the NPS PEPC database and provide information about the numbers and types of comments received, organized by code and by various demographics. The first table is a summary of the number of comments received under each code. Data on the number of correspondences received by correspondence type, organization type, state, and country are then presented in tables 1 to 5.

Table 1. Correspondence Distribution by Correspondence Type

Correspondence Type	Correspondences
Web Form	15

Table 2. Correspondence Distribution by Organization Type

Organization Type	Correspondences
Unaffiliated Individual	15

Table 3. Correspondence Distribution by State

State	Correspondences
VA	8
MD	2
CO	2
DC	1
FL	1
AL	1

Table 4. Correspondence Distribution by Correspondence Type

Country	Correspondences
USA	15

Table 5. Correspondence Distribution by Code

Code	Description	Comments	Percentage
AL1000	Support Watershed Restoration	13	38%
IT5000	Impact Topics: Fish and Wildlife	4	12%
IT4000	Impact Topics: Water Resources	3	9%
IT3500	Impact Topics: Air Quality	2	6%
IT1000	Impact Topics: General Comments	2	6%
AL3500	Alternatives: General Comments	2	6%
IT7000	Impact Topics: Visitor Use and Experience	2	6%
IT4500	Impact Topics: Public Health and Safety	1	3%
CC1000	Consultation and Coordination: Civic Engagement	1	3%
IS1000	Issues: Private Property	1	3%
PN3500	Staging Areas	1	3%
IT3000	Impact Topics: Soil Chemistry	1	3%
AL2000	Oppose Watershed Restoration	1	3%
TOTAL		34	100%

COMMENT RESPONSES

The National Park Service is required to respond to substantive comments submitted during the public review period for environmental assessments. All comments that are timely received are considered, and the standard practice is to respond to substantive comments that are submitted during the public review period.

Substantive comments are those that:

- question, with reasonable basis, the accuracy of the information in the National Environmental Policy Act (NEPA) document;
- question, with reasonable basis, the adequacy of the environmental analysis;
- present reasonable alternatives other than those presented in the NEPA document; or
- cause changes or revisions in the proposal.

In other words, substantive comments raise, debate, or question a point of fact or analysis. Comments that merely support or oppose a proposal or that merely agree or disagree with NPS policy are not considered substantive and do not require a formal response. Where applicable, responses are included below.

AGENCY RESPONSES TO PUBLIC COMMENTS RECEIVED ON THE ENVIRONMENTAL ASSESSMENT

Tables 6 to 13 summarize the comments received during the comment period and is organized by code into concern statements. As stated, responses are included where applicable.

Table 6. AL1000 – Support Watershed Restoration

ID	Concern Statement	Response
1	Several comments expressed support for the preferred alternative, <i>Alternative B: Split-dose Liming</i> , and stated that action was necessary because of the long-standing and continual pollution of streams and rivers in the area and that it is a more tailored solution to adequately address acidification in the Meadow Run watershed. Furthermore, one commenter stated that <i>Alternative B: Split-dose Liming</i> was preferred to <i>Alternative C: Uniform-dose Liming</i> because the latter could result in areas with under- or over-application of limestone sand which would limit effective ecosystem functioning and be inefficient economically.	(No response required.)
2	Commenters stated that they supported restoration of the Meadow Run watershed because not doing so would take more than 100 years for the watershed to return to a healthy state, and that funding has already been provided for the project through the legal settlement with the Westvaco Corporation.	(No response required.)

Table 7. AL2000 – Oppose Watershed Restoration

ID	Concern Statement	Response
3	One commenter stated they were opposed to the project in its entirety and have sent a certified letter to Shenandoah National Park's Superintendent expressing this concern.	(No response required.)

Table 8. AL3500 – Alternatives: General Comments

ID	Concern Statement	Response
4	Commenters stated that the success of liming projects in the Allegheny Plateau ecoregion of West Virginia and the St. Mary's River in Virginia show that the proposed action for the environmental assessment is a proven method for watershed restoration, and that both action alternatives provide long-term support for the Meadow Run watershed and its immediate surroundings.	(No response required.)

Table 9. CC1000 – Consultation and Coordination: Civic Engagement

ID	Concern Statement	Response
5	One commenter stated that Shenandoah National Park did not directly contact nearby residents in advance of the June 2019 public scoping meetings.	<p>The National Park Service initiated a civic engagement process in June 2019 to inform the public about the need for watershed restoration. Comments were accepted from June 5 to July 28, 2019. During that time, the National Park Service held two in-person public meetings at the Crimora Community Hall and the Charlottesville Library, as well as two virtual meetings. The goal of these meetings was to obtain public input on how to achieve restoration goals well in advance of consideration of project implementation. Outreach in advance of these meetings included posting flyers at businesses along route SR-340 from Grottoes to Waynesboro and supplying the Crimora Community Center with flyers to distribute. Additionally, a press release was sent out on June 5, 2019, to 108 government and elected officials, non-government organizations, and local news sources, and information was also posted on two different days (June 24 and June 26, 2019) on social media.</p> <p>On October 30, 2020, the National Park Service announced a second opportunity for public comment on watershed restoration, which included details on potential alternatives for applying limestone sand and their associated impacts. Prior to the release of the environmental assessment and the public comment period, additional public outreach was made in February 2021 to reach neighbors through press releases, social media posts, virtual public meetings, and mailing of letters to property owners associations, local churches, and publicly-known addresses neighboring the immediate project area.</p>

Table 10. IS1000 – Issues: Private Property

ID	Concern Statement	Response
6	One commenter stated that Black Bear Lane and Wild Turkey Lane should not be used for the project because they are private roads. The commenter also stated that there are two trail markers	The environmental assessment does not indicate that Black Bear Lane and Wild Turkey Lane will be used for project implementation. The environmental assessment specifically notes in more than one location (e.g., pages i, 6, 7, 8, etc.) that the National Park Service will only establish staging areas outside the park if the landowners and local jurisdiction grant permission.

	<p>directing the public to Riprap Trail, and that these markers are not located on publicly owned land and therefore should be removed. The commenter noted that the environmental assessment directs the public to access public property from private roads, particularly to wilderness near the Town of Crimora. There was also concern about limestone sand runoff onto private property.</p>	<p>Visitor access to the park boundary at Riprap trailhead has a long history, but in recent response to concerns expressed from a park neighbor regarding access, the park currently does not reference this access point until the issue is resolved. Therefore, the reference to this entrance has been removed from the environmental assessment. All parklands, including trails, are open for public use unless otherwise posted. Shenandoah National Park does not encourage public access across private lands in this area and routinely encourages park users to respect private property.</p> <p>The project is intended to benefit the Meadow Run watershed's overall health in response to the longstanding environmental harm documented by scientists from the National Park Service, the University of Virginia, and the Virginia Department of Environmental Quality (VADEQ) over the past 40 years. This project will comply with all applicable laws regarding material in waters. The VADEQ and the U.S. Army Corps of Engineers, who have responsibility for state waters, both responded during the environmental assessment public review period, stating they had no concerns with the NPS proposed action. As noted in the environmental assessment (e.g., pages 5 and 13), operational measures for aircraft use and project area buffers inset from the park boundary are established to avoid limestone sand falling on non-federal lands.</p>
--	---	--

Table 11. IT1000 – Impact Topics: General Comments

ID	Concern Statement	Response
7	Two commenters stated the action alternatives would have beneficial impacts on park resources, including wildlife and wildlife habitat, plants, fisheries, and soils. They would also aid carbon sequestration and help the park manage surface runoff.	(No response required.)

Table 12. IT3000 – Impact Topics: Soil Chemistry

ID	Concern Statement	Response
8	One commenter stated that the preferred alternative, Alternative B: Split-dose Liming, would cater to native soil conditions.	(No response required.)

Table 13. IT3500 – Impact Topics: Air Quality

ID	Concern Statement	Response
9	One commenter stated that greenhouse gas emissions from the project are not analyzed in the environmental assessment.	<p>There would be greenhouse gas emissions from the helicopter during project implementation (also from trucks and construction equipment). These emissions were considered during the NEPA phase but dismissed from detailed analysis. This is described in appendix A, entitled “Issues, Impact Topics, and Alternatives dismissed from Detailed Analysis”, of the environmental assessment. This description in appendix A includes the following text:</p> <p>“The proposed action would have a localized impact on air quality from engine emissions during the limestone sand application period of up to three months, and during November while the limestone sand stockpile is being constructed. Emissions would come from the helicopter, trucks, and other construction vehicles used in the staging areas. The emissions contribution of these activities would be extremely low relative to existing regional emissions. In addition, the helicopter emissions would be geographically dispersed over the flight path and would not result in concentrated emissions in any particular area due to the short duration of helicopter hovering over an active staging area during switching of buckets. The project area is in attainment status with respect to the National Ambient Air Quality Standards (USEPA 2020b).”</p> <p>also:</p> <p>“Although climate change is expected to affect the resources in the Meadow Run project area (NPS 2020b), the proposed project is not expected to affect climate change. While the helicopter and trucks used during liming would consume fossil fuel, greenhouse gas emissions associated with these activities would be negligible because of the limited number of anticipated flights and truck trips. As a result, impacts on climate change from greenhouse gas emissions were dismissed from detailed analysis in the EA.”</p> <p><u>Citations:</u></p> <p>NPS. 2020b Climate change. Shenandoah National Park, Virginia. Accessed on August 5, 2020. https://www.nps.gov/shen/learn/nature/climatechange.htm#CP_JUMP_5689907</p> <p>USEPA (US Environmental Protection Agency). 2020b Virginia nonattainment/maintenance status for each county by year for all criteria pollutants. Accessed May 15, 2020. https://www3.epa.gov/airquality/greenbook/anayo_va.html</p>

ID	Concern Statement	Response
10	One commenter stated that Shenandoah National Park has one of the worst air qualities of any of the national parks in the United States, and that the Clean Air Act is applicable to the project because the damages incurred by the Meadow Run watershed and surrounding water systems are directly connected to the poor air quality in the area.	(No response required.)

Table 14. IT4000 – Impact Topics: Water Resources

ID	Concern Statement	Response
11	One commenter stated that she took pH samples from three (3) areas of Meadow Run, and that the pH level was six (6) in each area.	<p>As referenced in the environmental assessment and its associated appendix B (entitled “Technical Background for Liming Meadow Run Watershed”), there are decades of scientific data from Meadow Run water samples in the park. Specifically, the National Park Service has collected quarterly water quality data in collaboration with the University of Virginia since 1987 at sampling site VT36, located in Meadow Run just upstream of the western park boundary, and approximately semi-annually since 1984 during fish and macroinvertebrate surveys. Of the more than 200 pH measurements made during these field visits, the highest pH value ever recorded was 5.79, and the average was 5.40.</p> <p>These data contributed to the Virginia Department of Environmental Quality declaring Meadow Run since 2004 as Category 5a Impaired Waters for aquatic life due to low pH under Section 303d of the CWA (VADEQ 2020). Specifically, it is listed because baseflow pH values in Meadow Run are below the pH criteria of 6.0 to 9.0 set by Virginia for Class IV (mountainous zone waters) and Class VI (natural trout waters) streams.</p> <p>Another important indicator of acidification is Acid Neutralizing Capacity (ANC), which has never exceeded 12.89 during the monitoring period and has averaged 4.54 and further demonstrates that Meadow Run upstream of the park boundary is clearly acidified. Acidification is further reflected in the soil chemistry; appendix B of the environmental assessment provides details of recent soil sampling at 46 sites in the Meadow Run watershed, with pH values in the soil ranging from 3.77 to 4.49.</p> <p><u>Citation:</u> VADEQ (Virginia Department of Environmental Quality). 2020. Final 2020 305(b)/303(d) Water Quality Assessment Integrated Report. Accessed January 14, 2021. https://www.deq.virginia.gov/water/water-quality/water-quality-assessments/most-recent-year-305b-303d-integrated-report</p>

ID	Concern Statement	Response
12	<p>Commenters stated that water quality standards are important because designated uses and ecosystem functioning cannot reasonably repair itself.</p> <p>Commenters also stated that Meadow Run is a medium priority water body and will be included in a [Environmental Protection Agency] Total Maximum Daily Loads (TMDL) Plan between 2023 and 2028.</p> <p>Furthermore, Alternative B: Split-dose Liming could serve as a TMDL plan, expediting the timeline to remove Meadow Run from the impaired waters list.</p>	(No response required.)

Table 15. IT4500 – Impact Topics: Public Health and Safety

ID	Concern Statement	Response
13	<p>One commenter stated that polluting industries affect the Meadow Run watershed, as well as the surrounding community through creating various health problems due to extremely poor air quality. By creating a healthier environment through better air quality, the commenter stated that a more harmonious relationship with the community would ultimately benefit the polluting industries in question.</p>	(No response required.)

Table 16. IT5000 – Impact Topics: Fish and Wildlife

ID	Concern Statement	Response
14	<p>One commenter stated that the proposed project would kill bats and, in doing so, would take away an important food source for peregrine falcons. The commenter also stated that the project would kill bees during winter months, when they are at their weakest.</p>	(No response required.)
15	<p>One commenter stated that keeping any inputs as close to the natural order of the ecosystem should be the top priority, and that they support the proposed project because it considers the possible effects to endangered species in the area.</p>	(No response required.)

ID	Concern Statement	Response
16	One commenter stated that the preferred alternative anticipates pH to increase to over 6.0 after liming, which would remove Meadow Run from the acidic range of impaired mountainous and natural trout streams. Furthermore, the increased calcium content of applied limestone would increase calcium content, highly benefitting surrounding wildlife. The commenter also stated that similar positive impacts have been supported by a liming project on the Monongahela National Forest.	(No response required.)
17	One commenter stated that the Clean Water Act safeguards bodies of water for recreational use, and as a habitat for wildlife. They noted that state of the surface water is poor, endangering fish and wildlife, recreational use, and ultimately leads pollution into the Chesapeake Bay through the Shenandoah, Rappahannock, and James Rivers. The commenter also stated that Alternative B: Split-dose Liming is extremely beneficial for the watershed, flora, and fauna (particularly the trout/fish) and the people who recreate in and around these water bodies.	<p>Liming would occur during winter when bats are hibernating. There are no suitable hibernacula within Meadow Run, so there is no potential for direct impacts to any bat. Also, project activities would not affect the spread of white-nose syndrome. Liming could have indirect positive effects on bats. Our understanding of the effects of acidification on bats is based on knowledge that low pH adversely affects most native invertebrates, which are essential prey for higher trophic predators like bats. This effect has been documented most widely in aquatic habitats, where several taxa – notably mayflies (Ephemeroptera), and some species of water striders (Gerridae), caddisflies (Trichoptera), and damselflies and dragonflies (Odonata) – are sensitive to acidification and become scarce or disappear from lakes and streams with declines in pH to between 6.0 and 5.0 (Eilers et al. 1984). Such species have rather rapid colonization times, such that a functional stream macroinvertebrate community may return in about three years (Sullivan et al. 2003). Areas around aquatic habitats are among the most important foraging areas for bats in the Meadow Run watershed and liming would therefore benefit bats because it would increase the abundance of aquatic insect populations (Feldman and Conner 1992; Sullivan et al. 2003). Liming is not also expected to adversely impact populations of other important bat prey in other habitats in Meadow Run watershed.</p> <p>Regarding the peregrine falcon, any project effect would be positive. The peregrine falcon is unlikely to forage in the project area and suitable nesting habitat (i.e., on high cliffs) is limited in the watershed. Peregrine falcons leave the park during winter and would not likely occur in the area during project implementation. Peregrine falcons forage on small to medium-sized birds and common prey in the Appalachian Mountains include northern flickers, blue jays, towhees, juncos, and mourning doves (NPS 2020). As detailed in the environmental assessment,</p>

ID	Concern Statement	Response
		<p>conclusive evidence exists that liming would generally benefit birds by reversing adverse effects from acidification. Therefore, if any peregrine falcons were to use the Meadow Run watershed, they would find improved foraging relative to existing conditions (if the multitude of other factors outside of the park causing avian declines are addressed).</p> <p>Indeed, among terrestrial insects, bees are among the most threatened. As described in the environmental assessment, many insect groups are negatively impacted by acidic deposition. Native invertebrates are generally less abundant in acidic soils (Rusek and Marshall 2000). There is no evidence to suggest that bees would be adversely affected by liming; instead, liming is expected to increase the concentration and bioavailability of soil nutrients to plants, thereby improving plant growth and potentially increasing the availability of flowering plants used by bees.</p> <p>Citations:</p> <p>Eilers, J.M., G.J. Lien, and R.G. Berg. 1984. Aquatic organisms in acidic environments: A literature review. Wisconsin Department of Natural Resources Technical Bulletin No. 150. 18pp. Available at: https://dnr.wi.gov/files/PDF/pubs/ss/SS0150.pdf</p> <p>Feldman, R. and E. Conner. 1992. The relationship between pH and community structure of invertebrates in streams of the Shenandoah National Park, Virginia, USA. <i>Freshwater Biology</i> 27:261–276.</p> <p>NPS. 2020. Peregrine Falcon. Shenandoah National Park website. Last updated February 3, 2020. Available at: https://www.nps.gov/shen/learn/nature/falcon.htm</p> <p>Rusek, J., and V. G. Marshall. 2000. Impacts of Airborne Pollutants on Soil Fauna. <i>Annual Review of Ecology, Evolution, and Systematics</i> 31:395–423.</p> <p>Sullivan, T. J., B. J. Cosby, J. A. Laurence, R. L. Dennis, K. Savig, J. R. Webb, A. J. Bulge, M. Scruggs, C. Gordon, J. Ray, E. H. Lee, W. E. Hogsett, H. Wayne, D. Miller, and J. S. Kern. 2003. Assessment of air quality and related values in Shenandoah National Park. Technical Report NPS/NERCHAL/NRTR-03/090. US Department of the Interior, National Park Service, Northeast Region, Philadelphia, PA. https://irma.nps.gov/Datastore/DownloadFile/455172</p>

Table 17. IT7000 – Impact Topics: Visitor Use and Experience

ID	Concern Statement	Response
18	Commenters stated that NPS' dedication to shuttling/rerouting Appalachian Trail thru-hikers for the duration of the project is appreciated, and that they understand some closures of park resources, such as the Wildcat Ridge and Riprap Trails, are inevitable for visitor safety. Commenters also stated that by utilizing the off-season [for visitation] to complete the plan, there would be minimal disruption to the ambient environment, as well as the general public that uses the trails .	(No response required.)

Table 18. PN3500 – Staging Areas

ID	Concern Statement	Response
19	One commenter requested that closures of Skyline Drive be limited in scope as much as possible, and that they would prefer helicopter staging locations be outside of the park boundary in an effort to reduce these closures.	As stated for example on page 9 of the environmental assessment, the goal of the park is to limit closures during project implementation to the minimum number of days feasible to complete the project while providing for visitor safety. Clearly, it is the best interest of the park to implement the project in a highly efficient manner, as it would reduce closures, limit the period of noise from the helicopter, and also reduce implementation costs (including for the helicopter and crew, and needed park staff). Given the range of staging areas available (and described in the environmental assessment), the park would have some flexibility for efficient implementation. Finally, it is noted that some of the potential visitors to the park are familiar with temporary closures of Skyline Drive during the winter; these closures are regularly caused by toppled trees and adverse snow and ice conditions.

APPENDIX B

ERRATA

Meadow Run Watershed Restoration Project Environmental Assessment

April 2021

ERRATA

An errata sheet is necessary for the project because factual corrections need to be made to the *Meadow Run Watershed Environmental Assessment* (environmental assessment) and because substantive public comments must be addressed. The corrections made herein do not increase the degree of impacts described in the environmental assessment or change the determination that no significant impacts will occur under the selected alternative. Existing text to remain in the environmental assessment is found in *italics*, additions to the text are underlined, and deleted text is shown in ~~strikeout~~.

Chapter 3, Page 31: *Wilderness Character* (paragraph 3).

There is access to the wilderness in the project area from Skyline Drive and from the park boundary near the Town of Crimora. Two corridors in the project area are not designated wilderness: a 1-mile-long section along Riprap Trail near the boundary (starting at the trailhead in the southwestern corner of the project area) and a corridor along Skyline Drive, both with an average width of approximately 0.25 miles (figure 11).

Chapter 3, Page 36: *Visitor Use and Experience*, subsection *Hiking* (paragraphs 1-3).

The park is home to more than 500 miles of trails, including 105 miles of the Appalachian Trail and 200 miles of designated horse trails (NPS 2018a). Approximately 8 miles of hiking trails can be accessed within the project area, including Riprap Trail, Wildcat Ridge Trail, and the Appalachian Trail (figure 11). While these trails are open year round, access is limited to the entrance near Crimora if Skyline Drive is closed due to snowfall or ice storms.

Each of these trails weave in and out of the project area and are maintained by the park's trail crews and volunteers from the Potomac Appalachian Trail Club. Key features of each trail are as follows:

- ***Riprap Trail:*** *This trail currently has two entrances, one located near Crimora in the southeastern corner of the project area and one located at the Riprap Parking Area along Skyline Drive in the northeastern corner of the project area. From the entrance near Crimora, The trail at the boundary follows the mainstem of Meadow Run for approximately 1.5 miles, then continues along Cold Spring Hollow to Chimney Rock and Calvary Rocks at an elevation of approximately 2,800 feet along the northern boundary of the project area, and connects to the Riprap Parking Area at Skyline Drive.*

In addition, two updates are included for a figure and a table in the environmental assessment.

Chapter 3, Page 16, *Soil Chemistry*, Figure 7. Geological Formations and Structures in the Project Area and Vicinity of the Environmental Assessment. This map has been modified slightly by adding the following three geological formation names listed in the legend to the map: Nf, Cca, and Zcp.

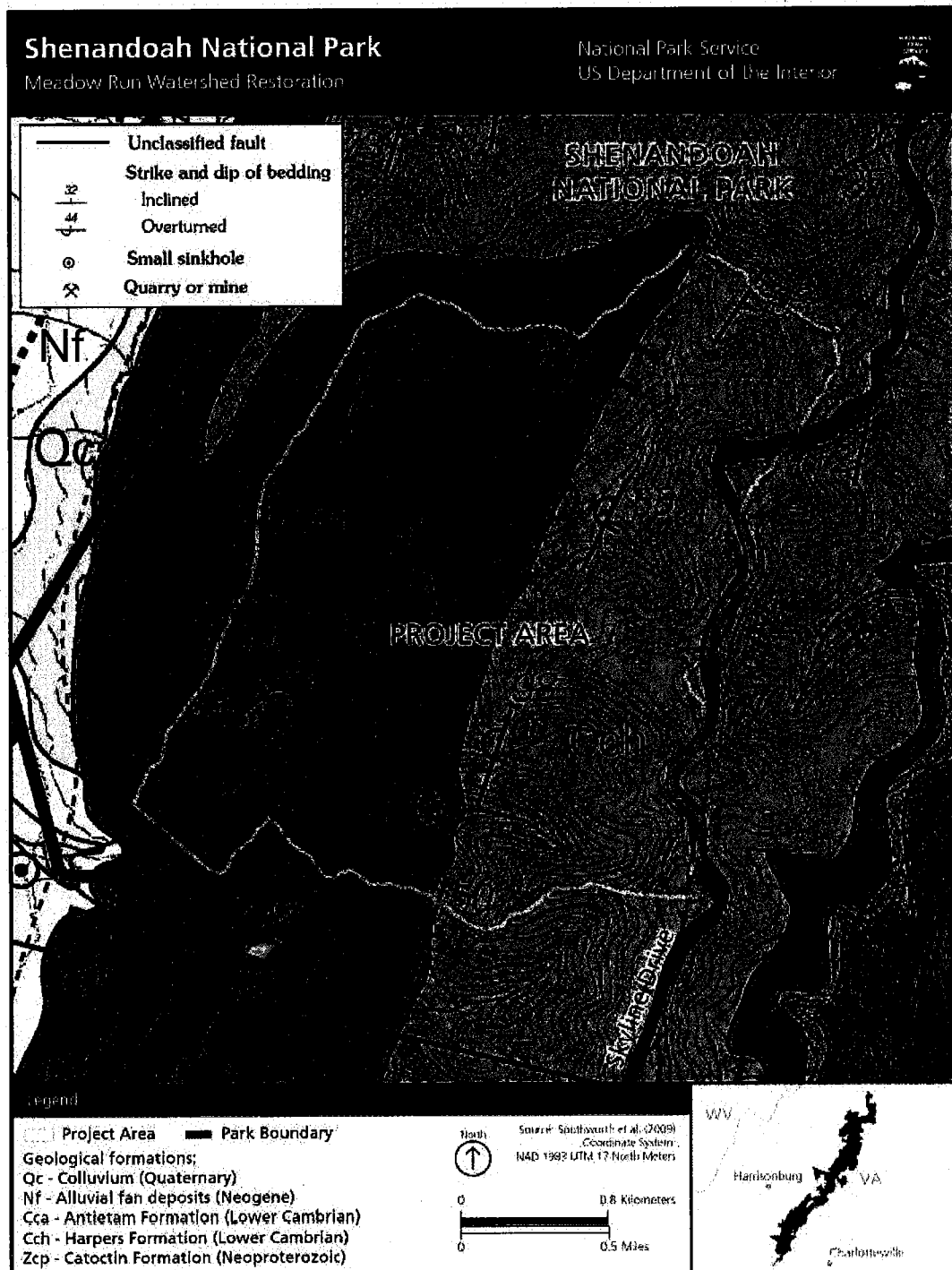


FIGURE 7. GEOLOGICAL FORMATIONS AND STRUCTURES IN THE PROJECT AREA AND VICINITY

Chapter 4, Page 47, *Vegetation*. Table 3. Soil pH Ranges for Plant Species within or near the Project Area. The updated maximum pH value in the last row in column 4 is 8.0 (replacing 7.9).

TABLE 3. SOIL pH RANGES FOR PLANT SPECIES WITHIN OR NEAR THE PROJECT AREA

Common Name	Scientific Name	Typical pH Range		Sources; Notes
		Low	High	
Dominant and Codominant Plant Species				
Yellow birch	<i>Betula alleghaniensis</i>	4.0	8.0	a, f
Sweet birch	<i>Betula lenta</i>	3.6	6.8	a, f
Table Mountain pine	<i>Pinus pungens</i>	4.5	7.0	a, f
Pitch pine	<i>Pinus rigida</i>	3.5	5.1	a, f
Chestnut oak	<i>Quercus prinus</i>	4.5	6.5	a, f
Red oak	<i>Quercus rubra</i>	4.3	7.3	a, f
Eastern hemlock	<i>Tsuga canadensis</i>	4.2	5.7	a, f
Sugar maple	<i>Acer saccharum</i>	3.7	7.9	a, f
Maximum pH range		3.5	8.0	
Non-native Invasive Plant Species				
Tree-of-heaven	<i>Ailanthus altissima</i>	4.1	7.9	a, f
Garlic mustard	<i>Alliaria petiolata</i>	5.0	7.2	b
Oriental bittersweet	<i>Celastrus orbiculatus</i>	5.0	7.5	a, f
Japanese honeysuckle	<i>Lonicera japonica</i>	4.9	7.8	a, f
Stiltgrass	<i>Microstegium vimineum</i>	4.6	6.3	c
Empress tree	<i>Paulownia tomentosa</i>	4.5	7.5	a
Oriental lady's thumb	<i>Persicaria longiseta</i>	4.8	8.0	d, g
Wineberry	<i>Rubus phoenicolasius</i>	6.0	8.0	e
Maximum pH range		4.1	7.9	

Sources: (a) USDA-NRCS 2020b; (b) Anderson 1995; (c) Fryer 2011; (d) Cao 2008; (e) NCSU 2020; Innis 2005.

Notes: (f) USDA-NRCS (2020b) PLANTS website lists pH under "growth requirements" for each tree and states that plant characteristics were compiled "from the scientific literature, gray literature, agency documents, and the knowledge of plant specialists. ... The values are best viewed as approximations since they are primarily based on field observations and estimates from the literature, not precise measurements or experiments."
(g) Species not documented within the project area, but nearby.

APPENDIX C

Determination of No Impairment

Meadow Run Watershed Restoration Project Environmental Assessment

April 2021

DETERMINATION OF NO IMPAIRMENT

Meadow Run Watershed Restoration Project Environmental Assessment

**US Department of the Interior
National Park Service
Shenandoah National Park**

April 2021

National Park Service (NPS) *Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether or not proposed actions will impair a national park's resources and values. NPS decision makers must always seek ways to avoid or to minimize, to the greatest degree practicable, adverse impacts on park resources and values. The National Park Service has the management discretion to allow impacts on park resources and values when necessary and appropriate to fulfill the purposes of the park, although that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically prescribes otherwise.

An impairment is an impact that, in the professional judgment of the responsible NPS decision maker, will harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values. An impact on any park resource or value may, but does not necessarily, constitute impairment. An impact will be more likely to constitute impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park, or
- key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park, or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance.

An impact may be less likely to constitute impairment if it is an unavoidable result of an action necessary to preserve or restore the integrity of park resources or values, and it cannot be further mitigated. Impairment may result from visitor activities; NPS administrative activities; or activities undertaken by concessioners, contractors, and others operating in the park. Impairment may also result from sources or activities outside the park.

An impairment determination is not made for subject matters such as visitor experience, public health and safety, socioeconomics, environmental justice, land use, and park operations because impairment determinations only relate to resources and values that maintain the park's purpose and significance.

The consideration of impairment to resources at Shenandoah National Park (park) applies to the remaining resources evaluated in the *Meadow Run Watershed Restoration Project Environmental Assessment* (environmental assessment). Additionally, this determination applies only to NPS lands.

SOIL CHEMISTRY

Soils are the critical factor in a watershed's sensitivity to acidification because they serve as the primary store and source for exchangeable base cations, such as calcium and magnesium, that buffer acidic deposition on land and provide acid-neutralizing capacity to streams. Soil acidity and toxic aluminum in the Meadow Run watershed will be reduced by the selected alternative. Improvements to soil chemistry should be observable within a year and will have beneficial impacts on soils for well over 100 years.

No adverse impacts to soil chemistry were identified in the environmental assessment. Therefore, the selected alternative will not harm the integrity of soils and will not impair soil resources.

WATER QUALITY

Acidified soils affect the quality of groundwater, which in turn affects the water quality in the stream after seeping into it. Monitoring data indicate that Meadow Run has poor water quality, especially for brook trout (*Salvelinus fontinalis*). Liming will have ecologically significant, beneficial impacts on water quality by measurably increasing the acid neutralizing capacity and pH and decreasing aluminum toxicity. The pH in the stream water is expected to increase to a level greater than 6.0 after implementation of the selected alternative, which will allow Meadow Run to be removed from the Virginia Department of Environmental Quality's Section 303d list for impaired waters.

No adverse impacts to water quality were identified in the environmental assessment. Therefore, the selected alternative will not harm the integrity of water quality and will not impair water resources.

AQUATIC WILDLIFE

The streams of the park are home to many fish and aquatic macroinvertebrate species. Liming aquatic ecosystems has been shown to strongly reverse the adverse impacts on aquatic chemistry and to generally restore aquatic biological communities by increasing abundance and richness of acid-sensitive invertebrates and fish. These beneficial changes to stream water quality may result in the return or increased abundance of fish species (such as brook trout and blacknose dace [*Rhinichthys atratulus*]) and macroinvertebrates (an important food source for fish) through implementation of the selected alternative.

No adverse impacts to aquatic wildlife were identified in the environmental assessment. Therefore, the selected alternative will not harm the integrity of aquatic wildlife and will not impair the park's aquatic wildlife.

VEGETATION

Dominant native plant species in the project area include chestnut oak (*Quercus prinus*), sweet birch (*Betula lenta*), and Table Mountain pine (*Pinus pungens*). Codominant species include red oak (*Quercus rubra*), pitch pine (*Pinus rigida*), and yellow birch (*Betula alleghaniensis*). Rare vegetation communities and two rare acidophilic plant species also occur in the project area.

Changes in soil chemistry will result in long-term improvements of plant growth, improving the overall health of the project area's forest. This includes improved growth of acid-sensitive plants in the project area, giving them a slight competitive advantage over acid-dependent plants.

While there will be added competition for acid-dependent species, the selected alternative is not anticipated to increase the soil pH beyond the range tolerated by these species. Furthermore, the areas where two known

rare acidophilic plant species occur will be excluded from liming. While the spread of non-native invasive plants could occur, the implementation of mitigation measures will minimize adverse impacts. Therefore, the selected alternative will not impair vegetation resources.

TERRESTRIAL WILDLIFE

The extremely acidic soils in the Meadow Run watershed create a suboptimal habitat for some animals, such as snails, birds, and salamanders. Snails are expected to become more abundant due to calcium additions available for shell growth. Birds, especially ground- and understory-foraging species, will benefit in the long term by the selected alternative from the increase in calcium-rich food items such as snails; birds require large amounts of calcium to produce eggshells and raise young. Some salamanders could experience more growth and reproduction because of increased availability of invertebrates and reduced aluminum toxicity as well.

No adverse impacts to birds or snails were identified in the environmental assessment. Although the selected alternative is not expected to have adverse impacts on salamanders, the extent of beneficial impacts on the various salamander species in the project area is expected to vary and will depend on the change in prey populations and interspecies competition among salamanders as a result of the high soil pH. Therefore, the selected alternative will not harm the integrity of terrestrial wildlife and will not impair the park's terrestrial wildlife.

WILDERNESS CHARACTER

The park contains 79,579 acres of congressionally designated wilderness, which constitutes approximately 40% of the park. Within the project area, approximately 1,711 acres of wilderness are designated, which constitutes 2.2% of wilderness parkwide. The selected alternative will help the park meet its wilderness and backcountry management goals by reducing adverse impacts on wilderness resources (i.e., soil, stream water, vegetation, and wildlife) and will have long-term, beneficial impacts on the natural quality of wilderness character.

The selected alternative will result in minimal adverse impacts on the untrammelled, natural, and opportunities for solitude and primitive or unconfined recreation qualities of wilderness character within the project area. These impacts arise from the manipulation of natural processes, the use of a helicopter and vehicles that generate noise and produce visual impacts, and trail and area closures.

The adverse impacts associated with the selected alternative will not harm the integrity of wilderness because they are temporary—lasting up to three months during project implementation—and wilderness resources will experience long-term (for well over 100 years) beneficial impacts. Therefore, the selected alternative will not impair the park's wilderness character.

ACOUSTIC ENVIRONMENT

Common natural sounds in the project area include bird calls, insect buzzing, animal calls and sounds, water flowing in streambeds, and weather-related sounds (e.g., wind rushing through trees, thunder, and pouring rain). The selected alternative will have adverse impacts on the acoustic environment in terms of human and wildlife annoyance during project implementation. More intense impacts may occur near staging areas with low-elevation helicopter activity and truck deliveries of limestone sand. These impacts will occur during the daytime only. Noise impacts will also be mitigated through careful planning for flight paths and staging areas.

These adverse impacts will not harm the integrity of the acoustic environment because they are temporary—lasting up to three months. Therefore, the action will not impair the park's acoustic environment.

CONCLUSION

The National Park Service has determined that implementation of the selected alternative will not constitute an impairment of the resources or values of the park. This conclusion is based on consideration of the park's purpose and significance, a thorough analysis of the environmental impacts described in the environmental assessment, comments provided by consulting agencies and the general public, and the professional judgement of the decision maker guided by the direction of the NPS *Management Policies 2006*.