REST AREA WILDERNESS EXPERIENCE:

REIMAGINING THE DESIGN OF REST AREAS ON INTERSTATE 64 IN VIRGINIA

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Jeffery Curtis

Thesis submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of:

Master of Landscape Architecture
in
Landscape Architecture

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May 23, 2017
Alexandria, Virginia

Keywords
Landscape Architecture, Rest Area Design, Wilderness, Trails, Blackwater Forest Swamp, Scenic Highways

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Abstract

Wilderness has inspired the imagination and passion of Americans for the past two centuries. However, the places that are most often designated as wilderness are often remote and difficult for most people to access. It is therefore important to understand how the idea of wilderness can be rescaled and rethought to allow for its benefits to be more attainable within common and accessible areas. Interstate rest areas provide an excellent subject to study how a wilderness experience can be designed within an area not typically associated with wild nature. The rest areas along Interstate 64 in Virginia provide a good opportunity to conduct this study due to the variety of ecological conditions that the interstate passes through. This thesis explores the varying conditions of all the rest areas on Interstate 64 in Virginia and develops a design for one of them, New Kent County Eastbound at mile marker 213. This design process is a site specific model for designing a wilderness experience at an interstate rest area that provides opportunities to experience local ecology, improve storm water management features, and increase wildlife habitat.

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General Audience Abstract

This thesis design examines the possibility of creating wilderness and providing wilderness experiences in an unexpected place, the interstate rest area. What defines wilderness is a variable concept that can be rescaled based on individual preferences, beliefs, and experiences. This design explores the variability of these scales while placing the design of a wilderness experience at a rest area within the natural context of the local environment.

CONTENTS

I. INTRODUCTION

View of the Blue Ridge Mountains from the VDOT Workers Memorial off I-64 in Greenwood, VA

Wilderness has inspired the imagination and passion of Americans for the past two centuries. John Muir (1931) stated that "the clearest way into the Universe is through a forest wilderness" (p. 313). However, the places that are most often designated as wilderness are typically remote and difficult for most people to access. It is therefore important to understand how the idea of wilderness can be rescaled and rethought to allow for its benefits to be more attainable as areas traditionally thought of as wild become rarer. This thesis design will examine the possibility of creating wilderness and providing wilderness experiences in an unexpected place, interstate rest areas.

Wilderness is a variable concept that has changed and evolved throughout human history. In the most simple terms, wilderness is land that exists without the influence and presence of humans, but this condition is quite rare or arguably non-existent. Through hunting, seed distribution, and prescribed fire, humans have played an active role in land management for thousands of years. This in combination with modern issues such as invasive species colonization, dams, mining, air and water pollution, global warming, and logging has left very little land outside of human influence. In order to preserve the land as wilderness, many land managers have had to abandon the untouched model and play an active role in preserving historical land management practices while mitigating the land management issues of the present.

The idea that humans have always intervened in nature, and that some natural places cannot remain natural without human intervention releases man-made wilderness from its oxymoronic status. Land previously heavily disturbed by humans can be managed to give it a wild character and be allowed to naturalize. In his essay "Restoration, Community, and Wilderness" William R. Jordan (2000) writes:

> *If the gardener or farmer in some sense takes charge of the landscape, the restorationist does just the opposite, relinquishing his or her hold on it in an attempt to turn it back over to itself, or, more accurately, to let it be--and help it become--what it used to be before he or she or we arrived in it (p. 27).*

Often this process of letting go is not simply ignoring the landscape, but an intensively designed process of planting, weeding, selectively cutting and instituting other management processes. Through this, the wildness of a place is not completely determined by its management practices, but by the experience it provides.

The National Wilderness Designation Act of 1964 provides four major criteria in order for a place to become wilderness. According to the Wilderness Act (S. 4 — 88th Congress), wilderness areas must be:

> *...protected and managed so as to preserve its natural conditions and which (1) generally appear to have been affected primarily by the forces of nature; (2) have outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) have at least five-thousand acres or are of sufficient size to make practicable their preservation; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.*

These criteria however severely limit what qualifies as wilderness. The main areas available through this law were western areas that were distant from population centers, which made access to these areas challenging to most people. The Forest Service sought to relieve this issue through the Eastern Wilderness Designation Act (S. 3433 — 93rd Congress). This act relaxed the strict untouched criteria for wilderness and reduced the required land size in order to allow more eastern lands to be admitted into the wilderness designation system. Despite the additional eastern lands added, analysis of current wilderness use trends show that wilderness is still not being used by the majority of America's population. Overwhelming evidence shows that the majority of wilderness users are educated white men between the ages of 30 and 40 (Chavez, 2000). A study about racial diversity within National Parks found minority groups underrepresented as National Park visitors because of lack of a cultural connection within a community, parks were too far away from people, and not enough education provided about what to do in parks (Taylor, 2011). It is possible that developing ways to bring wilderness parks closer to people could be a source of change for these trends (Roggenbuck, 1989). Understanding how the wilderness experience can be brought to a setting closer to people could be an important part of this development.

There are three qualities of wilderness described in the National Wilderness Act that can be incorporated into a built wilderness area. These are the appearance that the landscape has primarily been formed by natural elements, opportunities for solitude, and preservation of natural, geologic, or historic resources. Instead of merely designating a place as wild or not in the Wilderness Act, the feeling of wildness exists on a continuum. Places can be more or less affected by humans and the experience of the continuum is highly variable from person to person and place to place. In his book Wilderness and the American Mind, Roderick Nash (1982) states "One man's wilderness may be another's roadside picnic ground. The Yukon trapper would consider a trip to northern Minnesota a return to civilization while for the vacationer from Chicago it is a wilderness adventure indeed" (p. 1). The wildness of an experience is far more connected to the person having that experience than it is to how the location of an experience relates to the altered-unaltered spectrum. The wilderness experience is a very different entity from wilderness and can therefore be designed.

The photographs displayed on the next page show images of three different scales of wilderness experience. These are regional, site, and patch. This first image is of Wrangell St. Elias National Park in Alaska. It is the most traditional and objectively wild version of wilderness. It contains over 9 million acres of Federally designated wilderness, which is the largest continuous stretch of wilderness in the country. The National Park Service regulates visitor entry in certain areas to minimize the chance that groups will come in contact with one another. This represents the regional scale of wilderness. Wilderness at this scale encompasses the entire landscape. Views of undeveloped land stretch for many miles.

The next image could be any plot of forest, but it is a picture of Rock Creek Park (2,820 acres) in Washington, DC and represents the typical experience at the site scale of wilderness. At this scale, the predominant land use is something else, but large patches of undisturbed land still persist. This is the typical scale of urban wilderness. Wilderness at this scale is reflective of my final design. In the northeastern area of the Rock Creek Park, there is a place where one can be farther away from a road than anywhere else within the city limits of Washington, DC. This point is a mile away from anywhere that a person can drive a car, and therefore requires at least half an hour of walking for the average person to get there. This point is not on a trail, but one can still see and hear other hikers on nearby trails while sitting here. On pleasant days many people pass along the adjacent trails. When I visited this point, though I could see others, I felt the distance and seclusion were significant enough to prevent anyone else from seeing me. The sound of cars is absent, but the sound of aircraft is not. This could be the wildest location in the city of Washington. The experience of sitting in this spot is not one specifically designed by the Olmsted brother's plan for the park, but it is facilitated by it. This area feels very much left outside of human influence, but the solitude typically associated with wildness is unlikely. Despite this,

it became easier for me to let go of the idea that I was in the middle of a major metropolitan area and imagine that the forest extended indefinitely. In this example, one sees the reality of site scale wilderness found in urban areas. It can never be true wildness like the million acre parks of the west, but a small reflection of that wildness. Urban wilderness is a moment where the visitor can, even if only briefly, forget the urban and be fully immersed in wildness.

The final image is from a pollinator garden (1300 sqft) in the Dale City Interstate Rest Area. This is the patch level of wilderness, where small islands of land have the appearance of being left outside the influence of management. Within this scale, a number of interesting questions arise such as: When the patch needs to be surrounded by a tame landscape, what proportion of land can be left untamed in order to remain functional or socially acceptable? What is the best way to arrange the patches of untamed landscape within a tame landscape to maximize the experience of wilderness? And what level of management is acceptable in the untamed landscape or non-management in the tamed landscape to meet the goals of their design?

The interstate rest area has the potential to provide an experience of all three of the scales of wilderness. The regional scale can be offered by creating opportunities for long range views that extend off site in a remote area. Site scale wilderness can be created through extending the boundaries of the typical rest area site to allow for hiking and opportunities for immersion in a natural area. The patch scale wilderness can be created, as seen in Dale City by allowing rougher native forms of vegetation such as wildflowers or forest to replace the manicured lawns typically found in common rest areas.

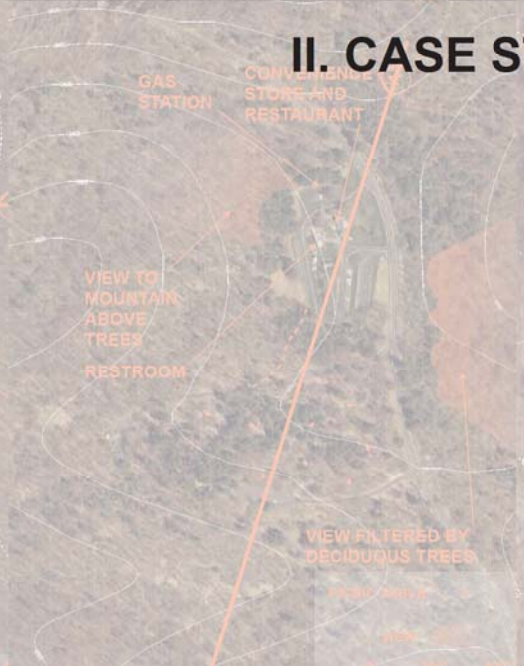
Providing a wilderness experience improves the rest area in a number of ways. By increasing the availability of native plant cover, it expands wildlife habitat. Through decreasing the impermeable surfaces and adding denser plant material a wilderness design augments the functionality of the storm water management system. Finally, it enhances the overall user experience through developing contrast and separation from a built and busy highway system. This thesis focuses on improving the experiential component while remaining connected to improving other factors that increase sustainability. The ultimate goal is a site specific design that allows visitors to immerse in the experience of wilderness within a rest area setting. The author hopes that the design can be a model for how wilderness experiences can be created at other rest areas on Interstate 64 and across the state.

Wrangell St. Elias National Park, 9 million acre wilderness area in Alaska

Rock Creek Park, 2,820 acre green space in Washington, DC

Pollinator garden at interstate rest area in Dale City, VA

II. CASE STUDIES



In the typical interstate rest area situation, the building is the focal point of the experience. In this, the site design directs all attention towards the building. The most common user of interstate rest areas briefly stops to use the rest room facilities, then moves on. In order to gain an understanding of how the design of a rest area can facilitate the experience of wilderness, I examined three precedents where wilderness is the center of the design. I chose each of these precedents for a different reason that I have explained in their description. From these case studies, I was able to develop an understanding of how rest areas can formulate the design of circulation, vegetation, and topography to be a conduit for wilderness experience.

1. Norwegian Rest Stops

The first precedents I examined were Norway's rest areas. Some significant projects that were implemented can be seen in the photos on the right. The country is in the middle of an 18-year plan to improve the design of its rest areas. They have commissioned a number of well-known architects to engage in this task. The common thread in all these images is the clear emphasis on the beauty of the natural areas surrounding the buildings. The buildings are designed in ways that decrease their visual impact and augment the experience of the surrounding wild landscapes. The use of large open windows, and the surrounding extraordinary landscape make the buildings a center that directs attention outwards.

Trollstigen Visitor Center, by Reiulf Ramstad Arkitekter

Wild Reindeer Pavilion by Snøhetta

Eggum Rest Area, designed by Snøhetta

Plan of visitor center

2. Thomas Craig Discovery Center

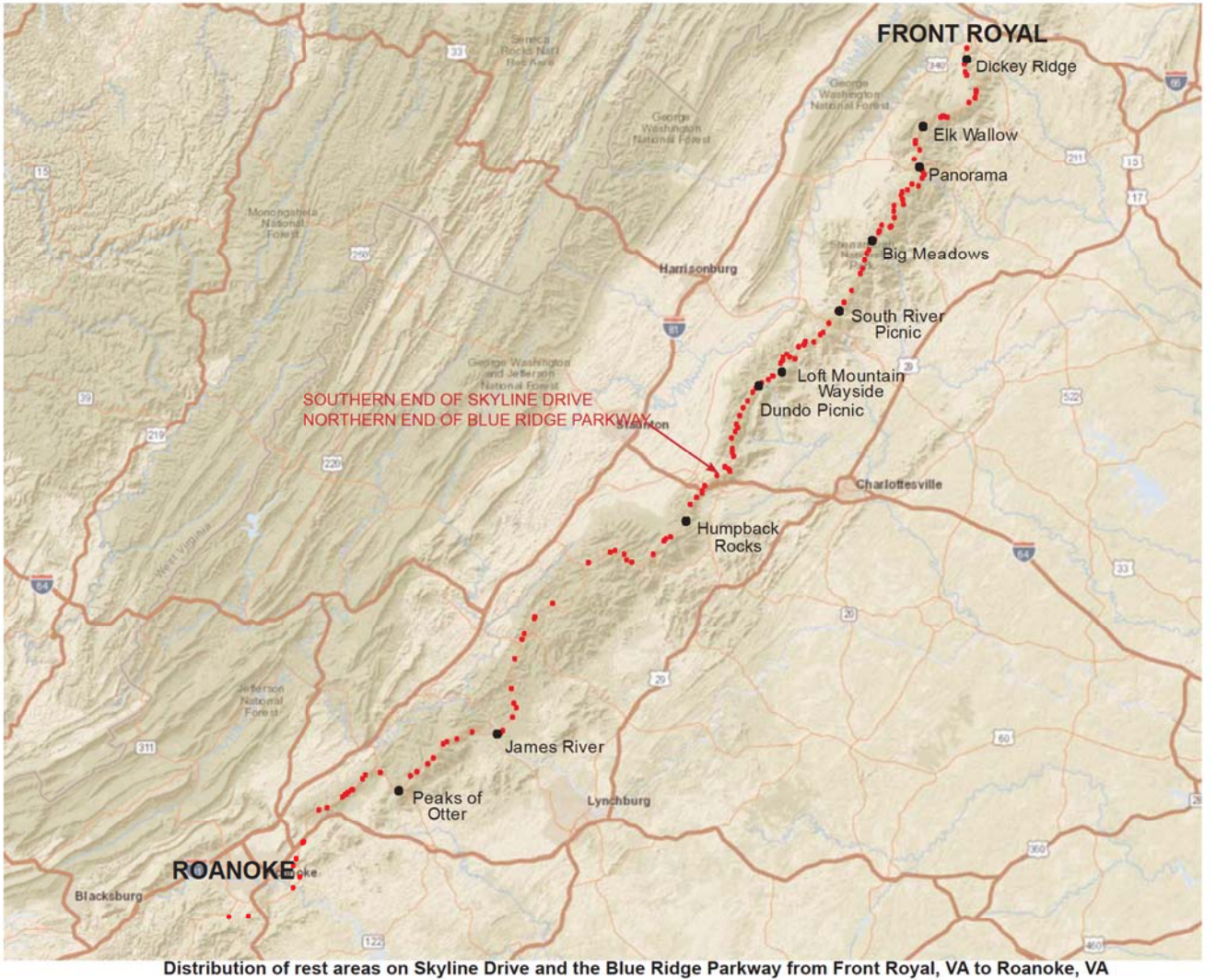
The next area I examined was the Thomas Craig Discovery Center in Grand Teton National Park. The primary function of this visitor center is to provide rest and information before people move on to experience the Teton Wilderness. According to the designers, "the wilderness would not be tamed." All plant material was sourced from seeds and cutting found on the site. The ecological and topographic context provide the framework for the design. The building sits back on a knoll on the edge of a sagebrush meadow and on a riparian forestland. The building is oriented away from the forestland but set back within it in order to maximize the view of the Teton range from inside the building and minimize views of the building from the outside. The building is also placed away from the parking area in order to allow visitors to decompress and move through the landscape before entering the building.

Visitor center recessed into the trees

3. Skyline Drive and the Blue Ridge Parkway

The following pages are an in-depth study of 10 rest areas along Skyline Drive and the Blue Ridge Parkway in Virginia. The combination of these two roadways is viewed as the premier scenic driving experience in the entire United States. They provide a unique combination of a paved accessible roadway with wilderness scenery. The design of rest areas along this roadway was built to further facilitate this experience. Both Skyline Drive and the Blue Ridge Parkway had slightly different intents as can be surmised by studying the rest area distribution map to the right. The rest areas in Skyline Drive are almost twice the density of the rest areas along the Blue Ridge Parkway. The designers of the Blue Ridge Parkway advertised the experience as an opportunity to "drive awhile and stop awhile." With that same line of thinking, the experience of Skyline Drive can be seen as an opportunity to drive a little and stop a while, and the experience of driving an interstate can be seen as drive a while and stop a little.

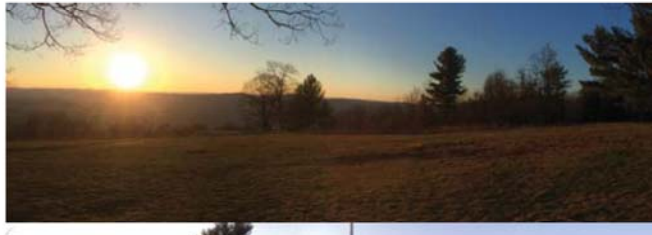
The following rest areas are presented in order from north to south. Skyline Drive and the Blue Ridge Parkway have three primary types of rest areas. These are the overlook, picnic ground, and the visitor center. The map the to right displays all of these types from Front Royal to Roanoke. The study that follows presents the first 10 rest areas that are a picnic ground or visitor center because the design complexity of these sites are most similar to that of rest areas on an interstate. Understanding the design of these rest areas will provide better insight into incorporating the experience of wilderness with visitor facilities along roadways.



Distribution of rest areas on Skyline Drive and the Blue Ridge Parkway from Front Royal, VA to Roanoke, VA

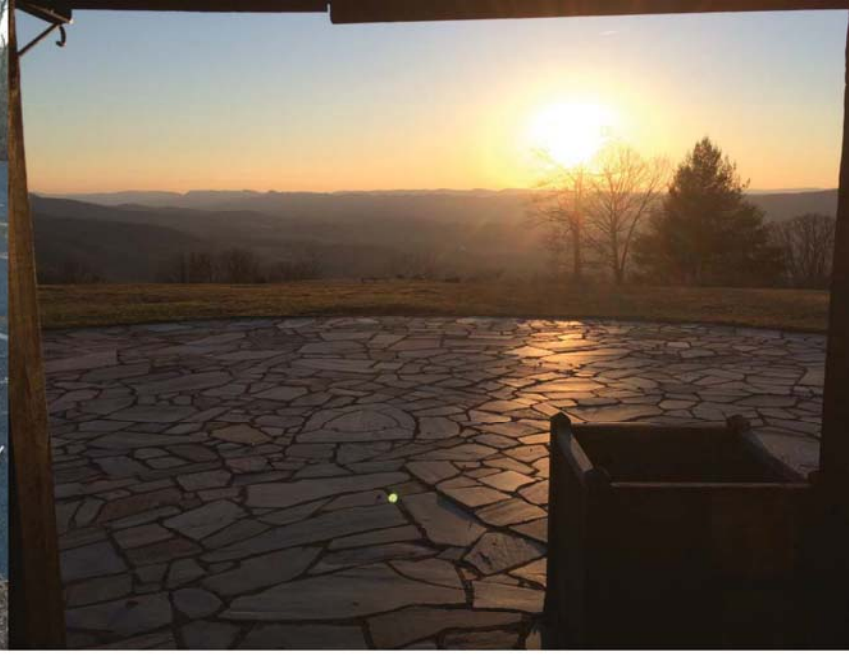
3.1 Skyline Drive:
Dickey Ridge Visitor Center

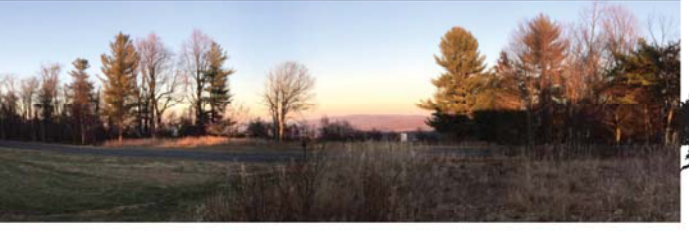
The Dickey Ridge Visitor Center is the first visitor center on Skyline Drive that one approaches when coming from the north. The structure of the center consists of three loops. These loops are two multi-directional u-shaped loops where the ends connect to the road, and one lolly pop loop that offshoots from the main u-shaped loop. The parking area holds 126 spaces, which are more than most highway rest areas. However, it is able to achieve greater levels of privacy and immersion into the wilderness experience through the segmented loop system. The main loop in the center holds parking closest to the visitor center. The visitor center sits on top of a ridge. The vegetation surrounding this main loop and the building is mowed to provide clear panoramic views on either side of the ridge. However, less than a tenth of the mowed area is mowed as closely as a common lawn. The rest is allowed to grow roughly to maintain

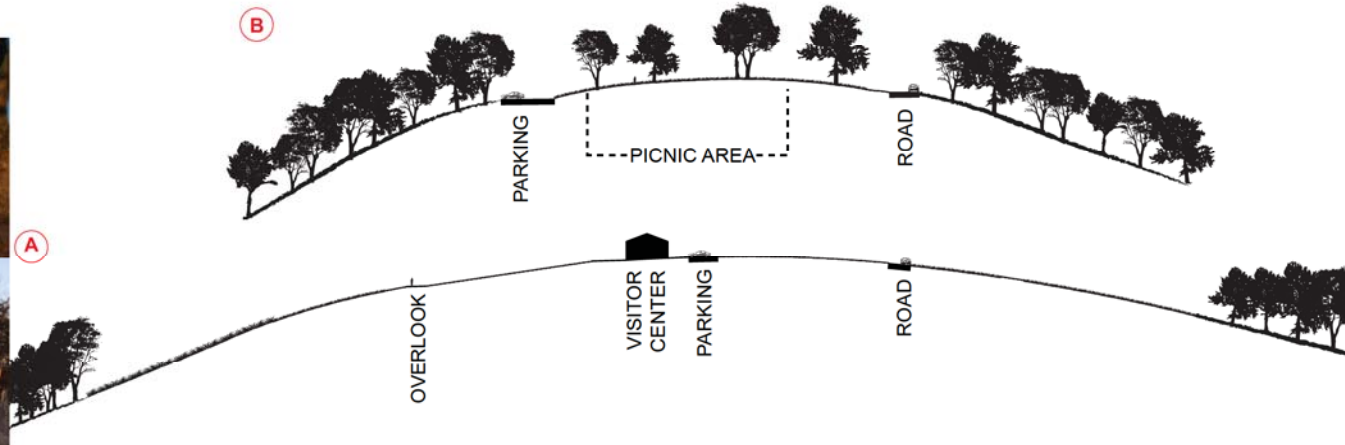


the feeling of a wild meadow.

The eastern view for drivers takes advantage of a common strategy on Skyline Drive. This strategy is to place the open views on the outside of the crest of a curve in order to provide the driver the opportunity to experience the view while still looking at the road. The parking and the building are placed linearly along the ridge line so that these two spaces do not obscure the views from one another. The two secondary outer loops work in a similar manner. These parking areas are broken up by mature vegetation in order to avoid large continuous patches of asphalt. These loops, in addition to being broken off of the main parking area, are also segmented within themselves so that one piece will never contain more than 20 spaces. In the eastern picnic loop, the sections are further hidden by being slightly recessed in the topography. This arrangement makes a parking area of 126 spaces feel like 6 parking areas; one large parking area containing 75 spaces, and 5 smaller parking areas containing roughly 10 spaces each. This segmentation structure is used throughout the park.







3.2 Skyline Drive:
Elkwallow Wayside

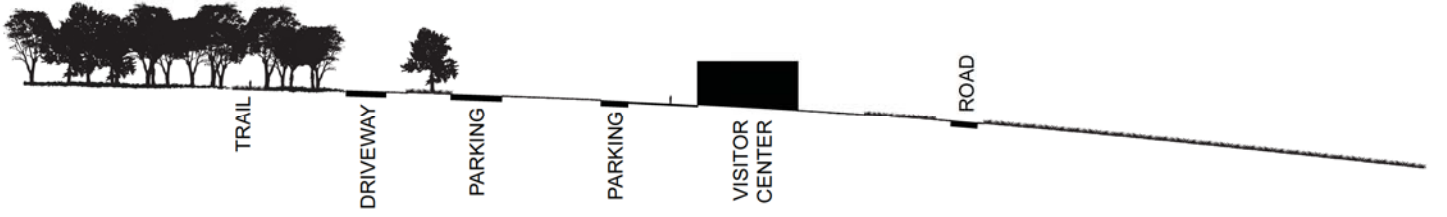
The Elkwallow Wayside Store is a gas station and convenience store. It follows a similar segmented parking structure to Dickey Ridge. It consists of two loops, one main loop next to the buildings and one picnic loop. Despite being a ridge, the views from this site are not as dramatic. The vegetation around the building is mostly closely mowed turf. There are few opportunities for long range overlooking views. The reason for this is the site does not sit as high compared to the surrounding topography, the on-site topography is relatively flat, and the only area where there could be a view is partially blocked by a dense thicket of pine. The remaining view-frame is only clear in winter when the deciduous trees are bare. Views to the northeast are available of tall mountains reaching above the area blocked by trees. The picnic loop at Elkwallow has a much wilder feeling than Dickey's Ridge. This is created by significantly reducing the density of the picnic tables, and not mowing more than 10 feet away from the tables.

3.3 Skyline Drive:
Panorama Visitor Center

The Panorama Visitor Center is not structured like any other in the park. It is served by two separate terraced parking areas. The lower parking area has access directly from US-211 so that the visitor can park here and access the park without paying an entrance fee. The parking area is a one-way loop with one entrance and mostly 45-degree parking. The upper loop is perpendicular in-and-out parking. This parking area sits in a deep road cut for US-211 and on a bridge embankment for Skyline Drive. The building is placed far enough away from the edge of the its terrace in order to minimize the experience of 211. The experience of the lower parking area is reduced in the same way. The terraces combine a wall with a steep slope that ties into the flat parking. This allows visitors standing at the edge of the parking to be able to experience the view without experiencing a steep drop off. This terracing structure is successful in creating broad panoramic views. Regularly mowed turf is confined to strips along the edges of the asphalt and a small traffic island surrounding the building. The vegetation along the edge of the terrace is mowed to maintain the views.

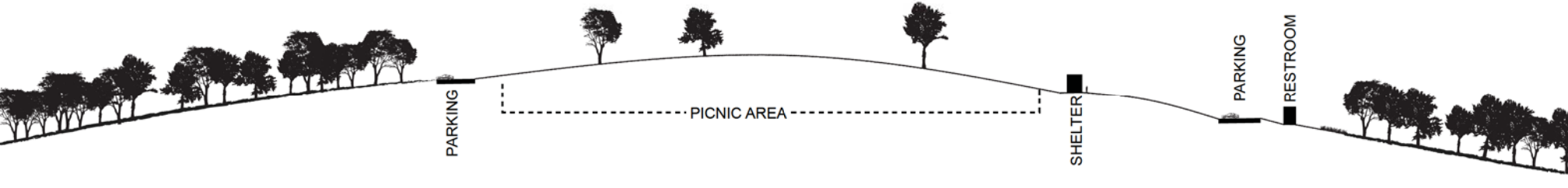
3.4 Skyline Drive:
Big Meadows Visitor Center

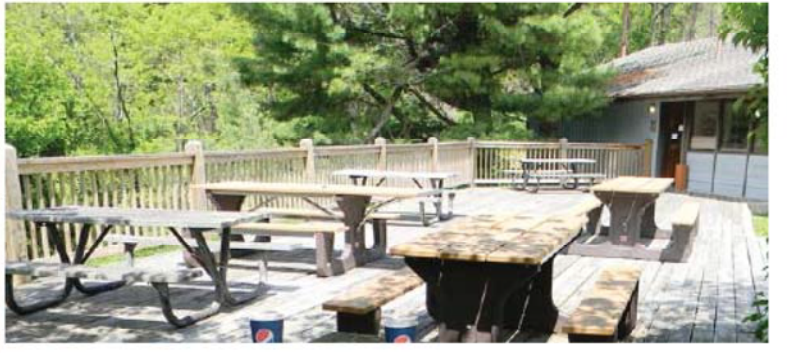
The Big Meadows Visitor Center sits on the edge of a managed meadow area and a forest line. Skyline Drive follows the tree line. The visitor center is placed on the inside of a curve in Skyline Drive and recessed just inside the forest. This arrangement obscures the visitor center from the road while maintaining clear views from the building. The images on the top and center show the views of drivers coming from either side of the visitor center on Skyline Drive. In the top image, one can barely see the roof of the visitor center behind the pine trees that provide year-round screening. The bottom image and map show an example of how dense vegetation is used to assist the segmented parking structure in making the parking area feel smaller.



3.5 Skyline Drive
South River Picnic Area

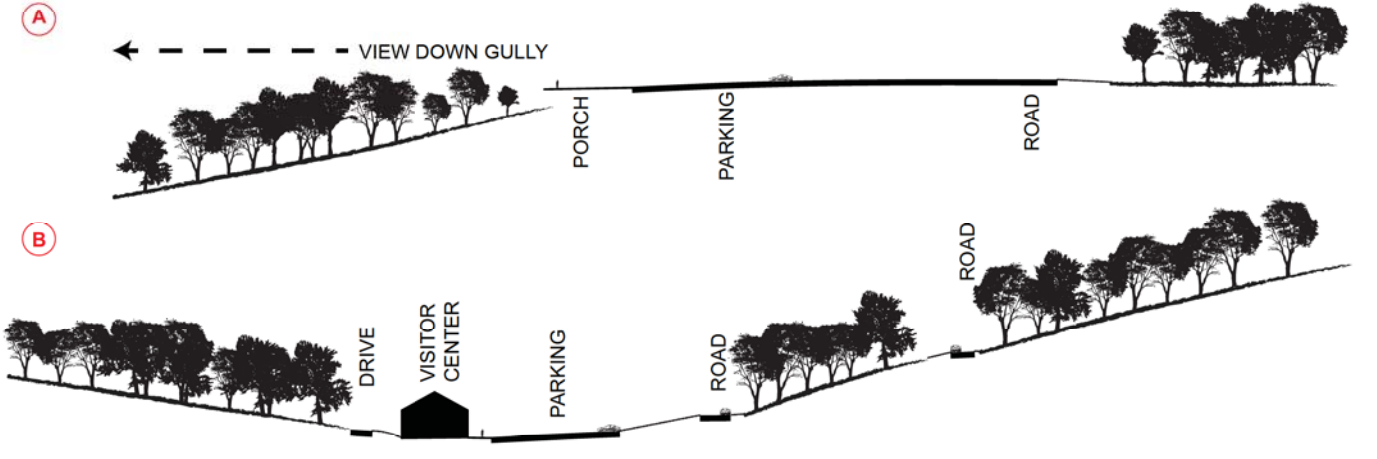
The South River Picnic Area is one of three picnic areas in Shenandoah National Park that all follow the same type of structure. In this, a lolly-pop shaped loop is placed around the summit of a hilltop. All picnicking is confined to the center of the loop. In this center, the vegetation is mowed in a savanna-like pattern. This structure provides open views out to the wild landscape. Also, it does not completely eliminate the trees that provide shade and the opportunity to experience closer nature.





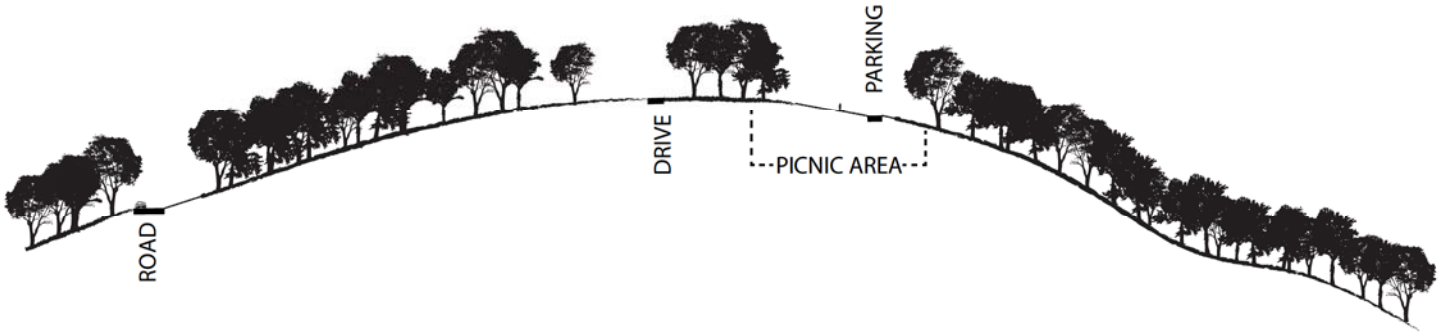
3.6 Skyline Drive:
Loft Mountain Wayside

The Loft Mountain Wayside is the last visitor center that southbound drivers come to and the first for northbound drivers. It acts as a gateway to the Loft Mountain Campground. The visitor center does not use the segmented parking structure like the other areas. Instead, it uses a semicircular shape that coalesces with the irregular contour lines that occur at the saddle of the mountain where the parking is placed. The north corner of the semicircle fits into the rounded points of the contours on the gully on the southern side of the saddle. The southeastern side of the parking is then elevated to maintain a flat area for parking. This elevation is augmented by extending a porch into the gully. Although the area is topographically enclosed, as can be seen in Section B, elevated views are still available through looking down the narrow gully displayed in Section A.



3.7 Skyline Drive:
Dundo Picnic Area

The Dundo Picnic Area is the southern most picnic area in Shenandoah National Park. Its main significance is that it is the only picnic area in the park explicitly designed for ADA accessibility. To do this, the picnic area includes very flat concrete lattice paving over the parking areas. Picnic areas also have flat finely crushed gravel around the picnic tables and on paths leading to these tables from the parking. Its base structure follows a modified version of the structure in other picnic areas. Rather than a loop that completely encircles a hilltop, the picnic area only encircles half of it. This is because the area around the hill is somewhat close to Skyline Drive, and the topography is used to block and lessen the experience of the road. This is the only picnic area that places tables on the outside of the loop.

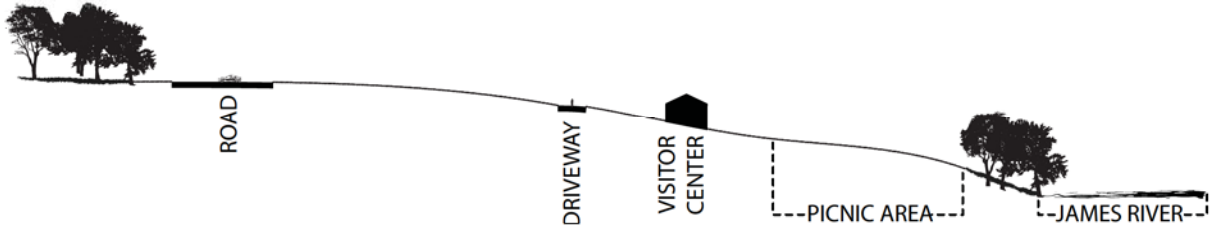


3.8 Blue Ridge Parkway
Humpback Rocks

The Humpback Rocks Visitor Center and Museum is the first visitor center that southbound drivers reach on the Blue Ridge Parkway. This visitor center sits across the street from a popular parking area for the Humpback Rocks Trail that leads to the summit of the Humpback Rocks Mountain. It also incorporates an example farm that uses original relocated log buildings and split rail fences to show how people lived in the Blue Ridge Mountains before construction of the park. The vegetation is managed in a way to augment this feeling by mowing the grass closely to simulate a pasture. Placed on a saddle between two mountains, this visitor center provides no overlooking views. However, the clearings are oriented in a way that provides a view to the summit of Humpback Rocks from the parking area and front of the visitor center.

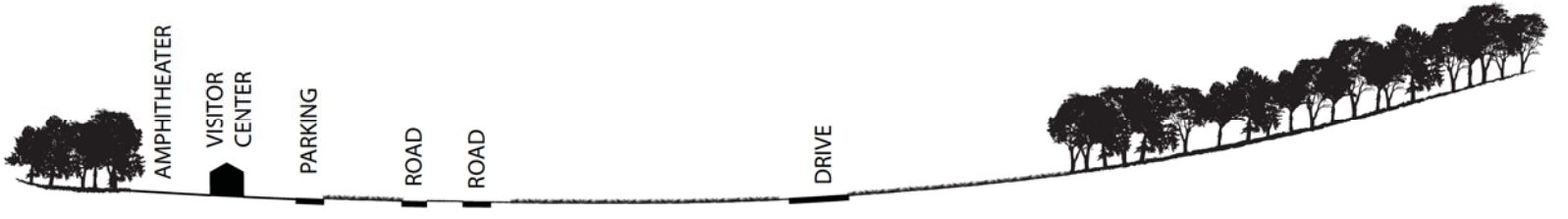
3.9 Blue Ridge Parkway
James River Visitor Center

The James River Visitor Center sits at the lowest point of the Blue Ridge Parkway, where it crosses the James River. The topography of the site consists of three subtle outward sloping terraces. The parking sits at the top, and the building sits on the second terrace. The final and least terrace-like level is a picnic area that slopes down to the river. The topographic structure highlights the main scenic feature of the site, the James River. Views of the building from the parking area are lessened, and the building feels somewhat sunken into the hillside. The visitor center also serves as a hub to a number of trails. A pedestrian underpass connected to the parkway bridge provides access for viewing the historic Kanawha Canal on the other side of the James River. There is an additional trail connecting the visitor center to a path along Otter Creek that empties into the James River nearby.



3.10 Blue Ridge Parkway
Peaks of Otter Visitor Center

The Peaks of Otter Visitor Center uses a similar strategy as the Big Meadows Visitor Center to create views while hiding the building. The building sits on the inside of a road curve and is set back into the forest. There is a large open mowed area on the outside of the curve and in front of the building. This open area creates views for motorists and occupants of the building while lessening the experience of the parking and the building for drivers. Rather than being managed as a wilder meadow, as in Big Meadows, the fields in this area are more closely mowed to look like historic pasture land. This look is enhanced through lining the roadways with split rail fencing and dividing sections of the field with it as well.



4. Summary of Case Studies

The major design lessons informed by the case studies are:

Circulation

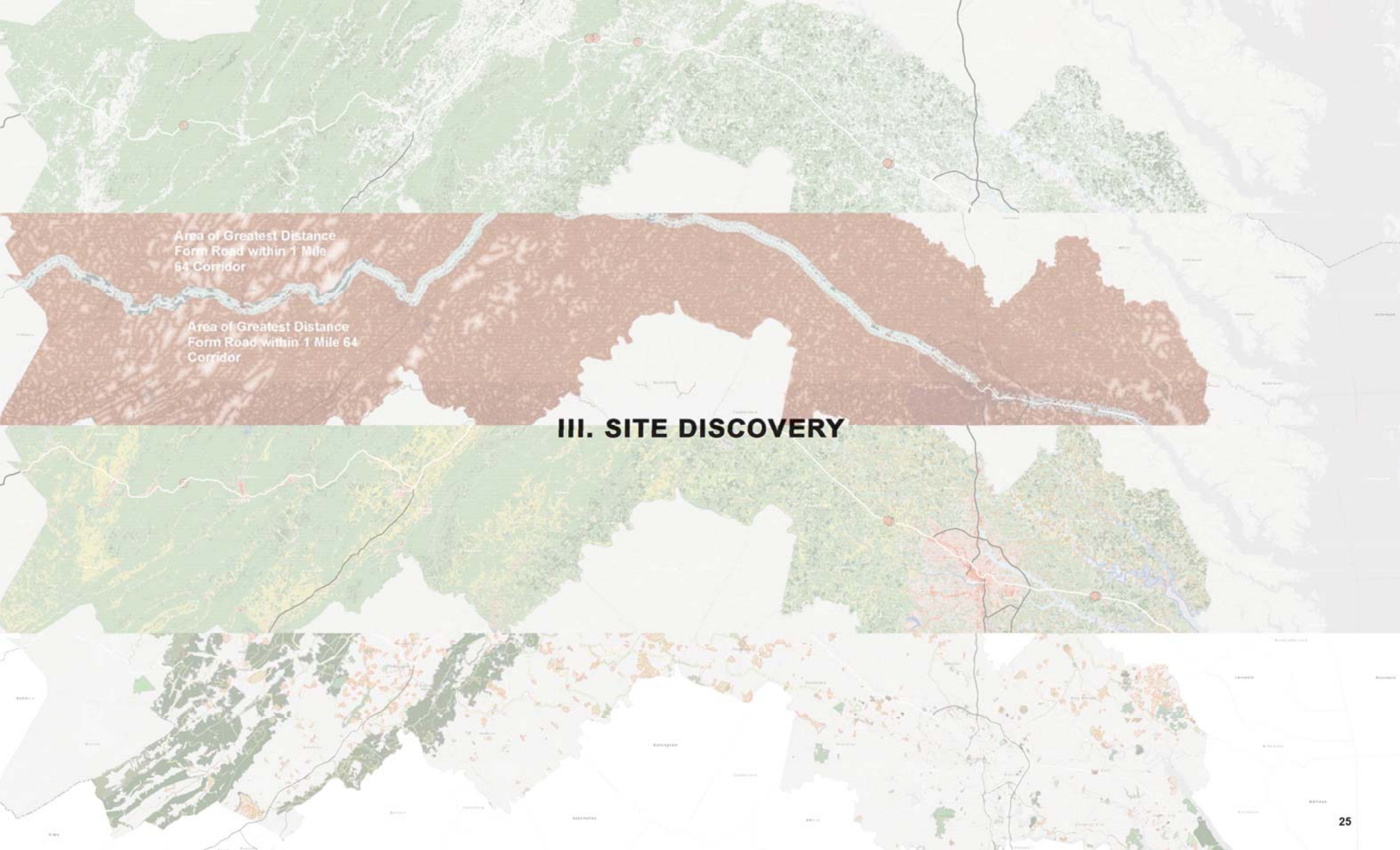
- Large parking areas can be made to feel smaller by breaking them up into pieces.
- Adding distance between the building and parking when possible provides users with the opportunity to decompress and experience nature before entering the building.
- Architecture of the visitor center can become a conduit to focus attention outwards to the surrounding landscape rather than inwards to the building.

Topography

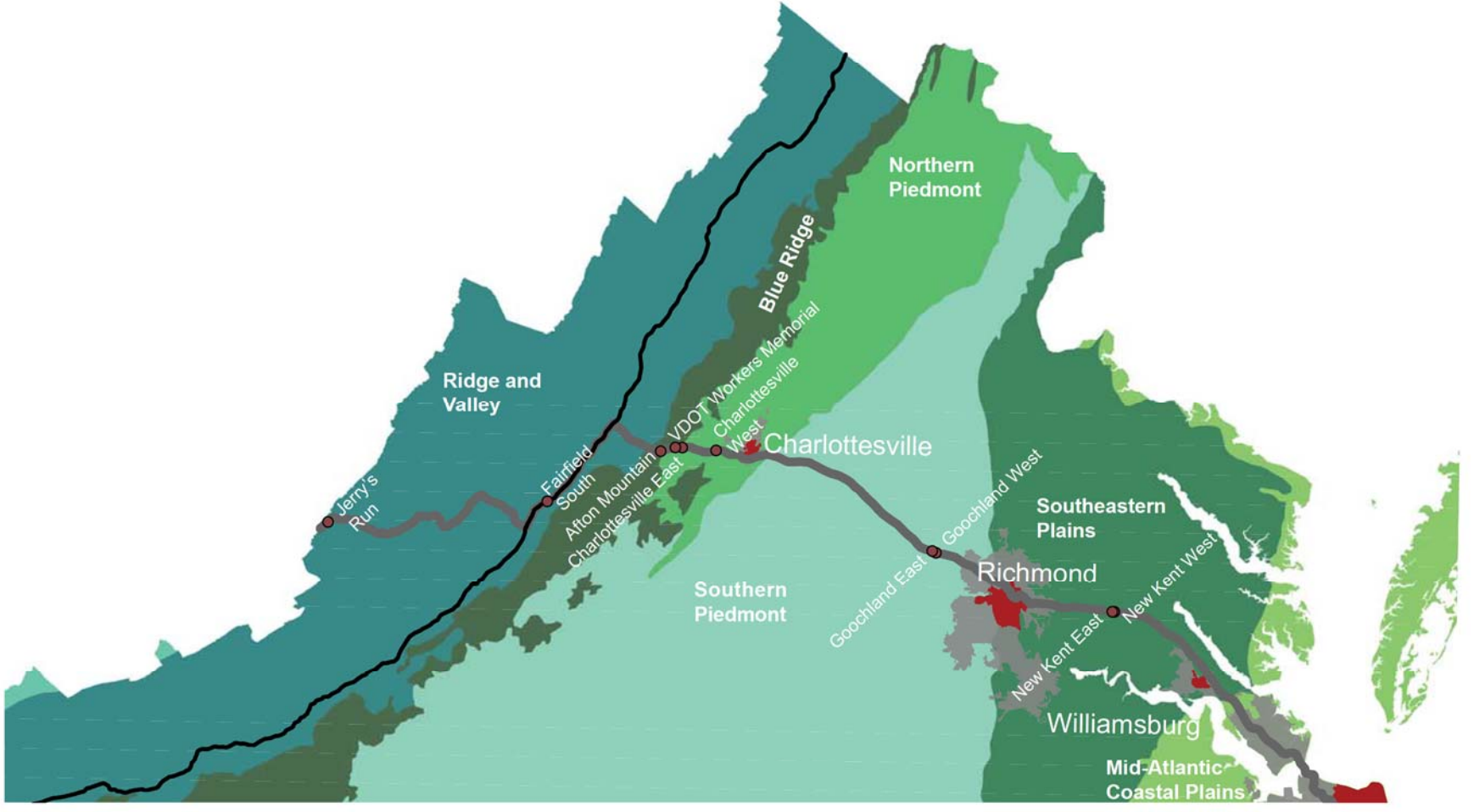
- Topography can aid in breaking up the parking.
- Terracing the land provides the opportunity to create segmented zones between the parking, building, picnicking, and walking areas. Terraces obscure structures on the slope and direct attention to areas beyond the slope.

Vegetation

- Vegetation can aid in breaking up parking areas and providing screening to create opportunities for solitude
- Native vegetation can be reintroduced into the built landscape to frame views, obscure structures, and provide connection to the wilder landscape beyond.



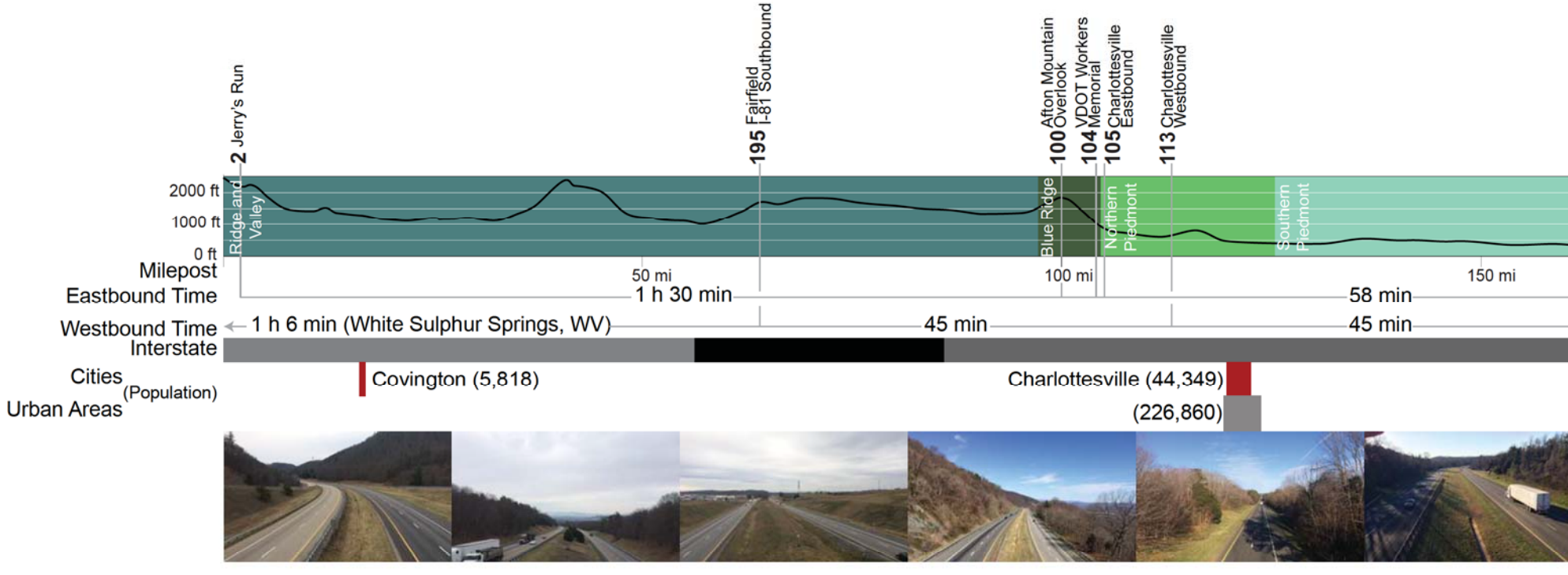
III. SITE DISCOVERY


Ridge and Valley
Blue Ridge
Northern Piedmont
Southern Piedmont
Southeastern Plains
Mid-Atlantic Coastal Plains
Jerry's Run
Fairfield South
Afton Mountain
Charlottesville East
VDOT Workers Memorial
Charlottesville West
Charlottesville
Goochland East
Goochland West
Richmond
New Kent East
New Kent West
Williamsburg

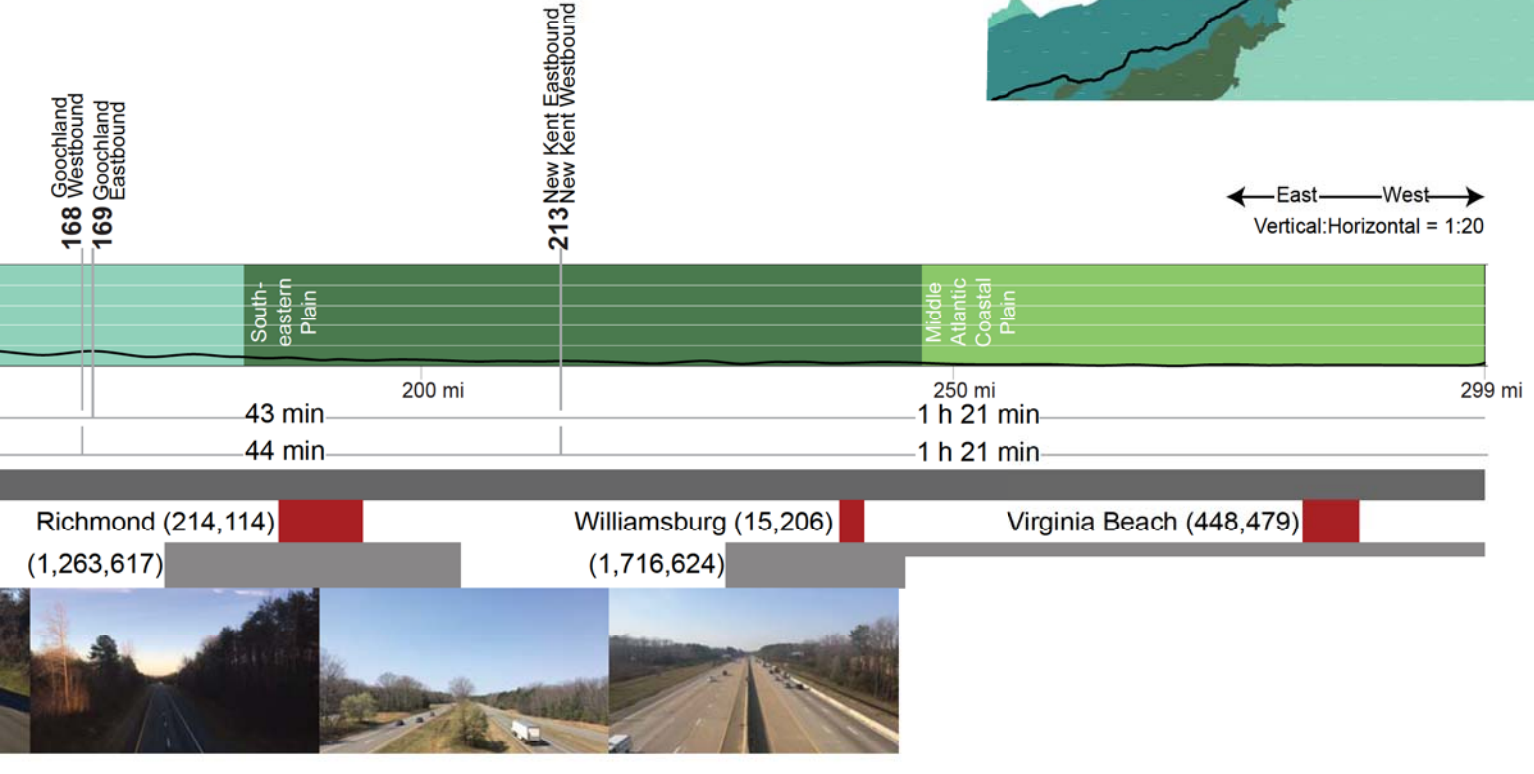
Wilderness, as a scalable experience, changes depending on the existing land use, population, and local ecology. The purpose of this thesis is to show how to integrate these factors in a rest area wilderness experience that is locality specific. While my final design focuses on one area, taking the idea of my thesis further would involve creating a network of rest areas that exemplify how wilderness and ecology vary along the traverse of a highway. Interstate 64 is the prime interstate in Virginia to explore the concept. As an east-west highway, it experiences the greatest variation in ecoregions and population dynamics. Interstate 64 provides a good opportunity to explore how regional changes affect land use and rest area structure across the state.

1.1 Transect of I-64

Interstate 64 is the only major interstate in Virginia that takes motorists from the Atlantic Ocean all the way to the West Virginia border. Unlike Virginia's north-to-south highways that travel along its ecological divisions, I-64 crosses all the major divisions in the state and provides a rest area in all of them except for the Mid-Atlantic Coastal Plain. The diagram below shows how east-to-west movement through these ecoregions affect topography and population through the state. It also shows the evenness of distribution of rest areas through the state. The images at the bottom were taken from overpasses at approximately even intervals along the highway to show how the landscape changes along the interstate.

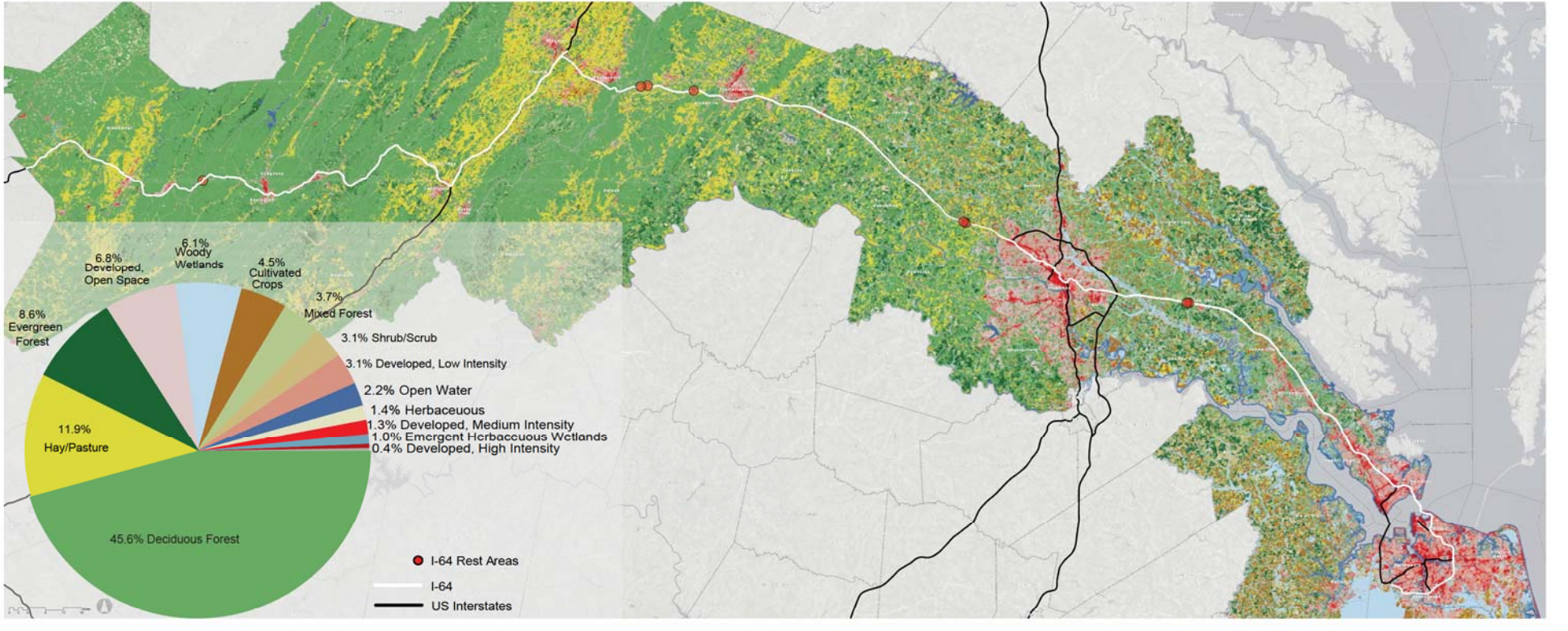



Jerry's Run
Fairfield South
Afton Mountain
Charlottesville East
VDOT Workers Memorial
Charlottesville West
Charlottesville
Goochland East
Goochland West
Richmond
New Kent East
New Kent West
Williamsburg


168 Goochland Westbound
169 Goochland Eastbound
213 New Kent Eastbound New Kent Westbound
East
West
Vertical:Horizontal = 1:20
South-eastern Plain
Middle Atlantic Coastal Plain
200 mi
250 mi
299 mi
43 min
44 min
1 h 21 min
1 h 21 min
Richmond (214,114)
(1,263,617)
Williamsburg (15,206)
(1,716,624)
Virginia Beach (448,479)

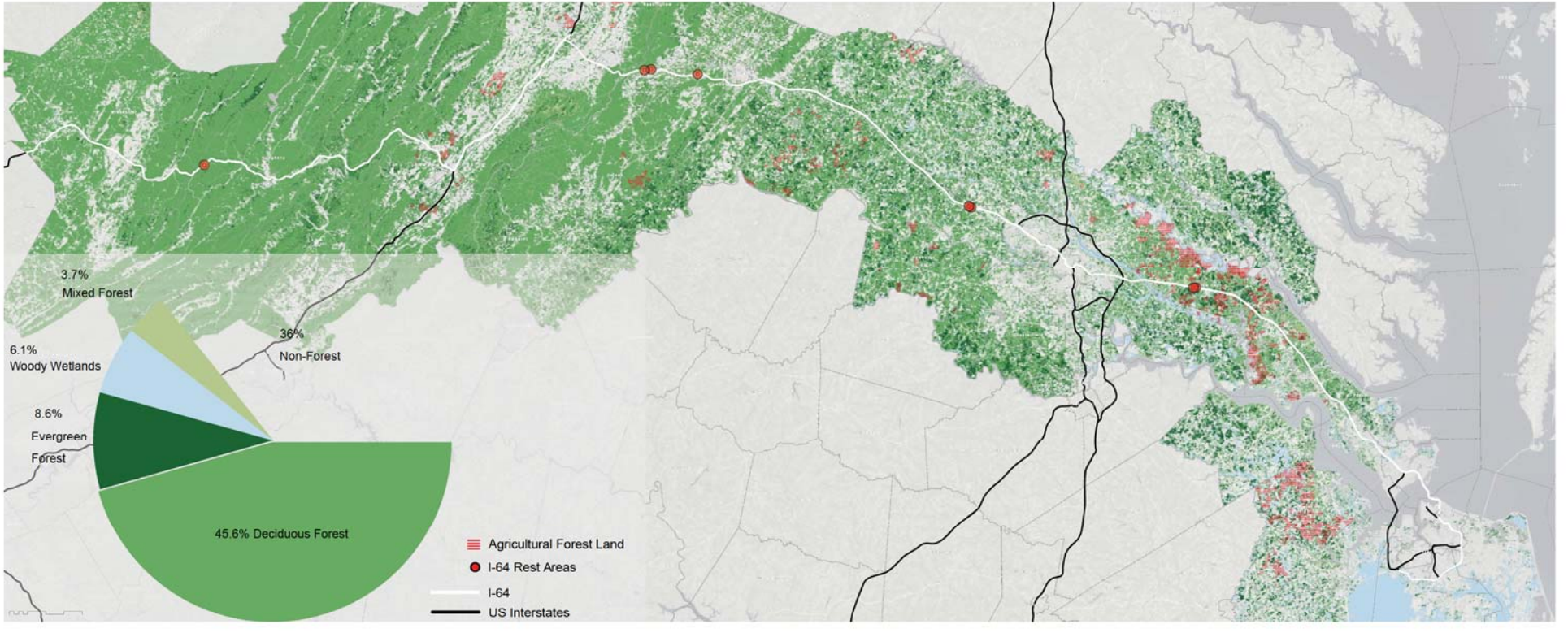
1.2 Land Cover

The map below shows land use distributed across the counties surrounding I-64. Similar to the transect on the previous page, this map shows that population and development are concentrated on the eastern side of the state but gradually diminish as one travels west. Land use is also much more varied on the eastern side. Overall, forest makes up more than half of all land cover.



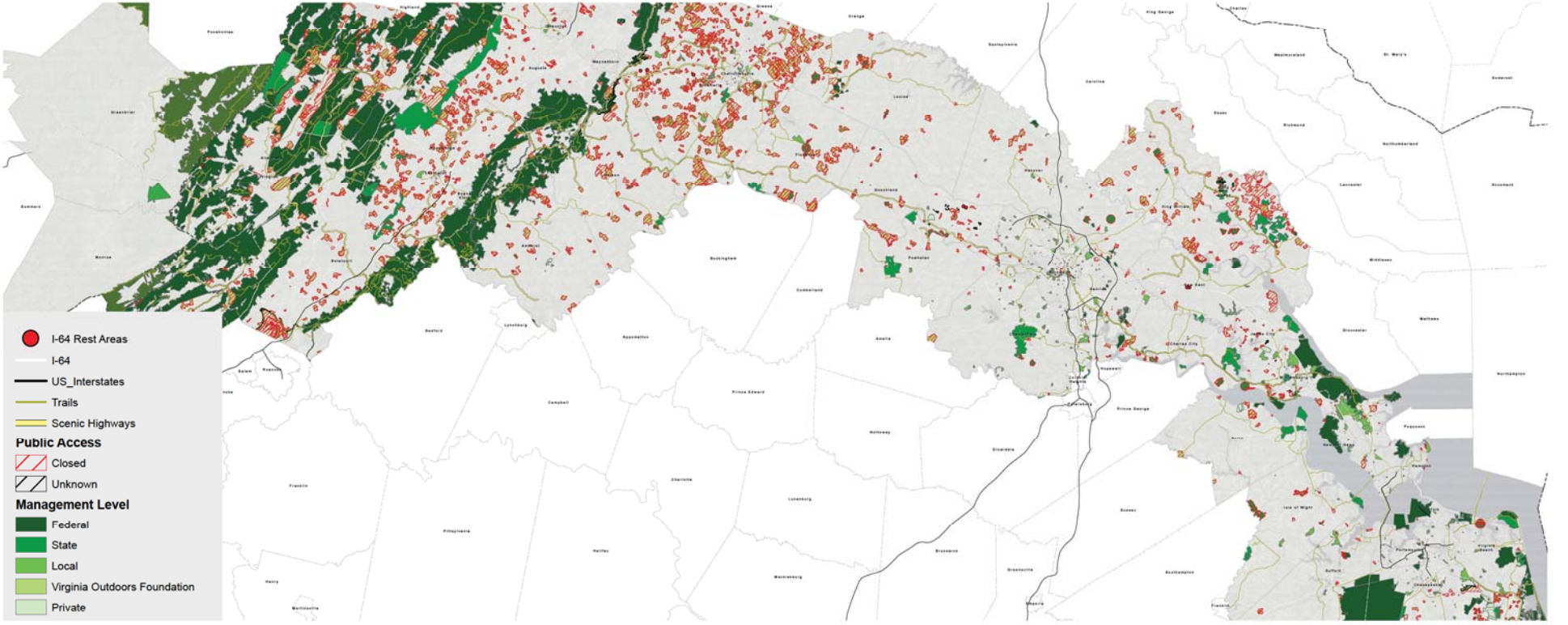
1.3 Forest Cover

In Virginia, forest is the primary type of land cover associated with green space and wilderness. The map below shows the distribution of forest in the counties surrounding I-64. The dotted hatch areas on the map show forest land used for agricultural forestry, which is prevalent in the less developed portions of the piedmont and coastal plain regions.



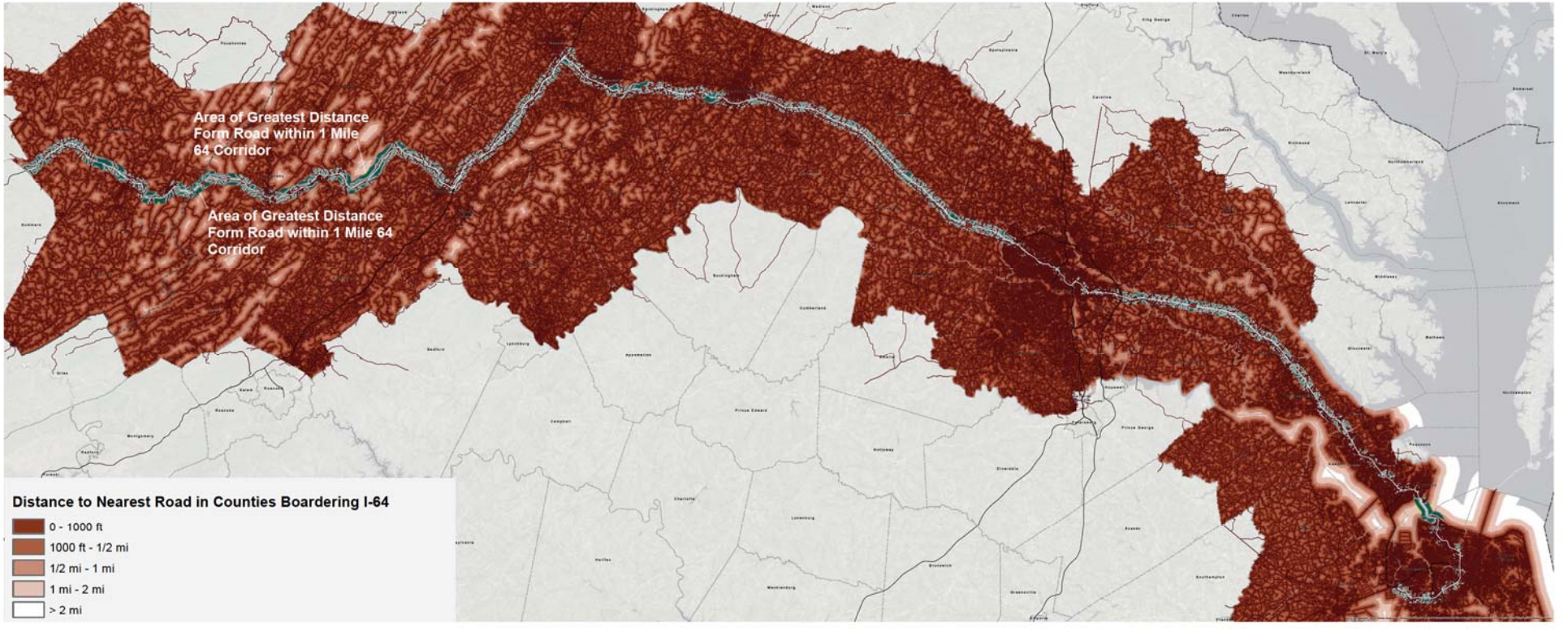
1.4 Land Designated for Conservation

This map shows land set aside for conservation in counties that I-64 passes through. It reveals opportunities to connect to conserved green space near rest areas along I-64. It shows the same trend of previous maps, which is higher development in the east and lower development in the west.

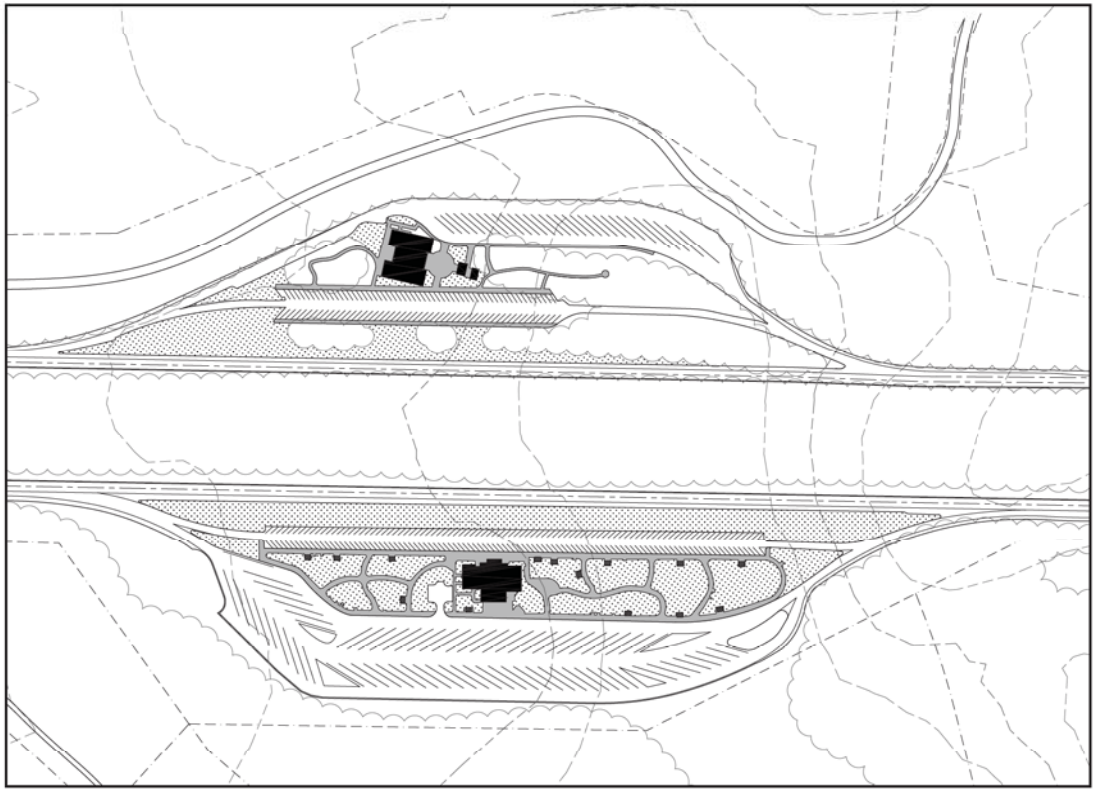


1.5 Distance to the Nearest Road

The experience of wilderness is often gauged by the opportunities to be in a remote inaccessible location. An unroaded primitive area is another type of wilderness-like designation by state and federal land managers. This designation is given to land that exhibits wilderness qualities, but is ineligible or has not gone through the process required by the Wilderness Act. The map below shows the distribution and magnitude of these types of land. Finding a new site for a rest area that could provide a wilderness experience would involve exploring these unroaded areas along the interstate.



2. Site Scale Rest Area Study



NEW KENT

MINOR CONTOUR 5'
MAJOR CONTOUR 20'
SIDEWALK
HIGHWAY
CANOPY LINE
BUILDING
PARCEL BOUNDARY
ROAD

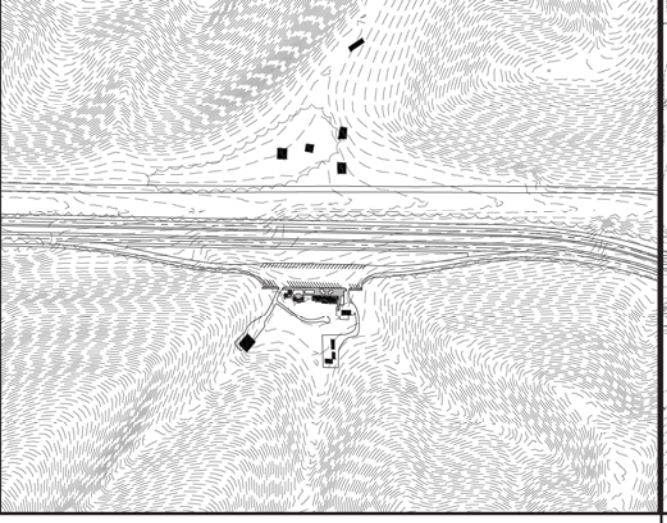
0 200 400 Feet

The typical rest area in Virginia is designed for maximum efficiency. The building sits in the middle of the site while paths and circulation are focused on conveying people towards the building. All of the rest areas have the entrance separate from the exit. Truck parking is always pull-through and separated from the car parking. All parking is usually angled at 45 degrees or more. In addition to rest rooms, amenities include, picnic tables, playgrounds, charcoal grills, and dog bathroom areas. The planting design of these rest areas is trees, turf, and small areas of ornamental plants near the entrance to the buildings.

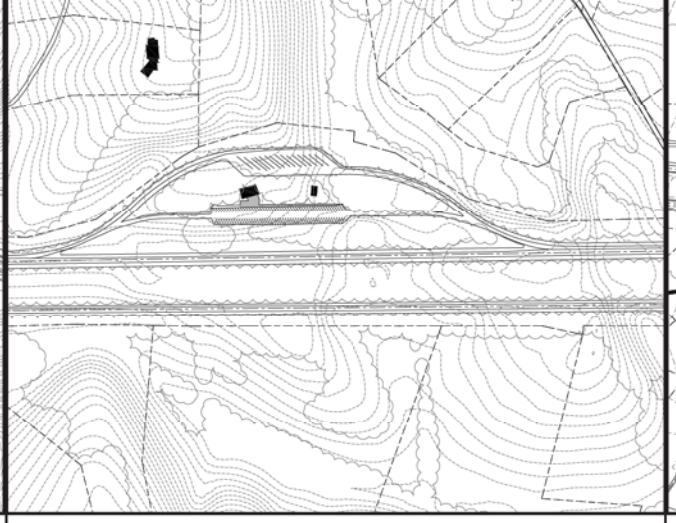
As mentioned earlier, there are three attributes in the Wilderness Act that can be reformulated to fit within the interstate rest area. These are the appearance that the place is primarily formed by natural elements, opportunities for solitude, and opportunities for preservation of natural, geologic, or historic resources. From these attributes and the need to find a location that can incorporate the topography, circulation, and vegetation lessons informed by the case studies, I developed three criteria to determine the ideal location to design a wilderness experience within a rest area. These criteria are:

1. **Opportunities for Redevelopment** - segmentation of surrounding land parcels, surrounding land ownership, rest area size
2. **Natural Suitability** - existing wilderness character, ecological variation
3. **Rest Area Usage** - average vehicles per day

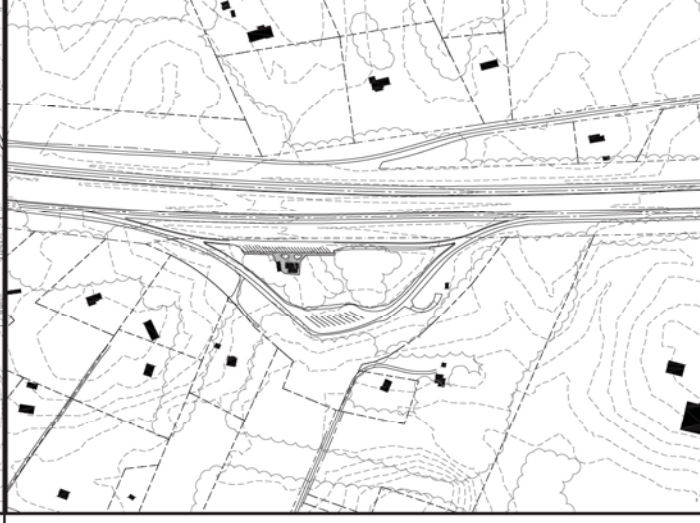
The following pages examine all eight rest areas on I-64 based on the above criteria using a comparative ranking system. Each of the eight rest areas is given a score of 1 (least favorable) to 8 (most favorable). Qualitative and quantitative data are combined to form one qualitative comparative ranking for each of the three above criteria. Measurements for these criteria are taken in a study area of 2000' by 3500', which is displayed in the existing conditions maps on the right of the following pages.



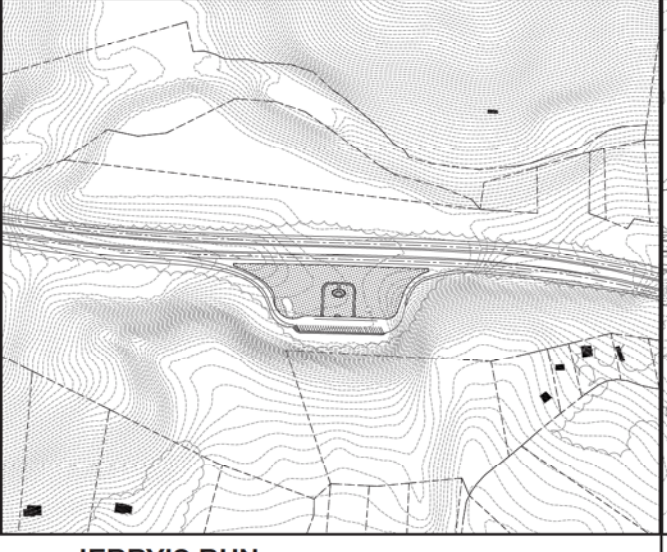
JERRY'S RUN



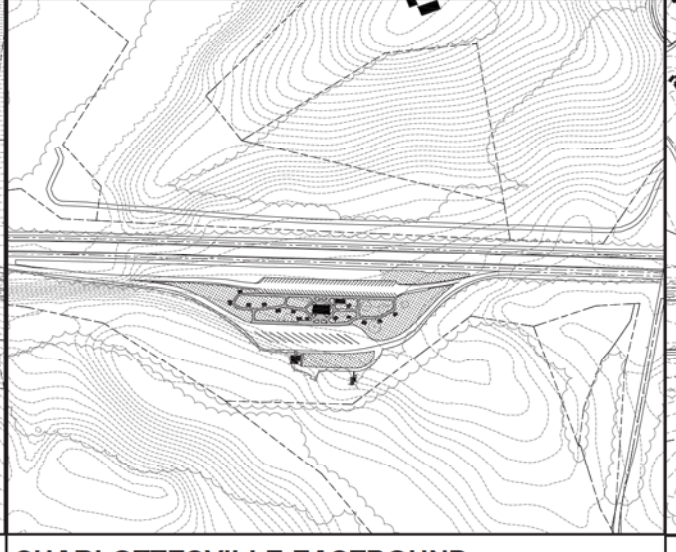
CHARLOTTESVILLE WESTBOUND



GOOCHLAND EASTBOUND



JERRY'S RUN



CHARLOTTESVILLE EASTBOUND

GOOCHLAND WESTBOUND

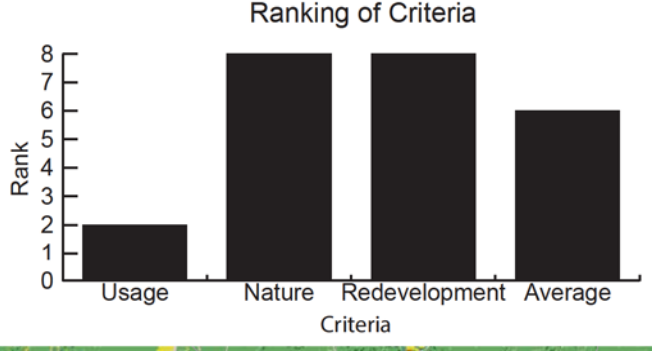
2.1 Jerry's Run

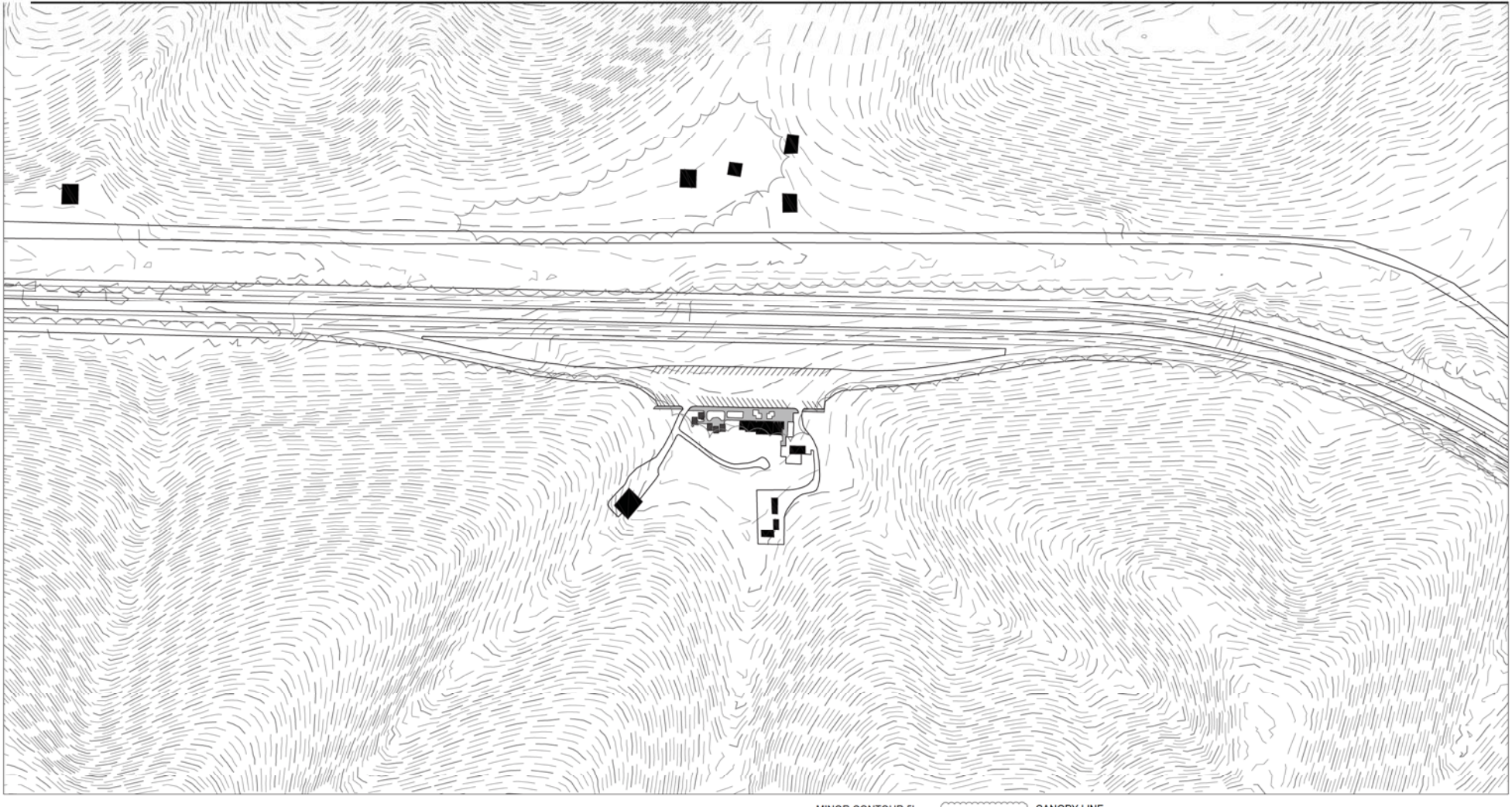
Jerry's Run is the Virginia Welcome Center for motorists entering Virginia from West Virginia. The existing site is endowed with more existing wilderness character than all the other rest areas by far. Its adjacency to Jefferson National Forest and the Allegheny Trail make it ideal for experiencing wilderness at the regional scale. However, its lower variation in ecological diversity and lower usage make it less ideal.

1. Usage
Average annual vehicles per day: *420*
Population of closest city: *5,818 - Covington*

2. Natural Suitability
Existing wilderness character within rest area parcel: *High*
Existing wilderness character within study area: *High*
Natural ecological units: *North Eastern Interior Dry Oak Hardwood Forest, Central Interior Calcareous Cliff and Talus*

3. Redevelopment Potential
Rest area parcel size: *Unknown*
Number of parcels in study area: *4*
Average size of parcels in study area: *> 500,000 acres*
Adjacent ownership entities: *National Forest, Rural Residential*




MINOR CONTOUR 5'
MAJOR CONTOUR 20'
SIDEWALK
HIGHWAY
CANOPY LINE
BUILDING
PARCEL BOUNDARY
ROAD
0
200
400
Feet

JERRY'S RUN

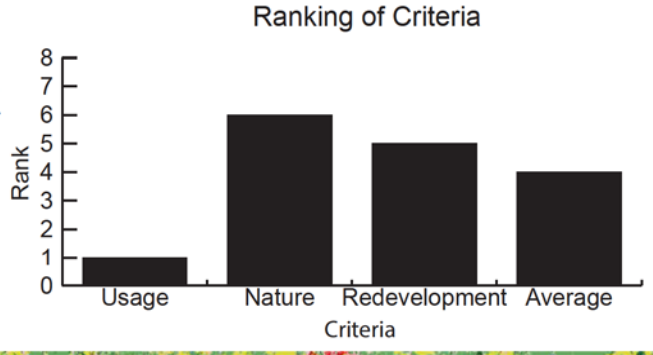
2.2 VDOT Workers' Memorial

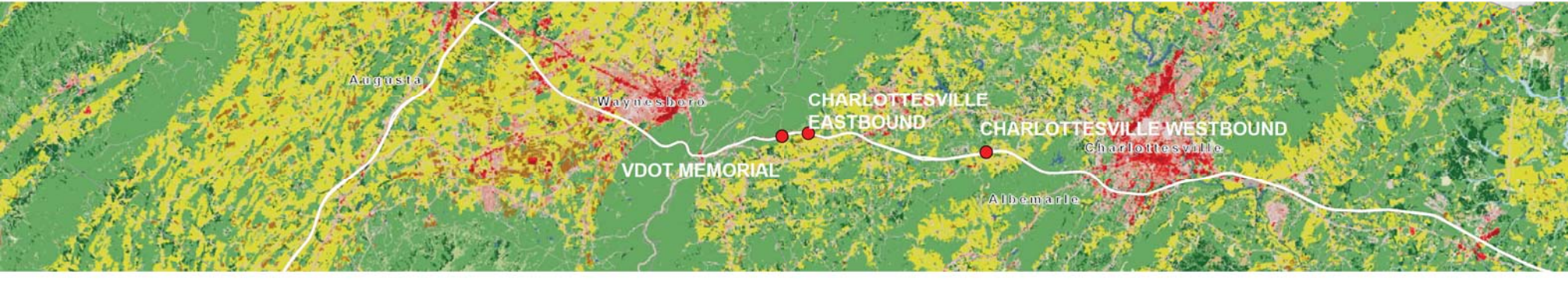
The VDOT Workers' Memorial was dedicated in 2004, but the original parking and overlook layout are much older. Of all the rest areas in this study, it is the only site that provides truly long range views. It is almost adjacent to Shenandoah National Park and very close the Appalachian Trail. However, the site is boxed in by the highway and steep drop-offs immediately outside the parking. This makes access to the rest of the property and beyond challenging.

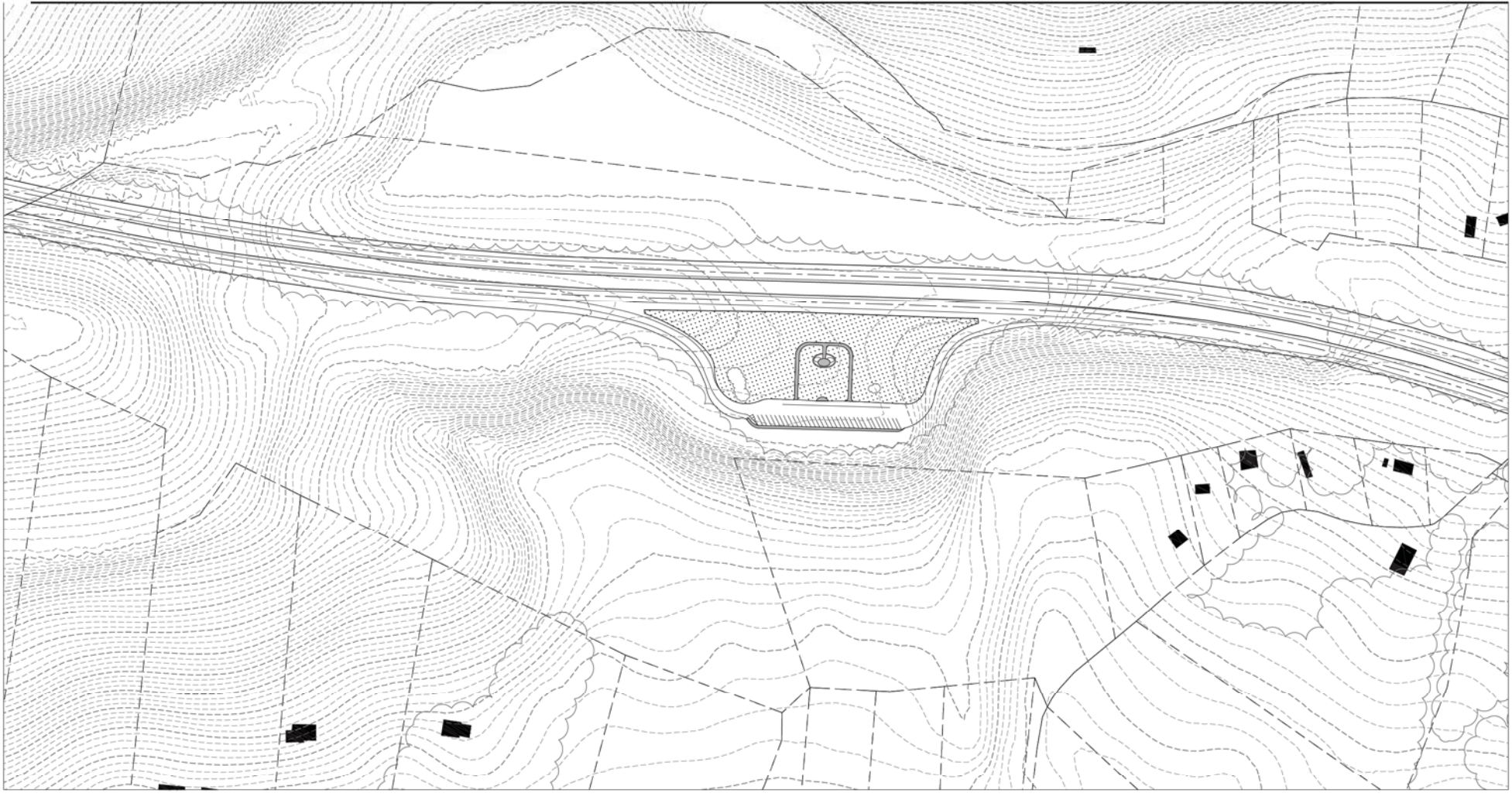
1. Usage
Average annual vehicles per day: *Unknown*
Population of closest city: *44,239 - Charlottesville*

2. Natural Suitability
Existing wilderness character within rest area parcel: *Medium*
Existing wilderness character within study area: *High*
Natural ecological units: *Northeastern Interior Dry Oak Forest, Southern and Central Appalachian Cove Forest, North-Central Appalachian Acidic Cliff and Talus*

3. Redevelopment Potential
Rest area parcel size: *140 acres*
Number of parcels in study area: *35*
Average size of parcels in study area: *36 acres*
Adjacent ownership entities: *Private Rural Residential, Pasture land, National Park*







VDOT WORKERS' MEMORIAL

MINOR CONTOUR 5'
MAJOR CONTOUR 20'
SIDEWALK
HIGHWAY
CANOPY LINE
BUILDING
PARCEL BOUNDARY
ROAD

0 200 400 Feet

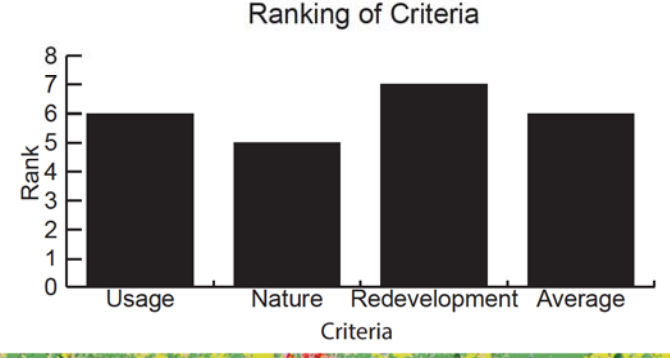
2.3 Charlottesville Eastbound

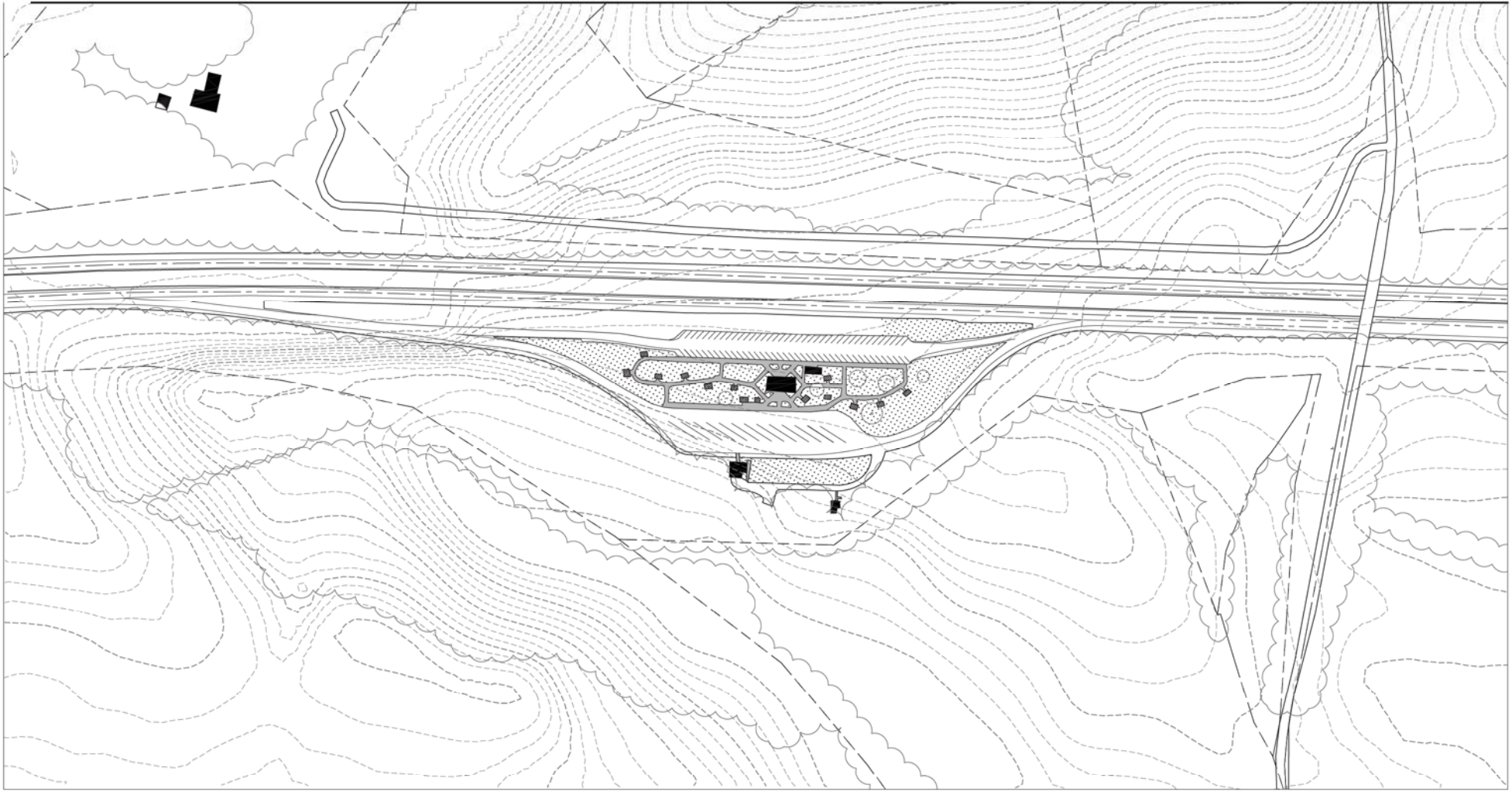
Charlottesville Eastbound sits at the edge of the Piedmont. The rest area core is open, which affords broad views of the mountains to the west. The southeastern corner of the property has a relatively large patch of wooded area with a dirt road, which could be improved to provide 15 to 20-minute walking experiences. Beyond the boundaries is entirely open pasture land.

1. Usage
Average annual vehicles per day: *1600*
Population of closest city: *44,239 - Charlottesville*

2. Natural Suitability
Existing wilderness character within rest area parcel: *High*
Existing wilderness character within study area: *Medium*
Natural ecological units: Northeastern Interior Dry Oak Forest

3. Redevelopment Potential
Rest area parcel size: *14*
Number of parcels in study area: *9*
Average size of parcels in study area: *109*
Adjacent ownership entities: *Pasture land*





CHARLOTTESVILLE EASTBOUND

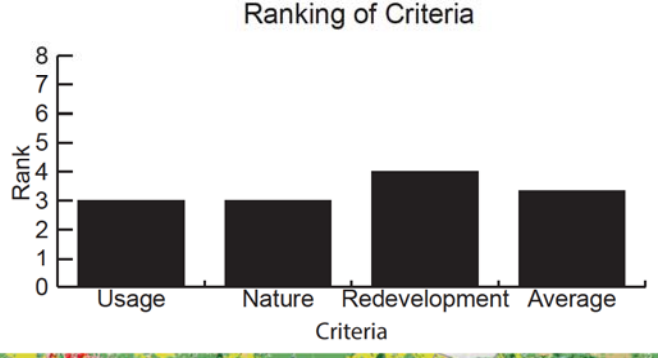
2.4 Charlottesville West-bound

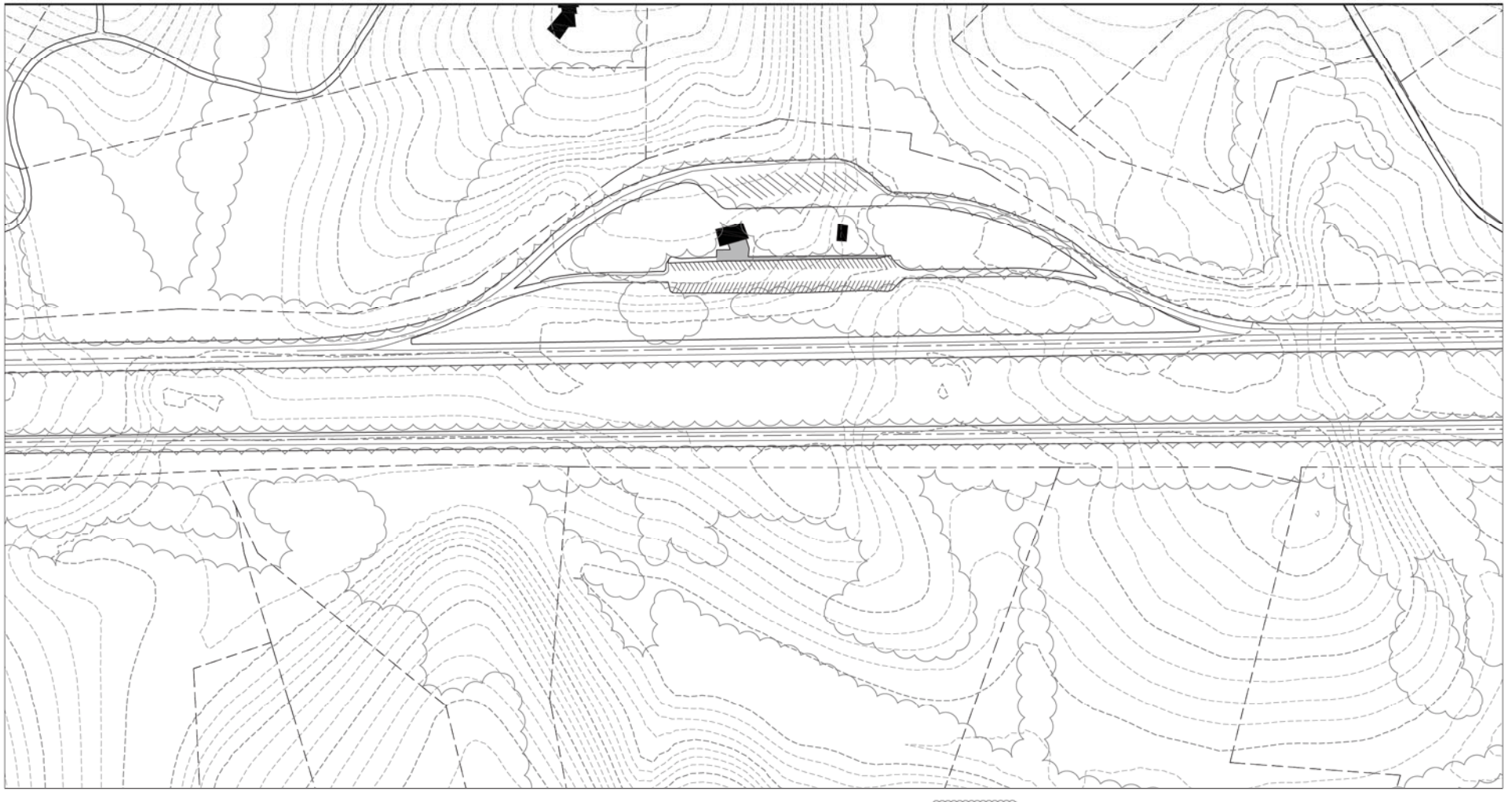
Charlottesville Westbound provides interesting on-site topography and wooded areas. The center of the site has a deep ravine that provides good shelter from traffic noise with high potential to offer opportunities for solitude. The northern edge of the rest area parcel is bordered by heavily wooded private property.

1. Usage
Average annual vehicles per day: *430*
Population of closest city: *44,239 - Charlottesville*

2. Natural Suitability
Existing wilderness character within rest area parcel: *High*
Existing wilderness character within study area: *Medium*
Natural ecological units: Northeastern Interior Dry Oak Forest

3. Redevelopment Potential
Rest area parcel size: *22 acres*
Number of parcels in study area: *16*
Average size of parcels in study area: *17 acres*
Adjacent ownership entities: *Rural Housing, Pasture Land*





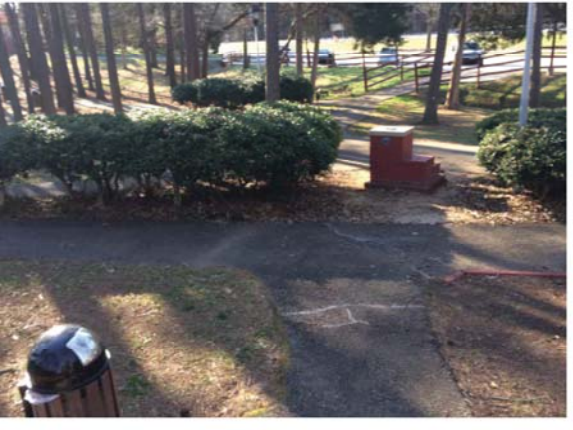
CHARLOTTESVILLE WESTBOUND

MINOR CONTOUR 5'
MAJOR CONTOUR 20'
SIDEWALK
HIGHWAY
CANOPY LINE
BUILDING
PARCEL BOUNDARY
ROAD

0 200 400 Feet

2.5 Goochland Westbound

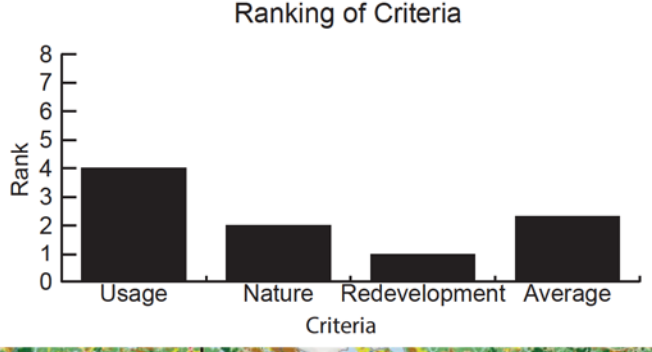
Goochland Westbound is the smallest of the rest areas in this study. The parking does not completely surround the building like most other rest areas. This parking arrangement has motorists facing the forest and not another parking lot. This could be a strategy for encouraging users to move beyond the existing parcel boundaries, but the highly segmented residential setting surrounding the rest area make this unlikely.

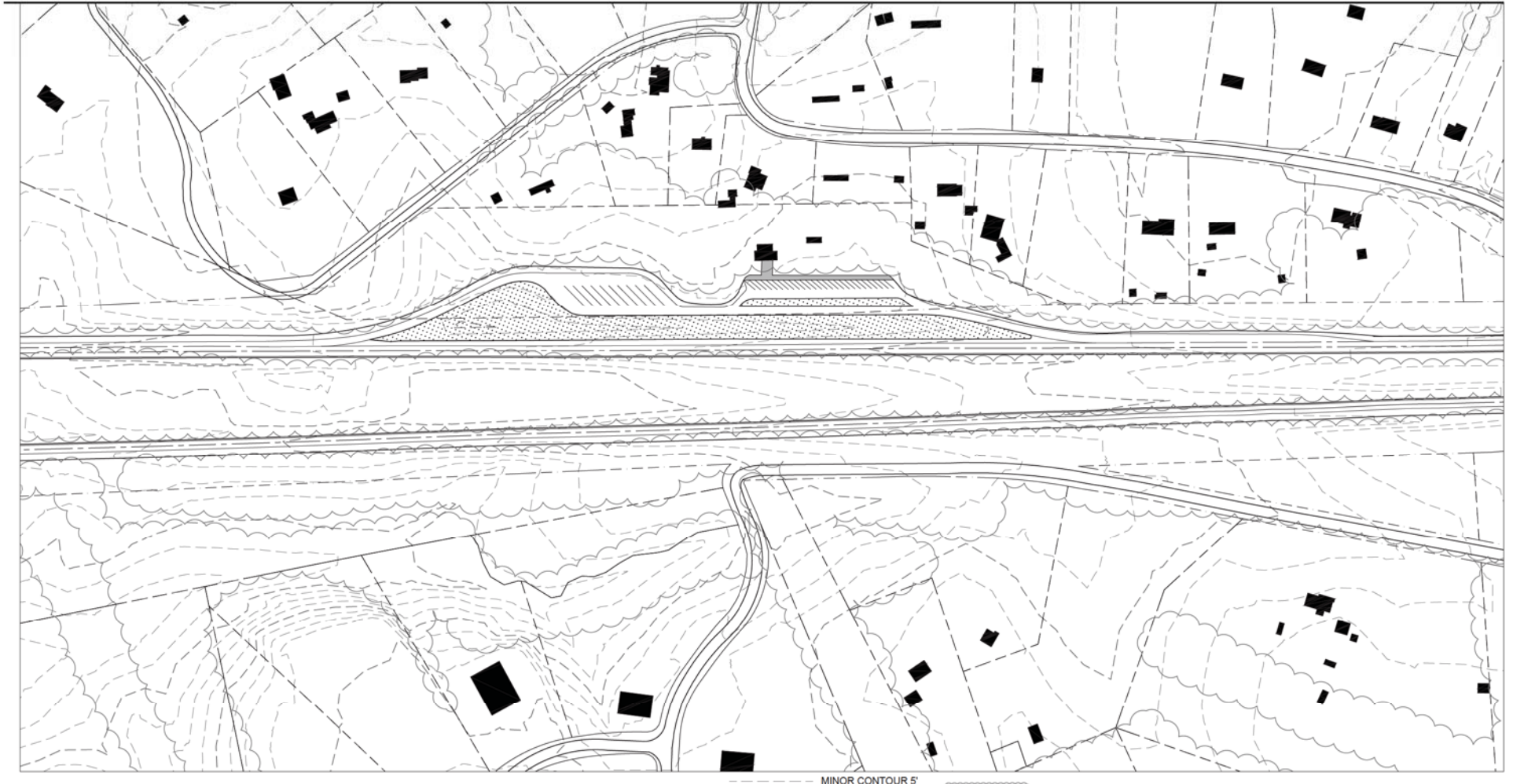


1. Usage
Average annual vehicles per day: *950*
Population of closest city: *214,114 - Richmond*

2. Natural Suitability
Existing wilderness character within rest area parcel: *Low*
Existing wilderness character within study area: *Low*
Natural ecological units: *Southern Piedmont Dry Oak-(Pine) Forest, Southern Piedmont Small Floodplain and Riparian Forest, Southern Piedmont Dry Oak-(Pine) Forest - Loblolly Pine Modifier*

3. Redevelopment Potential
Rest area parcel size: *8 acres*
Number of parcels in study area: *68*
Average size of parcels in study area: *4 acres*
Adjacent ownership entities: *Suburban Residential*





GOOCHLAND WESTBOUND

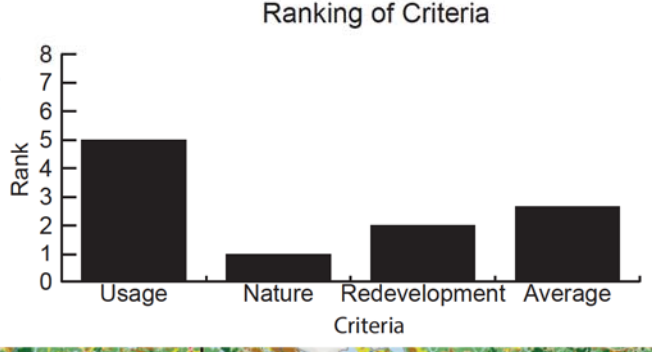
2.6 Goochland Eastbound

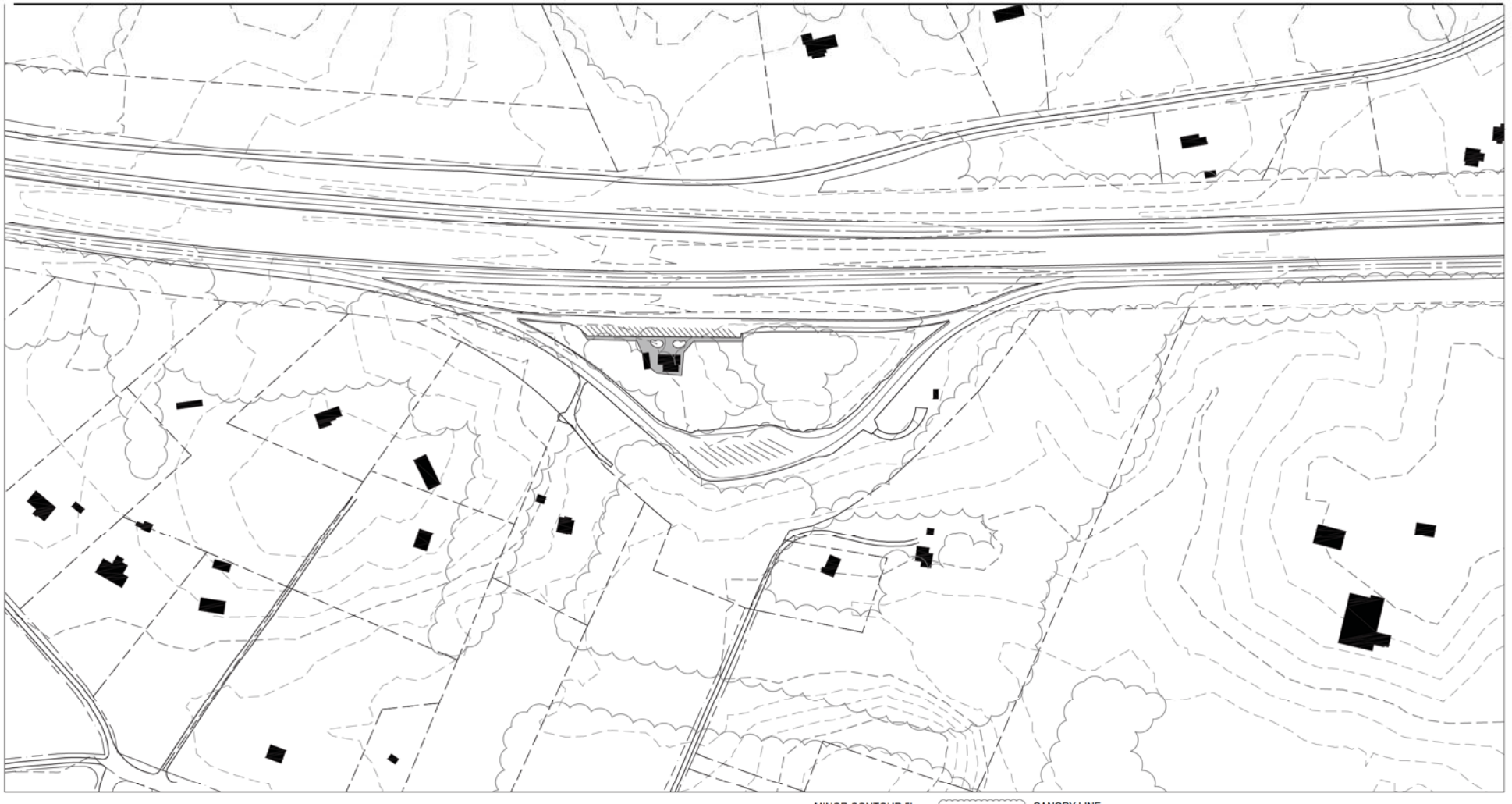
Goochland Eastbound provides an interesting blend of forest patches that make it good for patch and site scale wilderness experience development. Beyond the parcel boundaries are a series of fairly segmented properties, which make it not ideal to develop beyond the rest area boundary.

1. Usage
Average annual vehicles per day: *1200*
Population of closest city: *214,114 Richmond*

2. Natural Suitability
Existing wilderness character within rest area parcel: *Low*
Existing wilderness character within study area: *Low*
Natural ecological units: *Southern Piedmont Dry Oak-(Pine) Forest - Mixed Modifier, Southern Piedmont Dry Oak-(Pine) Forest - Loblolly Pine Modifier*

3. Redevelopment Potential
Rest area parcel size: *11 acres*
Number of parcels in study area: *35*
Average size of parcels in study area: *10*
Adjacent ownership entities: *Rural Residential*





GOOCHLAND EASTBOUND

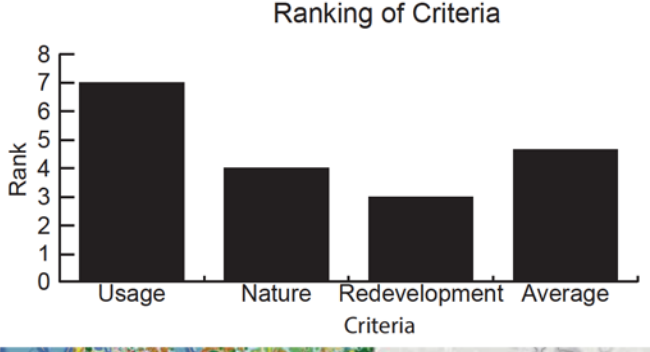
2.7 New Kent Westbound

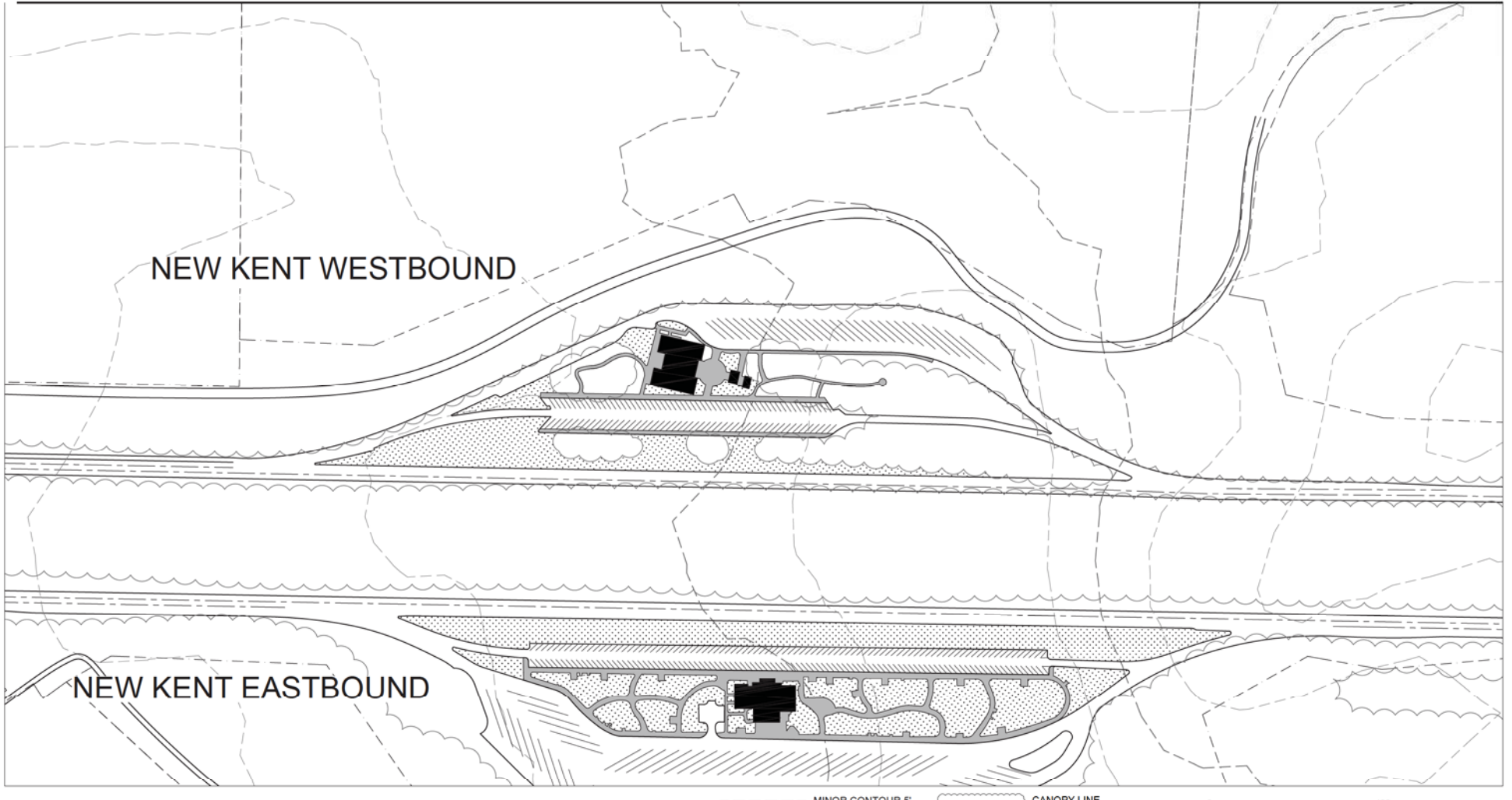
New Kent Westbound is the most recently renovated of the rest areas in the study. In 2013, the building was rebuilt to LEED certification standards. Sustainable landscape actions taken during this process were the addition of a bio-retention basin and minimizing expansion and repaving of the parking. On site, planting is mostly trees and turf, but the edges contain some forest patches that could create solitude experiences. Off-site is mostly agricultural forestry.

1. Usage
Average annual vehicles per day: *2400*
Population of closest city: *214,114 - Richmond*

2. Natural Suitability
Existing wilderness character within rest area parcel: *Medium*
Existing wilderness character within study area: *High*
Natural ecological units: *Southern Atlantic Coastal Plain Mesic Hardwood Forest, Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest, Atlantic Coastal Plain Blackwater Stream Floodplain Forest*

3. Redevelopment Potential
Rest area parcel size: *24 acres*
Number of parcels in study area: *5*
Average size of parcels in study area: *95 acres*
Adjacent ownership entities: *Agricultural Forestry, Rural Development*





NEW KENT WESTBOUND

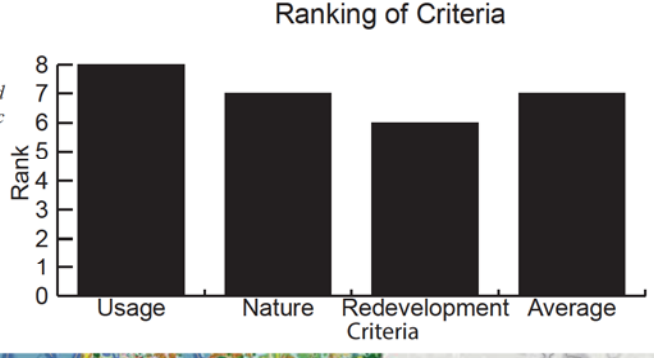
2.8 New Kent Eastbound

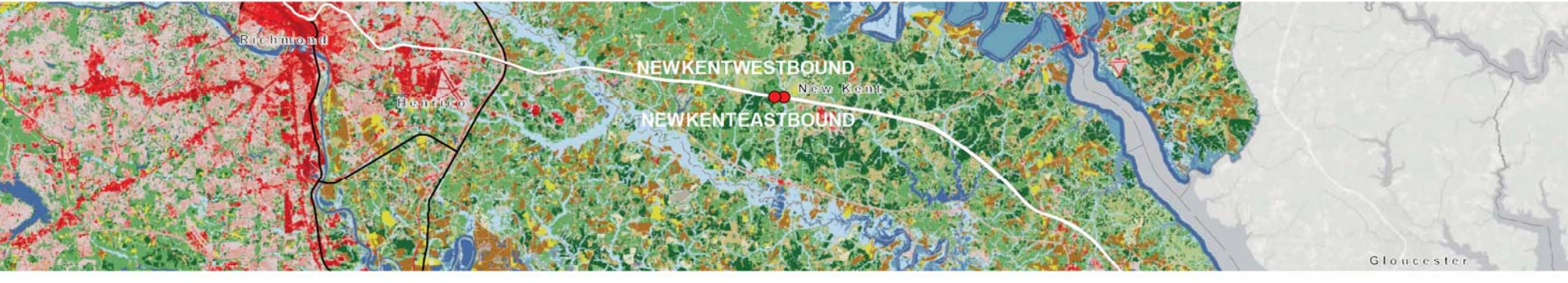
New Kent Eastbound provides a contrast of having the most tamed and manicured conditions within its core while also having the most diverse and interesting ecological conditions beyond its boundaries. The majority of the site's core is taken up by large parking areas. The rest is closely mowed grass with a few individual trees scattered across the lawn. Beyond the property boundary is floodplain forest isolated from any reasonable access because of challenging wet terrain and dense vegetation.

1. Usage
Average annual vehicles per day: *2400*
Population of closest city: *214,114 - Richmond*

2. Natural Suitability
Existing wilderness character within rest area parcel: Low
Existing wilderness character within study area: *High*
Natural ecological units: *Southern Atlantic Coastal Plain Mesic Hardwood Forest, Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest, Atlantic Coastal Plain Blackwater Stream Floodplain Forest*

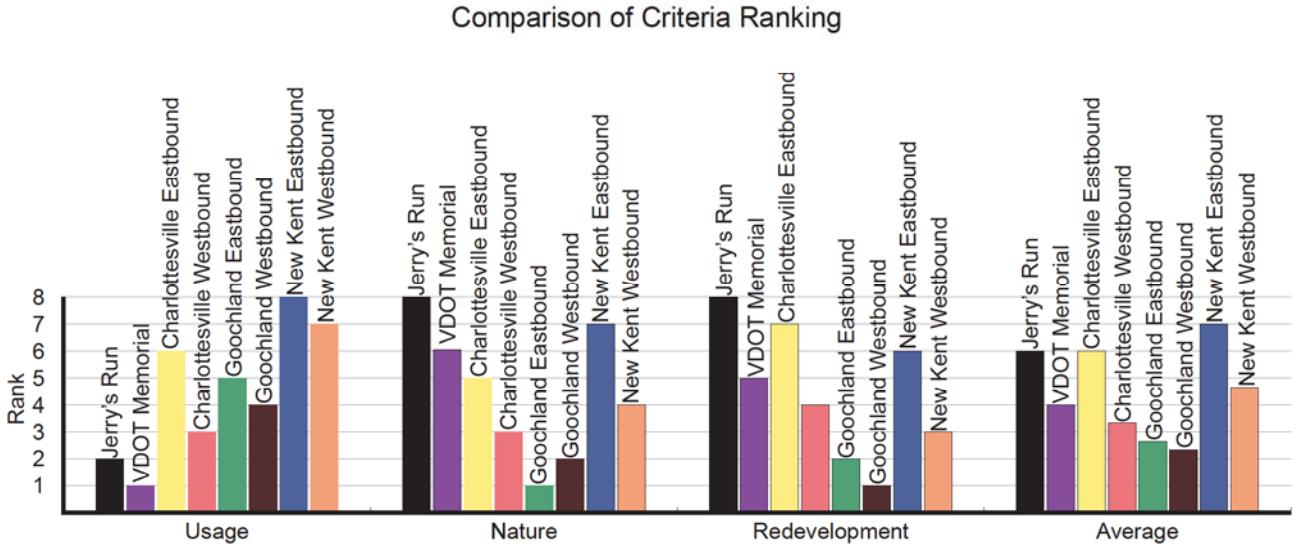
3. Redevelopment Potential
Rest area parcel area: *30 acres*
Number of parcels in study area: *7*
Average size of parcels in study area: *73 acres*
Adjacent ownership entities: *Agricultural Forestry, Rural Residential*



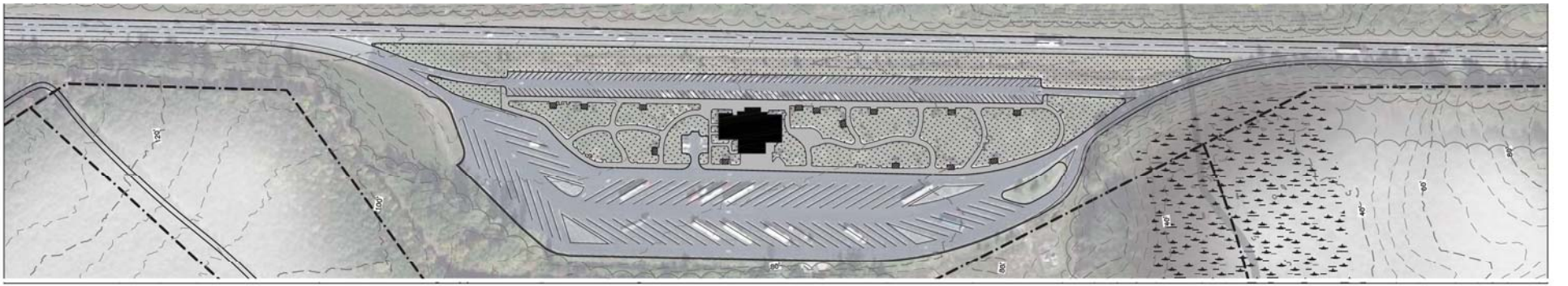


NEW KENT EASTBOUND

3. Site Selection



I chose New Kent Eastbound for a site to design as an example of a rest area that sits within a system of wilderness experience rest areas. Of all the rest areas in this study, the existing interior of this rest area is the most ecologically homogeneous and lacking the experience of wildness. The interior of the site heavily contrasts with the exterior, which contains the most interesting combination of ecological features of all the rest areas. With the exception of Jerry's Run, the exterior of New Kent Eastbound also has the greatest potential to create solitude, because of the large size of its forest patches and their relative isolation. The opportunity to connect the contrasting interior and exterior of New Kent Eastbound combined with the fact that it is the most heavily used rest area gave New Kent Eastbound the highest average ranking of all the rest areas. This can be seen at the end of the chart to the left that summarizes the rankings of all the rest areas.



NEW KENT EASTBOUND

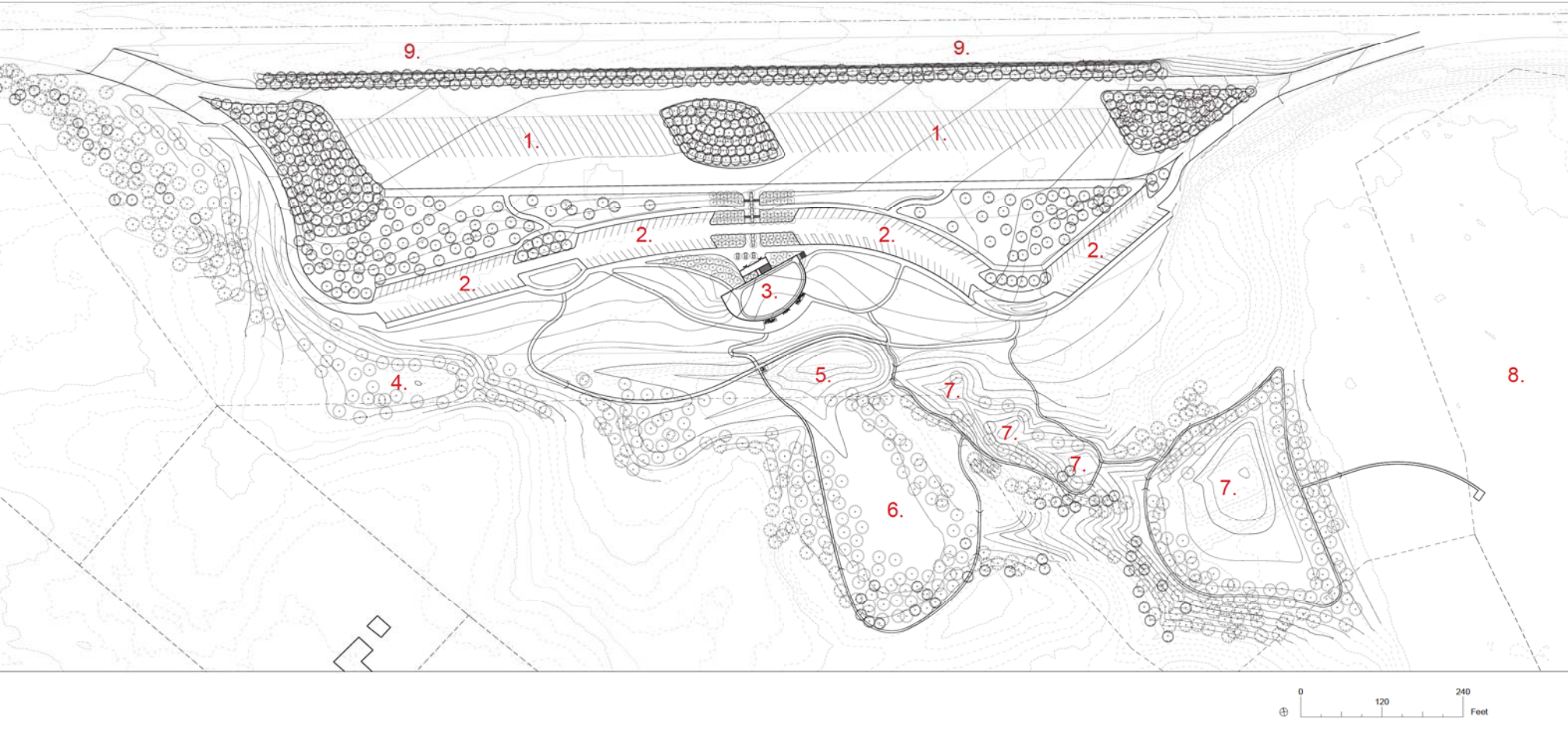
MINOR CONTOUR 5'
MAJOR CONTOUR 20'
SIDEWALK
HIGHWAY
CANOPY LINE
BUILDING
PARCEL BOUNDARY
ROAD
0
200
400
Feet

NEW KENT: LOCAL POPULATION FLOW AND DISTRIBUTION

10 50,000 VEHICLES PER DAY

0' 7200'

IV. DESIGN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9.
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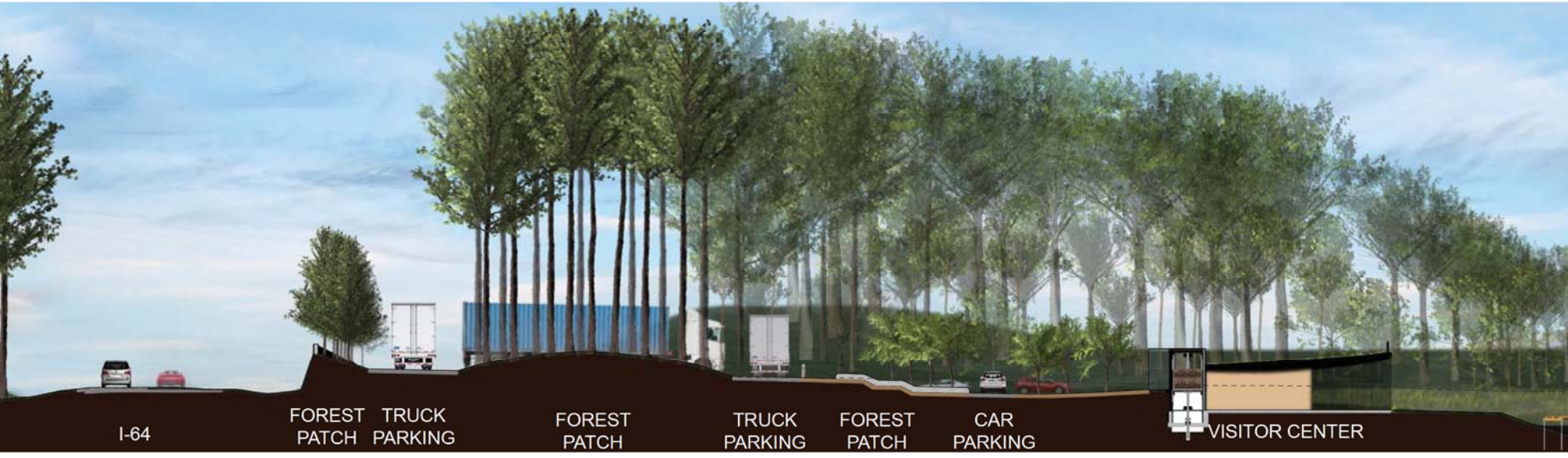
8.
0
120
240
Feet

1. Design Overview

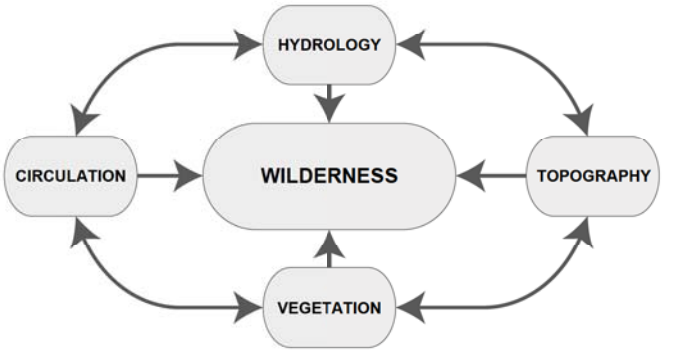
1. Truck Parking
2. Car Parking
3. Visitor Center
4. 2-Year Flood Catchment for I-64
5. Blackwater Forest Display Area
6. 2-Year Flood Overflow
7. Step Pools
8. Existing Blackwater Riverine Forest
9. Sound Berm

Existing Section

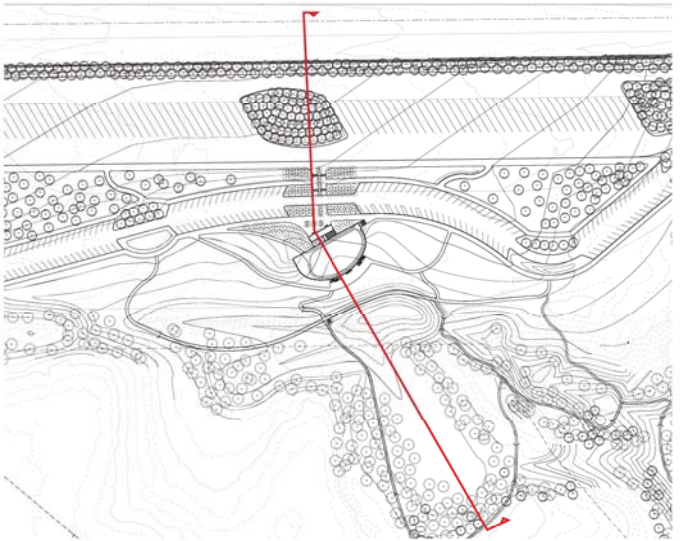
Proposed Section



INACCESSIBLE FOREST



Key Plan

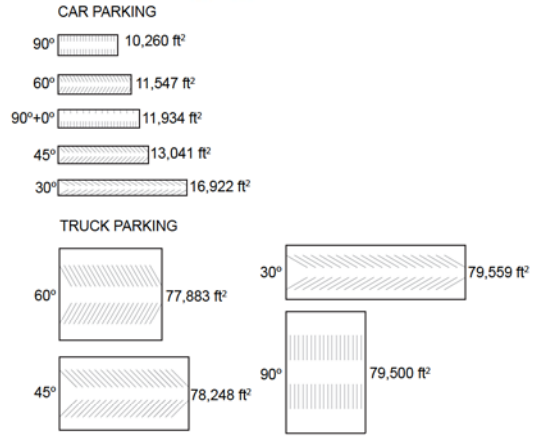


In order to design the experience of wilderness in an interstate rest area, I had to reevaluate the common practices associated with rest area layout. New Kent East and most other interstate rest areas that I studied followed a common pattern in their arrangement. This pattern, as seen in the existing section of New Kent East above and to the left, is to place car parking closest to the highway, followed by the visitor center, then followed by the truck parking. The truck parking acts as a barrier between the building and the edge of the property. This pattern is problematic in facilitating a wilderness experience because the rest area edge often contains the wildest version of nature on the rest area property.

The new design seen in the section below and to the left rearranges this order to bring the point that concentrates the most people, the building, to the edge of a wild forest and to mix patches of the wild forest into the parking and sidewalk infrastructure. This reorganization employs four interconnected components that improve storm water management capacity, increase wildlife habit, and maximize the experience of wilderness on the site. These components are circulation, topography, hydrology, and vegetation. These will be discussed in the following sections.

2.1 Circulation
Parking

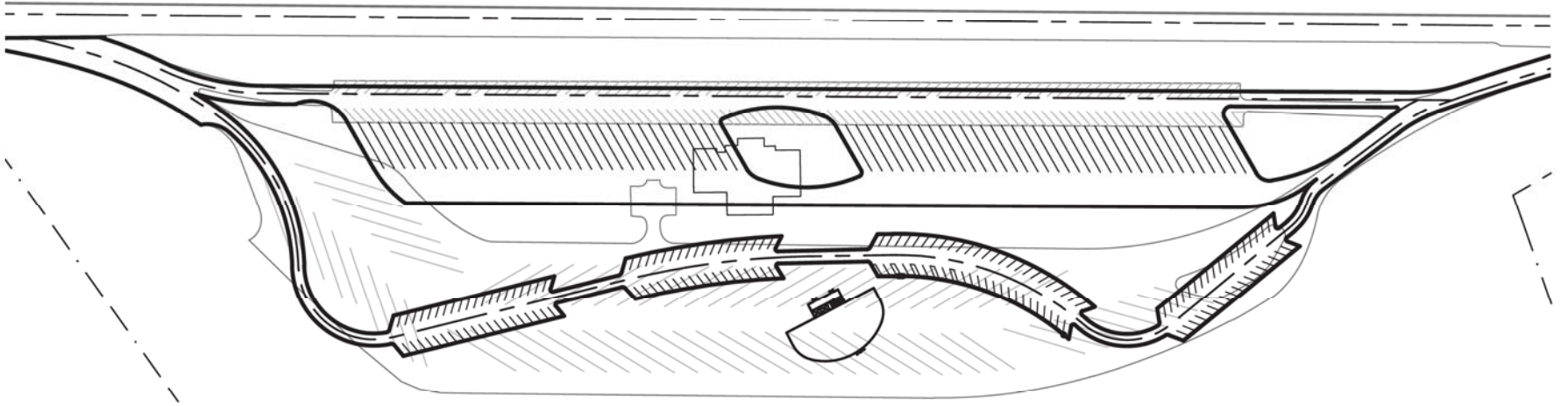
How parking angle affects the size of a parking area containing 40 spaces



On the existing site, the large parking area is one of the most dominating features. It was my goal to reduce its impact without decreasing the number of spaces, reducing the efficiency of the parking area's flow, or extending the new parking area significantly beyond the existing parking footprint. My first tool to accomplish this was adjusting the parking angle. As can be seen in the drawing on the left, car parking is the more space efficient as the parking angle approaches 90°. Trucks follow a similar trend, but because they have such a significantly wider turning radius there is a point where the additional driving lane width needed negates the efficiency gained by a steeper angle. The most space efficient layout for trucks is double lane 60° parking. By changing the truck parking angle from 30° to 60° the final parking layout reduces the total truck parking area by 91,812 ft² without losing any spaces. The final car parking plan removes 6 car spaces in order to reduce the maximum distance of car spaces from the visitor center. However, by changing the car parking angle from 45° to 60°, the proposed plan reduces the area of an equivalent number of existing spaces by 15,260 ft².

The second strategy that the proposed parking plan uses is breaking the parking area into pieces so that the occupant never experiences the full size of the parking area. This is a strategy effectively employed by the parking lots along Skyline Drive and the Blue Ridge Parkway that provided inspiration for this design. While double row truck parking and 90° car parking are more space efficient than the single row truck parking and 60° car parking used in the design, the thinner parking area widths produced by the layouts used made it easier to break the parking into smaller pieces. For creating a wilderness experience, the most important part of the process is minimizing the feeling of the parking lot size even if it is larger than the smallest size possible.

Proposed parking overlaid on existing



2.2 Circulation

Trails

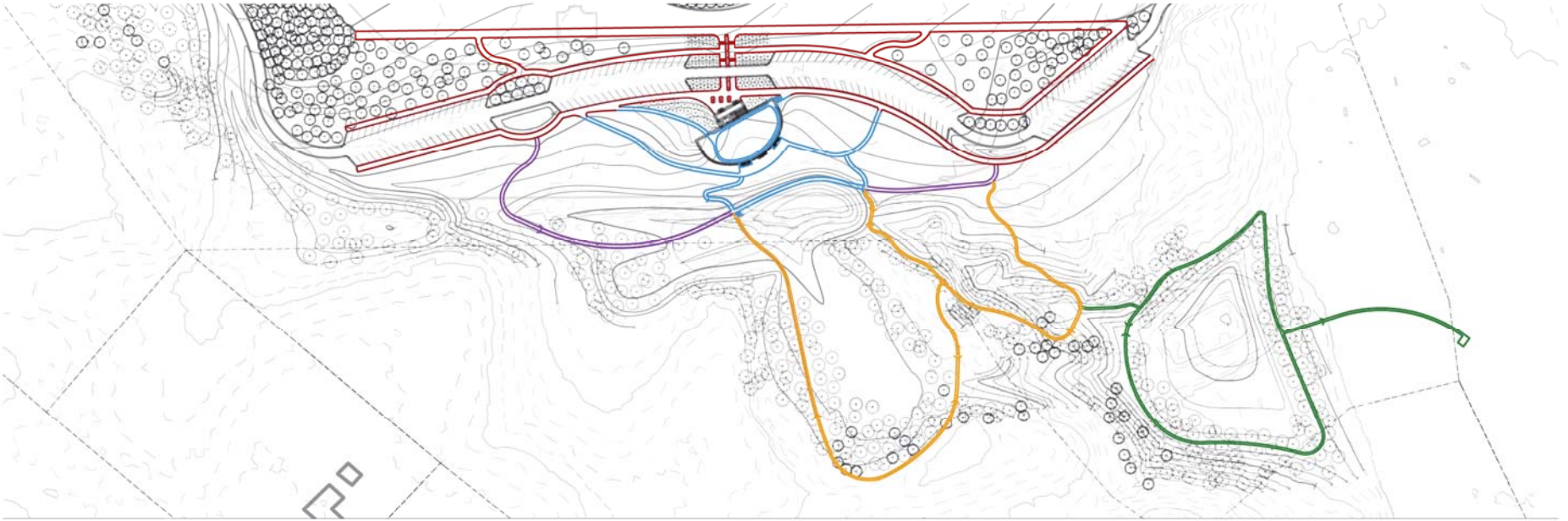
Zone 1: 8ft to 12 ft wide
Sidewalks along parking areas. Paved utilitarian pathways designed to collect people from the parking area and convey them to and from the building. Moments of patch scale wilderness immersion are provided in short sections that briefly move away from the parking area through a meadow, around a rain garden, or underneath a pine grove.

Zone 2: 3ft to 5ft wide
Paved pathways and boardwalks in close proximity to and on the roof of the visitor center. Designed for people with limited time or impaired mobility who want a more immersive experience than what can be provided by Zone 1. Provides close views of marsh vegetation from the boardwalk and long range views of the wild landscape from the building roof.

Zone 3: 5ft wide
Compacted finely crushed gravel pathway and boardwalk. Travels a greater distance from the rest area core. Moves along the edge of the meadow, the edge of the forest, the edge of the wetland, and the edge of the point where one can no longer see the structures of the rest area. Designed as a gateway that encourages people to move into the next wilder zones.

Zone 4: 3ft wide
Dirt trail and boardwalk. Only short sections are in full view of the rest area. The rest is hidden or filtered through the trees. Opportunities to view older native Mesic Hardwood Forest are found at the southern end of the loop.

Zone 5: 3ft
Dirt trail and boardwalk. The wildest experience available at the rest area. Views back to the structures in the rest area core are limited. Its distance provides the greatest opportunities for solitude and the most shelter from traffic noise. This zone is the only area where you can enter the original native Blackwater Forest.



3. Topography

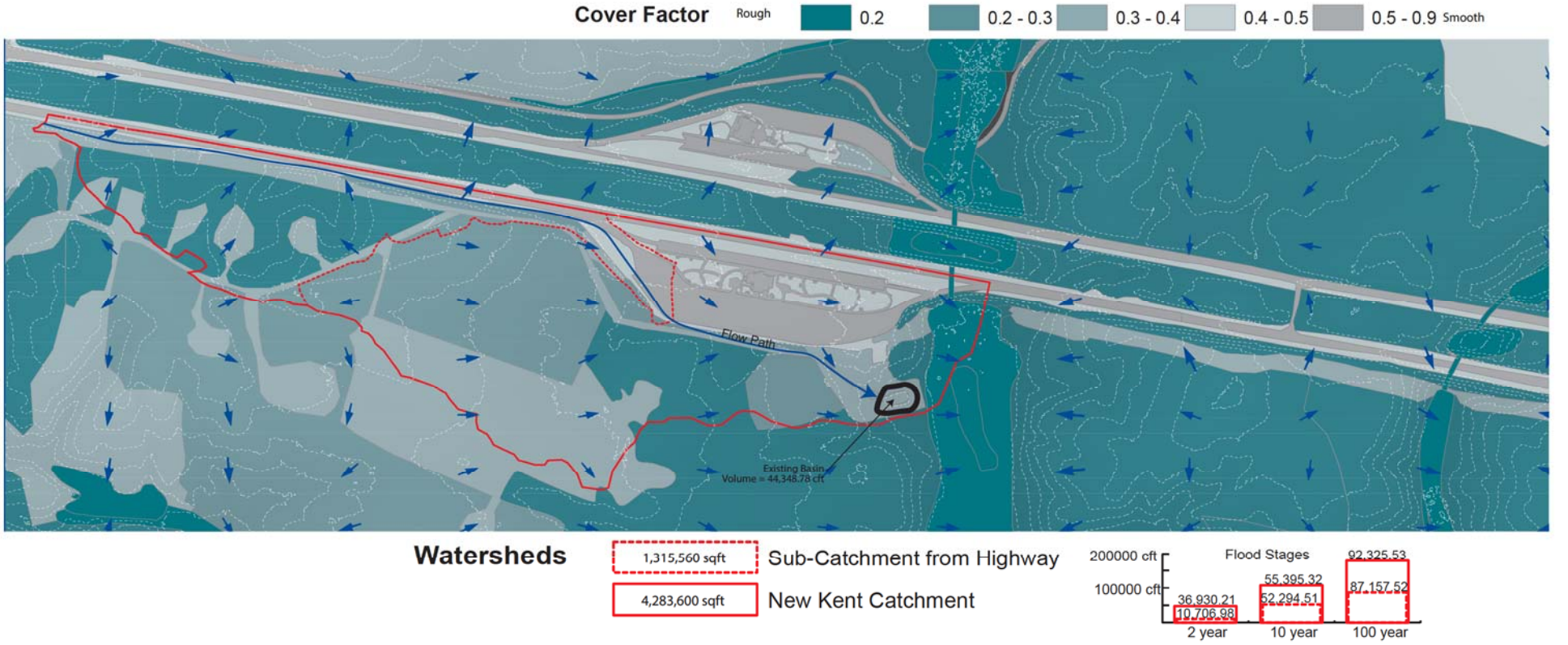
Reordering the existing topography plays a major role in bringing the rest area visitor closer to the wilderness while subdividing the structures to reduce their presence on the site. A sound berm separates the trucks from the interstate, and large mounds planted with trees subdivide the truck parking lot. A series of terraces that partially bury the building divides the trucks, the cars, and wilderness area beyond.

Proposed Section

Detail of terrace dividing the trucks and cars while partially burying the building

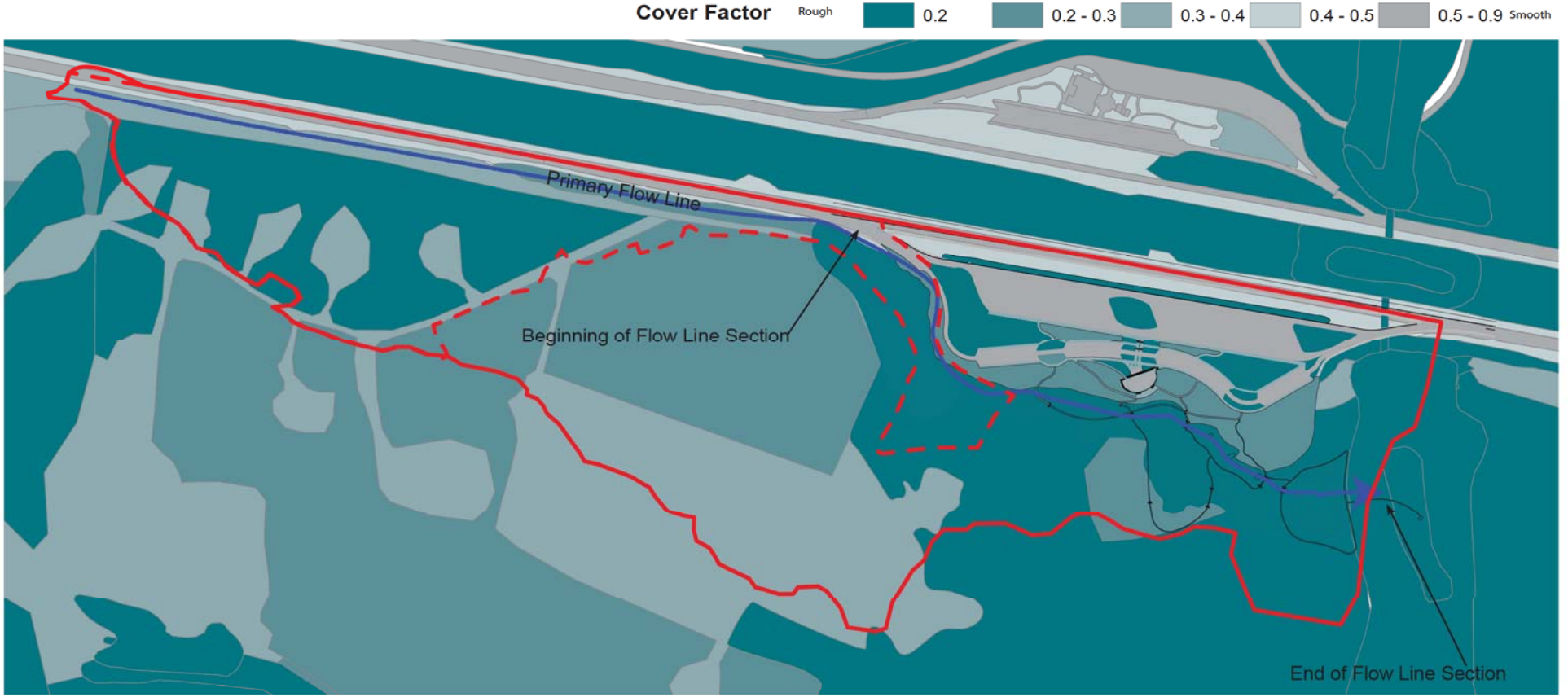
4.1 Existing Hydrology

The entire hydrolgy for the site is contained in one major watershed. The map below shows the entire area of this watershed in addition to the sub-catchment area of land that includes the highway. In the existing conditions of the sight, the water collected during a two-year storm drains into the existing catchment basin in the southeast corner of the watershed. This existing basin is a steep-walled mowed grassy berm that has no dialogue with the existing topography or wetland. For any storm greater than the two year level, stormwater exceeds the capacity and drains out into the marsh.



4.2.1 Proposed Hydrology:
Regional Context

The proposed hydrology does not significantly change the formation of the surrounding watersheds. The primary difference is reducing the pavement by 100,000 sqft and increasing the roughness of the overall cover factor converting mowed lawn to meadow and forest. This increases infiltration rates and reduces the quantity of water that is needed to be stored during a storm event.

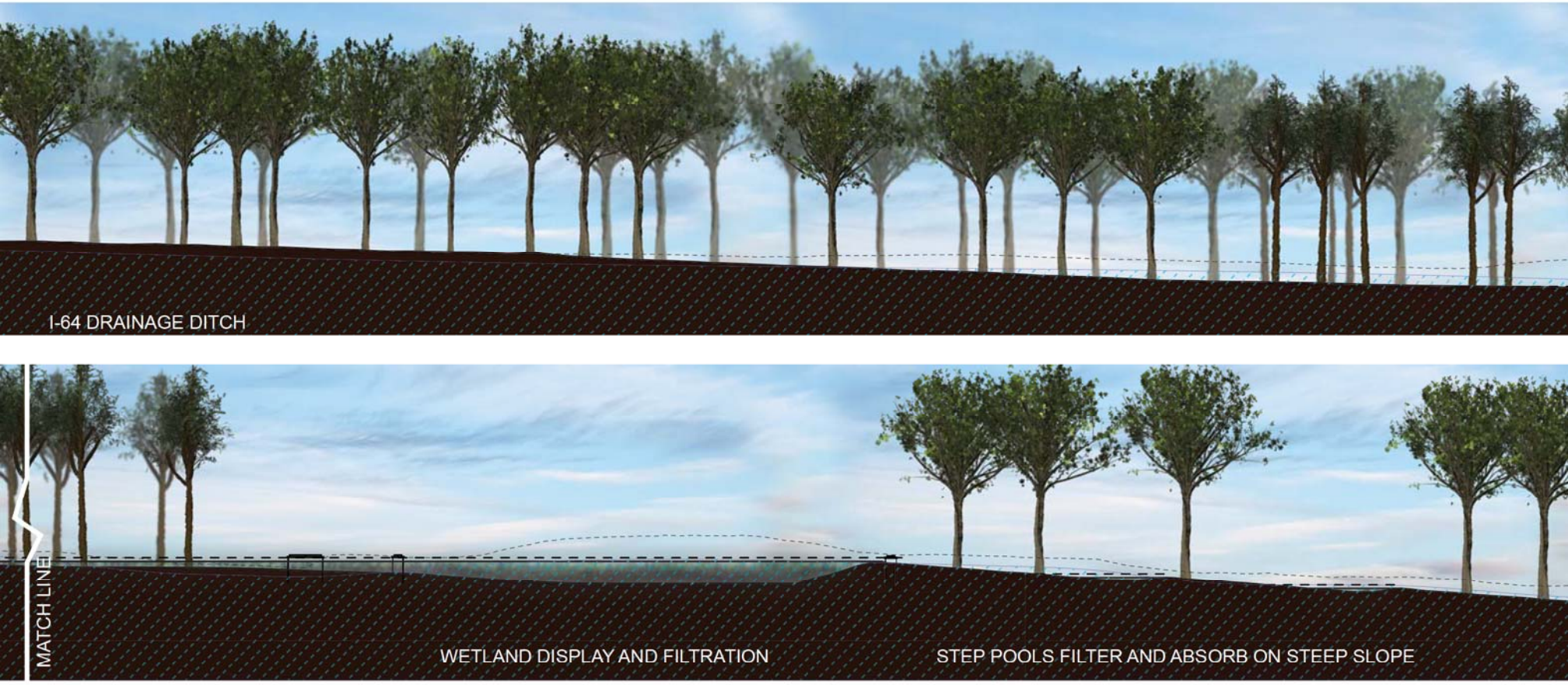


4.2.2 Proposed Hydrology:
Section of Primary Flow Line

Existing Water Table

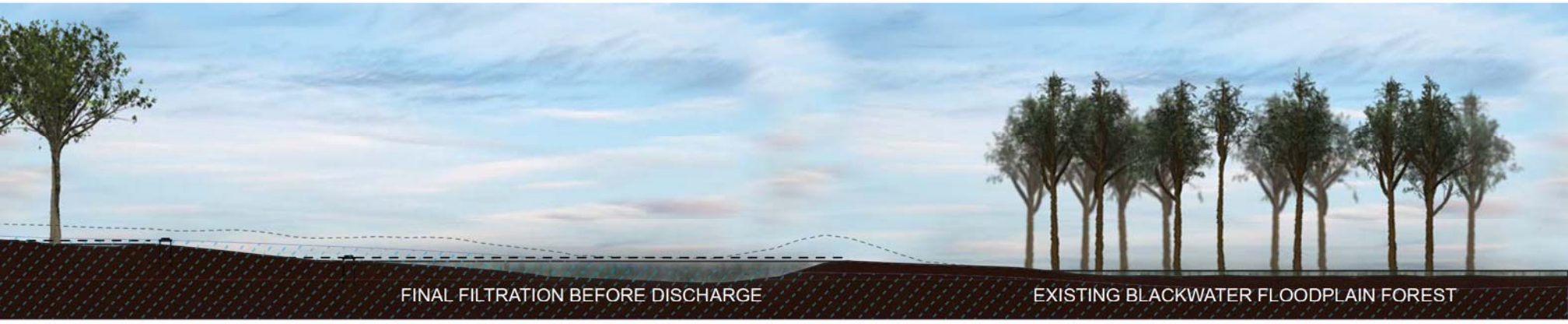
Existing Section

Proposed 2-Year Flood Level



As water flows off I-64 through the rest area site, it passes several stages that slow, infiltrate and filter it before it is released into the wetland at the end of the flow line.

The drawing below shows a section view of the primary flow line of the proposed hydrology seen on the previous page.



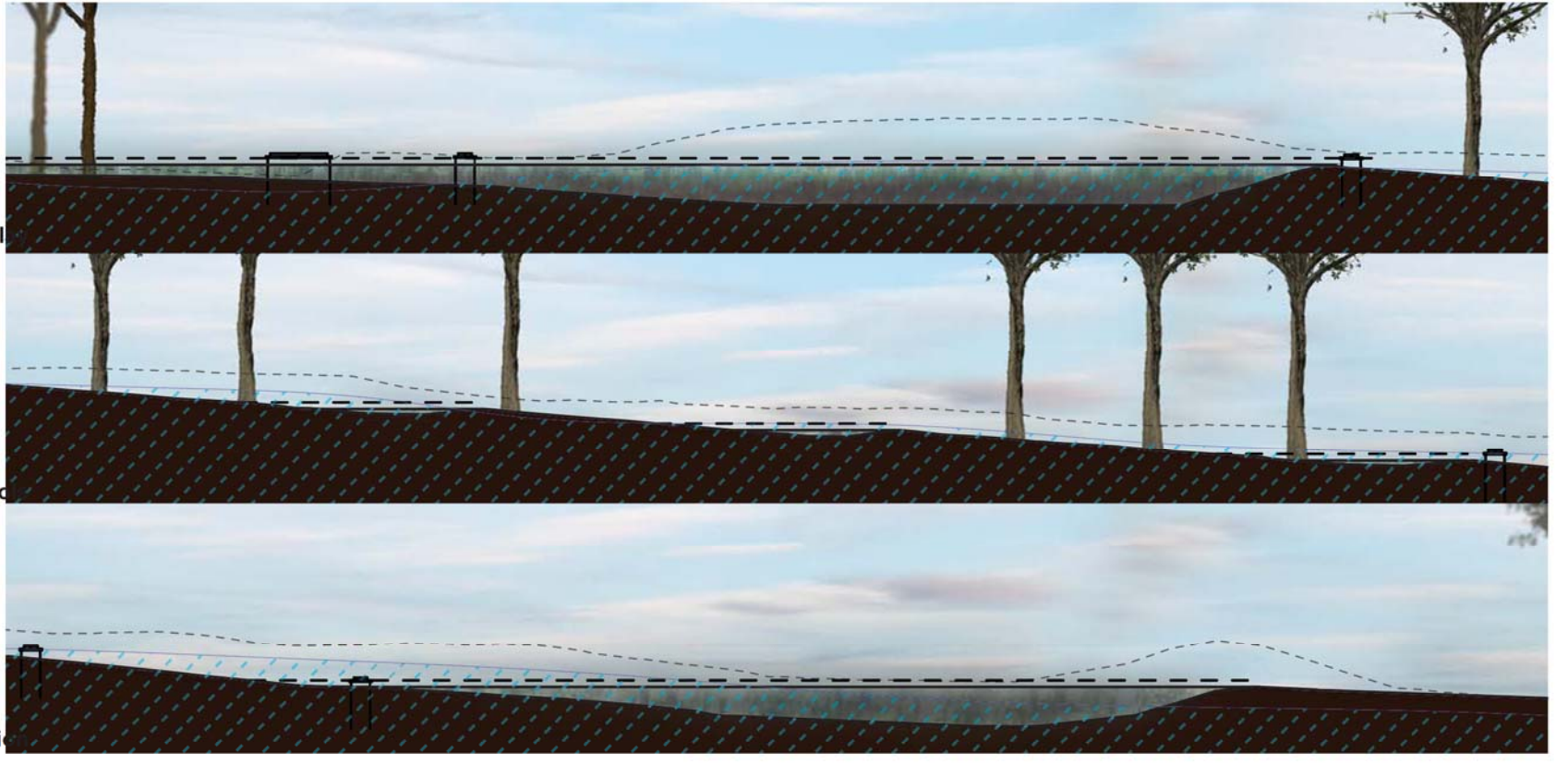
Existing Water Table

Existing Section

Proposed 2-Year Flood Level

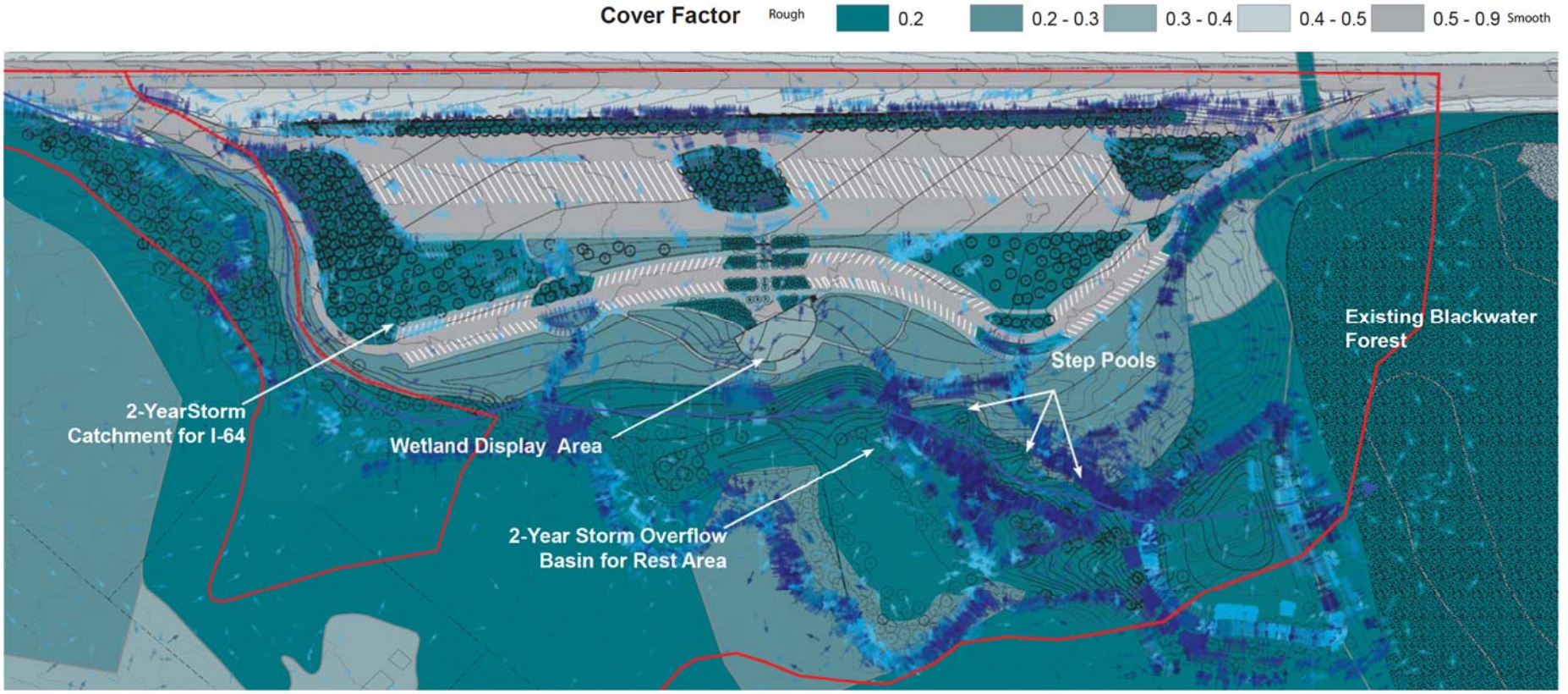
4.2.3 Proposed Hydrology:
Detail Sections Of Primary Flow Line

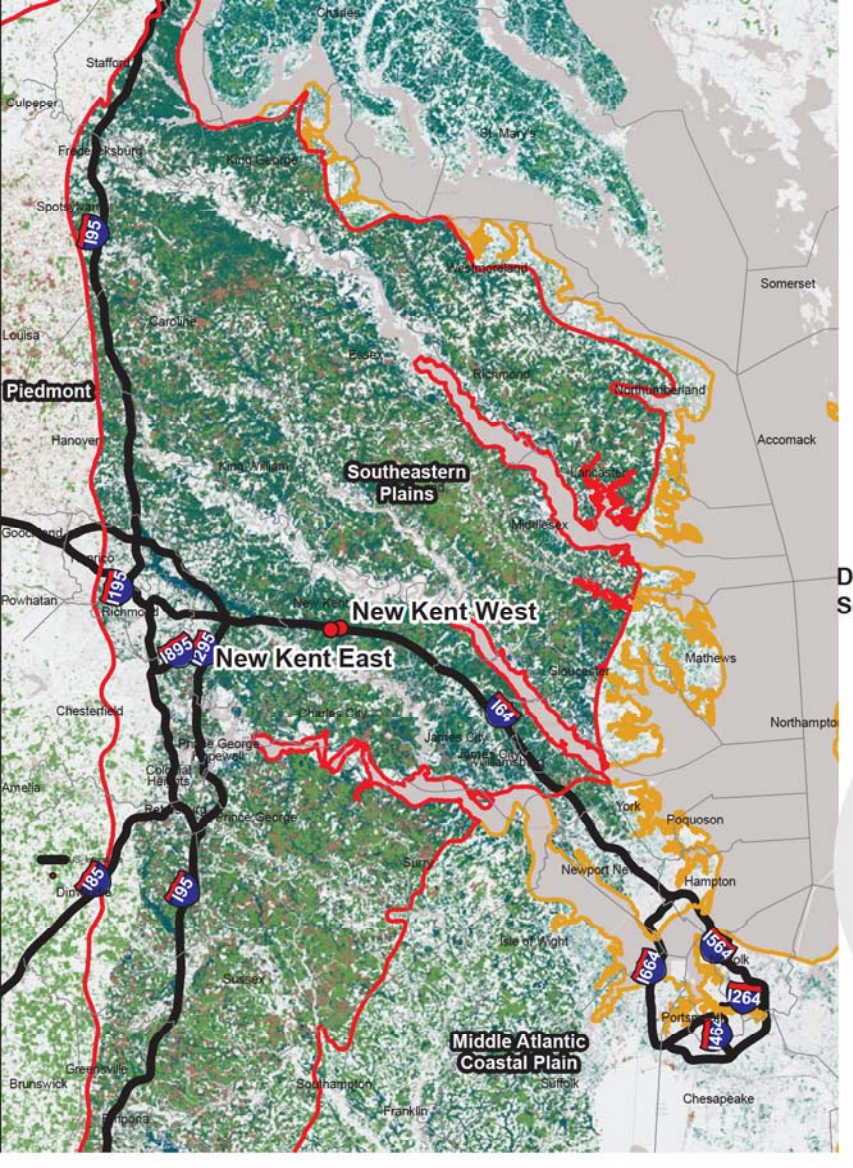
The sections below show three types of water storage structures found along the primary flow line. The wetland display area is placed in view right in front of the visitor center. It brings rest area users an up-close and immediate experience of the Blackwater Forest that was unknown and inaccessible in the original rest area. The step pools are a series of small shallow pools that slow water and allow it to infiltrate on the steepest section of the flow line. Final filtration is the last man made pool in the series. It is designed to be an indistinguishable extension of the existing Blackwater Forest Wetland.



4.2.4 Proposed Hydrology:
Site Plan Detail

The new rest area design provides water retention capacity for the entire rest area during the 10-year storm. During a typical 2-year storm event, water from the interstate is retained in the 2-year storm catchment for I-64. Water from the rest of the rest area watershed is slowed and allowed to infiltrate in the greater area of permeable surfaces. It is then retained in the wetland display area, step pools and final filtration basin. Water greater then the two year storm is retained in the 2-year storm overflow basin up to a 10-year storm event. Storms greater then a 10-year storm event overflow to the Blackwater Forest. The outlets for the overflow basin and wetland display area are 5 feet lower than the building, which prevents it from ever being flooded.

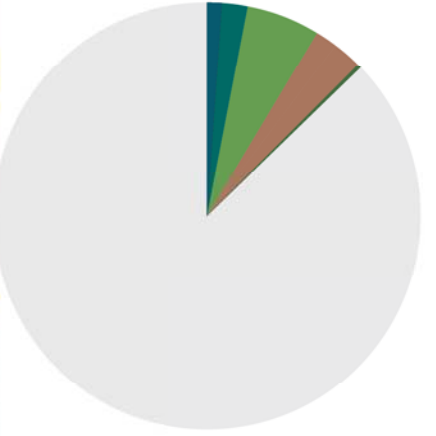




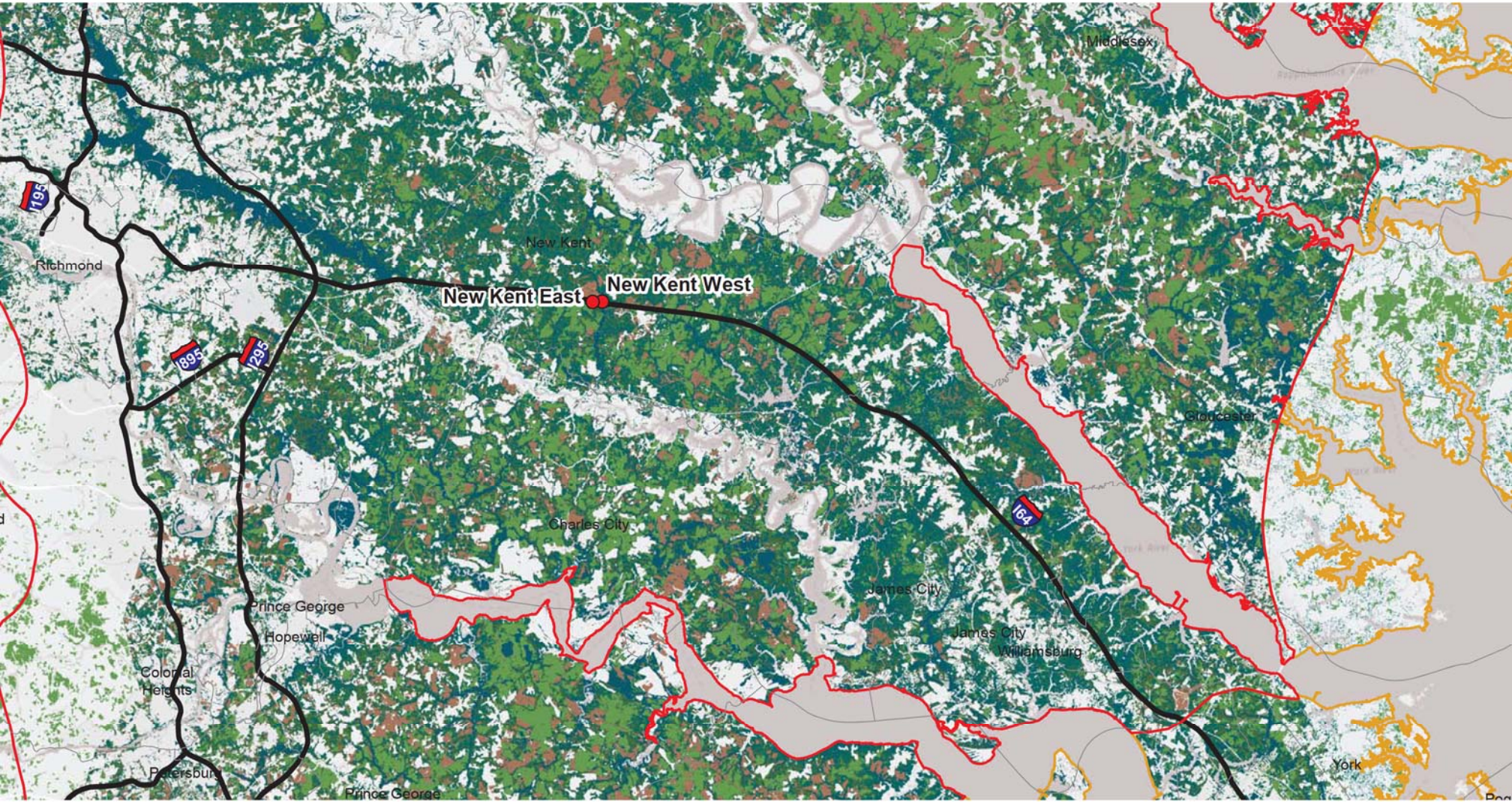
5.1 Existing Ecological Units

There are five ecological units in the rest area site that appear to be formed primarily by natural forces. The distributions of these units through the coastal plain is displayed to the left and right. Combined these forest types make up approximately a fifth of the total land cover in this area with agricultural forestry making up the majority of this area. The proposed rest area design creates access to display some of the less common fully natural forest types in this region.

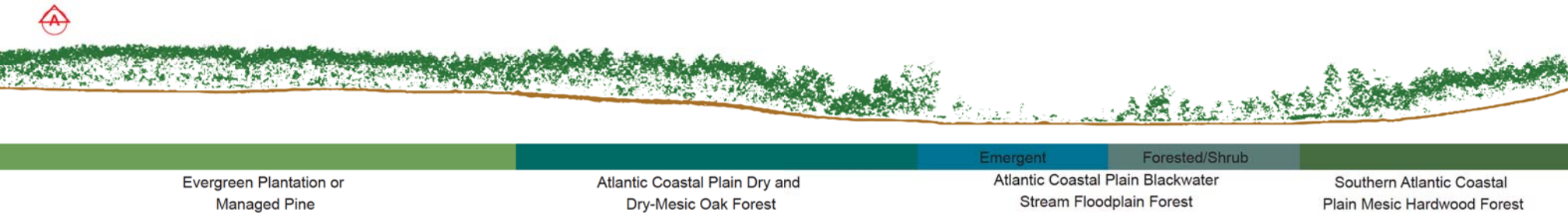
Distribution of existing natural and semi-natural ecologic units in the Southern Coastal Plain

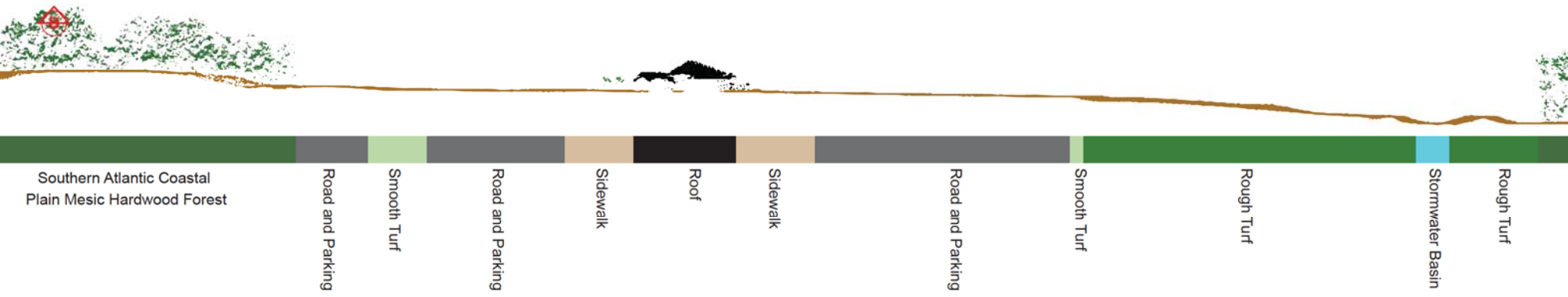


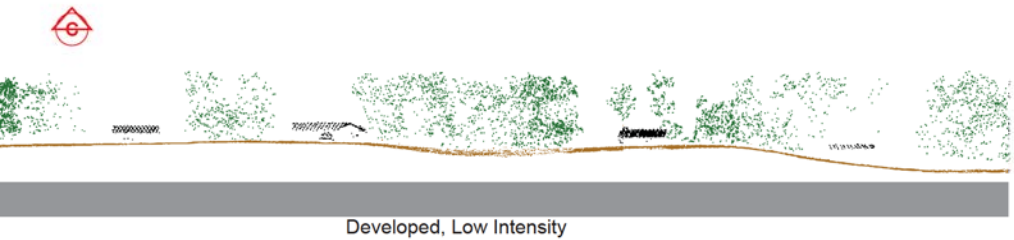
- Other
- Southern Atlantic Coastal Plain Mesic Hardwood Forest
- Harvested Forest
- Evergreen Plantation or Managed Pine
- Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest
- Atlantic Coastal Plain Blackwater Stream Floodplain Forest

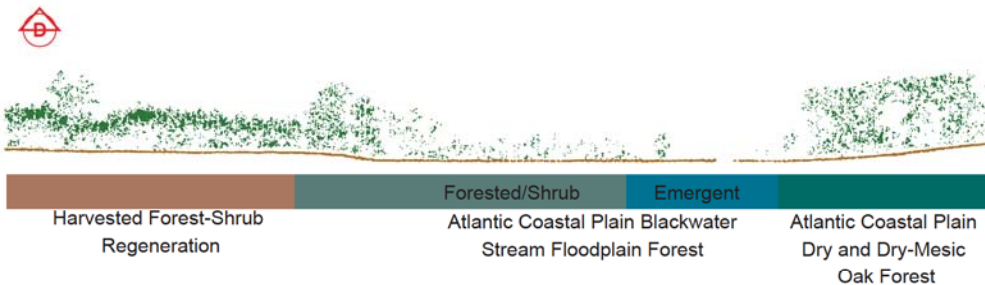

Middlesex
New Kent
New Kent East
New Kent West
Richmond
195
895
295
64
Charles City
James City
Prince George
Hopewell
Colonial Heights
James City
Williamsburg
Gloucester
York
Petersburg
Prince George

5.1 Existing Ecological Units


A
Evergreen Plantation or Managed Pine
Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest
Emergent
Forested/Shrub
Atlantic Coastal Plain Blackwater Stream Floodplain Forest
Southern Atlantic Coastal Plain Mesic Hardwood Forest


B
Southern Atlantic Coastal Plain Mesic Hardwood Forest
Road and Parking
Smooth Turf
Road and Parking
Sidewalk
Roof
Sidewalk
Road and Parking
Smooth Turf
Rough Turf
Stormwater Basin
Rough Turf


C
Developed, Low Intensity


D
Harvested Forest-Shrub Regeneration
Forested/Shrub
Emergent
Atlantic Coastal Plain Blackwater Stream Floodplain Forest
Atlantic Coastal Plain Dry and Dry-Mesic Oak Forest

5.2 Vegetation Management

The planting design is used as a tool to create scales of wilderness experience. Large dense vegetation is used to enclose and encourage the experience of solitude. This can be seen by the dense row of trees planted along sound berm and on the mounds in the truck parking. In the wildest areas on the edge of the design, the trail user is entirely enclosed by a dense forest that eliminates the experience of the highway, building, and parking.

Management of vegetation also provides the opportunity for a larger scale of wilderness experience. A low managed meadow replaces a lawn in the immediate vicinity of the building. This provides a rougher appearance while maintaining views to the forest beyond. The planting plan is based on the vegetation of the existing ecological units explored in the previous page. Lowering the landscape closer to the water table allows water to become a tool in managing the height and form of the vegetation. The wetter vegetation areas in a Blackwater Forest Wetland tends to be smaller in form and trees are more sparse. The Blackwater Forest Wetland is divided into four zones based on their water depth. Zone 1 is minimized because it supports the least biodiversity. Zone 2 produces the lowest and least dense vegetation. This zone is strategically placed to manage views. Placing the primary flow line along a key axis creates wetlands that allow clear views to extend from the building deep into the forest by maintaining the vegetation at a lower height.

ASPHALT PARKING

PAVED SIDEWALK

GRAVEL TRAIL

BOARDWALK

DIRT TRAIL

GREEN ROOF

0 240 Feet

RAIN GARDEN

MANAGED MEADOW

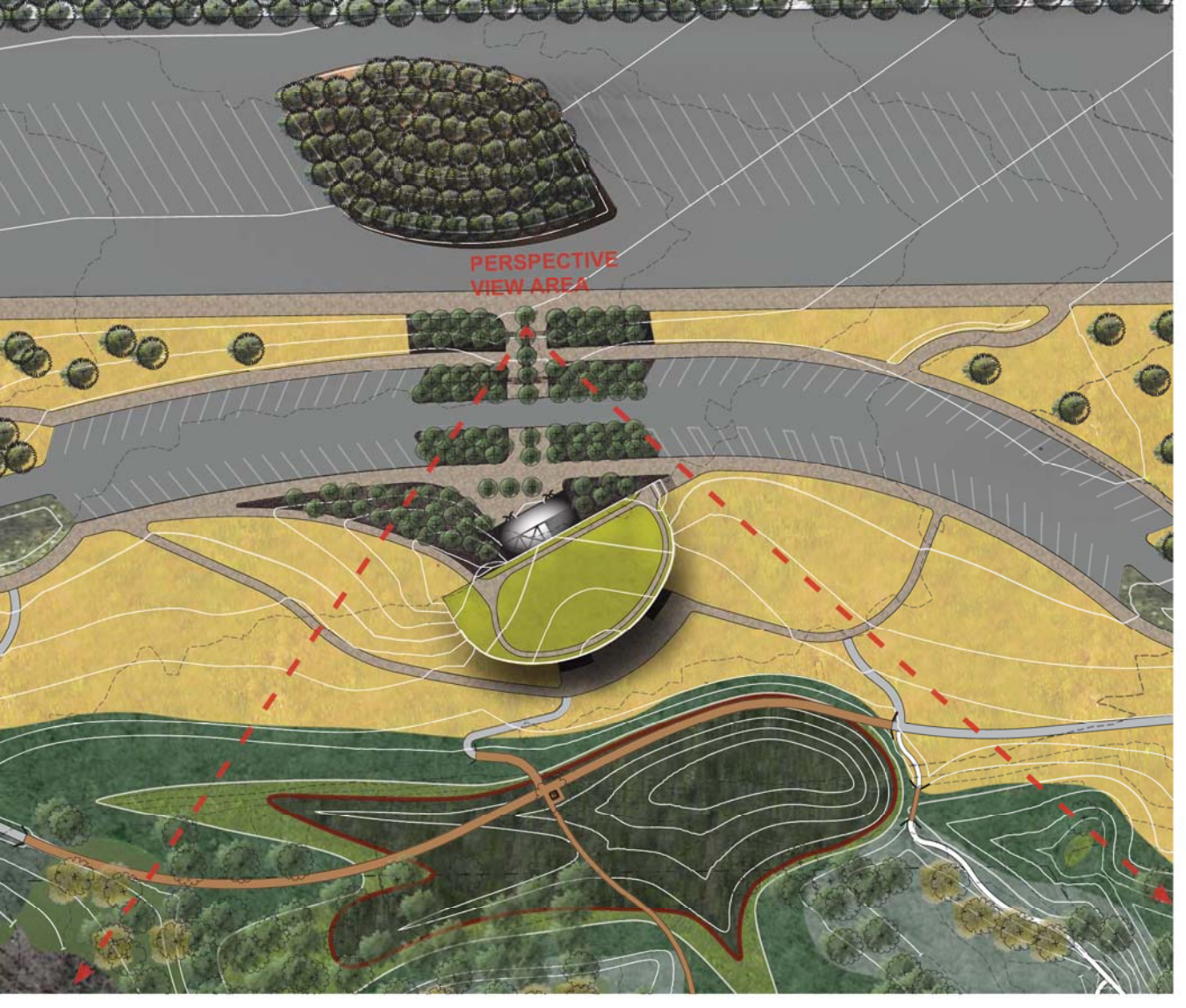
WETLAND ZONE 4
12”-36” above water

WETLAND ZONE 3
0”-12” above water

WETLAND ZONE 2
0”-6” below water

WETLAND ZONE 1
6”-12” below water

BLACKWATER POOL
>12” below water



6.1 Key Moments
Building Entrance

The drawing to the left shows a detail plan of the main entrance to the visitor center and the view area revealed in the perspective drawing to the right. This is the perspective of a person entering the plaza area from the truck parking lot. A person entering the plaza from this point is most likely headed straight for the building. However, the opportunity for this person to experience wilderness is still available. The new plaza design provides a wilder experience than the one found in traditional rest areas. The building no longer overpowers the site because it is covered with a green roof and mostly submerged in the ground. A grid of trees seen in the foreground intersects the atmosphere of wild and built. Broad views of the wild areas beyond dominate the experience of being in the plaza. Once the person enters the building from the plaza and descends the elevators or stairs, he or she will be immediately confronted with a large floor to ceiling window that has views of the Blackwater Forest Display Pond at the foot of the building. Views of trails from the interior of the building extending beyond visibility into the depths of the wild forest inspire a sense of mystery and a desire for exploration.

6.2 Key Moments
Wilderness Walking Experience

The image to the left displays a detail plan and the view area of the image to the right. This perspective is an illustration of one of the main points where people have the opportunity to move beyond the building and into the designed wilderness. Three types of experiences are displayed. The first is a small viewing platform that surrounds a tree. This area is part of the zone 2 trail network. The path to this seating area allows visitors to walk a short distance, rest and observe the marsh, then return to their vehicle if they choose not to walk farther. This is a beginning wilderness experience for people who do not have time or ability to go farther. The next type of experience is an intermediate wilderness journey that moves along the path to the left. This trail is part of the zone 3 trail network. A person moving down this trail will have many opportunities to experience many native flora and fauna species that inhabit the Blackwater Forest Wetland. Views back to the building remain accessible, but this path travels deeper into the landscape and offers opportunities to divert to wilder trails. The last experience displayed follows the trail to the right and travels deeply into the forest. It provides greater opportunities for solitude and submersion in nature. This trail is in the zone 4 network. It is narrower and crosses bare dirt in addition to the boardwalk. Visitors traveling this trail will have the opportunity to see the original Mesic Hardwood forest at the edge of the site. From the zone 4 trail network, visitors will have the opportunity to move to zone 5 (not displayed). This is the final wildest stage. Views back to the visitor center are limited and visitors have the greatest opportunity to be immersed in a landscape that appears to be primarily formed by the forces of nature.

V. Discussion

This design has shown that the experience of wilderness is possible at several scales and locations. However, this process is not without considerations in terms of site safety, feasibility, and convenience.

Safety

Wilderness is an inherently dangerous place. Arguably, the potential for danger and removing oneself from the crutch of society is part of the wilderness experience. One of the primary functions of civilization was creating barriers between people and wilderness to increase safety. It is only in the last century and a half that people have had the urge to reconnect with the wild. Federal land managers are often in a constant battle to find a balance. They often must choose between remaining true to the "untrammeled" mandate of the Wilderness Designation Act and the need to build infrastructure that makes the wilderness safer and accessible such as more firmly built trails and signage.

Because this rest area design incorporates more wild and unmanaged land, it is more dangerous than the existing rest area. There is the possibility that trail users could accidentally fall into the basins off the edge of the boardwalk that has no rails or wander off the trails and get lost. This design removes some of the barriers to wild nature to provide an improved experience. However, compared to a small wooded urban park, there is no significant difference in the safety of this rest area design. The maximum distance that one can walk away from the building within the trail system is half a mile, which the average person can walk in 15 minutes. In order to avoid unpreparedness for the varying levels of difficulty that this trail system provides, it has a number of features that alert trail users of the type of experience that they are about to have. All well-planned trails except in the most extreme wilderness areas have signage and trail markers where appropriate to minimize alternate routes that negatively impact the resource. This trail system will not be an exception.

In addition to including appropriate signage, as trails change to a wilder zone, the width and materiality of the trail change in a way that indicates the increase in wildness. The trail system is limited to only five loops that minimize the overall complexity to prevent people from getting lost. The way trails intersect one another also serve as a guide that directs walkers back to the rest area building. When a trail from one zone intersects a trail from another, the higher zoned wilder trail always meets the less wild trail at the stem of the t in a t-intersection. Therefore, if the trail user wants to remain on the less wild trail and go back to the rest area building, they must continue straight or turn around. If the trail user wants to increase the level of wildness and go farther from the building, they must take a right or left turn off the path that they are currently traveling on. This connects to an inherent human mindset, which is safety is remaining in the status quo and adventure is making a change.

Feasibility

A primary criticism of this design is the significant amount of grading required. The amount of soil being removed from the site far outweighs the fill. However, the grading process is not intended to create new topography but restore the site's original topography. Because of this, the amount of energy and resources used to create this design would not be significantly greater than the energy and resources that were used to create the original design. In addition, creating a new rest area with the design principals discussed in this thesis would ultimately require significantly less grading because an important practice for building on a new site would be to maintain as much of the original topography as possible.

The maintenance regime of the new rest area would be very different from the current design. The existing design utilizes a large amount of manicured turf. This turf is continuously being mowed during the growing season. The maintenance crew takes an entire week to mow the turf area and by the time they get to the end, they have to return to the beginning. The new design would greatly reduce the area required to be regularly mowed by limiting it to pathways. The meadow areas would only be mowed once per year. The bulk of the maintenance resources that are currently being used to maintain the turf would be shifted to maintain the trail system. On a bi-weekly to monthly basis workers will have to walk the trail system to remove dead trees and limbs while trimming the trail corridor of vegetation encroachment. Overall, it is likely that maintenance of the new design would require significantly less staff and resources.

Convenience

The new design does not greatly change user's convenience from the original design. The traffic flow patterns of the new rest area design are very similar to the original design and other interstate rest areas in this study. The new rest area provides almost the same number of parking areas and does not increase the maximum walking distance to the building from most of the parking spaces. One possible issue with the new segmented parking structure is that it is more difficult to gauge how full the parking area is. Drivers could accidentally skip empty spots at the beginning without realizing that all the spots at the end are full. Reconsiderations for this design could include a way to loop back from the end or finding a balance where views to other parking segments are obscured and filtered, but not completely blocked off.

VI. CONCLUSION

The design of the rest area presented here is a new model for rest area design. It works to create a place that feels primarily formed by natural elements while creating opportunities for solitude and exemplifying the character of the existing hidden or lost ecological conditions of the region. This design adds wilderness qualities to the reformed existing rest area through reordering the section of the rest area in a way that directs visitors to explore progressively wilder scales of wilderness. It separates its parking spaces to allow the feeling of nature to infiltrate the built environment. In contrast to the existing conditions, this rest area design increases green space and the visitor's ability to move through existing natural areas. The new design decreases the asphalt area by 100,000 square feet and adds a mile of trails of varying difficulties that connect users to the natural areas beyond the original boundaries. Through its four components, circulation topography, hydrology, and vegetation, the wilderness rest area intermingles the built landscape with the wild. This intermingling provides the chance for visitors to increase their scale of wilderness experience as they move farther away from the highway. This design provides a refuge of nature for visitors traveling on the busy and often congested highway between Richmond and Virginia Beach. Incorporating this type of designed wilderness within an interstate rest area increases accessibility to the wilderness experience. On average, the New Kent County Eastbound Rest Area receives 2400 vehicles per day. With the new rest area design, each one of the rest area users in these vehicles will experience some scale of wilderness. By maintaining a connection to the existing ecology and returning the topography to a form more representative of pre-rest area conditions, visitors have the opportunity to be exposed to a constructed form of more original nature and experience wilderness at their own scale.

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Geospatial Data References

Layer Name	Source
"World Imagery." (p. 12, 14-22)	Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, and the GIS User Community.
"World Street Map." (p. 11)	Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, EsriJapan, METI Esri China (HongKong), Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community. p 11.
"Contours." (p. 12, 14-19)	U.S. Geological Survey, National Geospatial Program. USGS NED 1/3 arc-second Contours for Charlottesville E, Virginia 20160315 1 x 1 degree Shapefile. Reston, VA. March 15, 2016. From: ftp://rockyftp.cr.usgs.gov/vdelivery/Datasets/Staged/Elev/Shape/Elev_321312_Charlottesville_E_1X1.zip.
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Other Influential Places

37.556143, -77.519066: William's Island Dam, James River Park - Richmond, Virginia

41.592599, -73.591416: Appalachian Trail - Pawling, New York

38.748057, -77.115265: Huntley Meadows Park - Lee, Virginia

38.975389, -77.046813: Rock Creek Park - Washington, D.C.