

Nelson County Comprehensive Plan Update

Draft Chapter 6: Protecting Natural & Cultural Resources

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INTRODUCTION

Nelson County's natural and historic resources shape its physical landscape as well as the rural character and agricultural heritage that residents have appreciated for generations. Officially incorporated in 1807, Nelson County is filled with historic sites, century farms, country roads, traces of Native American settlements, and ancient mountains home to unique native species. The natural environment also provides valuable biodiversity and recreation opportunities, while influencing the suitability and capacity for development. Like many rural localities, there is a complex link between the natural environment, cultural resources, economic development, and overall quality of life. The strategies outlined in this chapter provide actionable steps to protect natural and cultural resources that contribute to the long-term equity, economic viability, livability, and protection of the County's rural environment.

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WHAT WE HEARD | The Big Ideas

PLAN + PROVIDE EQUITABLY FOR EVERYONE

Protecting Nelson County's natural and historic resources is a top priority for the community. Maintaining a healthy environment that supports access to clean water and air, outdoor recreation opportunities, scenic landscapes, and cultural heritage are critical components of equitable public health and quality of life.

DIVERSIFY + BOLSTER THE LOCAL ECONOMY

The community strongly supports protecting the County's rural character while increasing economic opportunities for all. Nelson County's economy is largely dependent upon natural resources to sustain tourism, agricultural, and agritourism industries. Economic resilience and diversity can be promoted by bolstering local economic drivers and protecting the environment that they rely on.

IMPROVE + EXPAND VITAL COMMUNITY SERVICES

Public engagement feedback revealed that the majority of residents want Nelson County to do more to protect the natural environment, prepare for natural hazards, and plan for climate change. A resilient, healthy environment is critical to providing vital community services, such as reliable water and sewer infrastructure and quick recovery from natural disasters.

PROTECT + CONNECT TO OUR RURAL ENVIRONMENT

The community ranked *preserving environmental resources* as the top focus area for Nelson County's future. Strategic planning, updating, and implementation of the County's environmental protection policies is necessary to ensure that the rural environment is protected and that the community has access to the natural world. This includes not only physical access to trails and recreation, but also protecting the ambient resources that define Nelson County's peaceful, rural environment.

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WHAT WE KNOW | Natural & Cultural Resources Today

Nelson County is a place of natural beauty enjoyed along scenic roadways with panoramic views of the Blue Ridge Mountains. Public engagement showed overwhelming appreciation and support for Nelson's rural character with resource protection and planning for resiliency key concerns of residents. This section summarizes the key focus areas for Protecting Valuable Resources as identified through community input and data analysis. These focus areas are key opportunities for Nelson County to protect its natural and cultural resources while thoughtfully harnessing them for a sustainable future.

Protect the Natural Environment

Landscape & Geography

Physiography & Topography

Nelson County is located in two physiographic provinces – the Piedmont province to the east and the Blue Ridge province to the west. Elevation ranges from about 300 feet above sea level on the floodplains of the James River in the eastern part of the County to 4,063 feet at Priest Mountain in the western part of the County.

The Piedmont province consists of broad rolling hills with moderate slopes and ridges, underlain by crystalline rocks such as gneiss and schist. Steeper side slopes generally occur along major drainageways. The soils of the Piedmont are typically deep and well drained and have a loamy or clayey subsoil. Relief ranges from about 20 to 200 feet. Within the Piedmont are several mountains that have a northeast-southwest orientation; maximum relief is about 1,800 feet. The Blue Ridge province consists of rugged steep slopes, narrow ridges, and broad mountains. It is underlain by a variety of metamorphic, igneous, and metasedimentary rocks. Relief ranges from 100 to 3,500 feet. The rock base includes a feature known as the "Albemarle-Nelson Belt," a massive deposit of soapstone that has supported a successful mining industry in Schuyler since the late 19th century. Other prevalent minerals include feldspar, aplite, titanium, quartzite, iron, copper, and kaolin.

River valleys weave between the mountains and are where much of Nelson's development has occurred. Broad floodplains occur along the James, Tye, Piney, and Rockfish Rivers and other large streams in the County. The soils of the floodplains vary from well-drained to poorly drained. Most have a loamy subsoil, but those near the mountains have a cobbly subsoil.

The Blue Ridge Parkway closely follows the County's northern border, crisscrossed by 45 miles of the Appalachian Trail. The southern and western borders are defined by the James and

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Piney Rivers, respectively. The County's eastern border follows the Rockfish River from Howardsville to Schuyler before cutting northwest through the mountains to Afton.

[See Map 6.1: Topography and Steep Slopes]

Virginia Soapstone

Soapstone is a soft, dense rock known for its heat resistant properties and "soapy" feel. Native Americans used it during the Late Archaic period (8,000-1,000 B.C.E.) for pots, cooking slabs, ornaments, and molds for casting metal goods. A large soapstone deposit was discovered near Schuyler in the 1880s and spurred a successful soapstone mining industry that is still active today.

Steep Slopes

Slope refers to the angle between the earth's surface and a horizontal plane. Slope is calculated as a percentage by dividing the change in elevation by the amount of horizontal distance covered. The potential for erosion is moderately severe in areas where the slopes range from 12 to 20%. Slopes in excess of 15% are best left in a natural state. Steep slopes can be found throughout Nelson County, with the steepest slopes (25% and greater) generally located in the western mountainous terrain.

Development on steep slopes should be limited. Clearing, grading, and building on steep slopes can result in extensive erosion and stormwater runoff, which can lead to landslides and increased sedimentation in waterways. Septic systems should be avoided on slopes of 20% or greater to avoid hazards from system failures. Where land disturbance is necessary on steep slopes, erosion and sediment control measures should be enforced to the maximum extent possible to prevent unnecessary degradation.

Soils

Nelson County has a wide variety of soils due to the diversity of the landscape and parent material. Parent materials are either residual (weathered in place from the underlying bedrock) or transported (alluvial and colluvial sediments transported by water and gravity). Properties of residual parent material are directly related to the characteristics of the underlying bedrock, and the resulting soils will reflect the acidic or basic qualities of the rock source. Soils of the Piedmont and Blue Ridge Provinces reflect the predominantly igneous and metamorphic rock base underlying the region. Soils deriving from transported sediments were deposited as layers of sand, silt, and clay, and primarily exist in floodplains along rivers and streams in lowland areas.



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Generally, County soils where terrain is relatively flat or gently rolling are characterized as “good to moderate” and can accommodate septic fields. In areas of steep slopes, soil layers are thinner, runoff rates increase rapidly, and infiltration is poor.

[See Map 6.2: Soil Suitability for Septic Systems]

Land Cover

Nelson County’s land cover reflects its mountainous, rural qualities. Forested lands dominate the landscape, covering 76.4% of the County’s terrain. Much of the County’s forestland is part of state and federal forests and parks. The 422-acre Lesesne State Forest is located on the lower slopes of Three Ridges Mountain adjacent to the George Washington-Jefferson National Forest, which comprises a large section of Nelson County’s northwestern area. Two U.S. wilderness areas lie in Nelson County’s section of national forest: Three Ridges Wilderness (4,607 acres) and Priest Wilderness (5,994 acres). James River State Park and James River Wildlife Management Area are along the southern border of the County.

Farmland (including pasture and cropland) is the second highest land cover type, accounting for a combined 10.6%. Maintaining these landscapes and preventing the rapid conversion of agricultural and forestal tracts will be necessary to retain the rural charm that County residents value so highly.

[See Map 6.3: Land Cover]

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Table 6.1: Land Cover

Class Name	Acres	% of Total Area
Forest	231,934	76.4%
Pasture	29,106	9.6%
Tree	15,893	5.2%
Turf Grass	8,586	2.8%
Harvested/Disturbed	5,622	1.9%
Cropland	2,958	1.0%
Open Water	2,295	0.8%
Impervious (Extracted & Local Datasets)	4,754	1.6%
National Wetlands Inventory/Other	1,411	0.5%
Shrub/Scrub	952	0.3%
Barren	44	0.0%
Total	303,553	100%

Source: Virginia Land Cover 2016 Dataset

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Natural Habitats & Ecosystems

Threatened and Endangered Species

Nelson County's pristine, undeveloped rural lands are home to unique ecosystems that support biodiversity and threatened species. Threatened and endangered species in Nelson County are outlined in Table 6.2. Habitats supporting these species should be carefully managed and protected throughout the County.

Table 6.2: Threatened and Endangered Species

Common Name/Natural Community	Scientific Name	Global Conservation Status Rank	State Conservation Status Rank	Federal Legal Status	State Legal Status
BIVALVIA (MUSSELS)					
Yellow Lance	<i>Elliptio lanceolata</i>	G2 - Imperiled	S2 - Imperiled	LT - Listed Threatened	LT - Listed Threatened
Green Floater	<i>Lasmigona subviridis</i>	G3 - Vulnerable	S2 - Imperiled	N/A	LT - Listed Threatened
James Spiny mussel	<i>Parvaspina collina</i>	G1 - Critically Imperiled	S1 - Critically Imperiled	LE - Listed Endangered	LE - Listed Endangered
CHILOPODA (CENTIPEDES)					
Montane Centipede	<i>Escaryus cryptorobius</i>	G2 - Imperiled	S2 - Imperiled	SOC - Species of Concern	N/A
COLEOPTERA (BEETLES)					
American Burying Beetle	<i>Nicrophorus americanus</i>	G3 - Vulnerable	SH - Historic	LT - Listed Threatened	N/A
INVERTEBRATES					
Rusty-patched Bumblebee	<i>Bombus affinis</i>	G2 - Imperiled	S1 - Critically Imperiled	LE - Listed Endangered	PE - Proposed Endangered
LEPIDOPTERA (BUTTERFLIES & MOTHS)					
Frosted Elfin	<i>Callophrys irus</i>	G2G3 - Imperiled or Vulnerable	S1S2 - Critically Imperiled or Imperiled	SOC - Species of Concern	None
MAMMALS					
Northern long-eared Myotis	<i>Myotis septentrionalis</i>	G2G3 - Imperiled or Vulnerable	S1S3 - Critically Imperiled or Vulnerable	LT - Listed Threatened	LT - Listed Threatened
Tricolored bat (Eastern pipistrelle)	<i>Perimyotis subflavus</i>	G3G4 - Vulnerable or Apparently Secure	S1S3 - Critically Imperiled or Vulnerable	None	LE - Listed Endangered
VASCULAR PLANTS					
Swamp-pink	<i>Helonias bullata</i>	G3 - Vulnerable	S2S3 - Imperiled or Vulnerable	LT - Listed Threatened	LE - Listed Endangered
Small Whorled Pogonia	<i>Isotria medeoloides</i>	G2G3 - Imperiled or Vulnerable	S2 - Imperiled	LT - Listed Threatened	LE - Listed Endangered
Torrey's Mountain-mint	<i>Pycnanthemum torreyi</i>	G2 - Imperiled	S2 - Imperiled	SOC - Species of Concern	PT - Proposed Threatened

Source: Virginia Department of Conservation and Recreation Natural Heritage Database

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Ecological Cores

Ecological cores are defined as large, unfragmented patches of natural land with at least 100 acres of interior cover. Cores provide habitats for a wide range of flora and fauna, as well as recreational and ecotourism opportunities for people. Over time, ecological cores may become fragmented and disconnected due to development and infrastructure such as roads and utility lines, making it difficult for animals to traverse the landscape and allowing invasive species to populate in interior forests. DCR's Virginia Natural Landscape Assessment has identified ecological cores in Nelson County and ranked them based on their potential for biodiversity, ecological function, and landscape conditions. As shown in Map 6.4, Nelson County has many ecological cores with High, Very High, or Outstanding value rankings. Development should be directed away from these areas whenever possible; where development is necessary, green infrastructure concepts can be implemented to maintain cores and connections between them.

[See Map 6.4: Ecological Cores]

Using Green Infrastructure Planning to Connect Wildlife Habitats

Wildlife moves both daily and seasonally to survive; however, the habitats and corridors that animals rely on can become fragmented by housing, roads, fences, energy facilities, and other man-made barriers. As a result, animals increasingly struggle to reach food, water, shelter, and breeding sites.

Habitat connectivity is defined as the degree to which the landscape facilitates or impedes animal movement and other ecological processes, such as seed dispersal. As habitats are fragmented, degraded, and lost to development, the need for a coordinated connectivity network is growing. Better habitat connectivity allows wildlife to migrate with the changing seasons, boosts biodiversity and resilience in degraded ecosystems, safeguards genetic flow between populations, and ensures species are better able to adapt to a changing climate.

Green infrastructure incorporates both the natural environment and engineered systems to conserve ecosystem values and support ecosystem services. On the local level, green infrastructure practices can include rain gardens, permeable pavement, green roofs, and rainwater harvesting systems. At the largest scale, the preservation and restoration of natural landscapes (such as forests, floodplains, and wetlands) are critical components of green infrastructure.

Green infrastructure planning seeks to preserve and maintain intact, connected cores to allow native wildlife and plants to thrive and move across the landscape. Knowing the location of key green infrastructure resources allows for better decision-making when locating new development and utilities.

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Strategic Biodiversity Corridors

Nelson County is identified as a strategic biodiversity corridor for plants and animals to survive a warming planet in Virginia's Wildlife Action Plan. Nelson is one of the two primary areas identified in the Commonwealth where an important wildlife and biodiversity corridor connects the Piedmont with the Blue Ridge. The map and additional information about the Wildlife Action Plan can be found here: <https://maps.tnc.org/resilientland/>

Additionally, Nelson County is participating in the TJPDC's a STEW-MAP (Stewardship Mapping) Project, undertaken through US Forest Service and USDA which the County will be participating in. The goal of the STEW-MAP project is to map the general location of every group that plays a role in stewardship activities to connect their resources and expand opportunities for forest stewardship. The completed map can be found on the USDA's Forest Service website: <https://www.nrs.fs.usda.gov/stew-map/>

Water Resources

[See Map 6.5: Watersheds and Waterways]

Surface Waters

Nelson County's surface waters are vital assets that provide scenic beauty and recreational opportunities as well as drinking water for the community. 2,220 miles of waterways comprising a complex network of rivers and streams extend across nine subwatersheds within the James River basin. The two main subwatersheds are the Tye River, whose headwaters begin just above Montebello and drain south, and the Rockfish River, whose headwaters begin north of Wintergreen and Greenfield and drain the eastern half of the County. Other major waterways include the Buffalo and Piney Rivers. Nelson's natural rivers and streams are complemented by several artificial lakes and impoundments used for recreation and drinking water, including Lake Nelson, Lake Monacan, Black Creek Reservoir, and Johnson Hollow Reservoir.

Impaired Waterways

As part of the Clean Water Act and Chesapeake Bay Preservation Act, The Virginia Department of Environmental Quality (DEQ) has established water quality studies called Total Maximum Daily Load (TMDLs) for state waters that do not meet water quality standards. TMDLs are essentially clean-up plans that identify pollution loads and create reduction goals to attain water quality standards. Locally, Hat Creek, Piney River, Rucker Run, Mill Creek, Rutledge Creek, Turner Creek, Buffalo River, and Tye River were added to Virginia's Impaired Waters list due to excess bacteria that can be hazardous to humans and wildlife. The source of the

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contamination is primarily from agricultural runoff carrying pollutants from fields to streams, livestock having direct access to streams, and failing residential septic systems.

Floodplains

Floodplains are low-lying areas adjacent to waterways that serve hydrologic functions and are subject to varying levels of inundation. Wetlands can also occur in these low-lying areas. The Nelson County Zoning Ordinance, Article 10, includes the General Floodplain District, which regulates and restricts uses, activities, and development in flood-prone areas. Nelson County can opt to participate in the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) to improve floodplain management practices and reduce flood insurance premiums.

[See Map 6.6: Floodplains]

FEMA'S Community Rating System

The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the National Flood Insurance Program (NFIP). Over 1,500 communities participate nationwide.

In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program:

1. Reduce and avoid flood damage to insurable property
2. Strengthen and support the insurance aspects of the National Flood Insurance Program

Groundwater

Groundwater tapped from the Piedmont and Blue Ridge crystalline-rock aquifers supplies part of the Nelson County Service Authority's public water system, as well as all private individual and community well systems. The Piedmont and Blue Ridge aquifers generally have low dissolved solids contents; water is considered soft.

The Piedmont physiographic province contains a diverse geology; therefore, there are wide variations in groundwater quality and well yields. In areas with hard crystalline rocks, groundwater occurs in faults and fractures within 300 feet of the surface; well yields in such areas are typically 3 to 20 gallons per

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minute. The quality of groundwater in areas of crystalline bedrock is generally good, but in some areas may be acidic and have a high iron, manganese, or sulfate content.

The Blue Ridge physiographic province is a relatively narrow, mountainous region underlain by granite, gneiss, and marble. It is characterized by rapid surface runoff and low aquifer recharge. Groundwater use in the Blue Ridge is generally limited to domestic wells, which produce less than 20 gallons per minute. The groundwater is typically of good quality although it may be locally high in iron, manganese, or sulfur content.

The Region 2000 Regional Water Supply Plan (WSP) was published in 2011. This report assessed the current and future water supply conditions of 12 jurisdictions in the Central Virginia region. The WSP found that Nelson County is expected to experience a water supply shortage by 2058. Reliance on groundwater for part of the public water supply may need to be supplemented by new surface water sources by that time. While Nelson already uses reservoirs to pull surface water from local rivers and streams, additional reservoirs and waterlines are necessary to meet the projected demand. Nelson County should work proactively with the Service Authority to identify alternative water sources and undertake necessary infrastructure development to ensure long-term water supply. In the short-term, the County should encourage water conservation measures, as outlined in the Region 2000 WSP.

Impacts on Water Quality

Nelson County's water resources are integral not only to the local community, but also to the health of the James River and ultimately the Chesapeake Bay. Protecting them from contaminants and degradation is vital. Surface waterways and groundwater can be negatively impacted by land development, agricultural operations, and failing septic systems.

Clearing and grading during construction strips building sites of the trees and vegetation that naturally intercept rainfall, so the water that normally gets absorbed during rain events instead gets converted into surface runoff. Once construction is completed, structures and pavement introduce new impervious surface that facilitates stormwater runoff and restricts groundwater recharge. The excess runoff carries sediments, pollutants, and animal waste into nearby waterways, which can erode streambanks and degrade the surrounding ecosystem. Agriculture operations can also degrade local water quality due to erosion, runoff from fertilizers, biosolids, and pesticides, and livestock access to streams. Agricultural activities generally introduce three types of contaminants into waterways: nutrients, sediments, and toxicants. Failing septic systems can also threaten water quality by introducing raw sewage into local streams, rivers, and aquifers. Abandoned septic tanks should be properly removed or sealed.

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Pollutants to groundwater come in a variety of forms, but the predominate sources of pollution include septic system failure, industrial and sewage treatment plant pollution, and agricultural pollution from animal waste, sediment, nutrients, pathogens, pesticides, metals, and salts. The groundwater supply is also susceptible to threats from leaking underground storage tanks (USTs), septic tanks, and abandoned wells; abandoned wells can provide a direct channel for pollutants to enter the groundwater.

Chesapeake Bay Watershed

Although Nelson County is not a Tidewater locality as defined in the Chesapeake Bay Preservation Act (Bay Act), the County lies within the Chesapeake Bay watershed and adheres to the Bay Act through coordination with the Thomas Jefferson Planning District Commission (TJPDC). The TJPDC was contracted by DEQ to coordinate the region's urban sector stakeholder input process for the development of Phase I and II Watershed Implementation Plans (WIP). Topics included stormwater management, septic systems, and urban forestry. For the Phase III WIP, the District compiled lists of Best Management Practices (BMPs) to meet the region's TMDL goals.

The TJPDC continues to collaborate with DEQ and other partners to reduce loads of nitrogen, phosphorus, and sediment for the Chesapeake Bay TMDL by providing educational resources to the region and technical assistance to local governments and other stakeholders in the region.

Additionally, the TJPDC is a partner to the #LoveYourWatershed campaign, whose mission is to motivate residents of the greater Charlottesville area to reduce their impact on waterways and improve local water quality and ecosystems.



Improving Water Quality

There are many best practices that Nelson County can encourage to help control the quantity of stormwater runoff and improve the quality of the water that eventually gets discharged. To continue protecting water quality, the County should ensure its local ordinances are in

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compliance with state standards and encourage low impact development (LID) practices in all site designs. County-owned properties and existing stormwater ponds can be retrofitted with LID measures; funding and grants may be available through programs such as DEQ's Stormwater Local Assistance Fund. The County can also encourage residents to take advantage of cost-share programs offered through the TJSWCD.

- **Cost-Share Programs**, facilitated by Thomas Jefferson Soil and Water Conservation District (TJSWCD), can help Nelson County landowners pay for water quality best management practices (BMPs) on their properties. Programs are available for agricultural and urban/suburban properties. Eligible agricultural BMPs include nutrient management plans, riparian buffers, conservation tillage, cover crops, erosion control measures, and more that can be designed to fit the needs of the site and operation. Urban/suburban BMPs can include but are not limited to rainwater harvesting, conservation landscaping, and permeable pavement installation.
- **Erosion and Sediment Control Ordinances** regulate stormwater runoff during construction-related activities. Virginia Erosion and Sediment Control Law requires that development activities with 10,000 square feet or more of land disturbance obtain a land disturbing permit through the locality. The Thomas Jefferson Soil and Water Conservation District provides plan review services to Nelson County under its Erosion and Sediment Control Program. Construction activities involving more than one acre of land disturbance require a Virginia Stormwater Management Program (VSMP) construction general permit. Nelson County opts to have the Virginia DEQ administer this program on its behalf.
- **Low Impact Development (LID)** is a form of stormwater design that imitates natural processes to manage and filter stormwater as close to its source as possible. LID complements the native environment and improves water quality through low impact measures such as vegetated green roofs, permeable pavement, and rain gardens. LID is becoming increasingly preferred because it reduces the need for large, expensive stormwater infrastructure and can have bonus benefits such as supporting pollinators with native plants.

Ambient Resources | Air, Light, & Noise

Air Quality

The Virginia Department of Environmental Quality (DEQ) monitors air quality in accordance with the Clean Air Act and National Ambient Air Quality Standards. If the air quality in a geographic area meets or is cleaner than the national standard, it is called an attainment

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area; areas that do not meet the national standard are called nonattainment areas. Currently, Nelson County has met or exceeded air quality standards and is designated as an attainment area.

Air quality is an important component to environmental and public health. Although Nelson County is an attainment jurisdiction, there is a need to remain vigilant of the Commonwealth of Virginia's directions concerning air quality. Maintaining vegetation along highway corridors is a good way to mitigate the effects of automobile emissions in addition to providing other environmental benefits. Measures to reduce fossil fuel consumption and emissions, such as promoting public transportation, supporting e-vehicle charging station placement, enacting a government vehicle idling policy, planting trees and vegetative buffers, protecting marshlands and floodplains, and minimizing solid waste by promoting recycling and composting, will also help to maintain air quality.

Re-Use Sheds

Re-use sheds are intended to keep usable items out of the waste stream. Re-use sheds are staffed and open on weekdays at all of Nelson's solid waste and recycling centers, with the exception of the Rockfish Center collection center.

Noise Pollution

Nelson County regulates noise through its Noise Ordinance, which generally restricts loud noises after 10:00 p.m. In addition to adhering to the Noise Ordinance, careful consideration should be given to proposed site developments that could generate high levels of noise, especially when located next to residential or rural areas. Noise impacts can be further mitigated through the zoning process by requiring noise generators (e.g. speakers, amps) to be oriented away from adjacent properties, planting enhanced vegetative perimeter buffers, or installing sound barriers. Mitigating ambient noise will contribute to the peaceful rural atmosphere that residents and visitors appreciate about Nelson County.

Light Pollution

Light pollution is the overabundance of inefficient and improperly directed electrical lighting at night. Light pollution can disrupt human circadian rhythms and exacerbate sleep and mood disorders. It can also negatively impact natural ecosystems and wildlife, which may get confused under artificial light.

Nelson County has relatively low levels of light pollution and has become a destination for stargazing under its pristine dark skies. To continue maintaining natural darkness and prevent unnecessary light pollution, Nelson County should adopt a lighting ordinance that requires full cutoff fixtures, directs light sources downward, prevents a direct view of light sources from



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neighboring properties, limits light intensity, and incorporates other standards recommended by the International Dark Sky Association. Through the zoning process, additional conditions may be considered to address the potential light impact of specific development proposals. Reducing sources of ambient light and incorporating best practices to prevent unnecessary glare will help Nelson County retain its highly-valued dark sky views and will contribute to a healthy natural environment as well.

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Preserve Rural Character & Heritage

Agricultural Heritage

Prime Farmland

Prime farmland, as defined by the U.S. Department of Agriculture, is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is available for these uses. Only 12% of Nelson County's soils are classified as prime farmland, which can typically be found in fertile river floodplains.¹ However, Nelson's agriculture industry has successfully utilized the area's steeper, poorer soils for orchards and vineyards.

The Virginia Agricultural Model builds upon prime farmland criteria by also factoring in current land cover and travel time between agricultural producers and consumers, resulting in a suitability factor for agricultural lands. Scores range from Class I (Low Suitability) to Class V (High Suitability). Map 6.7 shows where land is most suitable for agriculture and can serve as guidance for steering future development away from these areas.

[See Map 6.7: Suitable Farmland in Nelson County]

Protected Landscapes

Rural landscapes and the natural resources they contain can be preserved through a suite of tools that limit development and provide tax incentives to landowners. Nelson County should continue implementing programs to protect and enhance the rich agricultural and forestal lands that are integral to the County's culture, identity, and economy.

¹ [Soil Survey of Nelson County, VA](#)

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Environmental + Economic Value of Forest Landscapes

The Virginia Department of Forestry estimates that the Commonwealth's forests bring over \$28.6 billion to our economy annually. Virginia's forestry industry employs over 100,000 people and brings in more than \$21 billion annually. Forest ecosystems generate significant economic value in reducing air and water pollution, moderating temperature, and absorbing carbon dioxide from the atmosphere. The value of Virginia forests in improving air and water quality is estimated to exceed \$6.6 billion annually. Forests also serve as important carbon sinks, with U.S. forests storing an estimated 15 billion metric tons of carbon in leaves, trunks, and limbs. In preserving its forest landscapes, Nelson is doing its part to protect a valuable piece of the local, regional, state-wide, national, and global economies.

Conservation Easements

[See Map 6.8: Conservation Easements and AFDs]

Conservation easements have been declared essential investments in making Virginia a desirable place to live and visit. ConserveVirginia was codified into law in 2021 as a key tool in guiding state investments for land conservation to ensure the highest conservation outcomes. Landowners can work with their choice of several land conservation organizations listed by Virginia Department of Conservation and Recreation (DCR) to preserve their land according to Virginia policies.

A conservation easement is a voluntary legal agreement between a landowner and a land trust or agency that permanently limits future development of the land to protect its conservation values. Under a conservation easement, landowners continue to own, use, and control their land, and can sell it or pass it on to heirs. Easements allow for and encourage rural land uses, such as forest management, agriculture, hunting and fishing, as well as protection of historically significant landscapes such as battlefields and archaeological sites. In return, landowners may qualify for federal, state, and local tax benefits.

Agricultural and Forestal Districts

Agricultural and Forestal Districts (AFDs) are rural conservation districts reserved for the production of agricultural products, timber, and the maintenance of open space as an important economic and environmental resource. A district is voluntary – it is initiated by a landowner or group of landowners as a mutual undertaking with local government. By establishing a district, property owners agree not to convert their farm, forestland, and other open space to more intense commercial, industrial, or residential uses for a term of four to 10 years. In return, the County and the Commonwealth agree not to take actions or make

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infrastructure investments that will place increased pressure on landowners to convert land to more intense land uses during the term of the district. Unlike easements, AFDs are intentionally renewed and not perpetual. There are currently four AFDs in Nelson County.

Use-Value Taxation Assessment

Land used for agriculture or forestry operations can be assessed and taxed relative to its actual use, as opposed to its fair market value. If minimum acreages are met for certain uses (i.e. agriculture, horticulture, forestry, or open space), then the land may be eligible for use-value taxation. While this may result in less revenue based on lower tax assessments, the County can apply for reimbursement through the Virginia Department of Forestry's Forest Sustainability Fund for Local Government to help offset the decreased revenue.

Purchase of Development Rights Program

Nelson County administers a Purchase of Development Rights (PDR) program to preserve local farmland, forestland, and open space. Purchasing development rights is the same as purchasing conservation easements or that portion of the "bundle of rights" that allows landowners to construct dwellings or non-farm commercial structures on the property. When a locality purchases development rights from a landowner, it essentially buys the right to develop the land then retires that right by placing a permanent conservation easement on the property restricting further development. Typically, these easements run in perpetuity.

Historic Resources

From the County's first Native American inhabitants, to the arrival of European settlers, and to the growth of the modern agritourism industry, Nelson County's cultural heritage has developed in concert with the natural landscape. Nelson and its surrounding counties are the ancestral home of the Monacan Indian Nation (today headquartered in Amherst). The Monacans were an agrarian people whose very way of life was tied to the natural landscape. The Monacan Nation is one of the few native people who still occupy their ancestral lands and archaeological sites and grave mounds are present throughout the region.

Nelson County is home to 28 sites listed on the Virginia Landmarks Register and/or the National Register of Historic Places. Nelson County should continue to work with local, regional, and state agencies and organizations to preserve the County's history. Property owners of non-registered historic sites can be encouraged to apply for register status.

[See Map 6.9: Registered Historic Sites]



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Table 6.4: Registered Historic Sites

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Site	Year Listed on VA Landmarks Register	Year listed on National Register of Historic Places
Arrowhead	2018	2019
Blue Ridge Tunnel	2022	N/A
Bon Aire	1980	1980
Edgewood	2006	2006
Elk Hill	2006	2007
Greenwood-Afton Rural Historic District	2010	2011
Hamner House	2004	N/A
Lovingston High School	2002	2003
Lovingston Historic District	2005	2005
Mill Hill	1973	1973
Montezuma	1980	1980
Nelson County Courthouse	1973	1973
Norwood-Wingina Rural Historic District	2019	2019
Oak Ridge Railroad Overpass	1977	1978
Oakland	2006	2006
Pharsalia	2009	2009
River Bluff	1980	1980
Riverside Farm	2015	2016
Rock Cliff	2015	2015
Ryan Hall Elementary School	2022	2022
Schuyler Historic District	2006	2007
Soldier's Joy	1980	1980
South Rockfish Valley Rural Historic District	2016	2016
Swannanoa	1969	1969
Three Chimneys	2013	2013
Tyro Mill	2006	2006
Wintergreen Country Store	2005	2005
Woodson's Mill	1992	1992

Source: Virginia Department of Historic Resources

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Plan For Resilience & Sustainability

Climate Change

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Average High in °F	47	50	59	70	76	84	87	86	80	70	61	50
Average Low in °F	25	27	34	43	52	61	65	64	57	45	35	28

68 °F

Average High
Temperature

45 °F

Average Low
Temperature

45 in.

Annual
Rainfall

16 in.

Annual
Snowfall

While the causes of climate change are global, the impacts are inherently local – increasingly powerful storms, higher average temperatures, and worsening drought can all directly affect a community's quality of life and ability to operate without disruption. Further, as the climate changes and sea levels rise, people living in coastal areas will adapt by moving to places that they perceive to be climate resilient. This is becoming known as climate migration. Inland communities in the Appalachian region are increasingly being targeted as safe havens from the deleterious effects of an uncertain climate. Nelson County can prepare for the impacts of climate change and climate migration by working with regional partners on hazard mitigation planning and ensuring development policies and ordinances direct development away from environmentally sensitive areas, and toward designated growth areas. Bolstering local infrastructure and proactive planning for future drinking water resources will also better prepare Nelson County for a growing population before an emergency occurs.

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Hazard Mitigation

Hazard mitigation planning is accomplished regionally through the Thomas Jefferson Planning District Commission (TJPDC). TJPDC works with the Federal Emergency Management Agency (FEMA), the Virginia Department of Emergency Management (VDEM), and local emergency managers to develop and maintain the Regional Natural Hazard Mitigation Plan. The Plan is updated every five years with details on how localities can prepare for natural disasters before they occur.

Regional Natural Hazard Mitigation Plan

Nelson County representatives participate in the Hazard Mitigation Working Group, which supports regional hazard mitigation efforts and planning. Implementing the strategies in this comprehensive plan will help the County adapt to changing weather patterns, mitigate hazardous conditions, increase renewable energy, and provide for the health, safety, and welfare of the community. Eight mitigation strategies were recommended for Nelson County to improve its disaster response and overall resilience.

- Continue and expand use of citizen alert systems.
- Provide training for building inspectors and code officials on mitigation techniques and hazard-resistant building.
- Conduct FireWise workshops.
- Provide educational instruction and materials to school age youth and their teachers on proper procedures for responding to natural disasters.
- Investigate safety and maintenance of roads in private communities.
- Ensure all houses have clear address signs that are visible during snowstorms.
- Ensure that all homeowners and businesses located in areas prone to landslides are aware of the risks and appropriate responses to an event.
- Maintain and add more fire rings in camping areas for controlled fires.

Hurricane Camille

In 1969, Hurricane Camille was one of the worst natural disasters in Virginia's history. As the hurricane swept through the state, Nelson County received the brunt of the storm, causing floods and landslides that trapped residents as they slept. Hurricane Camille proved that inland flooding can be as great a danger as coastal flooding during extreme weather

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Energy Efficiency & Renewable Energy Sources

Encouraging and promoting renewable energy systems is an important aspect of environmental resiliency and sustainability. Reducing dependence on fossil fuels and creating alternative sources of energy production will give Nelson County residents more options for energy stability.

SolSmart

Nelson County announced its commitment to become a SolSmart-designated community in February 2022. This commitment dedicates staff to work to improve solar market conditions and increase the efficiency of local solar development processes to make it faster, easier, and more affordable for residents and businesses to install solar energy systems. SolSmart will be leveraged to achieve three goals:

- Review planning and zoning process and enhance siting options for solar photovoltaic technology while preserving community character and historic resources.
- Review current permitting processes and/or implement solar permitting best practices.
- Support small-scale and community based local solar energy development.

Utility-Scale Solar

Electric utility companies often site large solar energy systems on undeveloped land in order to lower installation costs. Large, utility-scale solar arrays can render the land useless for other activities, including agriculture, and introduce an industrial aesthetic to the landscape. In addition to locating solar energy systems on land, they can appropriately be positioned on top of buildings and over already-paved surfaces such as parking lots. Nelson County's Zoning Ordinance promotes the safe, effective, and efficient use of small and large solar energy systems and small wind energy systems for electrical generation. However, to protect agricultural lands and the rural and natural character of the County, more specific regulations are needed. Regulations should encourage and allow large solar energy systems in built environments (e.g. on commercial/industrial rooftops and paved areas). For undeveloped sites, enhanced performance standards such as increased vegetated buffers and incentives for native plants will protect rural viewsheds and can help support local pollinators.

Energy Improvements

To set a precedent and encourage energy efficiency and renewable energy, Nelson County should also improve the energy efficiency of its own facilities. Photovoltaic panels can be installed on County-owned buildings. The County could pursue grants to help fund energy



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efficiency and solar-ready retrofit projects. Adopting energy efficiency and renewable energy as standard procedure for building maintenance and improvements will yield cost savings while reducing greenhouse gas emissions.

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HOW WE MOVE FORWARD

Nelson County is committed to planning and providing equitably for the community, diversifying and bolstering the economy, improving and expanding vital community services, and protecting and connecting to the natural environment. Implementing the following strategies will help the County fulfill the four big ideas of community engagement while successfully protecting its natural and cultural resources in a rapidly evolving and changing world.

Goal Statement

Nelson County will preserve its rural character and agricultural heritage by sustainably protecting and stewarding its natural and historic resources for future generations.

Strategies:

Protecting the Natural Environment

Landscape & Geography

1. Limit development on steep slopes to maintain balance between slope, soils, geology, and vegetation. Where disturbance is unavoidable, enforce erosion and sediment control measures to prevent unnecessary degradation.
2. Avoid the use of septic systems on steep slopes and unsuitable soils.

Habitats & Ecosystems

3. Direct development and infrastructure away from ecological cores, migration corridors, and environmentally sensitive areas.
4. Implement green infrastructure principles to preserve and connect natural habitats to support native species and wildlife.

Water Resources

5. Support the use of low impact development and stormwater best management practices to reduce nonpoint source pollution in local waterways.
6. Encourage landowners to work with local organizations, such as TJSWCD, for cost-share opportunities to install LID and BMPs catered to agricultural, residential, and commercial sites.

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7. Continue to work with state and regional partners (such as DEQ, TJPDC, and TJSWCD) to implement TMDL plans for impaired waterways.
8. Continue to work with regional partners on updates to the Regional Water Supply Plan and implement solutions to sustain the future water supply.
9. Encourage water conservation measures as outlined in the Regional Water Supply Plan.
10. Support efforts to identify and cap or remove abandoned wells and septic tanks to prevent contamination of the groundwater supply, and continue providing information on VDH's Septic and Well Assistance Program.
11. Condition approval of operations utilizing underground storage tanks (USTs) on assurances guaranteeing proper closure or removal of unused USTs and remediation of impacted soils.
12. Support scenic river and blueway designations for local waterways.

Ambient Resources

13. To protect air quality and reduce vehicle emissions, maintain vegetation along major roadways, support public transit, and promote recycling, composting, and the reduction of food waste through public education, signage, and outreach.
14. Explore opportunities for an incentive program to further the utilization of existing recycling and composting facilities with a focus on public education and outreach.
15. Invest in partnerships with community organizations to ensure continued support and possible expansion of the Re-use sheds.
16. Carefully consider noise-intensive uses near residential or rural properties, and require noise mitigation such as perimeter buffers and sound barriers.
17. Adopt an outdoor lighting ordinance with design and performance standards that increase safety and protect dark skies, consistent with International Dark Sky Association recommendations.

Preserving Rural Character & Heritage

Agricultural Heritage & Protected Landscapes

18. Direct development away from prime agricultural soils and suitable agricultural lands identified on the Virginia Agricultural Model.
19. Protect agricultural and forested landscapes from development through tools such as conservation easements, agricultural and forestal districts, use-value assessments, and purchase of development rights program.

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20. Maintain use-value taxation criteria and qualifications in the best interest of the County and landowners to ensure long-term viability of agricultural, horticultural, and forestal operations.
21. Continue to utilize the Virginia Department of Forestry's Forest Sustainability Fund to offset reduced tax revenue due to forestland use taxation.
22. Discourage ridgeline development to protect scenic viewsheds.

Historic Resources

23. Encourage assessment of unlisted historic sites for inclusion on the Virginia Landmarks Register and/or National Register of Historic Places.
24. Work with local partners such as the Nelson County Historical Society to identify, protect, and celebrate historic and culturally significant properties.
25. Pursue identification, recognition, and protection of historic areas representing Nelson County's diverse culture, including Native American and African American sites.
26. Encourage architectural compatibility of new development, including infill development, where significant historic resources exist.

Planning for Resiliency & Sustainability

Climate Change & Hazard Mitigation

27. Continue to work with regional partners to update and implement the Regional Hazard Mitigation Plan.
28. Continue improving flood resiliency by updating the Floodplain District Ordinance as needed to reflect new flood maps and best practices, and participating in FEMA's Community Rating System.

Energy Efficiency & Renewable Energy Sources

29. Continue working toward the stated goal of becoming a SolSmart-designated community.
30. Encourage and incentivize green building certifications, energy efficiency, and renewable energy sources for new developments and existing development retrofits.
31. Consider amendments to existing ordinances to encourage installation of solar panels on existing impervious surfaces, such as rooftops and parking lots.



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32. Strengthen performance standards for ground-mounted solar energy systems to protect existing landscapes, such as limiting clear-cutting on undeveloped parcels, specifying minimum vegetation requirements, and increasing perimeter buffer widths.
33. Assess County-owned buildings to identify opportunities for improving energy efficiency using the EPA's resources for Energy Efficiency in Government Operations and Facilities, or a similar program.