
VIRGINIA SCENIC LANDSCAPE ASSESSMENT PROJECT



Communities should be planned with an eye to the effect on the human spirit of being continually surrounded by a maximum of beauty.

Thomas Jefferson

Virginia Scenic Landscape Assessment Project

Prepared for: Scenic Virginia in partnership with The Virginia Department of Conservation and Recreation (DCR)

Scenic Virginia Viewshed Project Committee Members:

Lisa Dickinson Mountcastle, President of Scenic Virginia

Richard G. Gibbons, FASLA, Chair of the Scenic Virginia Viewshed Project Committee

Lynn Crump, PLA ASLA, DCR Planning & Recreation Resources

Sherry Buttrick, Scenic Virginia Trustee

Kathleen S. Kilpatrick, Scenic Virginia Vice President

Leighton Powell, Scenic Virginia Executive Director

Annie Weidhaas, Scenic Virginia Program & Outreach Coordinator

Prepared by: Patrick A. Miller, Ph.D., FASLA, FCEL
Professor of Landscape Architecture
Landscape Architecture Program
Virginia Tech

Jisoo Sim, Ph.D. Candidate
Graduate Research Assistant
Landscape Architecture Program
Virginia Tech

Peter M. Sforza, Ph.D.
Director and Research Scientist
Center for Geospatial Information Technology
Virginia Tech



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Table of Contents

FOREWORD.....	i
INTRODUCTION	1
ROLE OF THE LITERATURE REVIEW.....	2
METHODOLOGY FOR THE PROPOSED VIEWSHED NOMINATION AND EVALUATION	
FRAMEWORKS	4
SCENIC VIEWSHED NOMINATION FRAMEWORK	5
Section 1 - LOCATION AND SIZE	6
Section 2 - PHOTO DOCUMENTATION.....	6
Section 3 - VIEWPOINT AND VIEWSHED INFORMATION	6
Section 4 - CONTENT IN THE VIEWSHED.....	8
Section 5 - VIEWSHED DESCRIPTION	9
SCENIC VIEWSHED EVALUATION FRAMEWORK	9
Section 1 - VIEWSHED SCENIC QUALITY	11
Section 2 - PUBLIC CONCERN OR SENSITIVITY	13
SCENIC VIEWSHED DESIGNATION	15
REFERENCES	17
APPENDIX I: DEFINITION OF TERMS.....	20
APPENDIX II: RATIONALE FOR PHOTO ATTRIBUTES.....	26
APPENDIX III: SCENIC VIEWSHED NOMINATION AND EVALUATION FORMS	28
APPENDIX IV: EXAMPLES OF COMPLETED FORMS.....	32

Table of Figures

Figure 1. Viewshed Nomination Form Information and Framework	7
Figure 2. Scenic Viewshed Evaluation Form and Framework.....	10
Figure 3. Scenic Viewshed Designation Framework.....	15
Figure 4. Physiographic provinces of Virginia from Keyes et al. (1995)	23
Figure 5. Revised Physiographic units appropriate for viewshed evaluation.....	23
Table 1. Comparison table of landscape photograph contests	26

SCENIC VIRGINIA

FOREWORD TO VIRGINIA TECH'S "VIRGINIA SCENIC LANDSCAPE ASSESSMENT PROJECT REPORT"

Founded in 1998, Scenic Virginia is the only statewide conservation organization dedicated solely to the preservation, protection, and enhancement of the incredible scenic beauty and character of the Commonwealth – a scenic beauty that is part of our heritage and one that can easily be lost if not stewarded carefully.

As an advocacy and educational nonprofit, Scenic Virginia unites a shared passion for our unparalleled vistas, cultural landscapes, and scenic areas with an understanding of their exceptional value and importance. These resources give Virginia's counties, cities, and towns their unique identities while also promoting economic opportunity through tourism and a sense of pride and connection among residents. These resources cannot be taken for granted but should be recognized and considered in planning and managing natural resources for the future.

To those ends, Scenic Virginia is developing the Virginia Viewshed Register project, a new program that is the first of its kind in the nation. A viewshed is defined as an area that can be seen from a particular place in the landscape with attributes that include land, water, environmental elements, and cultural resources. The project's purpose is to assist citizens in identifying the state's most significant scenic areas and to confer upon them public recognition to aid in planning and preservation.

The designation of scenic resources will rely on an open process and build on documentation and assessment. The recognition of significant scenic viewsheds will benefit local decision-makers and planners as well as landowners and land trusts seeking to place lands under conservation easement. Project outcomes will include a statewide inventory of scenic resources and a Scenic Resources GIS layer for the state's Land Preservation Map.

Scenic Virginia commissioned Virginia Tech to undertake a study to review existing scenic resources data and scholarly literature with the goal of identifying and quantifying the elements that contribute to and define a scenic viewshed. Virginia Tech's Study presents a methodology and process that will facilitate consideration and recognition of Scenic Resources in the Commonwealth and elsewhere. It can also provide a technical advisory committee with a defensible nomination process and criteria for scenic value.

Going forward, Scenic Virginia will convene a technical advisory committee to develop credible and replicable criteria, and appropriate measures that reflect the public's scenic values for a defensible nomination process. Following that

will be coordinated outreach to ensure participation and support at the state and local level.

The Viewshed Register project will both fill a critical gap and serve as a complement to existing programs that include the Virginia Landmarks Register, the Virginia Outdoors Plan, the National Park Service's Civil War sites inventory and assessment, and ConserveVirginia, a new statewide, data-driven land conservation strategy that identifies high value lands and conservation sites across the Commonwealth of Virginia.

In conclusion, Scenic Virginia believes that Virginia Tech's "Virginia Scenic Landscape Assessment Project Report" reflects the culmination of years of research and input from a variety of sources. Its careful methodology and the resulting process of recognition in an inventory and documented Register will support an appreciation for and consideration of valued scenic resources in the Commonwealth. Our hope is that this initiative will serve as a model across the nation and even abroad so that irreplaceable resources can remain a living part of treasured landscapes.

--
Richard G. Gibbons, FASLA
Chair, Scenic Virginia Viewshed Committee
May 2019

VIRGINIA SCENIC LANDSCAPE ASSESSMENT PROJECT

INTRODUCTION

Decision Framework: The purpose of this study is to develop a decision framework or procedure for identifying and assessing the scenic quality of landscapes, those landscapes in the Commonwealth of Virginia that its citizenry treasure and enjoy. The decision framework must be understandable to all and provide a means of engagement so that people can nominate their favorite views, as well as offer input on those views put forward by others. The procedure must also be rigorous and defensible. It must draw upon research and the work of experts. It must use appropriate variables and measures to assess the scenic quality in a consistent and defensible manner. The procedure must be capable of providing convincing evidence that these scenic landscapes can be protected in a proposed scenic register.

Viewshed Definition: The geographic area of the landscape that is appropriate for the above purpose is a “viewshed.” A viewshed is an identifiable area that would provide information needed to achieve the goals of the Virginia Scenic Viewshed Register. A viewshed is an area that is seen from a particular place in the landscape. For the purposes of the Scenic Viewshed Register, it would be a “defined viewshed” that is the specified portion a viewshed that can be seen from a particular, publicly accessible vantage point, defined by its view direction, view width and view distance. In this report “defined viewsheds” are referred to simply as viewsheds.

Nomination and Scenic Assessment: For a viewshed to be considered for designation the Virginia Scenic Viewshed Register two things must occur. First, it must be nominated for consideration, and second, the scenic quality must be assessed or evaluated. The processes for nomination and scenic assessment are based on best practices drawn from an extensive review of the literature, as well as, a review of many of the landscape photographs contained in Scenic Virginia’s photographic archive of photos (3,778 photos) ([link: https://docs.google.com/spreadsheets/d/1TvyVMu9R35acivQWuvXi-zJspPwr15isPR731P477RI/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1TvyVMu9R35acivQWuvXi-zJspPwr15isPR731P477RI/edit?usp=sharing)) that are the result of the Scenic Virginia Photo Contest.

Literature Review: The literature review exists as a separate document titled Literature Review – Virginia Scenic Landscape Assessment Project. It includes two sizeable databases that describe the theories, concepts, variables, and approaches used in scenic resource assessment and management. The results of the review are described in the section on the Role of the Literature Review section below. This report is divided into five sections: 1) the Role of the Literature Review (the methodology used for selecting concepts and variables that were used in this study), 2) the Framework for Viewshed Nominations, 3) the Scenic Viewshed Evaluation Framework, 4) Scenic Viewshed Designation and 5) Concluding Thoughts.

ROLE OF THE LITERATURE REVIEW

Literature Data Bases: As mentioned above, the Literature Review is a separate document containing two databases. The first data base was one put together from keyword searches by the Virginia Tech researchers. The first data base contains 853 articles published between 1969 to 2018. The keywords used to search for journal articles and books are: scenic value, scenic beauty, scenic quality, visual quality, visual resource management, visual assessment, landscape preference, landscape quality, landscape quality. The data base includes abstracts for the articles contained and is searchable. It can be accessed at (https://drive.google.com/open?id=1r0DSI3wkZjQw-iicP6ooaoDFFd_Y3OB9).

The second data base contains 1854 publications published between 1936-2014. This data base was created by Dr. Andrew Lothian of Scenic Solutions. The data base can be found on the Scenic Solutions website (<https://scenisolutions.world/>). The first data base, described above, contains mostly journal articles and as mentioned above includes abstracts. The second data base is larger data base and includes articles published over a longer period of time and includes more diverse types of publications. However, it does not include abstracts. In compiling these databases, the researchers identified theories, concepts, variables, and measures that have been used and are commonly accepted by scenic resource management professionals and scholars. The literature sources for the concepts and terms adopted for this study can be found in Appendix I: Definition of Terms. Citations are also provided for each term in Appendix I.

Historical Perspective: Much of the literature on scenic assessment comes from work done by landscape architects working for federal land management agencies in the 1960s and '70s. This work came about as a result of legislation such as the Environmental Protection Act of 1970 that required that more attention be given to the environmental impacts of federal projects on the environment, including scenic or visual impacts. Legislation requiring multiple-resource planning on federal lands was also passed during this period. This legislation meant that in addition to the natural resources such as: timber, mineral and range resources, the scenic characteristics of the landscape were also to be managed. In this management context, these early landscape architects referred to the management of these scenic characteristics as Visual Resource Management (VRM). Inspired by the work of Dame Sylvia Crowe in the United Kingdom, U.S. landscape architects working for the Forest Service, the Bureau of Land Management and other federal agencies developed procedures for assessing the visual quality of the landscape and the visual impact of proposed alterations.

VRM Context: These pioneering landscape architects left a great legacy of visual concepts and terms available for visual management use today. However, these ideas and concepts came about in a different context. They were developed for use primarily on public lands in the Western United States and lands that were mostly undeveloped or in a mostly natural state. They focused on mitigating the visual impacts of landscape alterations resulting from natural resource extraction. In this context, the procedures developed tend to assume that natural or undeveloped landscapes have higher scenic quality than landscape containing man-made

features. The primary purpose of these concepts and terms was to assess and mitigate the visual impacts of human alterations of the landscape, such as timber harvesting, mining and grazing. The concepts and terminology used were to assure that consideration be given to the scenic or visual quality of the land when harvesting natural resources. The context for viewshed assessment in Virginia is different.

Viewshed Concepts and Terms: The Virginia Tech research team evaluated the applicability of the terms and concepts found in the literature for potential use in a scenic viewshed program in Virginia. The evaluation examined the applicability the concepts and terms from the literature to the landscape depicted in photographs in the Scenic Virginia Photo Contest archive. Virginia has a rich resource of public and primarily natural landscapes. People react to the landscape in two ways S. Kaplan (1979). They react to the landscape as a composition and arrangement. As a two-dimensional composition, people react to the visual complexity or variety of the composition. Is the composition visually interesting? They also react to the composition in terms of its coherence. Does it hold together and make sense? As a three-dimensional arrangement of landscape elements, people react to the legibility and mystery of the landscape. In terms of legibility, can one make a mental map of the landscape and find one's way around? These concepts are easily applied to natural landscapes and are well documented in the VRM literature and applications. Seven concepts or terms from the VRM literature were found to applicable to the Virginia landscape. They were:

- Physiographic province or region
- Distance zones
- Diversity, variety and visual complexity
- Coherence and legibility
- View type
- Viewer position
- Visual sensitivity or public awareness

Additional Concepts and Terms: Despite the rich VRM literature, several additional concepts or terms still needed to be included in order to meet the needs of scenic viewsheds in Virginia. VRM concepts and terms favor natural, undeveloped landscapes. VRM concepts and terms tend to consider the landscape as a composition or arrangement. However, people also react to the content of the landscape or the things that are in the landscape. Depending on the content, people react in either positively or negatively. For example, a smoking industrial plant (human alteration or content) would invoke an adverse reaction. While a historical structure (human alteration or content) or a stream (natural content) would evoke a positive response. While VRM favors natural landscapes, many landscapes in Virginia contain both human content as well as natural content and are quite scenic. The Virginia Tech research team identified five addition concepts or terms needed to assess scenic viewsheds in Virginia. These concepts or terms are landscape content found in Virginia. They are:

- scenic value of historic resources
- scenic value of human-influenced landscapes
- cultural landscapes

- urban landscapes
- scenic value of ephemeral qualities

Landscape Content: With a rich and deep history, Virginia has many landscapes with historic structures or artifacts. Some historic resources may be protected if they are on a historic register, but they may not be scenic. Conversely, there may also be historic resources or artifacts that do not meet the requirements of a historic register but do contribute to the scenic value of a viewshed. Other human-influenced landscapes, such as cultural landscapes and certain urban landscapes, may also contribute to scenic value. Cultural content in a viewshed may harken to the past and convey meanings to viewers that. For example, an old tobacco barn might evoke images of bygone days when farmers worked the fields by hand. The same can be true of views of urban environments. A viewshed containing vibrant and beautiful architecture found in some of Virginia's cities can be quite beautiful.

The VRM literature acknowledges ephemeral qualities, but because of the variable nature of ephemeral qualities, their contribution to a scenic quality is not fully dealt with in the VRM literature. However, people enjoy the Blue Ridge Parkway during the fall color. If ephemeral qualities occur relatively frequently and are reasonably predictable, they do contribute to the scenic quality of a viewshed and should be included in the Virginia Scenic Viewshed program.

The concepts and terms described above were used by the Virginia Tech Research Team to construct two frameworks. One framework is for nominating viewsheds for possible placement on the viewshed register. The second framework is to evaluate or consider placement on the viewshed register. Both of these frameworks are described below.

METHODOLOGY FOR THE PROPOSED VIEWSHED NOMINATION AND EVALUATION FRAMEWORKS

Overview: As stated in the Introduction the purpose of this study is to develop a framework or procedure for identifying and assessing the scenic quality of landscapes in the Commonwealth of Virginia that its citizenry treasure and enjoy. The procedure must be understandable and accessible to all and provide a means of engagement so that people can nominate their favorite views, as well as offer input on those landscapes put forward by others. The procedure must also be rigorous and defensible. It must draw upon research and the work of experts. It must use appropriate variables and measures to assess the scenic quality in a consistent and defensible manner. The procedure must be capable of providing convincing evidence that these scenic landscapes can be protected in some form of scenic register.

Use of the Framework: A good deal of literature exists regarding scenic/visual assessment, and some are quite complicated and technologically sophisticated. In order to select the concepts and variables appropriate for this project, it is necessary to understand how the concepts and variables are going to be used, both in the Scenic Viewshed Nomination and Evaluation processes.

As stated above, the Viewshed nominations will likely be made by citizens and government officials who lack technical knowledge of visual concepts and terminology. The scenic quality evaluation of viewsheds will require some knowledge of the visual concepts and variables being viewed but not at an advanced level. The concepts and variables selected, therefore, must be understandable to both these user groups.

Methodology: Based on the purpose of the frameworks described above the Virginia Tech Research Team developed a methodology for applying the concepts and terms identified in the literature to theories, concepts, variables, and measures used in the nomination and evaluation frameworks. The following guidelines were used in selecting concepts, variables, and measures from the literature for this project.

- Concepts, variables, and measures should have a history of use that indicates a high degree of acceptance and credibility among scholars in this field.
- Variables and measures should be intuitively meaningful and make sense to those using them.
- Measurement scales should:
- Be as straightforward and uncomplicated as possible (understandable).
- Be descriptive interval scales when possible (meaningful distinctions for measurement).
- Contain no more than seven intervals (considered the number of categories most people can distinguish between) (Note: Reference note needed).
- Not use mathematical functions other than addition and subtraction (reduce variability in measurement).
- Be capable of easy disaggregation when combined mathematically (i.e., understand how the parts contribute to the final product).

Following these guidelines ensures that the proposed nomination and evaluation frameworks are not only credible but that users will be able to apply them consistently and with minimal variation.

SCENIC VIEWSHED NOMINATION FRAMEWORK

The intent of the Scenic Viewshed program is to engage the citizenry of the Commonwealth in identifying and protecting viewsheds that they hold dear. Therefore, as stated in the Methodology Section above it is envisioned that scenic viewshed nominations will come from citizens, landowners, government officials, local grassroots organizations or anyone who believes that the scenic quality of a viewshed should be acknowledged.

Nomination Form: The first step in the process is the completion of the Nomination Form (see Figure 1). The nomination form is used to determine if the viewshed merits further consideration as a “scenic viewshed.” The Nomination Form is intended to provide basic information about the viewshed and is mostly descriptive. The nomination form requires 5 types of information and is divided into the following sections: 1) location, 2) photographic

documentation, 3) view point and viewshed information, 4) content in and around the viewshed and 5) viewshed description (including a checklist of possible descriptive elements). The information sections are outlined in yellow in Figure 1. Each is described in more detail below.

Section 1 - LOCATION AND SIZE

As mentioned above the nomination form is mostly descriptive information and should not require professional knowledge. If a decision is made to complete a scenic for the viewshed it will be done by someone with greater knowledge of scenic assessment concepts and terms. It is important that the person doing the evaluation be able to locate the viewshed and determine its size. The information on the nomination form (see Figure 1) related to "location" and "viewpoint and viewshed" provide that type of information.

Section 2 - PHOTO DOCUMENTATION

The photographic documentation is important for four reasons: 1) it can be used to determine if the nomination merits proceeding to evaluation, 2) the photographic quality needs to be good enough to be placed online, 3) the photographic quality should be accessible to most people with cell phone cameras and 4) the GPS metadata is available on most cell phones can be helpful in locating the viewpoint and possibly useful in for digital map of viewsheds in the future. The nomination form allows up to three photos one of which must be taken from the viewpoint. It is anticipated that the 2 additional photographs might be useful to record special content that may be in the viewshed. The proposed requirements for photographic meta-data ensure the quality of photographic images collected and should be able to be met by the average person, not just professionals. Digital photographs should be a minimum size of 1024 megapixels on the long side. The file size should be under 30MB, and the digital file format should be JPG. The Virginia Tech research team examined the photographic requirements of five organizations that hold photo contests (see Appendix II: Rational for Photo Attributes). The photographic size requirements recommended for the nomination form are consistent or better than those used by the five organizations reviewed.

Section 3 - VIEWPOINT AND VIEWSHED INFORMATION

Physiographic Units: Scenic Quality rating scales should be calibrated within the range of variance of a physiographic unit. This is standard practice in many landscape assessment procedures (Bishop, Wherrett, & Miller, 2001; Krönert, Steinhardt, & Volk, 2001) and ensures that the scenic quality in different units is acknowledged. Three Physiographic Units are recommended for scenic assessment in this report to accommodate the range of landscape types found in Virginia (Landscapes within different physiographic units have different visual characteristics). While Keyes et al. (1995) identified six physiographic units in Virginia, this report combines the four mountain zones into one, resulting in three total units: Mountain, Piedmont and Coastal Plain. The three physiographic units that are part of this process are

SCENIC VIEWSHED NOMINATION FORM

<p>View Point Photo Information</p> <p>Viewshed Name:</p> <p>Nomination Date:</p> <p>Location (City/County): LOCATION</p> <p>Specific (i.e. place name):</p> <p>Total number of photos¹:</p>	<p>View Point Meta-data (from photograph)</p> <p>Image Title:</p> <p>Taken Date & Time:</p> <p>Location: PHOTOGRAPH INFORMATION</p> <p>GPS lat: long:</p> <p>Image Size²:</p>												
<p>View Point Information <small>(check one)</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px;"></td> <td style="width: 80%; padding: 5px;"> 1. Mountain 2. Piedmont 3. Coastal Plain </td> </tr> <tr> <td style="padding: 5px;">Public Accessibility³ <i>visible from public road/trail, water-way or public road</i></td> <td style="padding: 5px;"> 1. Yes 2. No </td> </tr> <tr> <td style="padding: 5px;">Observer Position <i>human eye-level at viewpoint</i></td> <td style="padding: 5px;"> VIEWPOINT & VIEWSHED 1. Looking up 2. Looking down 3. Looking down </td> </tr> </table>			1. Mountain 2. Piedmont 3. Coastal Plain	Public Accessibility ³ <i>visible from public road/trail, water-way or public road</i>	1. Yes 2. No	Observer Position <i>human eye-level at viewpoint</i>	VIEWPOINT & VIEWSHED 1. Looking up 2. Looking down 3. Looking down						
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Public Accessibility ³ <i>visible from public road/trail, water-way or public road</i>	1. Yes 2. No												
Observer Position <i>human eye-level at viewpoint</i>	VIEWPOINT & VIEWSHED 1. Looking up 2. Looking down 3. Looking down												
<p>View Elements <small>(check all that apply)</small></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;"></th> <th style="width: 50%;">Frequency of occurrence</th> </tr> </thead> <tbody> <tr> <td>Ephemeral features</td> <td> Occurs often (daily or weekly) Occurs regularly but not often (seasonal) Seldom and unpredictable </td> </tr> <tr> <td>1. Wildlife and animals' signs & occupancy 2. Vegetation changes</td> <td style="text-align: center;">CONTENT IN VIEWSHED</td> </tr> <tr> <td>Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i></td> <td></td> </tr> <tr> <td>Distinctive man-made feature <i>see nomination checklist (built, historical...)</i></td> <td></td> </tr> <tr> <td>Distinctive natural feature <i>see nomination checklist (natural features)</i></td> <td></td> </tr> </tbody> </table>			Frequency of occurrence	Ephemeral features	Occurs often (daily or weekly) Occurs regularly but not often (seasonal) Seldom and unpredictable	1. Wildlife and animals' signs & occupancy 2. Vegetation changes	CONTENT IN VIEWSHED	Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i>		Distinctive man-made feature <i>see nomination checklist (built, historical...)</i>		Distinctive natural feature <i>see nomination checklist (natural features)</i>	
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Distinctive natural feature <i>see nomination checklist (natural features)</i>													
<p>View description: <small>(see checklist of possible descriptive elements)</small></p> <p style="text-align: center;">VIEWSHED DESCRIPTION</p>													

1. up to three photos, one must be from viewshed view point

2. a minimum size of 1024 megapixels

3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

Figure 1. Viewshed Nomination Form Information and Framework

consistent with those used by the Virginia Department of Conservation and Recreation when evaluating the potential for State Scenic Rivers designation.

Public Access: Because scenic viewshed designation is intended to raise public awareness and encourage consideration of significant scenic resources, the viewshed must be publicly accessible from a road, trail, waterway or public lands. If a viewshed is not accessible to the public, it is not eligible for designation.

Viewshed Size: The literature tells us that panoramic views tend to be perceived as more scenic than narrower views (R. B. Litton, 1968). Therefore, view size is one factor in scenic evaluation. It is envisioned that designated scenic viewsheds would be mapped digitally, so it is important to know not only where they are located but also how big they are. This may be difficult for some non-professional people to determine during the nomination process. So, the nomination requests an “approximate width” of the viewshed measured in degrees. The size and the extent of the viewshed can be determined more precisely using digital technology in the scenic viewshed evaluation stage of the project.

Distance Zones: The distance from the viewer to the furthest extent of the viewshed is also a measure of size and play a role in scenic quality (Anderson, Mosier, & Chandler, 1979; Antrop, 2000; Bacon, 1979; R. B. Litton, 1968). The Distance Zones in the literature are foreground (from 0 to between 1/4 and 1/2 mile), middle-ground (from between 1/4 and 1/2 mile to between 3 and 5 miles) and background (more than 3 to 5 miles). The Distance Zones vary depending on atmospheric and topographic conditions of the region where the viewshed is located. For this Virginia program, the closer distance view range of the distance zones was selected. Therefore, the Distance Zones used in this study are foreground (from 0 to 1/4 mile), middle-ground (from 1/4 to 3 miles) and background (more than 3 miles) (R. B. Litton, 1968).

Views of the landscape in background distances in Virginia tend not to contribute to scenic quality because they are muted or dulled by the humidity in the atmosphere that exists between the viewer and the landscape. Therefore, the visual characteristics of the viewshed are less visible; and visual characteristics, such as colors and textures, are not as visible and are not as vivid. The middle-ground often has higher visual quality because the forms and patterns that make up the landscape can be more clearly seen at this distance, allowing the viewer to get a sense of the lay of the land. This makes it easier to “make sense” of the land, and, thus, it is more legible and preferred by viewers (Kaplan & Kaplan, 1989). The foreground is where details of the landscape are visible. Many ephemeral qualities are more apparent in the foreground, and, if present, can contribute to scenic quality. To assist the viewer in identifying distance zones, the nomination form asks the nominator to draw his or her understanding of the zones based on the viewshed photograph.

Section 4 - CONTENT IN THE VIEWSHED

Special content: As mentioned in the Role of the Literature Review Section above the content or things within and around the viewshed can play an important role, either positive or

negative, in the scenic quality of a viewshed. It was also noted that content is not well developed in the concepts and terms in the VRM literature and is particularly relevant to the landscapes of Virginia. Also, noting special content is an opportunity to engage the nominator. Identifying special content will provide an opportunity for nominators to identify those things they feel are special within the viewshed.

Ephemeral Qualities of a landscape are a factor in the scenic quality of the viewshed (Litton, 1968). However, they must occur on a regular and predictable basis (e.g., fall color, flowers, fruit, waterfowl) and not be a serendipitous event (clouds and weather-related sunsets) in order to be a useful attribute of a scenic viewshed.

Section 5 - VIEWSHED DESCRIPTION

Description: The last information requested on the viewshed nomination form is “view description.” A checklist of descriptive elements is provided to help engage the person making the nomination. The Scenic Viewshed Description is also essential to the nomination, scenic evaluation, and the viewshed designation. It can include an account of the landscape’s physical characteristics (e.g., rivers, cliffs, ravines, meadows, and etc.) as well as aesthetic or experiential qualities (pastoral, dynamic, diverse, peaceful, and etc.). It can take into account factors that may not be captured in the rest of the form, and it can also describe threats to the scenic quality of the viewshed that would be important in future management. A checklist is provided to assist the nominator in writing the description. The features identified in the description could also be a “special consideration” in the viewshed designation stage of the process (see Figure 3 - Viewshed Designation section below) and would be helpful in scenic preservation efforts after designation occurs.

People who make nominations often live near a particular viewshed view it at different times of the year and over long periods of time. Viewsheds can have personal meanings to people that are worth capturing and sharing.

The viewshed nomination will provide a great deal of useful information to those making the scenic the evaluation or assessment. Information needed not only to make technical assessments of the scenic quality, but also information about those things in the landscape that are meaningful and special to people, and the reason they find the landscape scenic and worth special recognition.

SCENIC VIEWSHED EVALUATION FRAMEWORK

The purpose of designating viewsheds as “scenic” is to bring attention to and encourage consideration of their scenic value in public decision-making processes. Drawing upon the literature in the area of visual assessment and management, a framework was developed to evaluate the scenic quality of viewsheds. It is intended that this Scenic Quality Evaluation framework would be applied by someone familiar with the visual concepts and variables.

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY		HIGH	MODERATE	LOW																
1. Viewshed Size <i>How wide is the view?</i>		panoramic ^a 3	medium view ^b 2	limited view ^c 1																
2. Variety and Visual Complexity <i>How much variation in the visual characteristics of the landscape (patterns, color, form, line and textures)?</i>		High 2	Moderate 1	Low 0																
3. Coherence and Legibility <i>How the visual composition fits together, and is distinct and memorable?</i>		High 2	Moderate 1	low 0																
4. Ephemeral qualities in foreground and middle ground <i>Are ephemeral qualities a common content of the viewshed?</i>		frequent predictable 2	not frequent but predictable 1	not predictable 0																
5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>		Visual Striking 2	noticeable but not visual striking 1	not visible 0																
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>		Highly visible -2	Visible ^d -1	not visible 0																
<i>a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone, and narrow d. visible, but subordinate to visual elements and characteristics of the landscape</i>		TOTAL SCORE																		
		CLASS	H: 11 ~ 7	M: 6 ~ 3	L: 2 ~ -1															
PUBLIC CONCERN OR SENSITIVITY		PUBLIC CONCERN OR SENSITIVITY																		
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>		Highly awareness 2	Moderate awareness 1	Low awareness 0																
2. Number of viewers <i>Estimated number of people who see the viewshed</i>		seen over 100/day 3	seen over 100/week 2	seen under 100/week 1																
3. Viewer activity <i>What people are doing when they view the landscape</i>		idle Recreatin 2	interact with residents 1	visible passing 0																
4. Incongruent or distracting content not in viewshed but visible <i>Can powerlines, minings, junkyards be seen near the viewshed</i>		Highly visible -2	Visible -1	not visible 0																
5. Historical and cultural features <i>Does the viewshed contain historical and cultural features</i>		National 3	State 2	Local 1																
		TOTAL SCORE																		
		CLASS	H: 10 ~ 7	M: 6 ~ 3	L: 2 ~ 0															
SCENIC VIEWSHED DESIGNATION																				
<i>Scenic viewshed designation is based on scenic quality and public concern</i> <ul style="list-style-type: none"> ▪ I = INCLUDE (designate as a Scenic Viewshed) ▪ SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit) ▪ N = NOT INCLUDE (not designate as a Scenic Viewshed) 	PUBLIC CONCERN OR SENSITIVITY <table border="1" style="margin-bottom: 10px; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">VIEWSHED SCENIC QUALITY</th> <th colspan="3">SCENIC VIEWSHED DESIGNATION</th> </tr> <tr> <th>HIGH</th> <th>MODERATE</th> <th>LOW</th> </tr> </thead> <tbody> <tr> <td>HIGH</td> <td>I</td> <td>I</td> <td>SC</td> </tr> <tr> <td>MODERATE</td> <td>SC</td> <td>N</td> <td>N</td> </tr> <tr> <td>LOW</td> <td>N</td> <td>N</td> <td>N</td> </tr> </tbody> </table> FINAL Viewshed DESIGNATION:	VIEWSHED SCENIC QUALITY	SCENIC VIEWSHED DESIGNATION			HIGH	MODERATE	LOW	HIGH	I	I	SC	MODERATE	SC	N	N	LOW	N	N	N
VIEWSHED SCENIC QUALITY	SCENIC VIEWSHED DESIGNATION																			
	HIGH	MODERATE	LOW																	
HIGH	I	I	SC																	
MODERATE	SC	N	N																	
LOW	N	N	N																	
<i>(See 'Definition of Terms' for additional information and literature related to each variable.)</i>																				

Figure 2. Scenic Viewshed Evaluation Form and Framework

The viewshed evaluation framework has two parts (see Figure 2): “Viewshed Scenic Quality” (Terry, 2001) and “Public Concern or Sensitivity” (Bishop et al., 2001; Daniel, 2001; Daniel & Vining, 1983) toward the viewshed’s importance. Both concepts are well developed in the literature. The Scenic Quality section of the evaluation has six variables that are assessed and summed to determine a scenic quality score. The Public Concern and Sensitivity section has five variables that are assessed and summed to determine the public concern or awareness score for a viewshed. The scores for Scenic Quality and Public Concern are tallied to determine whether a landscape should be designated as a “scenic viewshed.”

Each variable in the Scenic Quality and the Public Concern sections of the framework are evaluated and scored. The evaluation scales are descriptive. For most of the variables it is assumed that if the variable is not present the score is a zero. If it is highly present then the score is “+2” or “-2,” depending on whether it is contributing positively or negatively to the scenic quality. If the variable is present, but not in a very visually noticeable, then it is scored 2. Since all viewsheds have a size, the Viewshed size variable for scenic quality is scored 1 (smallest) to 3 (largest) depending on the size. The number of viewers is also scored 1 (low number of viewers) to 3 (high number of viewers). The rationale for is that even if the number of viewers is low, they would still contribute the Pubic Concern or Sensitivity. The scores should be easy to understand and apply. Historical and cultural content is also scored 1 to 3 (local, state, national) if this content is present.

At the present time all the variables in both sections of the framework, Scenic Quality and Public Concern, carry approximately the same weight. It is anticipated that after the framework has been applied a few times that the scales will be adjusted to more accurately reflect the relative contribution of each variable to Scenic Quality and Public Concern or Sensitivity for Viewsheds in Virginia.

Section 1 - VIEWSHED SCENIC QUALITY

Expert or viewer preference: In the literature, scenic quality is evaluated in two ways: Expert Assessment, and Viewer Perception or Preference. The Expert Assessment approach relies on professionals with training in visual concepts and methods to assess the scenic quality of the landscape. The experts assess the physical and visual variables of the landscape to determine its scenic quality.

The Viewer Perception or Preference approach draws on the work of environmental psychologists. Viewer perceptions are a complex phenomenon involving innate (born with) and learned (acquired) reactions to the landscape. Landscape preferences for the public can be obtained through surveys. Based on the landscape preference research of S. Kaplan (S. Kaplan, 1979), we know that people prefer landscapes that are engaging or interesting to look at and that makes sense to the viewer. These two variables serve basic human needs, the ability to determine what the landscape has to offer (engaging or interesting) them (Gibson 1966) and whether they can find their way (makes sense) through the landscape.

These were essential to survival in the ancient past and are still part of how we react to the landscape today. People do not need to look for survival elements, but human minds are still fascinated with the variety and visual complexity of the landscape. It is engaging and interesting and viewers find these landscapes to be more scenic. People also like landscapes that are coherence and legibility. It is easier to make sense of these landscapes and people find them to be more scenic.

In short, visual resource experts look at the landscape while environmental psychologists look at the people who are looking at the landscape, but both do so with the intent of predicting Scenic Quality. While the terminology is often different, there is some overlap between these concepts and ideas. Miller (1984) found that variables used in scenic quality rating procedures were a relatively good predictor of scenic preference for landscapes. Whenever possible in this project, the Virginia Tech research team has drawn upon variables that can be explained by both approaches.

Scenic quality variables: The six variables of Scenic Quality Evaluation are:

- Viewshed Size
- Variety and Visual Complexity
- Coherence and Legibility
- Presence of Ephemeral Content
- Presence of Positive Human-influenced Content
- Presence of Incongruent or Distracting Content

Each variable is scored using a 3-point weighted categorical scale, as follows:

Viewshed Size: Research indicates that panoramic views have higher scenic quality than narrower views (R. B. Litton, 1968). Viewshed size is scored according to the width and depth (distance zones contained in the viewshed) of the view. View Size is scored as follows: Panoramic (wide with all distance zones) = 3, medium view (2 distance zones) = 2, and narrow or limited view (1 distance zone) = 1.

Variety and Visual Complexity: Variety and Visual Complexity are also commonly used in expert systems as indicators of scenic quality (Angileri & Toccolini, 1993; Buhyoff & Riesenmann, 1979; Dearden, 1987; Dramstad et al., 2001). Variety and visual complexity are scored as follows: High Variety and Visual Complexity = 2, Moderate Variety and Visual Complexity = 1, and Low Variety and Visual Complexity = 0. The scoring of high, medium, or low should be based on the range of variety and visual complexity that occurs in that physiographic region.

Coherence and Legibility: Coherence and legibility represent the extent to which a viewshed “makes sense” to the viewer, measuring whether the viewshed has a sense of order (coherence) and whether it is memorable (legibility). Coherence and Legibility are scored as follows: High Coherence and Legibility = 2, Moderate Coherence and Legibility = 1, and Low Coherence and Legibility = 0. As stated earlier, this scoring should be relative to the physiographic region in which the viewshed lies.

Measures of variety and visual complexity, and measures of coherence and legibility are well documented in the VRM literature and used most often to determine the scenic quality of natural or undeveloped landscapes. In Virginia, the content of the landscape or what is in the landscape is also important. The following three variables are based on a certain type of content that contribute to scenic quality.

Ephemeral Content: The presence of Ephemeral Content or changeable features in a viewshed, such as, fall color, wildlife or farm animals can have a powerful effect on scenic quality (Litton, 1968), but to be useful for scenic viewshed managers they must be able to predict when the content is likely to be present and its presence must be reasonably frequent. Visitors to the viewshed must be reasonably certain that if they visit a viewshed at a designated time that the ephemeral content will be present. Ephemeral Content is scored as follows: Frequent and Predictable (such as the presence of cows in a pasture and waterfowl in a wetland) = 2, Infrequent but Predictable (such as fall color) = 1, and Not Present or Not Predictable = 0.

Positive Human-influenced Content: The presence of historic structures and the cultural imprint of human use on the land can have a very positive impact on scenic quality. City skylines or visually striking architecture, depending on how visible and striking they are, can result in high scenic quality. The presence of Positive Human-influenced Content is scored as follows: Visually Striking = 2, Noticeable, but not Striking = 1 and Not Visible or Present = 0.

Negative Content: On the other hand the presence of Incongruent or Distracting Content in a viewshed, has a negative effect on scenic quality and includes elements in the landscape that appear not to belong or feel out of place (e.g., power lines, mines, and junkyards). The impact on Scenic Quality depends on the visibility of these elements in the viewshed. This variable is scored as follows: Highly Visible = -2, Visible but Subordinate to other Visual Elements of the Landscape = -1, and Not Visible = 0.

When summed, these six Scenic Quality variables produce a scenic quality score that can range from 1 to 11. The determination of a Scenic Quality class depends on the viewshed's total score: High Scenic Quality is a score between 11 and 7. Medium Scenic Quality is a score between 6 and 3. Low Scenic Quality is a score between 2 and -1.

Section 2 - PUBLIC CONCERN OR SENSITIVITY

As mentioned in the Introduction to this report, the purpose of this study is to develop a decision framework or procedure for identifying and assessing the scenic quality of landscapes, those Viewsheds in the Commonwealth of Virginia that its citizenry treasure and enjoy. Public engagement is critical if the Scenic Viewshed Program is to be successful. The public's concern for a viewshed is critical for assessing likely support for the nomination of a viewshed. Section 2 of the Viewshed Evaluation process is concerned with the public's awareness of and concern for the scenic quality of a viewshed. In the literature, this is referred to as Visual Sensitivity (Bishop

et al., 2001; Daniel, 2001; Daniel & Vining, 1983) and is often related to public concern over visual impact of resource harvesting and development within the viewshed.

There are many ways for people to experience and be influenced by viewed landscapes. Six of the 2017 Virginia Outdoor Survey's Top Ten activities featured a connection to scenic landscapes, including Driving for Pleasure, Viewing Water and Visiting Natural and Historic Areas. Additionally, the survey indicated that the sixth most-needed opportunity for recreating is Scenic Drives with 89% of the respondents indicating that scenery is Important or Very Important to them in making travel plans. It is therefore imperative that public awareness continues to be included in the decision-making process for determining the significance of Scenic Viewsheds. The five variables that contribute to a viewshed's Assessment of Public Importance are:

- Public Concern or Sensitivity
- Number of Viewers
- Viewer Activity
- Landscape Content
- Historical and Cultural Significance.

Each variable is scored using a three-point weighted categorical scale as follows:

Public Concern or Sensitivity: Public Concern or Sensitivity refers to evidence that the public values the viewshed. Examples of Public Sensitivity may take different forms, including a mention in newspaper articles, tourism guides, public relations literature and other publications, websites and social media, or at public meetings. Evidence of Public Concern or Sensitivity is scored as follows: Evidence of High View Importance = 2, Evidence of Moderate View Importance = 1, and Evidence of Little or No View Importance = 0.

Number of Viewers and Viewer Activity: The next two variables that assess Public Importance are the "Number of Viewers" and "Viewer Activity," and research indicates that both are important in evaluating public awareness (Daniel, 2001; McCool, Benson, & Ashor, 1986) of the scenic quality of the landscape.

Number of Viewers: Regarding the Number of Viewers, the greater the number of people who see a viewshed, the more likely they are to be aware of its visual quality. The Number of Viewers is scored as follows: Seen by >100 people per day = 3, seen by <100 per day but >100 per week = 2, and seen by <100 per week = 1.

Viewer Activity: The Viewer Activities that people are engaged in when they experience a viewshed -- as well as their state of mind and expectations while viewing -- will also affect their concern for and sensitivity toward a viewshed. The scoring for Viewer Activity is as follows: Visiting Areas for Scenic Reasons (e.g., driving along byways or trails, stopping at scenic overlooks, etc.) = 3, Living Day to Day with a Scenic Asset = 2, and Traveling by a Recognized Scenic Landscape with little opportunity to view it = 1.

Incongruent or Distracting Content: Landscape Content or features adjacent to and visible from the viewshed also affect Public Concern and Sensitivity. This is particularly true for incongruent or detracting content such as industrial uses, power lines, and mines (Iverson, 1985; Laurie, 1975). Incongruent or detracting content adjacent to and within the viewshed is scored based on its visibility: Highly Visible = -2, Visible but Subordinate to Other Visual Elements of the Landscape = -1, and Not Visible = 0

Historical and Cultural Content: Public Concern and Sensitivity are also influenced by historical and cultural content in a viewshed. Historical and Cultural Content affect scenic quality by how visually evident they are. The effect of Historical and Cultural Content on Public Concern and Sensitivity for is based on its importance, not visibility. The more important it is the more sensitive it is. Historical and cultural content is scored: National Significance = 3, State Significance = 2 and Local Significance = 1. Local Significance, while only scoring a 1, could be important to local communities and their sense of place and might present an opportunity for special consideration during the viewshed designation process. If no historical or cultural content is present then it is not rated and receives no score.

Public Concern: When summed, the five variables of Public Concern produce a score that ranges from 0 to 10, as follows: High Public Concern is 7 to 10, Moderate Public Concern is 3 to 6, and Low Public Concern is 0 to 2. As with Scenic Quality, the variables that influence Public Concern and Sensitivity are weighted approximately equally. As the framework is applied in the future it is anticipated that the weights may be adjusted to reflect observed public concern.

SCENIC VIEWSHED DESIGNATION

Scenic Viewshed Designation is determined by the combination of the scores for Scenic Quality and Public Concern (see Figure 3). A viewshed with a High Scenic Quality score and High Public Concern score should be “designated” as a “Scenic Viewshed.” Such a designation would also typically be the case for viewsheds with High Scenic Quality and Moderate Public Concern. Any viewshed with a Low Scenic Quality score should not be designated as a scenic viewshed, regardless of Public Concern. Not meriting scenic viewshed designation also applies to viewsheds with only Moderate Scenic Quality and Moderate Public Concern.

SCENIC VIEWSHED DESIGNATION			
VIEWSHED SCENIC QUALITY	PUBLIC CONCERN OR SENSITIVITY		
	HIGH	MODERATE	LOW
	I	I	SC
	SC	N	N
LOW	N	N	N

FINAL Viewshed DESIGNATION:

Scenic viewshed designation is based on scenic quality and public concern

- I = INCLUDE (designate as a Scenic Viewshed)
- SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit)
- N = NOT INCLUDE (not designate as a Scenic Viewshed)

(See ‘Definition of Terms’ for additional information and literature related to each variable.)

Figure 3. Scenic Viewshed Designation Framework

Special Consideration: There are, however, two scenarios in which additional consideration will be needed before a final designation is determined: 1) Viewsheds that score only Moderate Scenic Quality but that possess High Public Concern, and 2) viewsheds with High Scenic Quality but only Low Public Concern. For example, in the first case, a viewshed may have only a Moderate Scenic Quality score but also possess a unique sense of place and meaning to local people that are not fully reflected in the score and thus might require additional consideration before a designation decision can be made. In the second case, a viewshed may have a High Scenic Quality score but possess a low Public Concern score that requires additional consideration before a decision is made. For example, the viewshed may have unique visual qualities or content that the scenic rating framework could not adequately take into account and therefore merit consideration for designation, even though there is Low Public Concern.

CONCLUDING THOUGHTS

Looking over the landscape from a well-placed viewpoint can be a powerful experience. It can be uplifting. It can tell us many things. It can convey the power and wonder of the creator or evoke thoughts of those who occupied this land before us. Yet, something so powerful can be lost without us even knowing it. Viewsheds are so powerful, yet so fragile. The framework for scenic viewshed designation proposed in this report is an attempt to bring attention to and share the wonder contained in these viewsheds. Designating scenic viewshed represents a turning point in how we respond to the visual environment. A change from a defensive position of assessing the visual impacts of the proposed alteration to the landscape to a proactive stance of acknowledging the beauty of a viewshed before it is threatened. This scenic viewshed program will be one of the first in the country.

It is envisioned that the framework proposed in this report will be evaluated and altered to assure it is doing what it is intended to do. It will need to be evaluated to see if it can be understood and implemented by individuals across the state. Will the citizenry of Virginia engage the process and nominate viewsheds dear to them? Will knowledgeable professionals be able to assess the scenic quality of viewsheds worthy of such a program? How will designated viewsheds be shared? Will there be some a plaque at the viewpoint of designated scenic viewshed? Or, perhaps there will be some a mobile phone app that will lead you on a tour of designated viewsheds? We are only at the beginning of this visionary and meaningful program. We need to proceed carefully. But we are fortunate as citizens of Virginia to have a visionary and sensitive organization such as Scenic Virginia to guide us in this endeavor.

REFERENCES

- Amedeo, D., Pitt, D. G., & Zube, E. H. (1989). Landscape Feature Classification as a Determinant of Perceived Scenic Value. *Landscape Journal*, 8(1), 36–50.
<https://doi.org/10.3368/lj.8.1.36>
- Arthur, L. M., Daniel, T. C., & Boster, R. S. (1977). Scenic Assessment: An Overview. *Landscape Planning*, 4, 109–129.
- Bacon, W. R. (1979). The visual management system of the Forest Service, USDA. In: Elsner, Gary H., and Richard C. Smardon, Technical Coordinators. 1979. Proceedings of Our National Landscape: A Conference on Applied Techniques for Analysis and Management of the Visual Resource [Incline Village, Nev., April 23-25, 1979]. Gen. Tech. Rep. PSW-GTR-35. Berkeley, CA. Pacific Southwest Forest and Range Exp. Stn., Forest Service, U.S. Department of Agriculture: P. 660-665, 035. Retrieved from
<https://www.fs.usda.gov/treesearch/pubs/27639>
- Billingsley, F. C. (1966). Processing Ranger and Mariner Photography. *Optical Engineering*, 4(4), 404147. <https://doi.org/10.1117/12.7971335>
- Bishop, I. D., Wherrett, J. R., & Miller, D. R. (2001). Assessment of path choices on a country walk using a virtual environment. *Landscape and Urban Planning*, 52(4), 225–237.
[https://doi.org/10.1016/S0169-2046\(00\)00118-3](https://doi.org/10.1016/S0169-2046(00)00118-3)
- Chenoweth, R. E., & Gobster, P. H. (1990). The Nature and Ecology of Aesthetic Experiences in the Landscape. *Landscape Journal*, 9, 1–8.
- Craik, K. H. (1975). Individual Variations in Landscape Description. In E. H. Zube, R. O. Brush, & J. G. Fabos (Eds.), *Landscape Assessment* (pp. 130–150). Dowden, Hutchinson and Ross, Inc.: Stroudsberg, Pennsylvania.
- Daniel, T. C. (2001). Whither scenic beauty? Visual landscape quality assessment in the 21st century. *Landscape & Urban Planning*, 54(1–4), 267.
- Daniel, T. C., & Vining, J. (1983). Methodological Issues in the Assessment of Landscape Quality. In I. Altman & J. Wohwill (Eds.), *Behaviour and the Natural Environment* (pp. 39–83). Plenum Press.
- DCR. (2016). OVERVIEW OF THE PHYSIOGRAPHY AND VEGETATION OF VIRGINIA. Virginia Department of Conservation and Recreation.

Forest Service. (1995). Landscape aesthetics: a handbook for scenery management. U.S. Dept. of Agriculture, Forest Service.

Hack, J. T. (1982). Physiographic divisions and differential uplift in the Piedmont and Blue Ridge. USGPO.,

Hull, R. B. (1986). Sensitivity of scenic beauty assessments. *Landscape and Urban Planning*, 13, 319–321. [https://doi.org/10.1016/0169-2046\(86\)90044-7](https://doi.org/10.1016/0169-2046(86)90044-7)

Iverson, W. D. (1985). And That's About the Size of It: Visual Magnitude as a Measurement of the Physical Landscape. *Landscape Journal*, 4(1), 14–22.
<https://doi.org/10.3368/lj.4.1.14>

Iwarsson, S., & Stahl, A. (2003). Accessibility, usability and universal design—positioning and definition of concepts describing person-environment relationships. *Disability and Rehabilitation*, 25(2), 57–66. <https://doi.org/10.1080/dre.25.2.57.66>

Jones, M. (2003). The Concept of Cultural Landscape: Discourse and Narratives. In H. Palang & G. Fry (Eds.), *Landscape Interfaces: Cultural Heritage in Changing Landscapes* (pp. 21–51). https://doi.org/10.1007/978-94-017-0189-1_3

Kaplan, S. (1979). Perception and Landscape: Conceptions and Misconceptions. In *The Proceedings of Our National Landscape*, Elsner, Gary H., and Richard C. Smardon, (technical coordinators), p. 660-665.
https://www.fs.fed.us/psw/publications/documents/psw_gtr035/psw_gtr035_05_s-kaplan.pdf

Kaplan, R., & Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press.

Krönert, R., Steinhardt, U., & Volk, M. (2001). *Landscape balance and landscape assessment*. Springer Science & Business Media.

Laurie, I. C. (1975). Aesthetic Factors in Visual Evaluation. In E. H. Zube, R. O. Brush, & J. G. Fabos (Eds.), *Landscape Assessment* (pp. 102–117). Dowden Hutchinson and Ross, Inc.: Stroudsberg, Pennsylvania.

Lim, S. S., Innes, J. L., & Meitner, M. (2015). Public awareness of aesthetic and other forest values associated with sustainable forest management: A cross-cultural comparison among the public in four countries. *Journal of Environmental Management*, 150, 243–249. <https://doi.org/10.1016/j.jenvman.2014.11.026>

Litton, R. B. (1968). Forest Landscape Description and Inventories-A basis for land planning and design. Forest Service Research Paper PSW-40. Pacific Southwest Forest and Range Experiment Station, Forest Service. US Department of Agriculture, Berkeley, California.

Litton, R. B. (2001). Using landscape architecture and silviculture techniques in the roadside landscape. Looking Beyond the Trees: Visual Stewardship of the Working Forest Conference, 163. Citeseer.

Litton, R. B. J. (1974). Visual Vulnerability of Forest Landscapes. *Journal of Forestry*, 72, 7.

Lynch, K. (1960). *The Image of the City*. The M.I.T. Press: Cambridge, Massachusetts.

McCool, S. F., Benson, R. E., & Ashor, J. L. (1986). How the public perceives the visual effects of timber harvesting: an evaluation of interest group preferences. *Environmental Management*, 10(3), 385–391.

Pan, Y., Stevenson, R. J., Hill, B. H., Kaufmann, P. R., & Herlihy, A. T. (1999). Spatial patterns and ecological determinants of benthic algal assemblages in Mid-Atlantic streams, USA. *Journal of Phycology*, 35(3), 460–468.

Ribe, R. G. (1986). On the possibility of strong versus weak quantification of scenic beauty—a further response to carlson. *Landscape Planning*, 12(4), 421–429.
[https://doi.org/10.1016/0304-3924\(86\)90006-7](https://doi.org/10.1016/0304-3924(86)90006-7)

Swanwick, C. (2002). *Landscape Character Assessment, Guidance for England and Scotland*. The Countryside Agency and Scottish Natural Heritage.

Terry, C. S. (2001). Landscape Aesthetics, “Not a Clear Cut Situation.” Visual Stewardship of the Working Forest. Presented at the Visual Resource Management Conference, British Columbia, Canada.

Tetlow, R., & Sheppard, S. (1979). Visual unit analysis: A descriptive approach to landscape assessment. Proceeding of Our National Landscape, a Conference on Applied Techniques for Analysis and Management of the Visual Resource, Nevada, 117–124.

Ulrich, R. S. (1977). Visual landscape preference: a model and application. *Man-Environment Systems*, 7, 279–293.

United States Federal Highway Administration Office of Environmental. (1981). *Visual impact assessment for highway projects*. Washington, D.C: Federal Highway Administration, Office of Environmental Policy.

Zube, Ervin H. (1970). Evaluating the visual and cultural landscape.

APPENDIX I: DEFINITION OF TERMS

Coherence and Legibility

Coherence refers to a scene that provides a sense of order when attention is directed. Legibility is a space easy to understand and remember (Kaplan & Kaplan, 1989). Lynch describes legibility as the extent to which the landscape can be 'read' (Lynch, 1960). we define coherence as a reflection of the unity of a scene, where coherence may be enhanced through repeating patterns of color and texture. Coherence is also a reflection of the correspondence between land use and natural conditions in an area.

Color

This refers to the dominant colors of fields, woodlands, the built environment, and other landscape elements. It includes any notable seasonal effects due to farming activity or seasonal change.

Cultural Landscapes

Landscapes that are associated with and used by particular people, artists, writers or events in history that contribute to perceptions of the natural beauty of the area. Cultural landscapes tend to be defined in the classical geographical meaning as all landscapes that have been modified or influenced by human activity, although with an emphasis on ancient monuments, historic buildings and other built structures (Jones, 2003).

Distance Zone

Distance zones in the landscape assessment model are divided into three grounds: Foreground, Middle ground, and Background. These zones are helpful during analysis or comparison of a landscape. Most landscape assessment models use distance zones as one of the landscape features, but the scale of each distance zone is slightly different between the models based on atmospheric conditions that affect visibility. In this assessment model, distance zones are divided into three grounds: foreground, middle ground, and background.

- **Foreground:** The foreground refers to 0 to $\frac{1}{4}$ - $\frac{1}{2}$ mile from the viewpoint (R. B. Litton, 1968). In this zone, the observer can see textures of vegetation, surface patterns, tree trunks, distinctive colors, etc.
- **Middle ground:** Middle ground is the zone in which one can see the natural patterns of the landscape (line, form, color, textures) and is a critical zone in assessing the extent to which man-made alterations visually fit into the natural landscape. (Bacon, 1979; Forest Service, 1995; R. B. Litton, 1968). Middle ground extends from $\frac{1}{4}$ - $\frac{1}{2}$ mile to 3-5 miles from the viewpoint.
- **Background:** Background refers to distant landscapes or expansive views from 3.5 miles to infinity in the landscape (Bacon, 1979; R. B. Litton, 1968). In the background the

colors and patterns in the landscape become muted by atmosphere and details are not visible. Colors muted and textures are not distinct. Built structures, and human alteration to the landscape are less discernable.

Enclosed View

Where elements are arranged so that they enclose space, the overall composition of space and mass become one. The enclosed view has a great effect on scale due to the interaction of the height of the enclosing elements and the distance between them (Litton, 1974).

Ephemeral Features

The ephemeral feature depends on transitory effects and may last only seconds or during particular seasons of the year. There are five types of ephemeral feature categories: (1) Atmospheric and weather conditions, (2) wildlife and animals' signs & occupancy, (3) vegetation changes. These categories came from Litton's study in 1968 and are modified in understandable terms (Litton, 1968).

- **Atmospheric and weather conditions:** daily or weekly occurred features such as sunset and sunrise, regularly occurred features such as spring, summer, fall and winter, sometimes occurred but not unpredictable features such as rainbow
- **Wildlife and animals' signs & occupancy:** daily or weekly occurred signs such as livestock or small animals live in neighborhoods, regularly occurred signs & occupancy such as migratory birds or footprints of wildlife, sometimes observed but unpredictable wildlife and animals such as endangered animals
- **Vegetation changes:** daily or weekly changes such as morning glory, hibiscus that blooming in the morning and falling at night), seasonal changed vegetation such as blooming, changing leaves' color, bearing fruits and harvesting, sometimes changed but unpredictable vegetation such as a big fruit, unique colored flowers

Distinctive Feature

Distinctive feature means a predominant feature in the viewshed

Form

This term describes the shapes of linear features and landforms such as fields and woods. Examples of descriptions include rectangular, curvilinear, rounded, flat, etc. It is an important factor in defining ancient or planned landscapes (Amedeo, Pitt, & Zube, 1989; Laurie, 1975). We pick out forms and shapes very quickly, often based on slight evidence.

Incongruent adjacent

All elements on the viewshed that detract from the experience of the viewshed such as contaminated dump in front of a farm, a high-end car in the middle of trails, unmanaged trash can in the sidewalk.

Landscape

A landscape is part of the Earth's surface that can be viewed at one time from one place. It consists of the geographic features that mark, or are characteristic of, a particular area (National Geographic website, 2018, <https://www.nationalgeographic.org/encyclopedia/landscape/>).

Landscape Quality

Landscape quality means the physical state of the landscape. It includes the extent to which typical character is represented in individual areas, the intactness of the landscape from visual, functional and ecological perspectives and the condition of individual elements of the landscape (Swanson, 2002).

Natural Resource Harvesting

The removal of natural resources (timber, minerals, and grass) from the landscape, including: timber harvesting, mining and grazing.

Observer Position

A term employed to describe the observer's elevational relationship between himself and the landscape he sees (United States Federal Highway Administration Office of Environmental, 1981). Observer position describes the location and eye level of the observer. These positions are looking up, looking straight ahead, and looking down (Litton, 1968).

- ***Observer looking up:*** The looking up position refers to when the observer is below the visible, more distant landscapes. This position has the limitation of the visual blockage. Litton (1968) describes the looking up position as observer inferior.
- ***Observer straight:*** The straight position represents a position when a level line of sight coincides with the landscape. In this position, the sky is a significant part of the landscape.
- ***Observer looking down:*** The looking down position refers to the view on a mountain summit or ridge top overview. This position maximizes opportunities representing for distant views.

Panoramic Landscape

A panoramic landscape is a broad linear view limited only by the continuous line of the horizon. The line emphasis is on horizontality (Litton, 1968).

Physiographic Unit

The physiographic areas in Virginia are generally divided into six regions according to their elevation, geomorphology, and lithology (DCR, 2016; Pan, Stevenson, Hill, Kaufmann, & Herlihy, 1999). The six physiographic units in Virginia are Cumberland Mountains, Allegheny Mountains, Ridge and Valley, Blue Ridge, Piedmont, and Coastal Plain. Among these categories of regions, this study combined four units -- Cumberland Mountains, Allegheny Mountains, Ridge and Valley and Blue Ridge -- into one unit: Mountain. According to Hack's research about the physiographic differential uplift in the Piedmont and Blue Ridge, the four units slightly differ from each other (Hack, 1982), and it is difficult to distinguish the difference visually. Since this

report deals only with the viewshed seen by observers, it makes sense to combine these four physiographic regions into one.

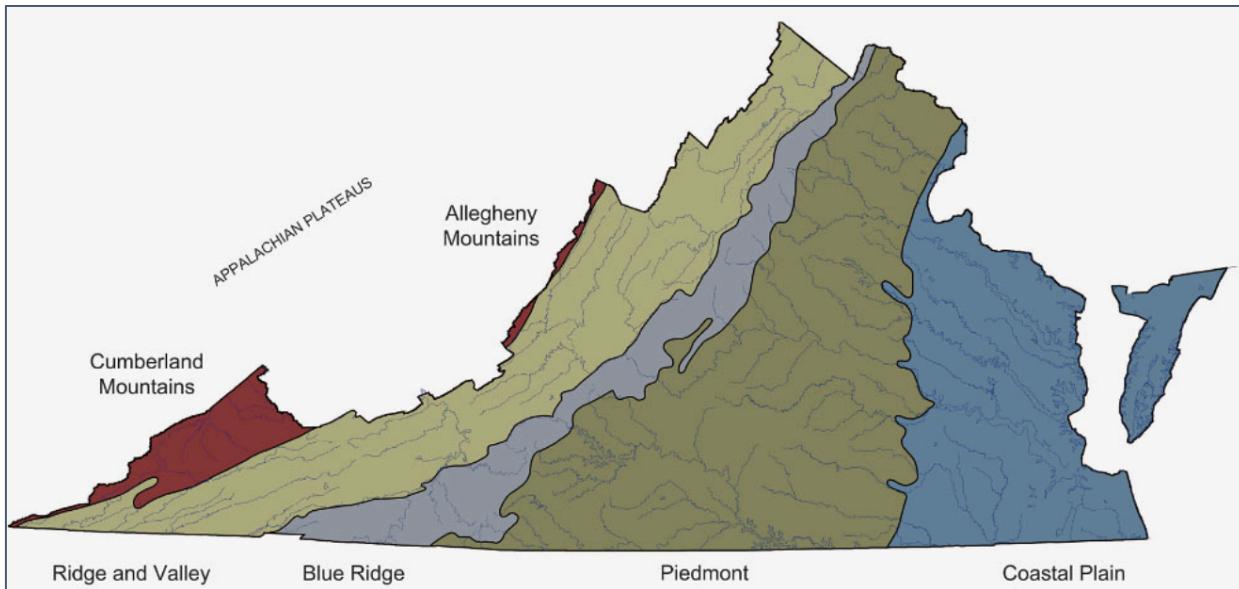


Figure 4. Physiographic provinces of Virginia from Keyes et al. (1995)

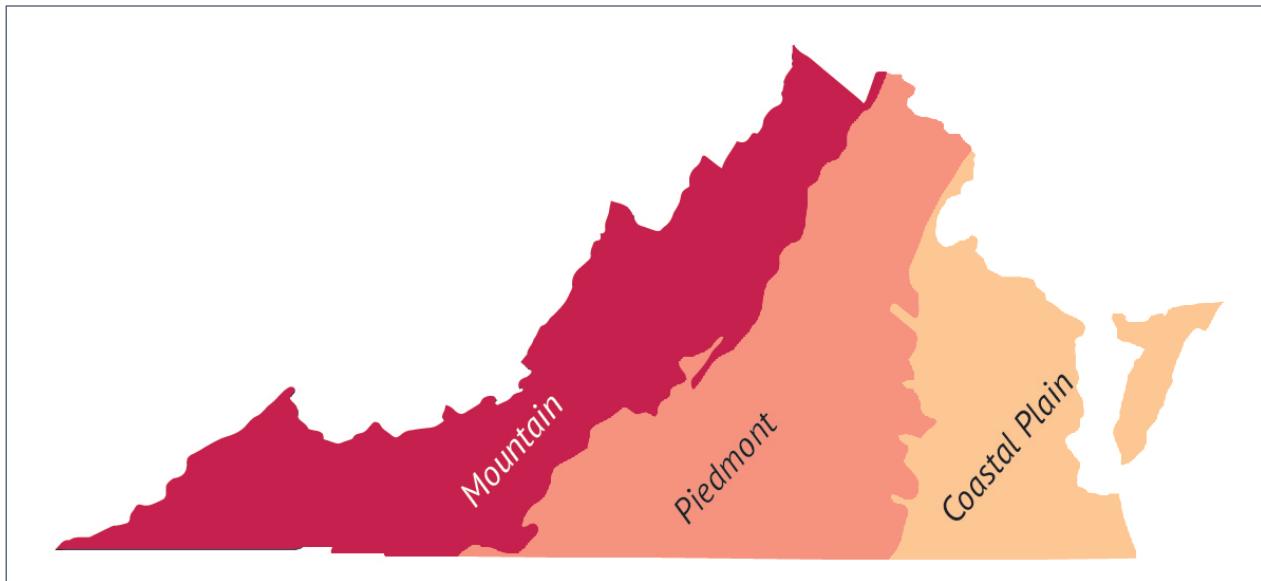


Figure 5. Revised Physiographic units appropriate for viewshed evaluation

Public Accessibility

One of the most important variables of the viewshed nomination inventory form is public accessibility, which refers to the ability of the average citizen to access the view (Iwarsson & Ståhl, 2003). Walking, bicycling, and driving are common ways to access a viewpoint and enjoy scenic resources.

Public Awareness

Public awareness means the general level of understanding of a certain topic. Public awareness is Public Awareness brings the issues relating to biodiversity to the attention of key groups who have the power to influence outcomes (Lim, Innes, & Meitner, 2015). In this report, public awareness means the level of people's understanding about what and why this viewshed is an important. The public awareness can be identified through the demonstrated the public awareness based on the number of media articles, tourism guides and public meetings.

Scale

The overall scale of a landscape must be assessed. Criteria include the degree of enclosed view by landform or woodland and the main positions from which the landscape is viewed (Amedeo et al., 1989). The overall scale of the landscape must be assessed once the factors that define it have been established. These include the degree of enclosure by landform or woodland and the main positions from which the landscape is viewed - scale increases with elevation and distance. Scale is closely related to balance, proportion and enclosure. Scale increases with elevation and distance and is closely related to balance, proportion, and enclosure.

Scenic Quality

Scenic quality measures the scenic importance of a landscape based on human perceptions of the intrinsic beauty of landform, water characteristics, and vegetation pattern. When combined, these attributes determine the intrinsic scenic beauty of a landscape (Terry, 2001). The essential attributes of landscape that when viewed by people and physiological benefits to individuals and, therefore, to society in general. Scenic quality can be described as being the product of the landscape according to the reactions of persons experiencing that landscape (Chenoweth & Gobster, 1990; Craik, 1975; Ulrich, 1977). It depends upon perception and reflects the particular combination and pattern of elements in the landscape, its aesthetic qualities, its more intangible sense of place or 'genius loci' and other more intangible qualities (Swanwick, 2002).

Sensitivity

Sensitivity can be considered the degree of concern toward scenic quality and present of proposed visual changed in a particular characteristic landscape (Hull, 1986).

Texture

This varies according to scale but can be defined in relative terms as coarse, intermediate, or fine. Texture is determined by elements such as crops, tree cover, size of trees, species, size of fields, etc. (Arthur, Daniel, & Boster, 1977). It is an important contributor to design unity and diversity and is susceptible to change by addition or loss of elements.

Unity

The repetition of similar elements, balance and proportion, and scale and enclosure all contribute to unity. The degree to which contrasting elements disrupt a composition depends also on the context (Tetlow & Sheppard, 1979). For example, a single quarry in the midst of an otherwise unified landscape pattern may cause a high degree of discontinuity.

Variety and Visual Complexity

Variety, diversity, and visual complexity are synonymous terms. Variety refers to the richness or degree of richness in the number of diverse parts of the landscape (Litton, 2001). Diversity needs to be assessed in two ways. First, within the boundaries of the landscape type, the minor variations of the landscape should be assessed to determine overall how uniform or diverse the landscape is. Second, the diversity of a landscape should be evaluated within the range of diversity in the physiographic unit within which the landscape is located (Ribe, 1986). High variety implies greater visual interest and higher quality in the comparison of landscapes (Litton, 1968; Zube, 1970). Variety and Visual Complexity are considered variables that enhance the landscape quality. Variety, Diversity, and Visual Complexity are synonymous terms.

Viewshed

A viewshed is all the surface areas visible from an observer's viewpoint or surface areas from which a critical object or viewpoint is seen (United States Federal Highway Administration Office of Environmental, 1981).

APPENDIX II: RATIONALE FOR PHOTO ATTRIBUTES

Rationale for photo attributes

1024 pixels is requested as the minimum photo attributes for the scenic viewshed evaluation. At least one side of a photo has to be 1024 pixels or greater than 1024 pixel. A pixel is a physical point in an image that the smallest controllable element of a picture represented on the screen (Billingsley, 1966). For the last decade, 1024 pixels has been used for the minimum pixel value for most mobile devices or monitor screens. This means that most citizens, interested in making a nomination, would be able to take a photo using their mobile device. It is easy to check the pixels of an image. This is done by right clicking on a photo when loaded on a computer to access the metadata of the photograph and view the dimension of the photo in pixels. Gigabytes is another measure of the size of an image in bytes, which is widely used for digital information. However, the reason why gigabytes is not being used in the nomination is related to the image quality. Even if gigabytes are large, if one side of the image is lower than 1024 pixels, the quality of the image will be poorly represented not only on mobile device but also monitor. To prevent this, many other photo contests also require the minimum pixels (Table 1).

Table 1. Comparison table of landscape photograph contests

	Scenic Virginia	National Geography	Smithsonian	Wildlife	The Nature Conservancy
Category	Cities & Towns Coastal & Chesapeake Bay Farms & Open Spaces Highways & Byways Mountains & valley Rivers & Waterways Virginia State Parks Scenic Trees Vistas with Wildlife Youth	Wildlife Landscape Aerials Underwater	Natural world Travel People Mobile	Wildlife Portraits Habitats & Landscapes Animal Behavior	Year theme
Photo Size (max.)	30MB	20MB (at least 1,600pixels)	10MB (at least 2,000pixels)	2.0MB (at least 1,024pixels)	20MB (at least 240dpi)
File type	jpg	JPEG, jpg, png, gif	-	JPEG, jpg, png	
Metadata	-	-	Collect upon entry	-	-
Judge	-	Two rounds	Two rounds	-	-

		<p>1st: a panel of judges select 10 entries 2nd: select a winner for each prize</p>	<p>1st: select 10 finalists per category 2nd: winner for each category and grand-prize</p>		
Awards	Winner for each category Honorable mention	Grand prize 1 First prize 4	Total 7	-	Grand prize 1 Runner up 1 Category winners
usage	-	Wall paper	-	-	Desktop wallpaper

APPENDIX III: SCENIC VIEWSHED NOMINATION AND EVALUATION FORMS

SCENIC VIEWSHED NOMINATION FORM

View Point Photo Information

Viewshed Name:

Nomination Date:

Location (City/County):

Specific (i.e. place name):

Total number of photos¹:

View Point Information

(check one)

Physiographic Unit	1. Mountain	
	2. Piedmont	
	3. Coastal Plain	
Public Accessibility³	1. Yes	
<i>visible from public road, trail, water-way or public road</i>	2. No	
Observer Position	1. Looking up	
<i>human eye-level at viewpoint</i>	2. Straight	
	3. Looking down	

Viewshed

Approximated Width of viewshed	
Maximum distance zone <i>background, middle ground, foreground</i>	

View Point Meta-data (from photograph)

Image Title:

Taken Date & Time:

Location:

GPS lat: long:

Image Size²:

View Elements

(check all that apply)

Frequency of occurrence	Occurs often (daily or weekly)	Occurs regularly but not often (seasonal)	Seldom and unpredictable
Ephemeral features			
1. Wildlife and animals' signs & occupancy			
2. Vegetation changes			
Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i>			
Distinctive man-made feature <i>see nomination checklist (built, historical...)</i>			
Distinctive natural feature <i>see nomination checklist (natural features)</i>			

View description:

(see checklist of possible descriptive elements)

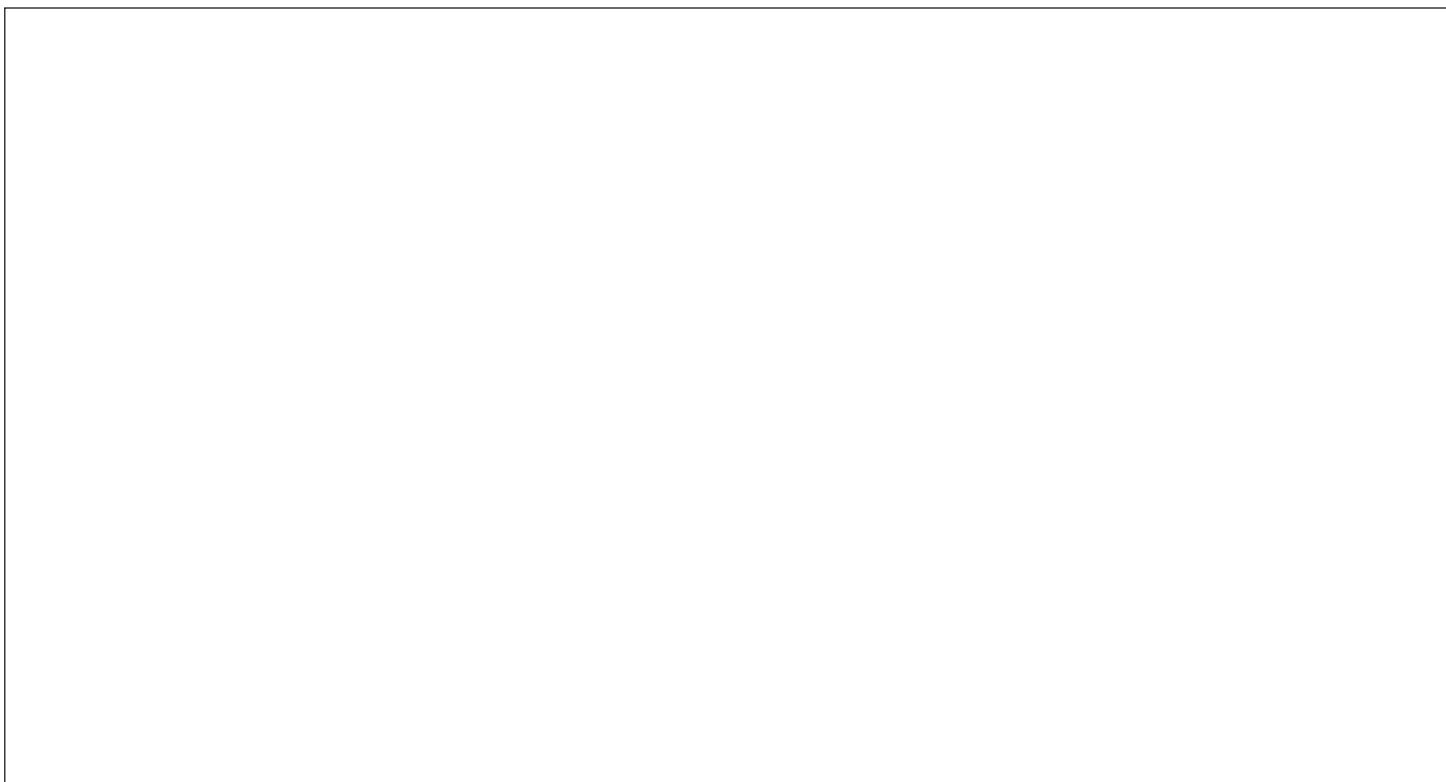
1. up to three photos, one must be from viewshed view point

2. a minimum size of 1024 megapixels

3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

MAP

Provide a map that locates the viewshed, public access and special planning, and zoning designations, if present.



CHECKLIST

Photographic features	<i>Mountains, ridges, rock outcrops, cliffs and etc.</i>
Natural features (vegetation and water)	<i>Groves, thickets, meadows, lakes, streams, wetlands and etc.</i>
Built structures	<i>Houses, barns, bridges and etc.</i>
Historical features (including type of designation)	<i>Historical buildings, battle works, roads and etc.</i>
Cultural features	<i>The legacy of physical artifacts and remnants, and intangible attributes of a group or society that are inherited from past generations (old farm structures, docks, mounds, ceremonial uses, religious or spiritual meanings, and etc.)</i>
Experiential qualities and appeal	<i>Visual characteristics of the landscape that change, but occur on a regular basis (farm animals in a pasture, waterfowl, fall color, flower blooms and etc.)</i>
Aesthetic appeal	<i>Visual and aesthetic characteristics of the landscape based on human perceptions of the intrinsic beauty of the viewshed (pastoral, serene majestic, peaceful, and etc.)</i>
Special uses or meaning	<i>Special uses or meanings of the landscape by local communities</i>

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
1. Viewshed Size <i>How wide is the view?</i>	panoramic ^a 3	medium view ^b 2	limited view ^c 1
2. Variety and Visual Complexity <i>How much variation in the visual characteristics of the landscape (patterns, color, form, line and textures)?</i>	High 2	Moderate 1	Low 0
3. Coherence and Legibility <i>How the visual composition fits together, and is distinct and memorable?</i>	High 2	Moderate 1	low 0
4. Ephemeral qualities in foreground and middle ground <i>Are ephemeral qualities a common content of the viewshed?</i>	frequent/ predictable 2	not frequent but predictable 1	not predictable 0
5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>	Visual Striking 2	noticeable but not visual striking 1	not visible 0
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>	Highly visible -2	Visible ^d -1	not visible 0
a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone and narrow d. visible, but subordinate to visual elements and characteristics of the landscape		TOTAL SCORE	
		CLASS	H: 11 ~ 7 M: 6 ~ 3 L: 2 ~ -1

PUBLIC CONCERN OR SENSITIVITY	HIGH	MODERATE	LOW
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>	Highly awareness 2	Moderate awareness 1	Low awareness 0
2. Number of viewers <i>Estimated number of people who see the viewshed</i>	seen over 100/day 3	seen over 100/week 2	seen under 100/week 1
3. Viewer activity <i>What people are doing when they view the landscape</i>	visible while recreating 2	visible from residents 1	visible while passing 0
4. Incongruent or distracting content not in viewshed but visible <i>Can powerlines, minings, junkyards be seen near the viewshed</i>	Highly visible -2	Visible -1	not visible 0
5. Historical and cultural features <i>Does the viewshed contain historical and cultural features</i>	National 3	State 2	Local 1
		TOTAL SCORE	
		CLASS	H: 10 ~ 7 M: 6 ~ 3 L: 2 ~ 0

SCENIC VIEWSHED DESIGNATION

Scenic viewshed designation is based on scenic quality and public concern

- I = INCLUDE (designate as a Scenic Viewshed)
- SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit)
- N = NOT INCLUDE (not designate as a Scenic Viewshed)

VIEWSHED SCENIC QUALITY	PUBLIC CONCERN OR SENSITIVITY		
	HIGH	MODERATE	LOW
HIGH	I	I	SC
MODERATE	SC	N	N
LOW	N	N	N

FINAL Viewshed DESIGNATION:

APPENDIX IV: EXAMPLES OF COMPLETED FORMS

EXAMPLE #1



SCENIC VIEWSHED NOMINATION FORM

View Point Photo Information

Viewshed Name: Early Spring in the valley

Nomination Date: 2011

Location (City/County): Highland county

Specific (i.e. place name): blue Grass valley

Total number of photos¹: 1

View Point Meta-data (from photograph)

Image Title: Mountains-Puffenberger.jpg

Taken Date & Time: 06/11/2004 10:00 am.

Location: Highland county

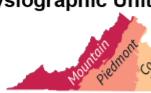
GPS lat: 38.380249 long: -79.670443

Image Size²: 1024 x 685

View Point Information

(check one)

Physiographic Unit



1. Mountain	<input checked="" type="checkbox"/>
2. Piedmont	<input type="checkbox"/>
3. Coastal Plain	<input type="checkbox"/>

Public Accessibility³

visible from public road trail, water-way or public road

1. Yes	<input checked="" type="checkbox"/>
2. No	<input type="checkbox"/>

Observer Position

human eye-level
at viewpoint

1. Looking up	<input type="checkbox"/>
2. Straight	<input checked="" type="checkbox"/>
3. Looking down	<input type="checkbox"/>

Viewshed

Approximated Width of viewshed	60 degrees
Maximum distance zone background, middle ground, foreground	background

View Elements

(check all that apply)

Frequency of occurrence	Occurs often (daily or weekly)	Occurs regularly, but not often (seasonal)	Seldom and unpredictable
Ephemeral features			
1. Wildlife and animals' signs & occupancy			
2. Vegetation changes		<input checked="" type="checkbox"/>	
Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i>			
Distinctive man-made feature <i>see nomination checklist (built, historical...)</i>			
Distinctive natural feature <i>see nomination checklist (natural features)</i>			
mountain			

View description: (see checklist of possible descriptive elements)

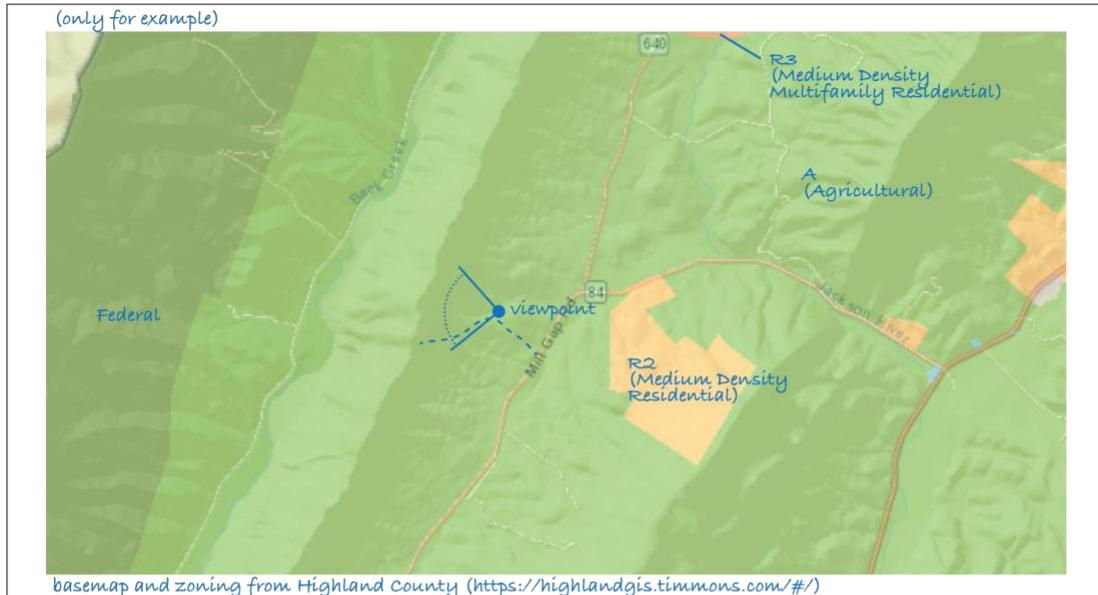
The photo was taken at Blue Grass Valley in Virginia near the Hightown, Highland county. It was taken on July 11 in 2004 at 10:00 am. and submitted to Scenic Virginia Vista Photo Contest in 2011. From 2008 to the present, a total number of photos that were taken at the Blue Grass Valley is only this one (Total number of photos). In term of the criteria for the contest, the photo is well qualified the minimum requirement of size, 1024 pixel (image size). The viewshed is included in Mountain physiographic unit and allowed for the public to access (Public Accessibility). Observer took the photo straight eye-level at the viewpoint. Approximated width of viewshed is 60 degrees and the maximum distance zone is the background. For view elements, the viewshed reveals ephemeral features occurred daily such as sunshine and seasonal features such as early spring scenery - growing grass on the ground, young shoots on trees, and several puddles that look like melted snow. The most distinctive natural feature in the viewshed is the mountain. This photo well depicts an ordinary scene of Virginia mountain area. Especially the form of mountains at the background shows the attribute of Virginia mountain that rigid and thick form. Two farmhouses at the middle ground also represent an ordinary scene of farm architecture at Virginia. There are no trim or ornamental features. The viewshed shows can be considered as a banality one in Virginia, but because of that, it has a worth. The viewshed can be one of the representative scene in the Mountains physiographic unit at Virginia.

1. up to three photos, one must be from viewshed view point

2. a minimum size of 1024 megapixels

3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

MAP Provide a map that locates the viewshed, public access and special planning, and zoning designations, if present.



CHECKLIST

Photographic features	Mountains, ridges, rock outcrops, cliffs and etc.
Natural features (vegetation and water)	Groves, thickets, meadows, lakes, streams, wetlands and etc.
Built structures	Houses, barns, bridges and etc.
Historical features (including type of designation)	Historical buildings, battle works, roads and etc.
Cultural features	The legacy of physical artifacts and remnants, and intangible attributes of a group or society that are inherited from past generations (old farm structures, docks, mounds, ceremonial uses, religious or spiritual meanings, and etc.)
Experiential qualities and appeal	Visual characteristics of the landscape that change, but occur on a regular basis (farm animals in a pasture, waterfowl, fall color, flower blooms and etc.)
Aesthetic appeal	Visual and aesthetic characteristics of the landscape based on human perceptions of the intrinsic beauty of the viewshed (pastoral, serene majestic, peaceful, and etc.)
Special uses or meaning	Special uses or meanings of the landscape by local communities

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
1. Viewshed Size <i>How wide is the view?</i>	panoramic ^a 3	medium view ^b 2	limited view ^c 1
2. Variety and Visual Complexity <i>How much variation in the visual characteristics of the landscape (patterns, color, form, line and textures)?</i>	High 2	Moderate 1	Low 0
3. Coherence and Legibility <i>How the visual composition fits together, and is distinct and memorable?</i>	High 2	Moderate 1	low 0
4. Ephemeral qualities in foreground and middle ground <i>Are ephemeral qualities a common content of the viewshed?</i>	frequent/predictable 2	not frequent but predictable 1	not predictable 0
5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>	Visual Striking 2	noticeable but not visual striking 1	not visible 0
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>	Highly visible -2	Visible ^d -1	not visible 0
a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone and narrow d. visible, but subordinate to visual elements and characteristics of the landscape	TOTAL SCORE		
	CLASS	H: 11 ~ 7	M: 6 ~ 3 L: 2 ~ -1

PUBLIC CONCERN OR SENSITIVITY	HIGH	MODERATE	LOW
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>	Highly awareness 2	Moderate awareness 1	Low awareness 0
2. Number of viewers <i>Estimated number of people who see the viewshed</i>	seen over 100/day 3	seen over 100/week 2	seen under 100/week 1
3. Viewer activity <i>What people are doing when they view the landscape</i>	visible while recreating 2	visible from residents 1	visible while passing 0
4. Incongruent or distracting content not in viewshed but visible <i>Can powerlines, minings, junkyards be seen near the viewshed</i>	Highly visible -2	Visible -1	not visible 0
5. Historical and cultural features <i>Does the viewshed contain historical and cultural features</i>	National 3	State 2	Local 1
	TOTAL SCORE		
	CLASS	H: 10 ~ 7	M: 6 ~ 3 L: 2 ~ 0

SCENIC VIEWSHED DESIGNATION

Scenic viewshed designation is based on scenic quality and public concern

- I = INCLUDE (designate as a Scenic Viewshed)
- SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit)
- N = NOT INCLUDE (not designate as a Scenic Viewshed)

PUBLIC CONCERN OR SENSITIVITY				
VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW	
	HIGH	I	I	SC
	MODERATE	SC	N	N
LOW	N	N	N	

FINAL Viewshed DESIGNATION: include

(See 'Definition of Terms' for additional information and literature related to each variable.)

EXAMPLE #2



SCENIC VIEWSHED NOMINATION FORM

View Point Photo Information

Viewshed Name: *ACLRailroad bridge*

Nomination Date: *2014*

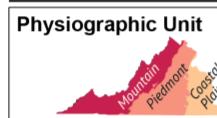
Location (City/County): *Richmond*

Specific (i.e. place name): *James River*

Total number of photos¹: *6*

View Point Information

(check one)



- | | |
|------------------|-------------------------------------|
| 1. Mountain | <input type="checkbox"/> |
| 2. Piedmont | <input checked="" type="checkbox"/> |
| 3. Coastal Plain | <input type="checkbox"/> |

Public Accessibility³

visible from public road trail, water-way or public road

- | | |
|--------|-------------------------------------|
| 1. Yes | <input checked="" type="checkbox"/> |
| 2. No | <input type="checkbox"/> |

Observer Position

human eye-level at viewpoint

- | | |
|-----------------|-------------------------------------|
| 1. Looking up | <input checked="" type="checkbox"/> |
| 2. Straight | <input type="checkbox"/> |
| 3. Looking down | <input type="checkbox"/> |

Viewshed

Approximated Width of viewshed *60 degrees*

Maximum distance zone *background*

View Point Meta-data (from photograph)

Image Title: *James River in Fall.jpg*

Taken Date & Time: *10/07/2014 02:10 pm.*

Location: *Richmond*

GPS lat: *37.534464* long: *-77.493185*

Image Size²: *3400 x 2267*

View Elements

(check all that apply)

Frequency of occurrence

Occurs often (daily or weekly)
Occurs regularly but not often (seasonal)
Seldom and unpredictable

Ephemeral features

- | | |
|--|-------------------------------------|
| 1. Wildlife and animals' signs & occupancy | <input type="checkbox"/> |
| 2. Vegetation changes | <input checked="" type="checkbox"/> |

X

Incongruent adjacent

note elements near the viewshed that detract from the experience of the viewshed

Distinctive man-made feature

see nomination checklist (built, historical...)

bridge

Distinctive natural feature

see nomination checklist (natural features)

stream

View description: (see checklist of possible descriptive elements)

1. up to three photos, one must be from viewshed view point
 2. a minimum size of 1024 megapixels
 3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
1. Viewshed Size <i>How wide is the view?</i>	panoramic ^a 3	medium view ^b 2	limited view ^c 1
2. Variety and Visual Complexity <i>How much variation in the visual characteristics of the landscape (patterns, color, form, line and textures)?</i>	High 2	Moderate 1	Low 0
3. Coherence and Legibility <i>How the visual composition fits together, and is distinct and memorable?</i>	High 2	Moderate 1	low 0
4. Ephemeral qualities in foreground and middle ground <i>Are ephemeral qualities a common content of the viewshed?</i>	frequent/predictable 2	not frequent but predictable 1	not predictable 0
5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>	Visual Striking 2	noticeable but not visual striking 1	not visible 0
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>	Highly visible -2	Visible ^d -1	not visible 0
a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone and narrow d. visible, but subordinate to visual elements and characteristics of the landscape	TOTAL SCORE		
	CLASS	H: 11 ~ 7	M: 6 ~ 3

PUBLIC CONCERN OR SENSITIVITY	HIGH	MODERATE	LOW
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>	Highly awareness 2	Moderate awareness 1	Low awareness 0
2. Number of viewers <i>Estimated number of people who see the viewshed</i>	seen over 100/day 3	seen over 100/week 2	seen under 100/week 1
3. Viewer activity <i>What people are doing when they view the landscape</i>	visible while recreating 2	visible from residents 1	visible while passing 0
4. Incongruent or distracting content not in viewshed but visible <i>Can powerlines, minings, junkyards be seen near the viewshed</i>	Highly visible -2	Visible -1	not visible 0
5. Historical and cultural features <i>Does the viewshed contain historical and cultural features</i>	National 3	State 2	Local 1
	TOTAL SCORE		
	CLASS	H: 10 ~ 7	M: 6 ~ 3

SCENIC VIEWSHED DESIGNATION

Scenic viewshed designation is based on scenic quality and public concern

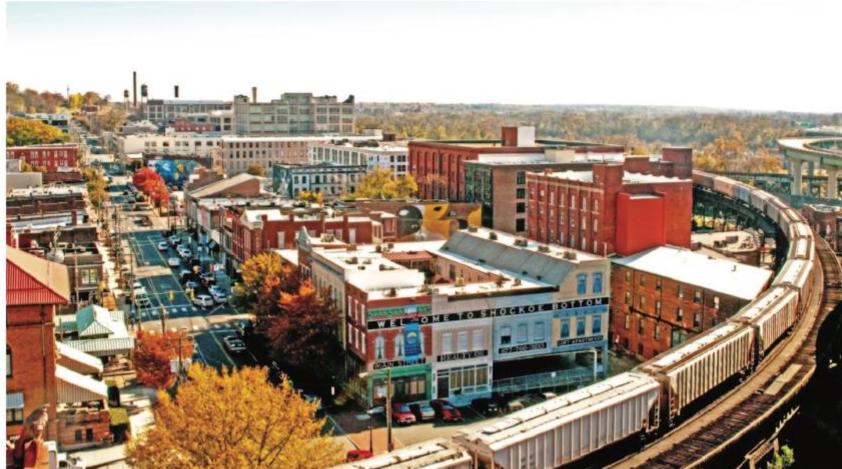
- I = INCLUDE (designate as a Scenic Viewshed)
- SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit)
- N = NOT INCLUDE (not designate as a Scenic Viewshed)

PUBLIC CONCERN OR SENSITIVITY				
VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW	
	HIGH	I	I	SC
	MODERATE	SC	N	N
LOW	N	N	N	

FINAL Viewshed DESIGNATION: *special consideration*

(See 'Definition of Terms' for additional information and literature related to each variable.)

EXAMPLE #3



SCENIC VIEWSHED NOMINATION FORM

View Point Photo Information

Viewshed Name: Shockoe Bottom

Nomination Date: 2013

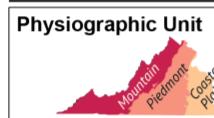
Location (City/County): Richmond

Specific (i.e. place name): Shockoe Bottom

Total number of photos¹: 1

View Point Information

(check one)



1. Mountain	
2. Piedmont	<input checked="" type="checkbox"/>
3. Coastal Plain	

Public Accessibility³
visible from public road trail, water-way or public road

1. Yes	<input checked="" type="checkbox"/>
2. No	

Observer Position

human eye-level
at viewpoint

1. Looking up	
2. Straight	
3. Looking down	<input checked="" type="checkbox"/>

Viewshed

Approximated Width of viewshed 80 degrees

Maximum distance zone
background, middle ground, foreground

View Point Meta-data (from photograph)

Image Title: Shockoe Bottom.jpg

Taken Date & Time: 11/22/2013 08:35 pm.

Location: Richmond

GPS lat: 37.535786 long: -77.431038

Image Size²: 3600 x 2043

View Elements

(check all that apply)

Frequency of occurrence	Occurs often (daily or weekly)	Occurs regularly but not often (seasonal)	Seldom and unpredictable
Ephemeral features			
1. Wildlife and animals' signs & occupancy			
2. Vegetation changes	<input checked="" type="checkbox"/>		
Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i>		elevated road on the right side	
Distinctive man-made feature <i>see nomination checklist (built, historical...)</i>		murals	
Distinctive natural feature <i>see nomination checklist (natural features)</i>			

View description: (see checklist of possible descriptive elements)

1. up to three photos, one must be from viewshed view point
 2. a minimum size of 1024 megapixels
 3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
1. Viewshed Size <i>How wide is the view?</i>	panoramic ^a 3	medium view ^b 2	limited view ^c 1
2. Variety and Visual Complexity <i>How much variation in the visual characteristics of the landscape (patterns, color, form, line and textures)?</i>	High 2	Moderate 1	Low 0
3. Coherence and Legibility <i>How the visual composition fits together, and is distinct and memorable?</i>	High 2	Moderate 1	low 0
4. Ephemeral qualities in foreground and middle ground <i>Are ephemeral qualities a common content of the viewshed?</i>	frequent/ predictable 2	not frequent but predictable 1	not predictable 0
5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>	Visual Striking 2	noticeable but not visual striking 1	not visible 0
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>	Highly visible -2	Visible ^d -1	not visible 0
a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone and narrow d. visible, but subordinate to visual elements and characteristics of the landscape	TOTAL SCORE		
	CLASS	H: 11 ~ 7	M: 6 ~ 3

PUBLIC CONCERN OR SENSITIVITY	HIGH	MODERATE	LOW
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>	Highly awareness 2	Moderate awareness 1	Low awareness 0
2. Number of viewers <i>Estimated number of people who see the viewshed</i>	seen over 100/day 3	seen over 100/week 2	seen under 100/week 1
3. Viewer activity <i>What people are doing when they view the landscape</i>	visible while recreating 2	visible from residents 1	visible while passing 0
4. Incongruent or distracting content not in viewshed but visible <i>Can powerlines, minings, junkyards be seen near the viewshed</i>	Highly visible -2	Visible -1	not visible 0
5. Historical and cultural features <i>Does the viewshed contain historical and cultural features</i>	National 3	State 2	Local 1
	TOTAL SCORE		
	CLASS	H: 10 ~ 7	M: 6 ~ 3

SCENIC VIEWSHED DESIGNATION

Scenic viewshed designation is based on scenic quality and public concern

- I = INCLUDE (designate as a Scenic Viewshed)
- SC = SPECIAL CONSIDERATION (designate as a Scenic Viewshed if other special considerations merit)
- N = NOT INCLUDE (not designate as a Scenic Viewshed)

PUBLIC CONCERN OR SENSITIVITY			
VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
	I	I	SC
	SC	N	N

FINAL Viewshed DESIGNATION:

(See 'Definition of Terms' for additional information and literature related to each variable.)

EXAMPLE #4



SCENIC VIEWSHED NOMINATION FORM

View Point Photo Information

Viewshed Name: james river and oldtown

Nomination Date: 2015

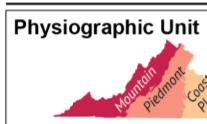
Location (City/County): Richmond

Specific (i.e. place name): oldtown

Total number of photos¹: 1

View Point Information

(check one)



- | | |
|------------------|-------------------------------------|
| 1. Mountain | <input type="checkbox"/> |
| 2. Piedmont | <input checked="" type="checkbox"/> |
| 3. Coastal Plain | <input type="checkbox"/> |

Public Accessibility³

visible from public road trail, water-way or public road

- | | |
|--------|-------------------------------------|
| 1. Yes | <input checked="" type="checkbox"/> |
| 2. No | <input type="checkbox"/> |

Observer Position

*human eye-level
at viewpoint*

- | | |
|-----------------|-------------------------------------|
| 1. Looking up | <input type="checkbox"/> |
| 2. Straight | <input checked="" type="checkbox"/> |
| 3. Looking down | <input type="checkbox"/> |

Viewshed

Approximated Width of viewshed	<u>110 degrees</u>
Maximum distance zone <i>background, middle ground, foreground</i>	<u>background</u>

View Point Meta-data (from photograph)

Image Title: jamesriver.jpg

Taken Date & Time: 05/01/2015 01:09 pm.

Location: Richmond

GPS lat: 37.529229 long: -77.443321

Image Size²: 5700 x 4300

View Elements

(check all that apply)

Frequency of occurrence	Occurs often (daily or weekly)	Occurs regularly, but not often (seasonal)	Seldom and unpredictable
Ephemeral features			
1. Wildlife and animals' signs & occupancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Vegetation changes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incongruent adjacent <i>note elements near the viewshed that detract from the experience of the viewshed</i>			
Distinctive man-made feature <i>see nomination checklist (built, historical...)</i>	<u>Landmark buildings</u>		
Distinctive natural feature <i>see nomination checklist (natural features)</i>	<u>cherry blossom</u>		

View description: (see checklist of possible descriptive elements)

1. up to three photos, one must be from viewshed view point

2. a minimum size of 1024 megapixels

3. must be accessible to be nominated (e.g. trails, roads, public recreation zones and other)

SCENIC VIEWSHED EVALUATION FORM

VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
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5. Positive human-influenced content in viewshed <i>positive, human-influenced content in the views</i>	Visual Striking 2	noticeable but not visual striking 1	not visible 0
6. Incongruent or distracting content in viewshed <i>Are incongruent elements (powerlines, mines, junkyards) visible in the viewshed?</i>	Highly visible -2	Visible ^d -1	not visible 0
a. wide view and includes all distance zones b. includes at least two distance, but not wide c. one distance zone and narrow d. visible, but subordinate to visual elements and characteristics of the landscape	TOTAL SCORE		
	CLASS	H: 11 ~ 7	M: 6 ~ 3

PUBLIC CONCERN OR SENSITIVITY	HIGH	MODERATE	LOW
1. Demonstrated the public awareness <i>Example: media articles, tourism guides, public meetings and gov. public relations</i>	Highly awareness 2	Moderate awareness 1	Low awareness 0
2. Number of viewers <i>Estimated number of people who see the viewshed</i>	seen over 100/day 3	seen over 100/week 2	seen under 100/week 1
3. Viewer activity <i>What people are doing when they view the landscape</i>	visible while recreating 2	visible from residents 1	visible while passing 0
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	TOTAL SCORE		
	CLASS	H: 10 ~ 7	M: 6 ~ 3

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PUBLIC CONCERN OR SENSITIVITY			
VIEWSHED SCENIC QUALITY	HIGH	MODERATE	LOW
	I	I	SC
	SC	N	N

FINAL Viewshed DESIGNATION: *include*

(See 'Definition of Terms' for additional information and literature related to each variable.)