ABSTRACT

Title of Document: WALK ALONG THE RIVER: COMMUNITY DESIGN PROCESS FOR THE NORTON RIVERWALK

Charles Dylan Reilly, Masters of Landscape Architecture, 2017.

Directed By: Dr. Christopher Ellis, Dept. of Plant Science & Landscape Architecture

The City of Norton, nestled in Southwest Virginia's coal country, has a proposed 2-mile Riverwalk running along the Guest River and connecting to an existing Safe Routes to School sidewalk. The designer employed informal interviews, a design charrette, and formal presentations during the summer of 2016 to better understand the challenges and opportunities for the Riverwalk. Design ideas from the community engagement process were triangulated and compared against the site analysis, to better understand which ideas had the most support and were feasible. The resulting design from this process focused on improving pedestrian connectivity; improving quality of life for residents and attracting visitors; and telling Norton's history, from towering chestnuts to coal mining. The community engagement process reached about 145 people and produced media buzz for the project with four front-page articles in local and regional newspapers. The charrette brought residents from diverse perspectives to the design table.

WALK ALONG THE RIVER: COMMUNITY DESIGN PROCESS FOR THE NORTON RIVERWALK

By

Charles Dylan Reilly

Thesis submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Masters of Landscape Architecture
2017

Advisory Committee:
Associate Professor Christopher Ellis, Chair
Associate Professor Victoria Chanse
Assistant Professor Byoung-Suk Kweon

ACKNOWLEDGEMENTS

Special thank you to Dr. Christopher Ellis for serving as my thesis committee chair and guiding me through this year long process.

Thank you to Dr. Victoria Chanse and Dr. Byoung-Suk Kweon for helping guide my work and serving on my thesis committee.

Thank you to those who participated in the Riverwalk Design Evening, those who met with me throughout the summer of 2016, Norton City Council for their support of my work, Norton City staff for helping with event planning and project promotion, Appalachian Voices for providing a stipend and work space, and City of Norton for being a great place to work!

Special thank you to City Manager Fred Ramey for constant guidance and support.

Special thank you to Adam Wells for constant guidance and support.

Thank you to Andi for being a light in my life and supporting me from near and far.

And finally, thank you to my father, mother, and sister for supporting my work and me during these last three years at University.

TABLE OF CONTENTS

TABLE OF FIGURES

Chapter 1: Introduction

Opening Statement

Over the past century, communities of coal country in Appalachia have provided fuel for United States energy needs, while often marginalized in popular culture as hillbillies and rednecks. The landscape architecture profession has benefited from development made possible by abundant electricity in cities and landscapes, the same abundant electricity provided in part by the hard work and sacrifice of people in coal country. Now that coal is declining, landscape architects have a responsibility to communities losing residents and jobs with landscapes degraded by decades of mining. Instead of riding in on a white horse, however, designers should see how they could act to support existing projects in communities struggling with the transition to a post mining economy. The Norton Riverwalk project is exactly that, a greenway proposal that arose organically in Southwest Virginia's coal country.

Norton Riverwalk is a proposed 2-mile multiuse greenway connecting the community of Ramsey with Norton Elementary School. The Riverwalk follows a public road, a private road passing through a former coal tipple, and then a sewer main easement. The Riverwalk would encourage Norton residents of all abilities to recreate along the scenic Guest River and create better pedestrian connectivity. Groundwork for the Norton Riverwalk project was laid by City of Norton's feasibility study (Graham Landscape Architecture; Mattern and Craig Engineers, 2010), UVA Wise's environmental research, and Nathan Brown's conceptual design for an adjacent coal tipple (Brown, 2011). This thesis aimed to address the missing link of community design engagement as project partners move towards grant funding and Clean Water Act

settlements (Consent Decree, 2016) to pay for the assessment, remediation, design, and construction of the Norton Riverwalk. A rigorous community engagement process was conducted in Norton to inform the public about the Riverwalk and give the community at large a substantial impact on the design, while it is still in its most flexible form. This process included 11 informal interviews, 2 formal presentations, and one large community design evening with 30 people. The community engagement work completed during Summer 2016 resulted in a feasible, conceptual design that was presented to the Norton City Council and featured in a local newspaper.

Landscape architects are increasingly engaging with the communities they serve through the design process. While designers can and should exercise their professional skill and knowledge, that skill or knowledge may draw more ire than praise if it moves the community in a direction it does not want to go. Landscape architects involving communities in design is often referred to as community engagement, where landscape architects create a process for learning about the needs and wants of the people they serve. The community engagement process and the design from this thesis are meant to help move the Riverwalk closer to completion and ensure that it reflects the community who will use it.

Community Engagement Literature Review

A literature review of peer reviewed articles and books written on community design engagement was completed with a focus towards understanding how to design and implement a community design engagement process for the Norton Riverwalk. This

literature review helped to "establish a baseline for available knowledge" on how to conduct a community design engagement process (Deming & Swaffield, 2011, p. 30).

Inclusive Design

Plural design is about empowering community members to help design the Riverwalk and to engage a diverse cross section of citizenry, including school teachers/children/parents, business leaders, college professors/students, churches, city park staff, and civic organizations (Crewe & Forsyth, 2003). *Cross-linked participation* is one way to overcome the "balkanized" situation of multiple local groups working towards the same goals without collaborating or communicating (Hester, 1999, p. 21). This process succeeds by engaging a diverse community to enable more collaboration between groups that are currently working toward the same goals. Enabling or encouraging this kind of collaboration in the long term is encapsulated by the concept of *reflective participation* when community members discuss community issues over the course of years as opposed to months, researching, making decisions, and reflecting on outcomes (Hester, 1999). Cross-linked participation and reflective participation are two concepts proposed by Hester as an antidote to the now ineffectual advocacy planning, which has been mastered by the already empowered.

Union Point Park, a nine-acre waterfront park in the Fruitvale district of Oakland, CA is the outcome of a many year grassroots community design process (Hou & Rios, 2003). The process was thoroughly cross-linked, with Unity Council (local community development corporation), City of Oakland, and the Coastal Conservancy all advocating for the park together, conducting community surveys/events, raising funds, and putting pressure on Port of Oakland to release the proposed park site.

Participatory and Engaged Action Research

Participatory action research (PAR), to engage the community for positive social and environmental change while conducting research, is part of the theoretical framework for this thesis (Mordock & Krasny, 2001). *Engaged action research* deals with "methods and theories that are still emergent, but also with emergence itself as a phenomenon under investigation" (Deming & Swaffield, 2011, p. 192). In the context of this thesis, engaged action research was the design of a community engagement process, the completion of that process, and then the evaluation of that process for design outcomes. This process was fluid as the designer learned more about community engagement during the summer, from both reading literature and trial and error. The content analysis for community engagement, while loosely based on techniques used by previous master's students, largely evolved during the design process to better fit the scale and type of community engagement employed for this project (Walker, 2014).

Ecological Democracy

In *Design for Ecological Democracy*, Hester discusses how "City form concretizes our values and reflects them back to us" (Hester, 2006, p. 7). A city that practices *ecological democracy* will include enabling, resilient, and impelling forms. Enabling forms help to create civic pride and responsibility. Resilient forms can lift us out of the constant grind to address economic, social, and ecological catastrophes. Hester imbues this form with a dose of Americana, "Resilient form fuels life, liberty and the pursuit of sustainable happiness" (Hester, 2006, p. 9). Impelling forms create joy in our daily lives and rise above insecurity. Design in the context of *ecological democracy* needs to be "participatory, scientific, and adventuresome" (Hester, 2006, p. 10).

"A true democracy depends upon leadership development in under-represented communities" (Hester, 1990, p. 4). Graham advocated for a public park in her underserved Boston neighborhood and community designers worked with her to collect the information and support necessary to achieve a $40,000 open space grant (Hester, 1990). Two years later, continuing work on open space with community designers, she was elected to the Cambridge City Council. In underrepresented communities, landscape design can be a door into greater leadership roles.

It is important here to further address the concept of enabling form because the Riverwalk is inherently a civic space. "Enabling form makes places where we can get to know our neighbors and build an increasingly capable and empathetic civil society" (Hester, 2006, p. 19). Centeredness, connectedness, fairness, sensible status seeking, and sacredness are the five key design principles of enabling form.

Ethnography as a Conceptual Framework

Ethnography is a discipline that has much to offer the practice of community engagement in landscape architecture. To better understand the role of ethnography in understanding community engagement the designer read *Ethnography Step-by-Step* (Fetterman, 1998). Similarly to ethnographers, landscape architects come into communities with a particular method, but also need an open mind. "The ethnographer enters the field with an open mind, not an empty head" (Fetterman, 1998, p. 1). Ethnographers' term for what they are studying is the "problem," which must be established before entering the field. The problem in the case of landscape architecture is often, what does the community want for this space? Multiple methods are equally useful in community engagement as ethnography because they allow for triangulation. In the

context of community engagement triangulation may mean the comparison of data from observation, interviews, and a public meeting to better understand the most pressing needs of a community. Triangulation can also "check negative bias," which for a landscape architect could mean changing their own perception about what a community needs (Fetterman, 1998, p. 12). If you hear the same thing three times over, perhaps that is a real community concern or want.

Similarly to ethnography, landscape architects visiting a community often have a different perspective than those of the community members they are meeting with. In ethnography, the emic and etic perspectives are used to discuss this relationship. The emic perspective is "the insider's or native's perspective of reality" (Fetterman, 1998, p. 20). The etic perspective is "the external, social scientific perspective on reality" (Fetterman, 1998, p. 22). While landscape architects do not need to be professional ethnographers to conduct good community engagement, the acknowledgement that they may perceive a completely different reality than the community they are entering can be helpful, enabling empathy and more responsive design.

Similarly, "the interview is the ethnographer's most important data gathering technique" and "informal interviews are the most common in ethnographic work" (Fetterman, 1998, pp. 37, 38). Ethnographers organize questions into two broad categories, survey and specific. "Survey questions are designed to elicit a broad picture of the participant or native's world and to map the cultural terrain" (Fetterman, 1998, p. 40). "Specific questions probe further into an established category of meaning or activity" (Fetterman, 1998, p. 42). Specific questions can also be further divided into structural

questions that are concerned with how systems work and attribute questions that are concerned with characteristics.

Community Engagement Methods

One of the reasons to hold a charrette is to break down barriers between experts who separately design roadways, housing, schools, and retail with competence, but are not able to consider how these components work together (Condon, 2008). The shopping mall, the highway, and the housing development can be individually well designed but result in communities with pinch points, traffic hotspots, and balkanization between different elements of daily human activity that were more integrated. Condon sees, similar to plural design, "design charrettes, [as] a method that we as professionals, officials, and stakeholders can use to reknit the pieces of the city together for our children" (Condon, 2008, p. XV). The challenge for the charrette is to "accept this multitude of often conflicting objectives without becoming paralyzed" (Condon, 2008, p. 5). Visioning charrettes provide the opportunity to connect with elements of the city that a rational design solution responding to a narrowly defined brief would not. "Divergent questions" with opposing intellectual answers can cause a project to become hung up (Condon, 2008, p. 12). Charrettes are about elevating and resolving the contradictions of divergent questions through "empathy, understanding, intuition and compassion" (Condon, 2008, p. 12). One of the most important elements of a good visioning charrette that Condon discusses is that it does not directly change regulatory documents and is not directly implementable, which means that it allows a space for city staff, designers, and stakeholders to work together in a relatively low risk environment. Conversely, an implementation charrette is meant to result in "implementable plans and associated

regulatory documents" (Condon, 2008, p. 27). "High-level authorization from elected bodies is a requirement for successful implementation charrettes" to make their outcomes actionable (Condon, 2008, p. 30). One lesson taken from the implementation type charrette was to engage with high-level decision makers from the beginning of the community design process. This preliminary presentation of design to community leaders gives people a chance to critique a design that may be veering too far from community norms (Lennertz & Lutzenhiser, 2014).

A design brief is a "specific [set of] instructions given to a design team," which should provide numerical requirements and performance targets for the site (Condon, 2008, p. 35). A design brief is important for a charrette because it lays down firm rules of play and can be used to drive policy going forward. Condon sets up a hierarchy for the design brief of a charrette with goals and objectives. The goal for a charrette should be one sentence long, should include all the objectives, and should pertain to outcomes and process. Objectives on the other hand "are the things you need to accomplish in order to reach your goal," with measurability often important. Charrette goals and objectives should be hewed as closely as possible to "already adjudicated public policies" to make the outcome more implementable (Condon, 2008, p. 38).

Greenways Literature Review

One of the most popular modern definitions of greenways comes from the 1987 President's Commission on Americans Outdoors in the USA:

> "to provide people with access to open spaces close to where they live, and to link together the rural and urban spaces in the American landscape

threading through cities and countrysides like a giant circulation system" (Ahern, 2002, pp. 34-35).

The first part of the definition describes proximity and access to greenways close to where people live. This is one characteristic that distinguishes greenways from National Parks. If National Parks are the crown jewels then greenways are the way we protect and access our daily, working landscapes (Ahern, 2002). Ahern identifies three elements that provide the "theoretical basis in support of greenways" (Ahern, 2002, p. 37).

Co-occurrence of Greenway Resources

"The hypothesis of co-occurrence posits that in any cultural landscape greenway resources are spatially concentrated along corridors," like riparian areas and ridges (Ahern, 2002, p. 37). Co-occurrence also includes natural resources, like forests, water sources, or populations of a particular species. *Spatial efficiency* results from co-occurrence because greenways often follow existing corridors, like rivers, taking advantage of minimal land to include maximal cultural and natural resources. *Political support* and consensus can be developed for greenways because of the diverse resources they include. A historical society and an environmental organization may be equally likely to support a greenway, but with different motives. The political support made possible by co-occurrence makes it easier to practice plural and inclusive design for the Norton Riverwalk. *Connectivity* of greenways can allow people to bike to work, go for a relaxing walk with a spouse, or allow wildlife to search for food and mates.

Inherent Benefits of Connectivity

Ahern defines connectivity as "a spatial characteristic of systems (i.e. landscapes) which enables and supports the occurrence of specific processes and functions, through adjacency, proximity or functional linkage" (Ahern, 2002, p. 40). A landscape has many different layers of connectivity, water, bicyclists, and robins all move through the same landscape in different ways. An economic argument can be made for human connectivity, just as landscape ecology points to the connectivity's inherent value for biodiversity.

Compatibility and Synergy of Multiple Use

Different viewpoints brought into greenway design by co-occurrence have associated preferred uses. Ahern posits that these multiple uses are often compatible and sometimes work together (Ahern, 2002). For instance a greenway may include a picnic shelter that provides for weekend family events, local researchers processing ecological data, students on a fieldtrip from a nearby public school, or a pedestrian getting out of the rain. Some of these uses cannot coexist, but some can and may even complement each other. The uses for a greenway seem limited only by the imagination of the community that uses them. A greenway's ability to stack many uses in the same area reinforces the concept of spatial efficiency. Not all uses for greenways are compatible. Intensity of recreational use along a greenway can decrease the diversity of wildlife because of regular human disturbance. Interior forest species are particularly vulnerable when human traffic increases through a natural area.

Self-Guided Trails Literature Review

Self-guided trails, also known as heritage trails, are defined as a "tourism product that draws on the natural or cultural heritage of an area to provide an educational experience that will enhance visitor enjoyment (MacLeod & Hayes, 2013, p. 258). Trails are often a component of rural tourism and economic development and can produce cultural, social, physical, and economic benefits. With good design, "there is the potential… to create an absorbing experience that allows users to interact with places on a variety of levels, especially in situations where the trail encourages wider use of local facilities (MacLeod & Hayes, 2013, p. 259). MacLeod and Hayes developed two typologies for describing trails; one categorizes trails by complexity and one by interpretative intent. The typology of complexity employs 10 categories, including governance, scale, and purpose to determine if a trail is "simple," "standard," or "sophisticated." The other typology used by the authors is interpretative intent, which they divide into three components "knowledge," "reputation," and "creative." Knowledge refers to a trails ability to communicate information about a particular topic, like the history of coal mining in SW Virginia. Reputation refers to how a trail "celebrate[s] the intellectual tradition of a region or town" (MacLeod & Hayes, 2013, p. 268). Creative refers to the recreational elements of a trail including "atmospheric dimensions," like signs of former industrial use including rusting coal tipple machinery (MacLeod & Hayes, 2013, p. 266). The authors discuss how a trail that combines knowledge, reputation, and creativity is likely to attract more visitors because it can satisfy a wider variety of interests.

Research Statement

Norton is working to get the funding necessary to construct the first phase of the Riverwalk. Doing a thorough community engagement process is critical to make the project a success and to secure grant funding. The literature outlines techniques that are useful for designing and implementing community engagement for landscape design projects. How can community engagement be used to study and address issues facing the development of a greenway in Norton, VA?

Chapter 2: Methods

Site Selection

The designer's involvement in the Riverwalk project began in November, 2015 when he had a conversation with Matt Hepler, formerly of Southern Appalachian Mountain Stewards now Appalachian Voices, who outlined three potential thesis sites in the Norton area, including two former coal tipples and a multi-thousand acre property with numerous abandoned surface and underground mining operations. The designer then called Adam Wells in February 2016, from Appalachian Voices, Norton, VA, to ask his opinion about the different sites. Wells indicated that the City was keen to continue pushing the Riverwalk project forward, associated with one of the Tipple sites Hepler mentioned. After preparing a proposal for a thesis oriented around community engagement and design for the Riverwalk, the designer called Norton City Manager Fred Ramey on March 14th, 2016 to discuss the project. City Manager Ramey was supportive of the idea and encouraged me to continue planning and come for a site visit soon. On

April 8th, 2016, City Manager Ramey and I walked phase one of the proposed Riverwalk, discussing the project challenges and opportunities.

Inventory and Analysis

Beginning in March 2016, the designer researched documents relating the to the Riverwalk project, including a feasibility study, a consent decree, and a previous thesis project. Three site visits, April 8th, July 28th, and July 31st 2016, were conducted as part of the inventory and analysis methodology to take photos, identify site challenges and opportunities, and better understand the character of the site. The site inventory and analysis was conducted including the following topics:

- ⇒ Connectivity to neighborhoods
- ⇒ Area Demographics
- ⇒ Wetlands
- ⇒ Soils
- ⇒ Topography and Slope
- ⇒ Ecology
- ⇒ Geology
- ⇒ Climate
- ⇒ Existing Circulation and potential connectivity
- ⇒ River Crossings
- ⇒ Railroad Crossings
- ⇒ Former Coal Tipple along the proposed route
- ⇒ Acid Mine Drainage (AMD)

The site analysis included maps, diagrams, photographs, and extensive written narrative.

Project History

In 2008 Assistant City Manager Fred Ramey observed the possibility of using a newly created sewer main easement for the creation of a Riverwalk that would provide pedestrian access to the community of Ramsey and create a recreational amenity for the

City. This realization started an almost decade long process, involving a feasibility study, a thesis, and grants, to make the Riverwalk a reality. This thesis project is part of that longer process.

Site Analysis

Introduction and Easements

Phase one of the Riverwalk, which this thesis focused on, will require the city to obtain multiuse path easements from three property owners. The tipple site is owned by J.W. Construction Co., a portion of the trail passing under a railroad bridge is owned by Interstate Railroad, and the terminus of the trail along Kentucky Avenue is owned by Mr. Teasley (City of Norton Virginia).

During October 2016, the city heard back a "no" from a Virginia Department of Conservation and Recreation (DCR) grant application submitted in July for the Riverwalk. DCR encouraged the city to reapply, noting that the lack of acquired easements and property along the Riverwalk route hurt Norton's grant application. Norton is actively in negotiations with Interstate Railroad and Mr. Teasley to secure easements through their properties.

Safe Routes to School

The proposed Riverwalk would connect the community of Ramsey with Norton Elementary and a Safe Routes to Schools sidewalk that connects to the downtown. In 2008, the City of Norton embarked on the process of creating a Smartbook for the Safe Routes to Schools program, which is a good resource to better understand students' current access to school. This resulted in the creation of a new sidewalk, retaining wall,

and fence to provide elementary school students a safe walking route from the downtown. The Safe Routes to School Sidewalk is 0.75 miles long and cost $4.88 million (Lester, 2015). Funding for the Safe Routes to School Sidewalk came from three sources: $3.1 million from the Department of Mines Minerals and Energy (DMME) from the Abandoned Minelands (AML) fund, $1.38 million from the Virginia Department of Transportation, and $400,000 from the City of Norton. The AML funding was made available during the planning phase when the City realized that the sidewalk passed by a former high-wall mine that posed an immediate hazard to public safety because it was dropping boulders into a public roadway.

Figure 1 - Safe Routes to School Sidewalk (Dylan Reilly)

City of Norton Demographics

City of Norton is an independent city in the Commonwealth of Virginia. Norton has an annual operating budget of around $9.5 million (City of Norton, 2015). The city has a population of 3,958 with 46.1% male and 53.9% female (U.S. Census Bureau, 2010). 78.2% of the city's population is over age the age of 18. 743 people, or 18.8% of the total population of the City is between the ages of 5 and 19 and likely attends public school. 33% of children in Norton live below the poverty line (Virginia Department of Health, 2016). Those children and teens are important because they are unable to drive until their late teens, assuming they have access to a car and someone to teach them. Without access to a car, the children and teens will tend to walk and bike more than adults. The unique connection of the Riverwalk to the Elementary school makes the young children of particular importance.

In Norton 3,510 people, 88.7%, self-reported as white, 250 people, 6.3%, self-reported as black or African American, 5 people, 0.1%, self-reported as American Indian or Alaska Native, 56 people, 1.4%, self-reported as Asian, 42 people, 1.1% self-reported as Some Other Race, and 95 people, 2.4%, self-reported as two or more races. Hispanic or Latino is not included in race on the Census form, but is its own category, so those who identify as Latino or Hispanic also identify as another race. 68 people, 1.7%, self-reported as Hispanic or Latino. A prominent Hispanic member of the community owns a well-known local restaurant, Mi Finca. Norton has a median household income of $36,148 (United States Census Bureau, 2010).

Emergent Wetlands

Vegetation, soil, and hydrology are the main factors used to identify jurisdictional wetlands in the U.S. (Environmental Laboratory, 1987). If jurisdictional wetlands will be disturbed by trail construction then a 404 permit may be required from the Army Corps of Engineers (Biebighauser, 2007). Sedges, irises, and wet soils on the site indicate that emergent wetland may be present within the sewer main easement near the first crossing of the Guest River (Ramey, Reilly, & Fields, 2016). Further study of the Army Corp 404 permitting process and potential design solutions should be explored.

Soils

The proposed Riverwalk begins in "Udorthents-Urban Land Complex", with 0 to 80 percent slopes transitioning to "Dumps, Mine-Urban Land Complex" after passing under route 68 (USDA, 2016). The range of soils encompassed by both of these soil descriptions is too great to be particularly useful in design analysis, for instance for the appropriateness of proposed plantings. The "Dumps, Mine-Urban Land Complex," however, does reinforce that the site was used as a tipple, dump, and had a portal to an underground mine at one point.

Topography

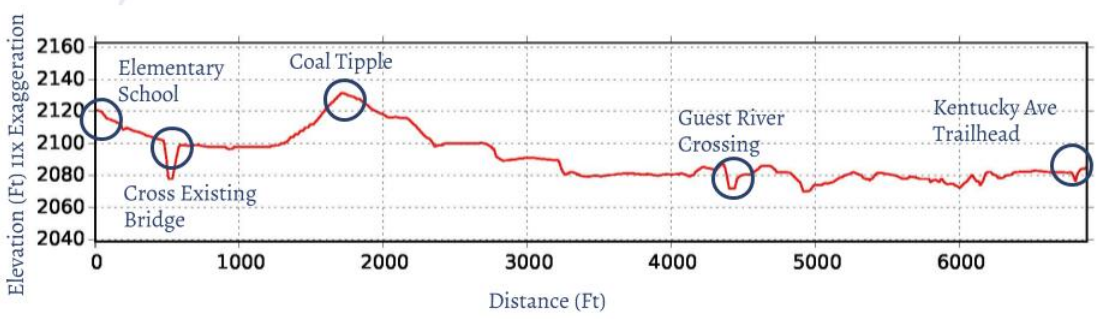


Figure 2 - Existing elevation profile for the proposed Riverwalk route

Figure 3 – View from Elementary School to Seneca Lane on 4/8/2016 (Dylan Reilly)

Figure 4 – View of Seneca Lane towards the coal tipple on 4/8/2016 (Dylan Reilly)

A steep slope, including 16’ of elevation drop separates the proposed Riverwalk from the existing Safe Routes to School sidewalk (See Figure 3). Steep slopes along the north side of Seneca Lane make including bidirectional vehicular traffic, minimum 20’ width, in addition to the Riverwalk, 12’ width, difficult (See Figure 4). This could preclude vehicular traffic, other than emergency vehicles, from accessing the former coal tipple. The slope up to the former coal tipple from Seneca Lane is 8%, with 30’ of elevation change, which could pose challenges for ADA accessibility (See Figure 2 and Figure 5). The road down from the coal tipple to the sewer main right of way reaches slopes of 10% with 50’ of elevation change which could also pose challenges for ADA accessibility (See Figure 2 and Figure 6).

Figure 5 - View from Seneca Lane up towards coal tipple on 4/8/2016 (Dylan Reilly)

Figure 6 – View from the coal tipple to the sewer main ROW on 4/8/2016 (Dylan Reilly)

Once joining the sewer main right of way, slopes are gentler because of pitch requirements for the sewer pipe until reaching the Teasley trailhead. Before the first and only river crossing, the Riverwalk passes within about 200' of a medical office with easy access to two local hotels. Steep slopes of 58% along the North side of the trail up to those amenities make an ADA connection difficult (See

Figure 8). Approaching the Teasley trailhead from the west, there is an earth ramp with a slope of 13% leading to gravel parking and access to Kentucy Ave (See Figure 7).

Figure 7 - View up ramp to Teasley property on April 8, 2016 (Dylan Reilly)

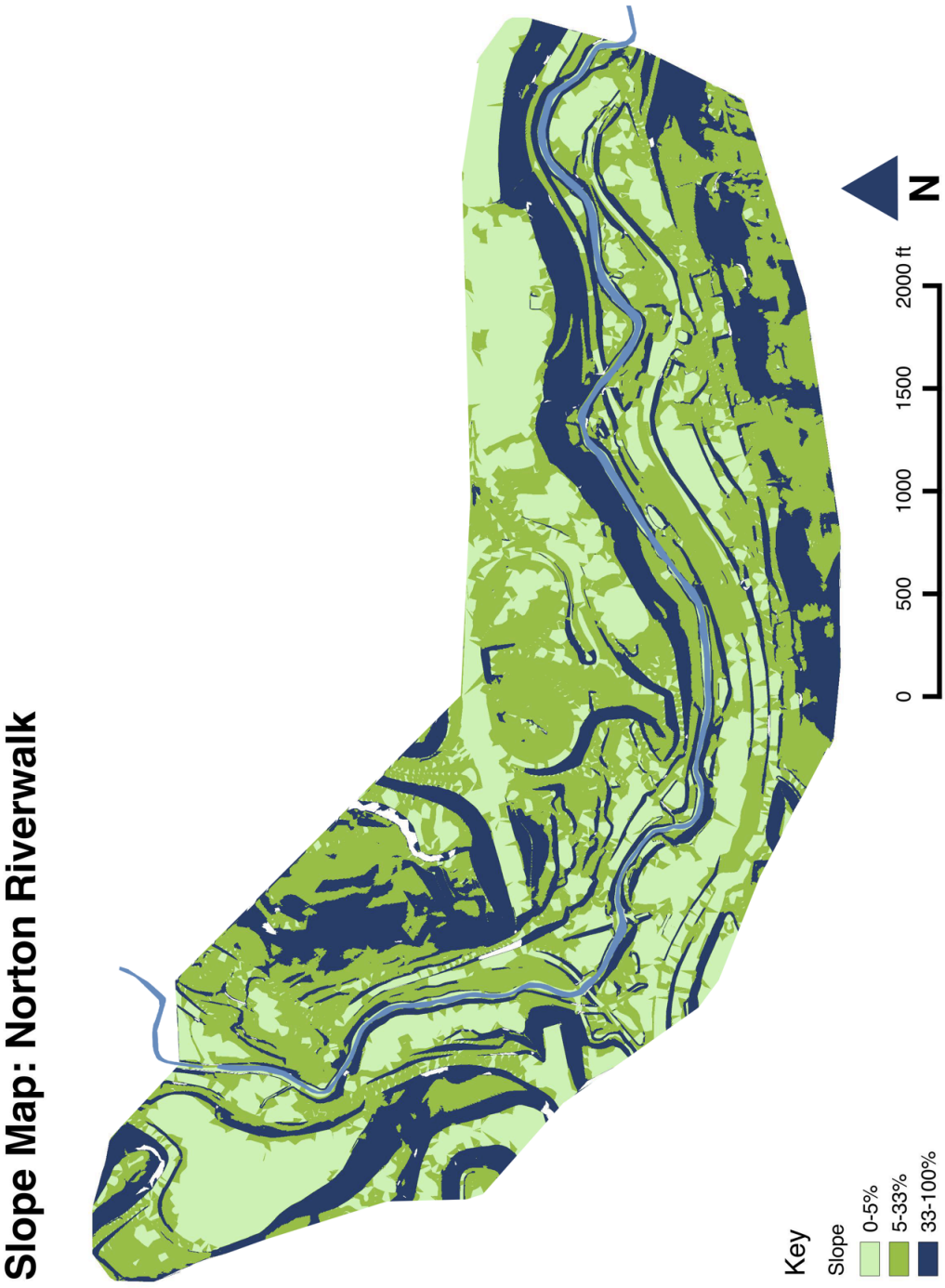


Figure 8 - Slope map of area around proposed Riverwalk

Ecology

The Environmental Protection Agency (EPA) has divided the United States into ecoregions or "areas where ecosystems (and the type, quality, and quantity of environmental resources) are generally similar" (EPA, 2016). There are four levels of ecoregions in the United States: 12 at level I, 35 at level II, 105 at level III, and 967 at level IV. At level III, Norton, VA is in ecoregion 69 or the Central Appalachian Region (National Health and Environmental Effects Research Laboratory, 2013). The Central Appalachian ecoregion is described as the following:

"The Central Appalachian ecoregion, stretching from central Pennsylvania to northern Tennessee, is primarily a high, dissected, rugged plateau composed of sandstone, shale, conglomerate, and coal. The rugged terrain, cool climate, and infertile soils limit agriculture, resulting in a mostly forested land cover. The high hills and low mountains are covered by a mixed mesophytic forest with areas of Appalachian oak and northern hardwood forest. Bituminous coal mines are common, and have caused the siltation and acidification of streams" (National Health and Environmental Effects Research Laboratory, 2013).

Acid mine drainage from a former underground mine portal on the site, discussed later in this thesis, will need to be addressed in the design. The mixed mesophytic forest character of the region helps inform the types of plantings chosen for the Riverwalk. During an April 8, 2015 site visit, evidence of deer trails and beaver activity was observed (See Figure 9).

Figure 9 – Evidence of beaver activity along the proposed Riverwalk route on April 8, 2016 (Dylan Reilly)

From 2012 through 2014, a research team from University of Virginia (UVA) at Wise did a comparative herpetological survey of the Guest River Gorge and the proposed route of the Norton Riverwalk. The study, prepared for the United States Department of Agriculture (USDA) Forest Service George Washington and Jefferson National Forests, examined the relationship between habitat quality and diversity of herpetology species across the two sites. At the Guest River Gorge "intact hardwood forest present in riparian zones" and the presence of cliff and bluff habitat "directly related to increased herpetofaunal diversity" (Smith & Fulton, 2015, p. 6). Conversely, "disturbed portions of the Guest River near Norton harbored relatively lower levels of both species richness and diversity and also lacked the embedded cliff and bluff habitats present at the gorge, along with these habitats' known specialist herpetofauna" (Smith & Fulton, 2015, p. 6). Mountain Chorus Frog (*Pseudacris brachyphona*), a Tier II species (Very High

Conservation Need), requires “ephemeral pools and seasonal streams in edge habitats” for breeding and “patches of intact forest for overwintering and dispersal between ponds” (Smith & Fulton, 2015, p. 6). *P. brachyphona* was recorded at the Guest River Gorge, but not at the Norton Riverwalk, likely due to its lack of intact forest. A habitat restoration plan for the site could include *P. brachyphona,* and recommend the reforestation and preservation of certain forest areas to meet the species’ needs. From a landscape performance standpoint, the “Guest River Gorge may provide valuable baseline data for the design of sustainable outdoor recreation corridors in the surrounding southwest Virginia region” (Smith & Fulton, 2015, p. 7).

Geology

Around the coal tipple the Riverwalk would pass by the Wise Formation (Pw) of interbedded siltstones and sandstones including the Dorchester Coal Bed (d). The Riverwalk would also pass the Gladeville Sandstone (Pg) descending from the coal tipple. Once the Riverwalk descends to the Sewer Main ROW along the Guest River, terrace deposits (td) and alluvium (al) are the predominate geological features (Whitlock, Lovett, & Diffenbach, 1988).

The local geology of Norton and the surrounding region has been important to its industry and culture through the abundance of bituminous coal. Slates and sandstones are also commonly exposed at outcrops in the area. Outcrops along the Riverwalk could be used to teach Norton public school students about the geology of their region and the impact on culture and economy. Skills like rock identification and measuring strike and dip could be taught at these outcrops, which would be a short and safe walk from Norton Elementary School (See Figure 10).

Figure 10 – Outcrop of Gladeville Sandstone along Riverwalk (Dylan Reilly)

Climate

Norton, VA has an average annual rainfall of 57.42 inches with consistent rainfall throughout the entire year (See Figure 12 – Average rainfall in Norton, VA .). This is why the area is referred to as a temperate rainforest. Plantings should be chosen that respond well to these mesic to wet soil conditions. Average high temperatures are around 80 °F in the summer and a little over 40 °F in the winter (See Figure 11). Average low temperatures are a little under 60 °F in the summer and a little above 20 °F in the winter. Norton is in USDA Plant Hardiness Zone 6b, with a minimum winter temperature range of 0 to -5 °F (USDA). Most of Norton's 55 inches of annual average snowfall happens in December through March (See Figure 13). Some locals take advantage of snow for cross-country skiing and snowshoeing during the winter on High Knob Mountain. Colder

temperatures prevail at the higher elevations, but perhaps some winter activities could be planned along the Riverwalk.

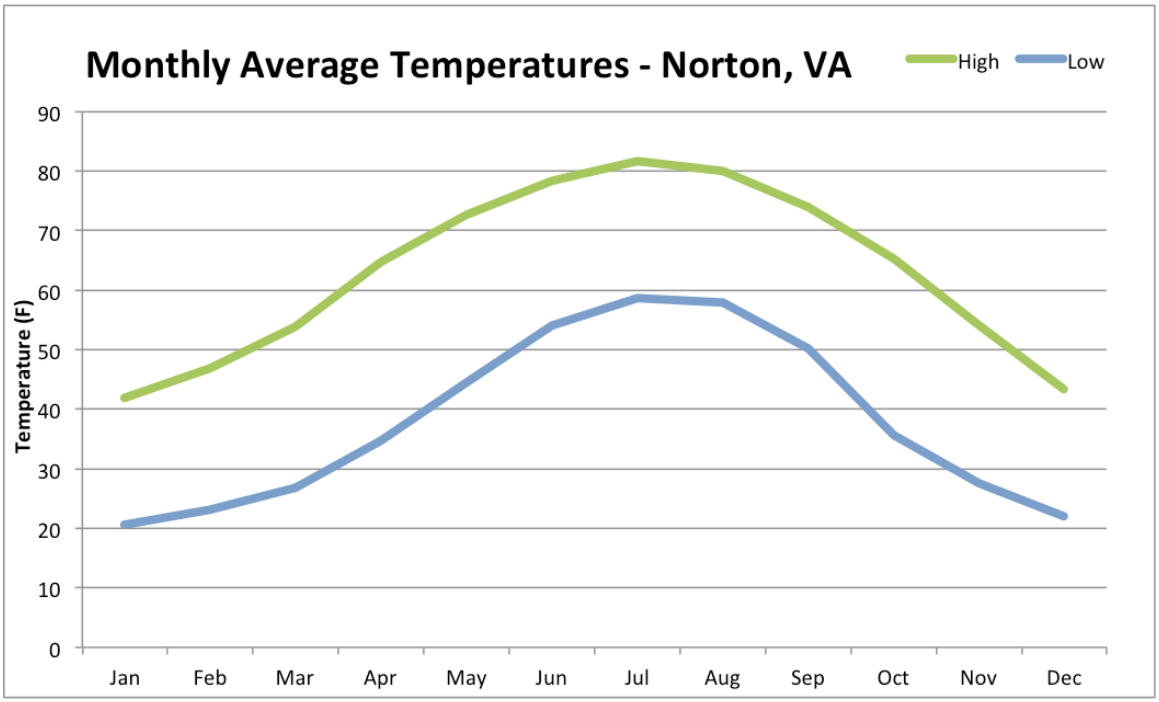


Figure 11 – Average monthly temperatures for the City of Norton, VA (City of Norton).

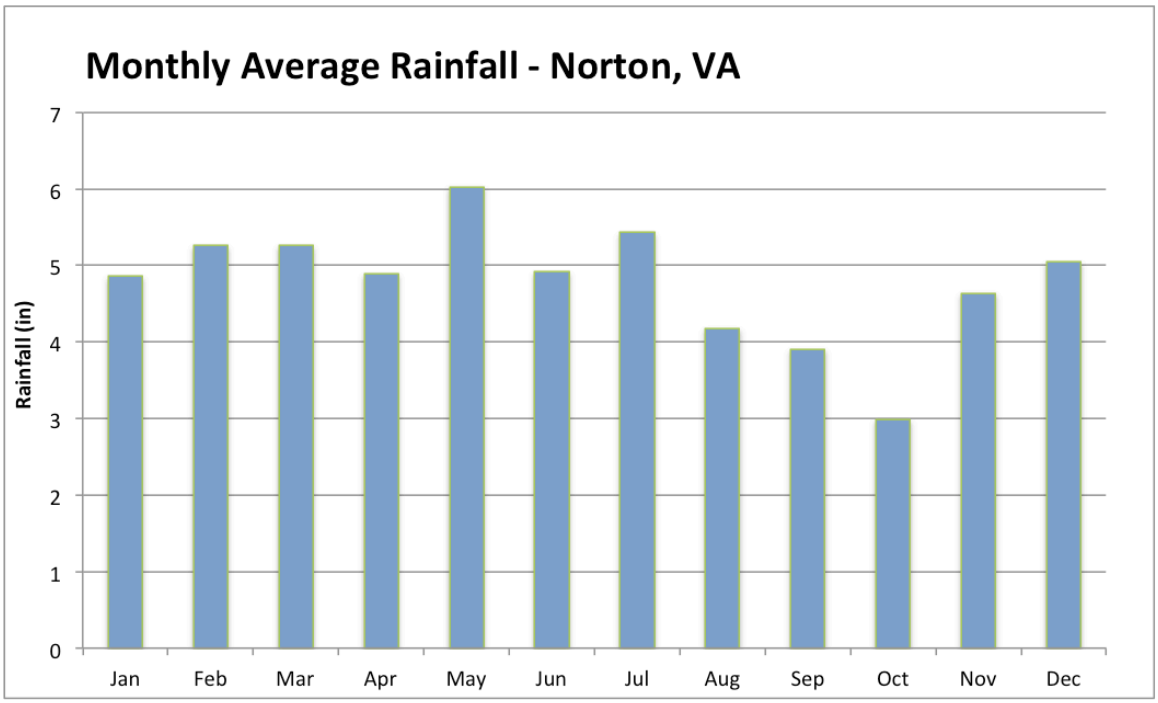


Figure 12 – Average rainfall in Norton, VA (City of Norton).

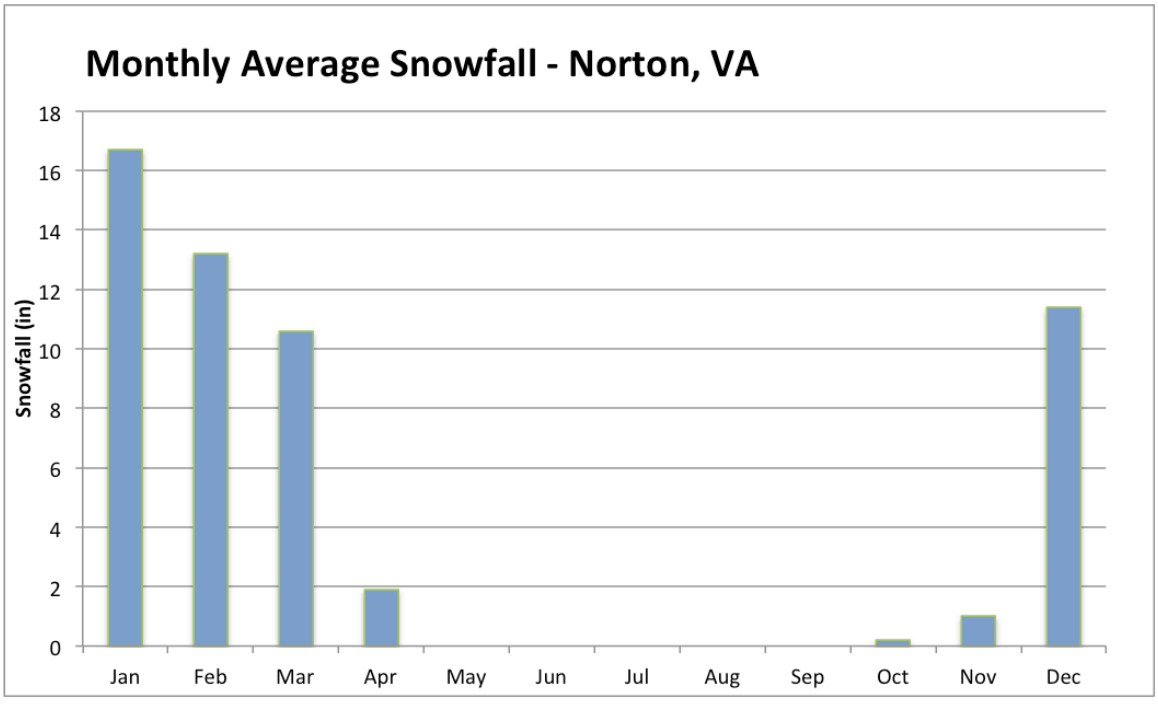


Figure 13 –Average snowfall in Norton, VA (City of Norton).

Circulation

Phase one of the Riverwalk is proposed to begin at Norton Community Center and go SE 1.25 miles to Kentucy Ave (See Figure 14 – Circulation Diagram for the Norton Riverwalk). The right of way for the trail is proposed to be 12', which includes a 10' paved and striped bidirectional bike path and 1' of shoulder on either side. The beginning of the Riverwalk connects with the existing Safe Routes to School Sidewalk that goes into downtown Norton. The community that the Riverwalk connects to in SE Norton is referred to as Ramsey and currently does not have adequate pedestrian connection to the downtown. An existing dirt road connects the tipple site to Wharton Lane, while Seneca Lane was the main access point to the site. The Federal Highway Administration recently came out with a report describing small town and rural multimodal networks. Common types of connections for rural and small towns were determined to be "local connections to schools," "connections between communities," "connections from residential areas to mainstreet," and connections within "mainstreet or commercial area" (Federal Highway Administration, 2016, pp. 1-7). The connections between communities would be more in line with a "Rails to Rrails" project from Norton to Appalachia, and the recent Virginia Department of Health Complete Streets Workshop in Norton is more focused on multimodal networks in the downtown. The Riverwalk addresses better connections to the schools, by providing safe access for students from Ramsey to go to the Elementary and the Middle school or to go all the way to the downtown High School along the Safe Routes to School Sidewalk. The Riverwalk also addresses better connections from residential areas to main street by providing a safe

route from the Ramsey community to the downtown, in conjunction with the Safe Routes to School Sidewalk.

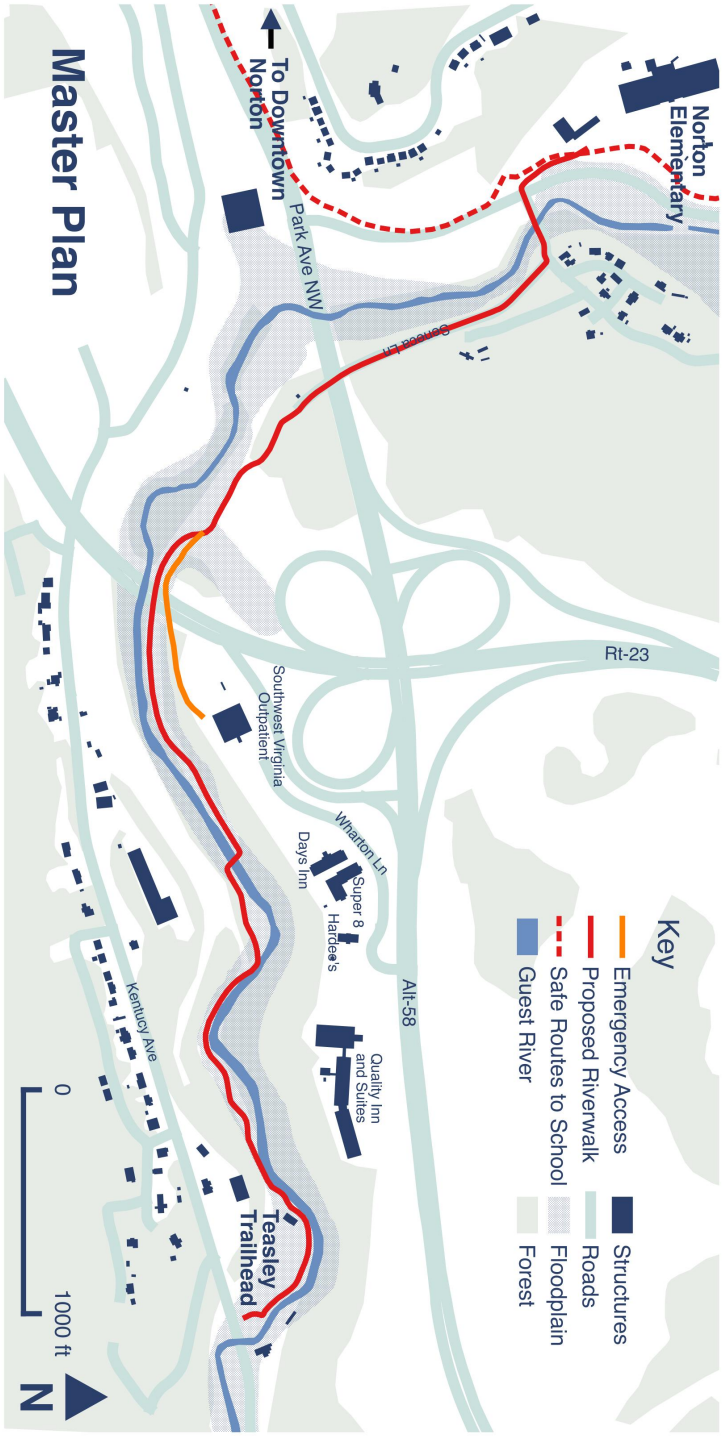


Figure 14 – Circulation Diagram for the Norton Riverwalk

Crossing the Guest River

Phase one of the proposed Riverwalk runs 1.25 miles from Norton Elementary School and Community Cener to the outskirts of the Ramsey community, crossing the Guest river once (Ramey, Reilly, & Fields, 2016). Cost estimates for a pedestrian bridge at that crossing range from $150,000 to $200,000, with additional engineering costs needed to ensure that the bridge does not encroach on the FEMA floodway (Graham Landscape Architecture; Mattern and Craig Engineers, 2010). An additional three river crossings are included in phase two. The high cost of pedestrian bridges relative to the overall project cost is one reason why the Riverwalk project is phased. The community engagement process focused on phase one because of how far in the future phase two would realistically occur. While phase one of the Riverwalk does not make as strong a connection to the Ramsey community as the whole project, it does connect to Ramsey and could act as a catalyst for phase two.

Interstate Railroad Crossing

Phase one of the Riverwalk crosses over the railroad once and under a railroad bridge once. The first crossing occurs on a public road and already includes flashing lights and vehicular barriers that lower to block traffic from colliding with an oncoming train. The crossing under the railroad bridge will likely need to be sheltered to protect it from falling railroad spikes, coal, and other detritus.

Coal Tipple

Part of the Riverwalk passes through a former coal tipple, a brownfield site, where coal was stored and transported from. The coal tipple site was the focus of Nathan Brown's 2011 undergraduate thesis, where he proposed a city park that would take

advantage of the site's unique history, while treating acid mine drainage through a series of stepped water features (Brown, 2011). In March 2016, a consent decree as part of a Clean Water Act lawsuit against Penn Virginia Land Operating Company and A&G Coal Corporation included a $35,000 supplemental project (SEP) for assessment of environmental remediation needs of the tipple site (Consent Decree, 2016). This assessment could make it easier for City of Norton to apply for and receive an EPA Brownfield grant.

There are many abandoned coal related industrial sites in the Virginia coalfields as a result of the boom bust cycles of the coal industry over the past few decades (See Figure 15).

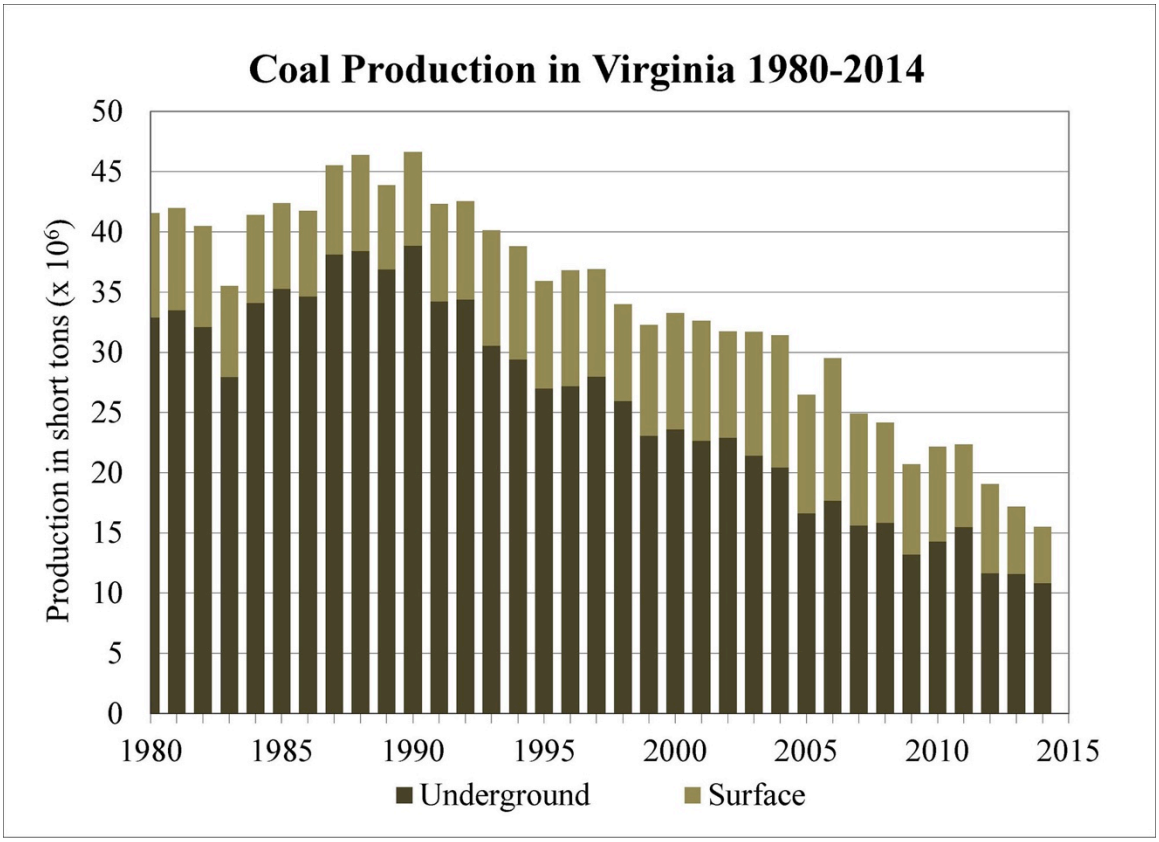


Figure 15 – Coal Production in Virginia 1980-2014 (DMME, 2014).

In 1977 Congress passed the Surface Mine Reclamation and Control Act (SMCRA) to deal with the special threat that surface mining posed to the health and welfare of the people and environment of coal mining regions in Appalachia and around the United States (City of Norton, Virginia, 2016). In Virginia, the Division of Mines Minerals and Energy (DMME) was tasked with enforcing the regulations of SMCRA and allocating money through the Abandoned Mine Lands (AML) program to reclaim mining sites abandoned before the passage of SMCRA. Approximately $422 million would be needed to reclaim all the existing AML sites in Virginia, so DMME, with a $6 million dollar annual budget in 2014, can only address the most pressing sites. Most of the Tipple Hill site, 95%, is classified as coal loading and processing, so is not eligible for AML funding. The 5% that is eligible for AML funding is low on the priority list, as an Acid Mine Discharge (AMD) that poses no immediate risk to human health or safety (City of Norton, Virginia, 2016). That is why the City of Norton plans to apply for a Brownfield grant in 2017 to address the site. In late 2016, the City of Norton completed an environmental assessment of the Tipple property. The designer learned about the completion of the assessment days before this thesis was due for submission.

Site Analysis Key Implications

1) The proposed Riverwalk requires purchase of the Tipple site, permission from Interstate Railroad, and an easement from Teasley property.
2) Extensive grading will be needed to address the 16’ elevation change from Norton Elementary School to the proposed Riverwalk.
3) Non-emergency vehicles will not be able to access the tipple site because Seneca Lane’s width is less than 20’. This means more pedestrian and bike focus

throughout he trail and no need to locate parking, however, it limits access for those with limited mobility.

4) Grading will be needed to address slopes ascending to and descending from the Tipple and the Teasley Trailhead, which currently reach 13%.
5) There is an opportunity to have a positive impact on the local ecosystem with reforestation. This will help increase species diversity, while fitting the native vegetation and low maintenance goals of the Riverwalk.
6) An outcrop of Gladeville Sandstone could be used for education along the Riverwalk for Norton Public School students.
7) The proposed Riverwalk would connect the downtown to the pedestrian isolated community of Ramsey via the Safe Routes to School Sidewalk. This connection will increase pedestrian safety and encourage exercise.
8) Phase One of the proposed Riverwalk requires construction of a pedestrian bridge across the Guest River. This bridge, estimated to be around $200,000 represents a significant piece of the Riverwalk budget, but is also an opportunity to create a stunning view up and down the river.
9) Acid Mine Drainage emerging from an abandoned underground coal mine on the site needs to be treated before discharging into the Guest River.
10) Abandoned Tipple Machinery on the site could be incorporated as historical, recreational, and artistic features.

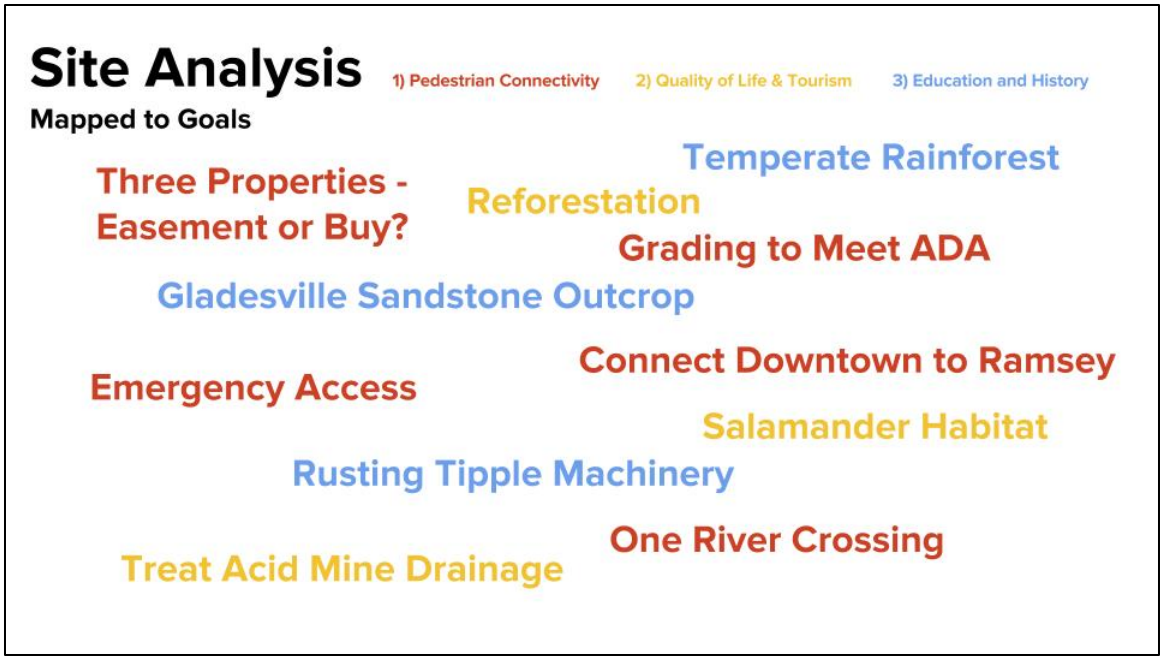


Figure 16 - Site analysis outcomes mapped to project goals

Community Engagement

The community engagement process for the Riverwalk is broken into three components: informal interviews, formal presentations, and community design charrette. Destailed information regarding the outcomes from this process is available in the appendix.

Informal interviews

Informal interviews all followed a similar format:

⇒ Informal interviews ranged from 30 minutes to 90 minutes

⇒ List of specific questions were compiled before the interview

⇒ Notes were taken in a word processor w/o audio recording

The community engagement process for the Riverwalk included informal interviews, where local professionals and experts in the fields of public health,

environment, business and education were brought together to discuss how the Riverwalk could help accomplish their respective and combined goals. Part of the goal of these "theme meetings" was to create cross-linked participation, wherein multiple groups that could be adversarial later in the design process were instead brought into the conceptual design process early, with their concerns/needs encapsulated into the conceptual design. For example, the designer met with the Chief of Police in Norton to address public safety needs, with outcomes included in the conceptual plan, narrative, and perspectives.

Interviews were also planned to integrate the Riverwalk with local initiatives (health, education, business, environment, tourism), to inform, and to encourage community partnerships with the Riverwalk. There were 11 informal interviews in total: three with groups, two with groups of two, and six with individuals. Of the individual interviews and the two person groups, five people were women and five people were men. As an example of some interview questions, here are the questions from the interview with the Director of Parks and Recreation Shelly Knox:

⇒ "*What is the Character of Norton City Parks?"*

⇒ "*How do you see the Riverwalk fitting into Norton's Network of Parks?*"

⇒ "*What are the maintenance concerns/needs for the Riverwalk?"*

⇒ *"Are there any key amenities that Norton City Parks and Recreation would like to see on the Riverwalk not previously mentioned?*"

During the Norton Community Engagement process, informal interviews were one of the most used and important tools. The informal interviews facilitated learning about the needs and concerns of the community from the angles of public safety,

recreation, health, business, and more. The majority of questions asked during the community engagement process were specific questions to learn things like the current health challenges facing the city or how policing is typically accomplished or the character of city parks. Unfortunately, the informal interviews did not include a universal survey question, but one may be useful in future projects to calibrate questions to the community member's worldview.

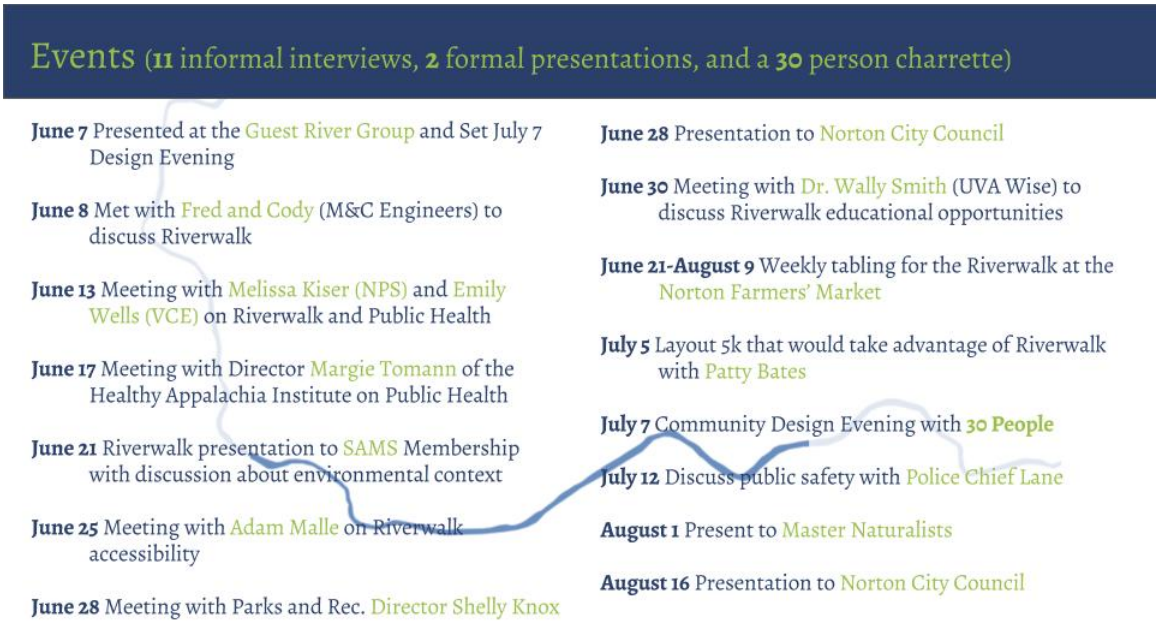


Figure 17 - Timeline of community engagement events during summer 2016

Figure 18 - Team 3 works through design challenges at the design evening charrette (Fred Ramey)

Design Charrette

After a presentation about the Norton Riverwalk community engagement process to the Guest River Group during a June 7, 2016 morning meeting, the designer proposed the group hold a special meeting on July 7 for a public design charrette. After that meeting a few of the key things that the designer needed to do included: outreach to bring community members into the event, determining and practicing the agenda of the event, and organizing general logistics. The low risk visioning charrette was chosen for the Norton Riverwalk event held at the Norton Community Center on July 7 because it aims to create a conceptual plan that coalesces people around the project, bringing diverse perspectives to the table, rather than alienating and angering. A visioning charrette is low

risk because without immediately implementable regulations or plans it frees up elected officials and city staff to think creatively without fear of reprisal.

Outreach for the event began with how to communicate its purpose. After discussing the meeting with Adam Wells and others at the Guest River Group meeting on June 7 it became clear that the event should emphasize sharing of information about the Riverwalk and soliciting ideas from participants. The slogan "Share Your Vision," in big letters across the top of the flyer, came from Wells' first redlining of the flyer. The day and time chosen have particular significance in the area. A weekend meeting was rejected out of hand because people do not typically attend public meetings on the weekends. Monday was rejected because people typically do not want to attend a meeting on the first day of the week. Wednesday is traditionally a church fellowship evening, so meetings would conflict with people's schedules. Friday is out because people are exhausted from the week. That leaves Tuesday and Thursday evenings for meetings, and we chose Thursday, July 7, at 6pm.

When: **Thursday, July 7 at 6pm**

Where: **Norton Community Center,** 201 Park Ave NE, Norton, VA 24273

What: **Learn and share your ideas about the Norton Riverwalk**, a proposed walking and biking trail along the scenic Guest River connecting downtown Norton with the community of Ramsey.

Fruits, veggies, and pizza will be served.

Email Dylan Reilly at dreilly@umd.edu to RSVP

CITY OF NORTON
On The Trail Of The Lonesome Pine
VIRGINIA

Appalachian Voices

Figure 19 - Flyer used to advertise for the design evening in person and over email.

Outreach for the event included flyer distribution local businesses (Vic's Decorating, Pathfinder Outfitters, Mi Finca restaurant, and Home Hardware), an email blast to engaged community members and project partners, tabling at the Norton Farmers' Market, and calls to individuals who had expressed interest in the project. An RSVP contact was included in all outreach materials and a master list of all people outreached to and their responses were kept throughout the process. Dinner was also advertised as part of the event. This list helped to order the correct amount of food and prepare the design game materials. By July 6 there were 27 confirmed for the event, so everything was oriented towards a potential turnout of 30. Some people did not show up, but others showed up who had not confirmed, resulting in a total attending count of 30, including 4 organizers (Myself, Norton City Manager Fred Ramey, Norton City Administrative Assistant Katie Hummel, and Appalachian Voices Economic Diversification Coordinator Adam Wells). City of Norton provided pizza and salad for the event and INtotal Health Community Outreach Representative Misty Lee provided a fruit tray. Then we did introductions, everyone said their name and their organization, or where they were coming from. This worked well as a quick way to let people know who was on their team and what their general background was.

- ⇒ Maps and amenity icons were prepared for teams to quickly lay out their vision for the Riverwalk. Each team received a sheet describing the character of each amenity and guiding questions for each of the three different maps.
- ⇒ Teams were encouraged to make notes on the maps about design decisions using post it notes

⇒ Teams were organized to mix professionals from different organizations and backgrounds

⇒ Each team was assigned a facilitator to keep them on track

⇒ The design evening was two hours in length including dinner

The event was held in a large meeting room in the City of Norton Community Center, near the trailhead for phase 1 of the Riverwalk. The July 7 meeting, was short, two hours, in comparison to the multiday workshops that Condon discusses or the open ended months long processes that Hester discusses. The Riverwalk was divided into three design sections for the evening, the tipple site, the sewer main ROW before the bridge and the sewer main ROW after the bridge. Each of these three design sections was allotted 20 minutes in the meeting and the three teams, each of about 10, were facilitated. Each team received three maps (with the Riverwalk marked), markers, icons to place amenities along the trail, post-its to write their reasoning behind each choice, and a homemade scale with only markers for 1" = 50' (the scale of the provided maps)(See Figure 20). During each of the three design sessions participants were going to be shown photographs taken on each section of the site in a slideshow kept running while they are working (Logistical issues prevented this). Fred Ramey, City Manager of Norton, floated around the room, answering technical questions, taking photographs, and observing the process.

Before participants sat down to begin the design activities everyone was encouraged to get dinner. Then the designer thanked the City of Norton Appalachian Voices, and INtotal Health. Fred said a few words on the project and the designer gave an

8-minute presentation on the big picture of the summer community engagement. The following mission statement was presented to the group as an encapsulation of all the conversations so far with project partners. *Riverwalk Mission* – To improve pedestrian connectivity, provide active recreation opportunities, enhance outdoor educational experiences, and generally improve quality of life for Norton Residents. The design game was then explained to the participants and they were shown an example map. Photographs were taken of all the maps that resulted from the evening and the maps themselves were carefully folded and stored.

Icon Explanations

Picnic Shelter

Each team receives **1 Picnic Shelter** icon. Picnic shelters should be located where they can be easily accessed and in a particularly scenic area.

Science Feature

Each team receives **2 Science Feature** icons. Science features include stream gauging stations, bird watching locations, forest sampling plots, arboretums and more.

Fitness Station

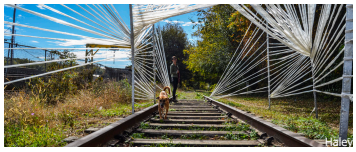
Each team receives **4 Fitness Station** icons. Fitness stations are structures built on the side of the trail that direct exercises like pullups, pushups, stretching, and more.

Amphitheater

Each team receives **1 Amphitheater** icon. The Amphitheater is a place to hold events and teach classes (Capacity ~30 people). It should be located near bathrooms and be easily accessible.

Art

Each team receives **2 Art** icons. The art icons represent locations to place sculptures, paintings, and more along the trail.



Bench

Each team receives **4 Bench** icons. The benches should be spread along the trail to give elderly and those with lower mobility a place to rest. Benches also provide a place to socialize and eat lunch.

Educational Sign

Each team receives **3 Educational Sign** icons. Educational Signs should be located within view of the historical, ecological, and other features they are presenting. The sky is the limit on sign ideas.

Fishing

Each team receives **2 Fishing** icons. Fishing icons are specially designated areas for fishing, perhaps with a place to clean fish, sit down, or a path to the water.

Restroom

Each team receives **2 Restroom** icons. Restrooms should be placed to offer convient use for bigger features like the amphitheater and picnic pavilion.

Water Fountain

Each team receives **2 Water Fountain** icons. Water fountains should be conveniently located for those exercising on the trail, as well as those visiting the amphitheater and picnic shelter.

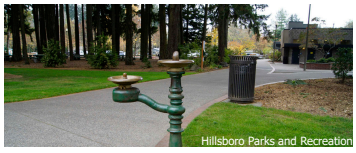


Figure 20 - Icon Explanations sheet that was provided to charrette teams

The overall engagement of participants at the event went well, with teams of 9, 7 and 6 respectively. The schedule ended up shifting about 5 minutes ahead and the last design session was cut about 5 minutes short because teams finished up the final section ahead of schedule. The first section, the tipple site took the most amount of time, with a full half hour from 5:30 to 6:00pm. The sewer main 1 took about 20 minutes and sewer main 2 took about 15 minutes. The designer gauged the progress of the teams with quick check-ins, leaving his team when they seemed engaged in a particular design question. When teams seemed restless or had already begun on another section, the designer rang the bell to signal all teams to move forward. Team 1, facilitated by Adam Wells, took an ideas based approach, laying down many post-its with ideas. Team 2 laid down all their icons, and a number of post-its with ideas, but seemed to consider each idea and discuss it before laying it down. Team 3 used all their icons and laid down post it ideas, but seemed to take a more detailed approach, even specifying the types of exercises that different fitness stations might have.

One thing to note with the design game process is that people quickly wanted to add to it or change it slightly. Lois Boggs, biologist from the Forest Service who was on Team 1, immediately mentioned that Wi-Fi should be included at some locations, including the amphitheater and there was not an icon for Wi-Fi. So Team 1 used a post-it to indicate that. Other teams, also began to use the post-its to make up for missing icons. Team 2 used post-its to indicate where they wanted a kayak/canoe put in and an ADA fishing area. While people did use post-its to make up for missing icons, they were able to understand the icons that existed quickly, and the icons were used as a foundation to allow the teams to get started without feeling overwhelmed by a total blank slate.

Some teams moved forward with different sections of the design evening before the bell was rung, indicating that they needed less time to accomplish the task at hand, or that it made more sense to work on multiple parts of the project at once. The design was originally divided into pieces to make it more manageable for people to design the project, without feeling overwhelmed. It may be worth revisiting the overall process to make sure that there is enough for people to do during the process.

Figure 21 - Team 2 work through Riverwalk design at the July 7 charrette (Fred Ramey)

Formal Presentations

On June 28, the designer gave a presentation to the Norton City Council focusing on the scope, methods, and outcome of the community engagement process. On August 16th, the designer gave a presentation to the Norton City Council focusing on the outcomes of the community engagement process and preliminary design concepts. The

two formal presentations given to the Norton City Council during the Summer followed this format:

- ⇒ 5-20 minutes
- ⇒ PowerPoint format
- ⇒ Opportunity for the Norton City Council to give feedback on the project
- ⇒ Questions held until the end

Figure 22 - Formal Presentation to Norton City Council (Fred Ramey)

Synthesis of Community Engagement Process

The purpose of synthesizing the community engagement process was to incorporate community input into the design effectively. The raw data for this synthesis came from the notes of the informal interviews and the photographs of the maps and notes from the charrette. The first step was to write down all the input from each of the

nine total maps created during the charrette. Each map includes amenity symbols and post-it notes, so information about those elements was transcribed. Once the information was recorded, then visual and written synthesis occurred. The written synthesis is a decision making narrative, discussing why some elements were included in the design and others were not, moving in a linear fashion form the beginning of the trail to the end. This narrative includes input from the informal interviews and the charrette.

The visual synthesis is the creation of three trail maps, one for each team, that combines all their design information from the charrette. The three maps were then combined into a synthesis map with one mention, two mentions, and three mentions all resulting in hierarchy of text and icons. This charrette synthesis map with hierarchy of text and icons was then compared with written notes from the informal interviews and the site analysis. Project goals and objectives were then extracted from this comparison and became the basis for the design. The selection of the goals and objectives is, in essence a subjective process, influenced by the community engagement and expertise of the designer. Careful consideration was given before excluding design elements highly supported from the community engagement process, because community engagement is so important to the Riverwalk. These goals and objectives acted as the brief, guiding the design process.

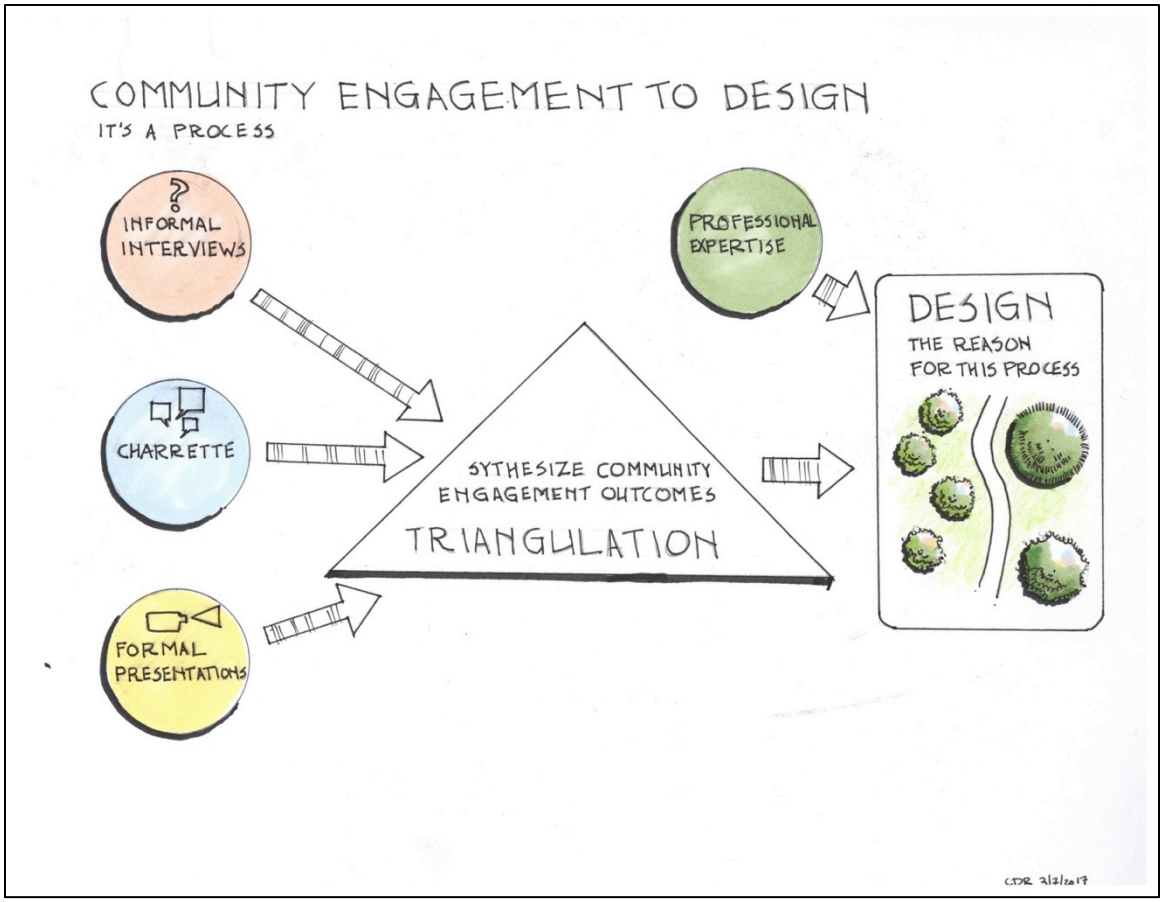


Figure 23 - The designer's approach to community engagement

Design

The design resulted from careful examination and synthesis of the community engagement outcomes, including from the charrette and interviews, and the site analysis. This process of triangulation of interests and needs is similar to that conducted by an ethnographer. The design includes a master plan, a site plan for the tipple property, a site plan for the Seneca Lane trailhead, and a preliminary layout plan at 50 scale with grading. Appropriate perspectives, sections, and diagrams were created to accompany these design elements. A preliminary grading plan for the Riverwalk was developed to better understand the feasibility of a fully ADA accessible trail at <5% slope.

Workplan

Though elements have changed throughout the course of the project, the following work plan was used to guide this thesis project.

1) **Develop a plan for a Community Engagement Process** based on feedback from community design professionals, a thorough literature review, and conversations with project partners. This would include a detailed description of a community engagement process, with specific recommendations for engagement events, schedule, and how participants will be able to express their ideas.

Completed *June 27, 2016*

3) **Implement the Community Engagement Process** as planned. This involves the completion of the community design events, including at least three theme meetings (health, education, and environment) and one general community design event. While the theme meetings will focus on goals, precedent, and specific design recommendations, the general community meeting will focus more broadly on the trail including materials, access, amenities (benches, lighting, trash receptacles, picnic shelters, etc.), and character. Logistical organizations of meetings and preparation of visuals is part of this process

Completed August 16, 2016

3) **Deliver Feasible Conceptual Plan and Community Engagement Overview** to Appalachian Voices, City of Norton, and all project partners. This report will include sections describing the community design process, the findings from it, and the resulting feasible, conceptual design. The design will address three main themes of health, education, and environment in addition to general design recommendations. Deliverables

include perspectives, sections, diagrams, siteplans, and narratives to describe the feasible, conceptual design. The final presentation will be given during the August 16th Norton City Council meeting.

Target Completion Date: Spring 2017

Logistics

Appalachian Voices, a regional non-profit, agreed to provide a $2,000 stipend and an office space for the summer. The City of Norton agreed to support community design events financially, $200, and by making available their community center at no cost. City of Norton also provided $500 dollars to help with travel and living expenses.

Chapter 3: Results

Community Engagement Outcomes

Please note that all notes from the informal interviews, charrette, and formal presentations are located in the appendix. This section only includes the content analysis of those notes.

Community Engagement Synthesis

The content analysis of the informal interviews and the charrette began with triangulation, looking for the design commonalities between interviews, charrette teams, and the site analysis. To more efficiently understand the design commonalities from the charrette, the designer created digital maps; one map for each team which included their icons and notes, combining each team's three maps into one. These three team maps were then combined into a synthesis map, which used a hierarchy of text and icon size to

indicate how often a feature was located in a certain place or proposed. Some design ideas were advanced because they addressed critical issues addressed in the site analysis, while others advanced because of the interest shown during the community engagement process. Conversely, some concepts had support from the community, but were not supported by the site analysis. Similarly to the site analysis, word clouds were created for the key interview outcomes and the key charrette outcomes (See Figure 26), identified with the synthesis map. Hierarchy of text was used to communicate relative importance of design ideas. The key outcomes from the community engagement process were then categorized and those categories helped to refine and define project goals.

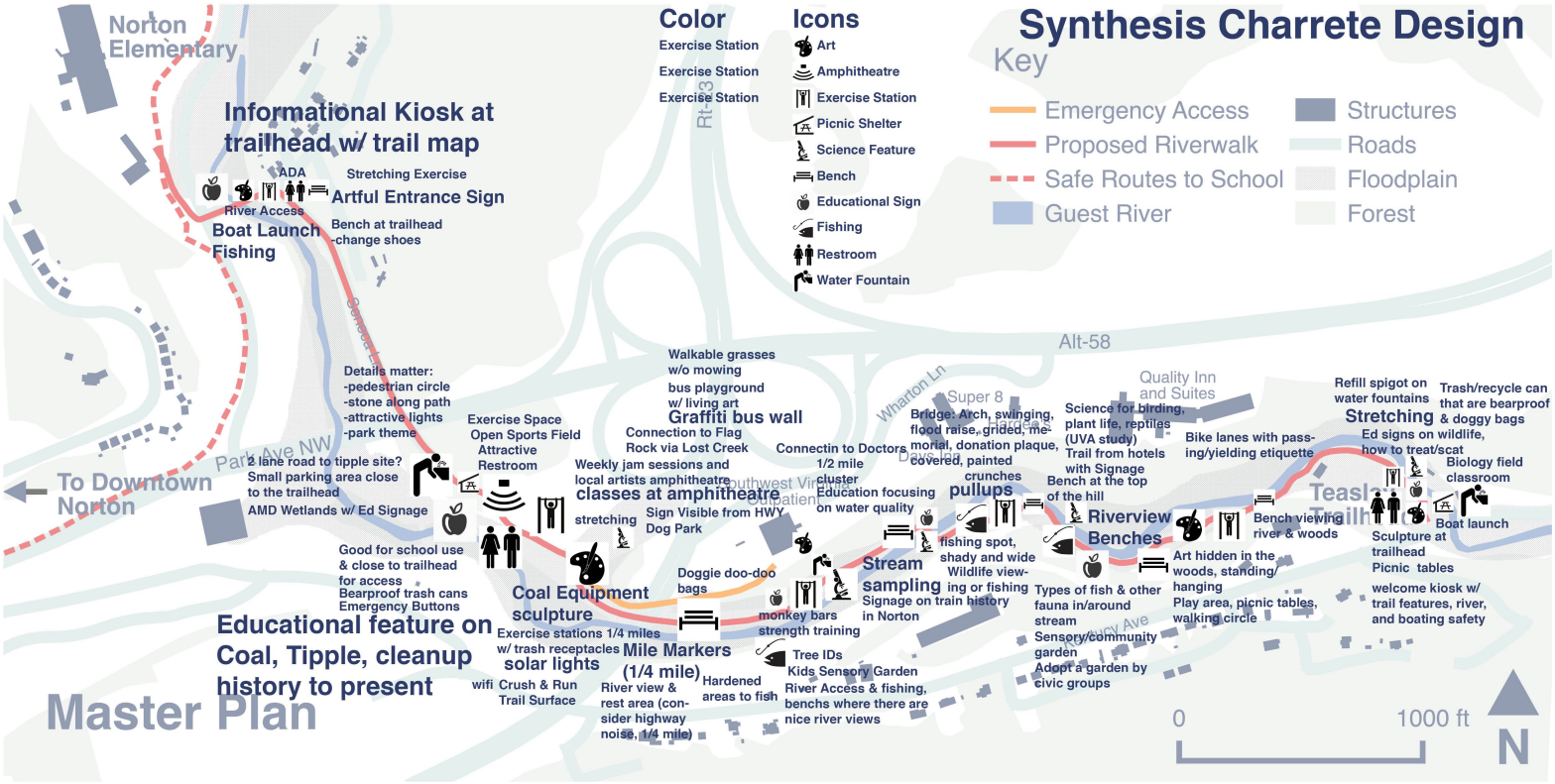


Figure 24 - Synthesis Charrette Map

Figure 25 - Word cloud of key interview outcomes

Figure 26 - Word cloud of key charrette outcomes

The following selected community engagement outcomes have been winnowed from all the content analysis. *Supported* means that an outcome was brought up at least once in an interview or in the charrettes. *Well-supported* means an outcome was brought up by two charrette teams and in at least one interview. *Strongly supported* means an outcome was

brought up by all three charrette teams and in at least one interview. There is an element of designer judgment in the list of community engagement outcomes as well. This list is not exhaustive and the synthesis maps from the charrette and the notes from the informal interviews were often referred to directly when making design decisions as opposed to secondary analysis.

1) Must safely connect to the Safe Routes to School Sidewalk and Norton Elementary School across Park Ave NE (*Supported*)
2) Water Fountains should be on the trail to encourage hydration (*Strongly Supported*)
3) Programming the Riverwalk with health related activities can take advantage of grant funding and existing Get Fit Initiative (*Well Supported*)
4) A bathroom is a high priority for the Riverwalk (*Strongly Supported*)
5) Emergency vehicles need to access the site, and provide an emergency access near the center (*Supported*)
6) Needs to be <5% grade and ADA accessible, creating a great experience for people of all ages and abilities (grade, seating, river view, tread materials and signage) (*Strongly Supported*)
7) Connect City Parks (*Supported*)
8) Minimize maintenance (*Supported*)
9) Overlook of Norton on the Tipple (*Supported*)
10) Interpretive experience of the coal and natural history (mines, coke ovens, chestnut trees, salamanders) at the tipple site (*Strongly Supported*)

11) Master naturalists could use the site for programming and be involved in planting maintenance of select areas. (*Supported*)

12) Stream sampling station established for UVA Wise Research (*Well Supported*)

13) Onsite coal equipment reused in artful entry sign concept at Seneca Lane (*Well Supported*)

14) Wayfinding and informational kiosk at Seneca Lane and Teasley trailhead (*Strongly Supported*)

15) Fencing along railroad for safety (*Supported*)

Conceptual Design

Goals and Objectives

Goals and objectives were developed from the community engagement process and the site analysis outcomes. Supporting design objectives are listed under each design goal.

1) Improve pedestrian connectivity

a) Layout a multi use trail to safely connect Norton Elementary to the Community of Ramsey

b) Make the trail ADA accessible (<5%, surface transitions, parking)

c) Include water fountains and restrooms

d) Facilitate emergency access

e) Minimize maintenance

f) Install way finding signage and kiosks to guide visitors

2) **Improve quality of life for residents and attract visitors**

   a) Include exercise stations and public health programming

   b) Create natural drama and habitat restoration by encouraging forest regrowth and managing meadows

   c) Passively treat Acid Mine Drainage with limestone ponds

3) **Tell Norton's Story, from towering chestnuts and coal mining through to the present**

   a) Design site furniture and structures that tell the industrial story

   b) Incorporate educational signage throughout about the site's natural and industrial heritage

   c) Incorporate scientific research on wildlife, plants, weather, and water quality

   d) Include a picnic shelter to facilitate education, scientific research, and recreation

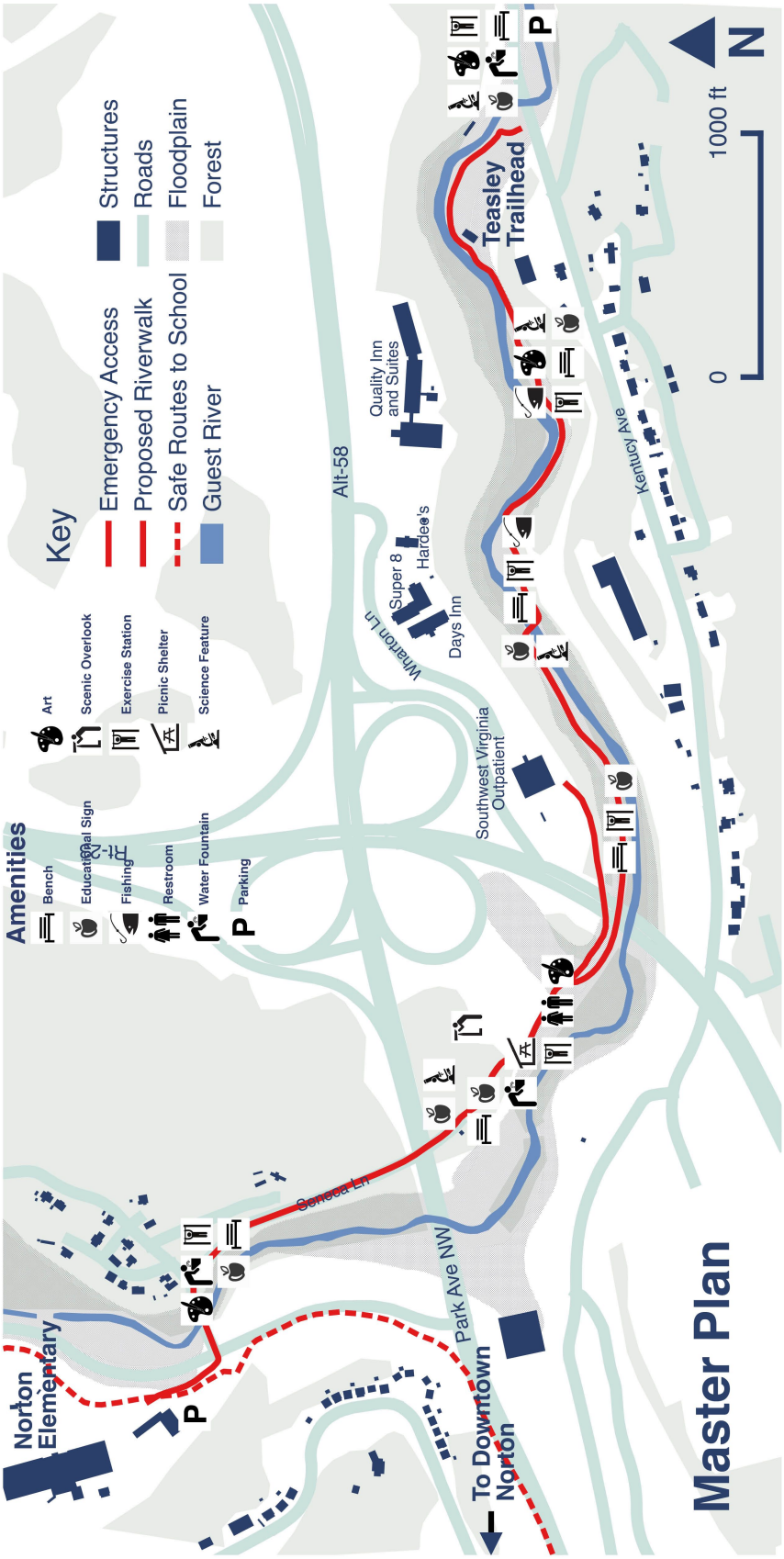


Figure 27 - Riverwalk Masterplan

Industrial Sublime Theme

The theme of industrial sublime on the site emerged from the community engagement process and visits to the site. In this context, sublime refers to how landscapes, real or contrived, cause us to confront our own mortality in their decay. This was the technique of romantic English gardens that used fake ruins to remind visitors of constant change and the impermanence of human endeavors. In the context of the Riverwalk, the industrial sublime comes from the community's need to tell the story of coal, the cultural, economic, and environmental elements of it, and how it led to today. The need for that narrative was made clear in the charrette and an informal interview. Throughout the design there are structures, furniture, and educational features that employ the industrial sublime theme.

Connection to Safe Routes to School Sidewalk

Connections are critical for this design. Numerous community members discussed the importance of the connection of the Riverwalk to the Safe Routes to School Sidewalk and therefore the Elementary school and the Downtown. In particular, a teacher who helps coordinate the Get Fit program at Norton Elementary School discussed the need for a safe crossing for kids to the new Riverwalk. At the Connection there are a few major design challenges. Design challenges at the connection include a ~16' elevation drop from the Safe Routes to School Sidewalk, a new crosswalk needed across a busy two lane road, crossing an existing bridge, and crossing railroad tracks at an existing signalized public road crossing. To deal with the 16' elevation, a sidewalk of greater than 320' was included that runs down the hillside from the community center to be at grade with the road at the proposed crosswalk. This allows the sidewalk to continue to be ADA

accessible at less than 5% slope and makes biking much more pleasant. A set of stairs going directly up the hillside is also under consideration as an additional feature. To cross the road a signalized crosswalk is proposed with a button to call it and LEDs embedded in the road way along a 10' wide, white painted crosswalk on the asphalt road. The existing bridge to Roundtown includes 42' of usable width, including an existing two-lane road and 5' sidewalk. 30' can be maintained for the two-lane road by moving the sidewalk to the opposite side of the bridge and increasing its width to 10', with a two-foot buffer on the vehicular side with a car barrier. There is 32' of asphalt width at the current railroad crossing. 21' of two-lane roadway can be maintained, when a 10' painted on sidewalk is included.

Two teams specifically asked for river access, including a kayak launch. Team 2 suggested a launch on the tipple site and team 3 suggested a launch near the Roundtown Bridge. A coal mining company owns the property around Roundtown Bridge, so the property would have to be purchased, or public access to the River negotiated. A kayak launch would be more accessible along the sewer easement, but without vehicle access to the tipple site getting the kayak to the launch would be challenging. There may be vehicle access at the Teasley trailhead, but the steepness of the slope and area constraints there make a launch difficult. Therefore, for this stage in the design the designer did not include a launch.

Seneca Lane

At the beginning of Seneca Lane where the trail turns south to the tipple, the width of the road way is only 20'. The three teams in the design evening and Police Chief Lane all expressed interest in having vehicular access to the tipple site for reasons

ranging from convenience to access to public safety, but unfortunately Seneca Lane cannot accommodate a two-lane road and a 10' multiuse path. In the future if the tipple site were to be developed as more high intensity use park then vehicular access to the tipple should be thoroughly pursued. A locking bollard at the intersection of 2nd Street NE and Seneca Lane will prevent private vehicle access to the tipple site, while allowing maintenance personnel and police to access the entire length of the Riverwalk, especially the building cluster at the tipple site. The locking bollard will be exactly the same as the Safe Routes to School Sidewalk and use the same key.

Team 2 suggested that coal equipment could be turned into art on the tipple site and Team 3 suggested that a coal sculpture could be incorporated into a welcome sign (See **Error! Reference source not found.**). A welcome sign, incorporating coal themes with reclaimed metal from the tipple and Gladesville sandstone could be commissioned and located at the beginning of Seneca Lane facing the road. The words "Norton Riverwalk" could be cut out metal from the site and attached to a Gladesville sandstone wall. The support for art and signage along the trail that reuses onsite coal machinery and evokes the coal industry was also the impetus for the Industrial Sublime concept throughout.

Team 2 and Team 3 suggested having a kiosk with a map of the Riverwalk on Seneca Lane before passing under the U.S. Route 58-Alt overpass. Norton has some kiosks on High Knob that the Riverwalk Kiosk could be modeled after. The kiosk should include a map of the site, hours of operation, photos, a small exhibit, and park policies (See Figure 28). Appalachian Trail Club also has guidelines for designing and building kiosks at trailheads (Appalachian Trail Conservancy, 2012). A bench right next to kiosk

would give folks a place to rest, or change shoes as Team 3 suggested. The designer imagined a kiosk and bench that could incorporate materials from the decaying industrial equipment onsite, weaving into the industrial sublime narrative told more overtly with educational signage (See **Error! Reference source not found.**). Team 2 placed a stretching fitness station on Seneca Lane before the overpass and located it near the beginning of the trail next to the kiosk makes sense. Clustering them together there with the welcome sign makes a statement that you are now entering the Riverwalk. Fencing is proposed along the railroad ROW to discourage pedestrians from walking on the tracks. This fencing was recommended by the City Manager to improve pedestrian safety along an existing public roadway. A water fountain at the tipple meets the recommendations of interviewed health professionals and the charrette teams. One of the charrette teams recommended a bear proof trash can.

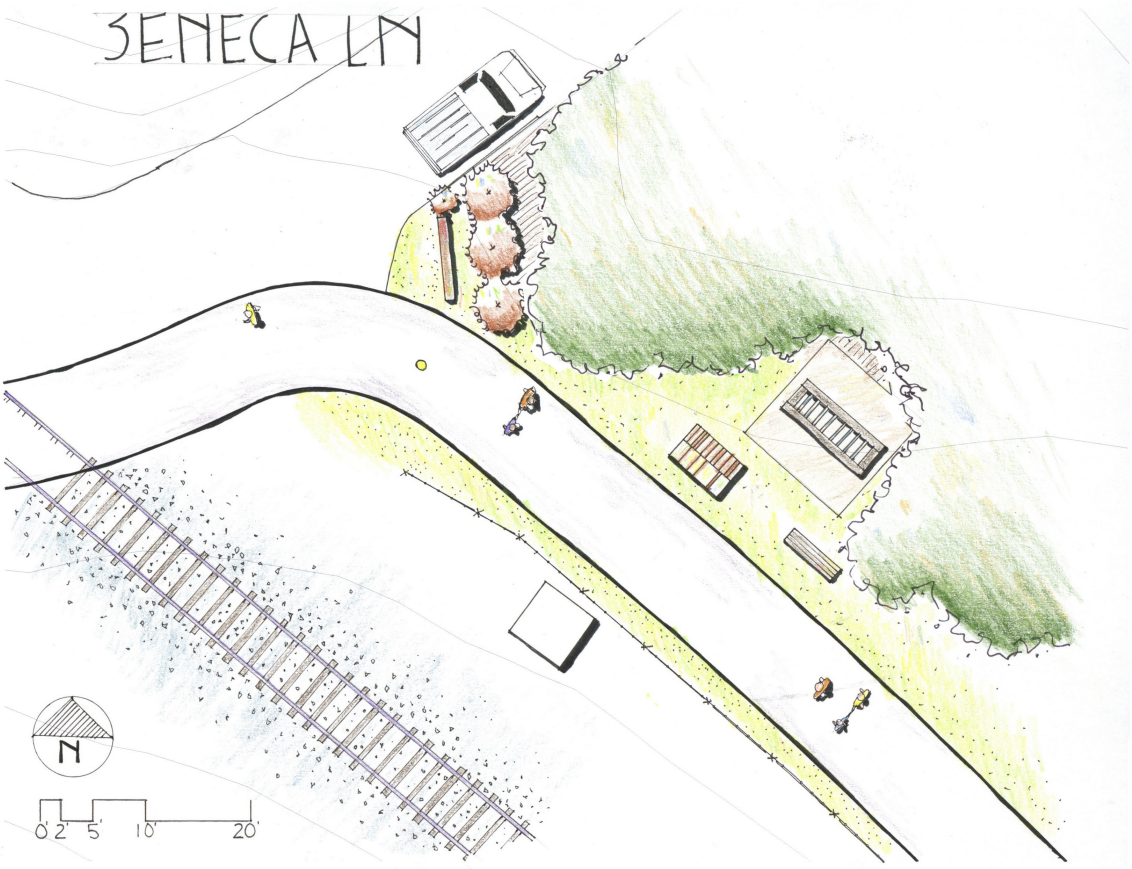


Figure 28 - Seneca Ln Siteplan

Figure 29 - Perspective of Seneca Lane Entrance

Coal Tipple

The tipple site itself was part of the design evening, and though each team had its own unique vision for the site, there was some consensus about what should go there and its character. It is also critical to note at this juncture that not all of the design input received at the charrette can or should go into the conceptual design. While consensus among teams guides design choices, sometimes site constraints prevent those design decisions from being included in the feasible conceptual plan. The road into the site is a good example of that. The information and maps from the design evening, as well as notes from all of the community meetings held are documented in the appendix and future designs should use that information as a tool, even if ideas were not included in this conceptual plan.

At the tipple site all three teams and Director Knox of Norton Parks and Recreation recommended a covered structure with seating that could be used as an outdoor classroom for Norton students, especially from the Elementary and Middle schools, which are at the beginning of the Riverwalk. This would provide a place for hikers/bikers to get out of the weather, scientists to process data, professors from UVA to teach, and Norton Elementary and Middle School Students to walk to an outdoor classroom. The design and location for the outdoor classroom will aim to accommodate 20 to 30 people, as indicated by Director Knox, and include a view down into the Guest River valley, railroad, currently operating tipple site, and High Knob mountain. The size of the structure is proposed to be 20’ by 32’, with a minimum ceiling height of 8’ with a gable roof. This structure could house 5 to 6 picnic tables comfortably.

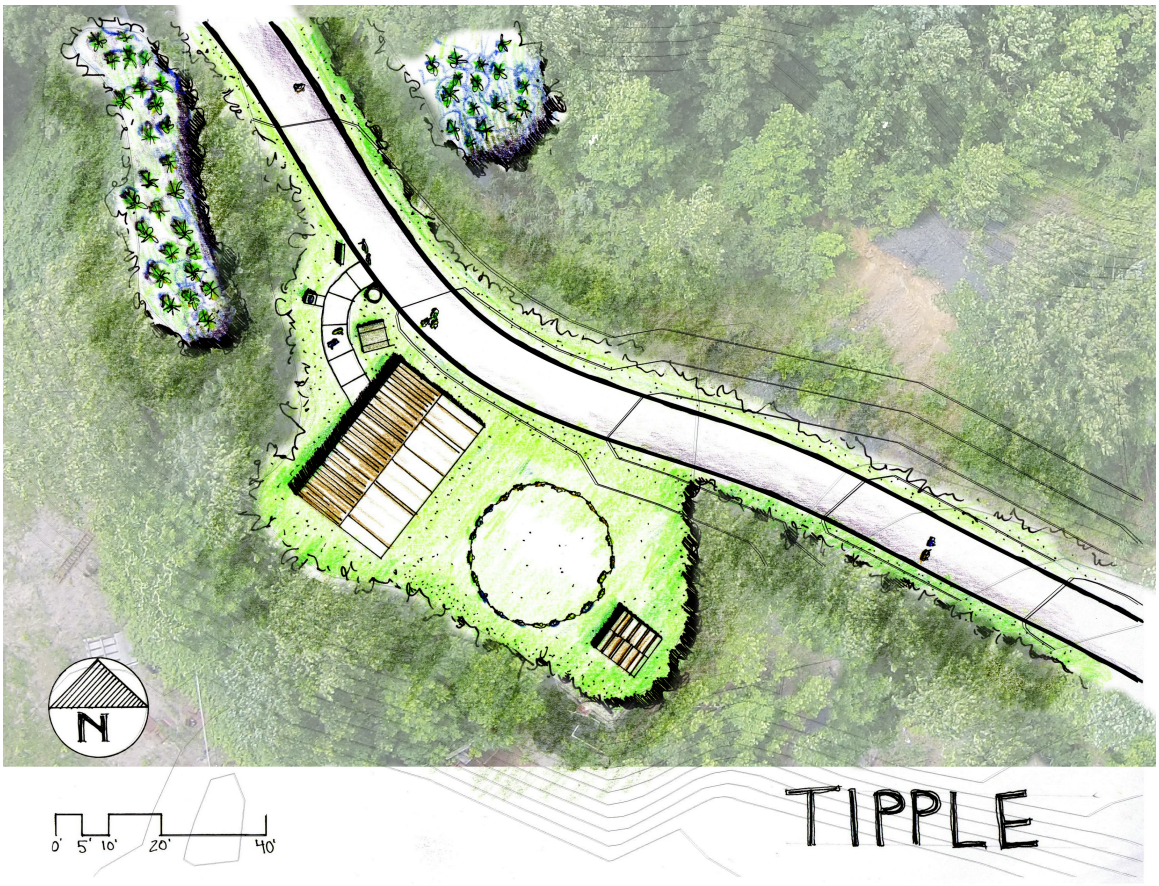


Figure 30 - Tipple Siteplan

All three teams during the design evening also located a restroom at the coal tipple; Chief Lane indicated the need to allow residents a safe, hygienic, and legal place to relieve themselves in the park; and Dr. Smith discussed the need for bathrooms to accommodate students. During a discussion of the possibility of a restroom on the tipple site with City Manager Fred Ramey on July 29, 2016 that included a call to the city's public works department, we learned that a water line might extend on to the tipple site to feed a pre-existing restroom. Finding the water line, determining if it has leaks, and running it to the proposed restroom location could prove challenging. It was also learned that a sewer line from the proposed restroom could tie into the upright manholes spaced along the sewer main. The closest sewer manhole to the proposed restroom is 110'. The

water line to any existing bathroom is harder to know because it was privately installed. If the City of Norton decides to pursue the public restroom at the tipple site the location and condition of any existing water line to the property should be first determined. A drainage valve and outlet would need to be installed to drain the restroom during the winter months and could be designed to drain the water fountain as well. An ADA accessible bathroom would reinforce the message that the Riverwalk is welcoming to those of all mobility levels.

All three teams; Norton Elementary School teacher and Get Fit organizer Melissa Kaiser; and public health advocate and local ultra runner Patty Bates; suggested a fitness station at the tipple site, with ideas ranging from yoga to pull-ups. This space could be incorporated into the proposed shelter. If a concrete slab and removable seating is used, the seating could be hung or locked up along the edge, then the space could become an outdoor exercise studio with a stunning view of the mountains. This also makes better use of limited budget by making one building multipurpose. Team 2 also suggested a stretching fitness station at the beginning of the trail on Seneca Lane, and this design includes that station. A small playfield makes use of the existing cleared, flat area at the tipple site for additional exercise activities.

Figure 31 - Perspective of the Tipple Site

All three teams during the design evening recommended a water fountain at the tipple site and Emily Wells of VCE recommended water fountains on the Riverwalk in general as a way to provide kids with a healthy and free way to stay hydrated. These water fountains would need to be drained for wintertime to prevent frozen pipes bursting and could be tied into the same drainage system proposed for the restroom. The water fountain could be designed to easily fill water bottles.

All three teams included an educational sign in there designs for the tipple site. All three groups proposed that the sign address the site history and the history of coal in the area more broadly. During my meeting with Southern Appalachian Mountain Stewards they also suggested the idea of a sign that spans from the earliest history of the site through to the developments that made it a public park. So, across the trail from the multipurpose shelter, facing the wetland, coal, and existing trailer an educational sign could go through the history of the site from its character pre-European settlement (towering American Chestnuts), to the early days of underground mining (including the mines underneath and discharging onto the site), to its time as a tipple, to its current development into a public park.

A more rustic trail spur of the Riverwalk could lead visitors further up the tipple site to an overlook with a view of Downtown Norton and the surrounding mountains. Director of Parks of Recreation Knox recommended an overlook. This spot could include a board with historical photos of the city.

An introductory mountain biking trail could weave in and out of forest and meadow on tipple hill, taking advantage of elevation change and leftover industrial

materials. Playful mountain biking challenge features made of recycled industrial equipment could speak to the industrial theme of the site.

Team 1 proposed a sensory garden for elementary school students with plants that have different smells, colors, and textures. If chosen as native plants, this garden could add a real interest to the tipple complex and provide an excellent volunteering opportunity for master naturalists and master gardeners, which they indicated interest in.

Bear proof trash and recycling bins could be provided at the tipple site, exactly like those provided at picnic shelters on high knob. Team 1 suggested native plants along the trail, so one specimen tree of American chestnut, resistant variety is proposed for the shelter and restroom area. Other plantings needed at the tipple site should be chosen and transplanted from natives already on site. Master Naturalists would be an excellent resource for that native plant identification and transplanting process. Team 1 specifically suggests that civic and volunteer organizations, like the Master Naturalists, could help be a part of garden design and maintenance on the entire site. A doggy doo-doo bag dispenser at this location will help people to remember to pick up their pet's poo along the trail.

Lighting the trail is something that Teams 1 and 2 both suggested and lighting was identified as a key way to prevent crime along the Riverwalk during my meeting with Chief of Police Lane. One of the challenges to lighting phase one, 1.25 miles, of the Riverwalk is that with light poles spaced every 80 feet, 83 light posts would have to be used. In this context it may make more sense to close the Riverwalk at night except for special events or just to light parts of the trail. For instance lighting the trail from Roundtown to the shelter and restrooms, around 1,450 feet, would take 18 light posts at

80 foot spacing. Existing power lines run through the tipple site, but the designer did not discuss whether those lines were live with the Public Works Department or the utility company.

While not immediately clear where it would go, an amphitheater could rest in one of the many slopes at the tipple site with a view of the mountains. It could be used for weekly jam sessions, an outdoor classroom, or even performances. Without access to the site by vehicle, a medium sized amphitheater, seating around 100, may be too much for the site during this phase of development. An amphitheater should be considered carefully if vehicular access is added to the park because of the interest in one during the community design evening.

Acid Mine Drainage (AMD) from an existing underground mine portal on the tipple site should be addressed during development of the site. Constructed wetlands with limestone are a commonly used method to passively treat AMD, while providing an attractive landscape feature. The constructed wetlands treating AMD on UVA at Wise's campus are an excellent model to copy on the Tipple site. The scope of this design is oriented more towards the linear Riverwalk and not the Tipple site, so a detailed constructed wetland plan is not included.

Riverfront Design Before the Railroad

The Riverfront design section spans from where the trail descends into the tipple to where the trail crosses under the railroad bridge. This section of the trail includes river views, a bridge, and mature forest surroundings. Most of this section is also within the 100-year floodplain, so no buildings will be proposed here.

All three teams suggested putting a bench just after the trail passes under U.S. Route 23. Next to each bench, a small level area is proposed to provide those in a wheelchair a place to rest and enjoy the river off the path. The bench will be located with a view of the river.

Figure 32 - Perspective of the Riverwalk along the Guest River

All the teams recommended a hardened area near the water for people to fish. Team 1 and 2 proposed a location near the first river bend in this section, while Team 3 proposed a location closer to the second bend. Due to the steep slopes near the river at the second bend, a fishing spot nearer to the first bend is proposed. This fishing trail bump out can also provide a place for those with limited mobility to get close to the water and a place for educational signage about railroad history in Norton, as suggested by Team 1. A view of the river should also be maintained at this location.

Teams 1 and 2 proposed mileage markers along the trail, with Team 2 suggesting that they should be placed every ¼ mile.

Team 1 suggested tree identification (ID) signage along the Riverwalk. The neighboring town of Big Stone Gap's greenway also makes use of tree ID signage. One thing that Norton may want to be careful about is where to place the ID signs. With all the new plant growth since the Big Stone Gap greenway's initial installation, determining which tree the sign is referring to is a challenge for those who cannot already ID trees. Small, metal ID tags, directly attached to the tree are proposed.

At the bend in the river Team 1 and Team 3 suggest a fitness station. Team 3 suggested a strength training station.

Team 1 proposed a connection to an Outpatient Center. For this proposal the designer did not include this connection because with 74' of elevation change over 132', any connection at this location, would require 1480' of switchbacks, over ¼ of a mile, to maintain 5% slope. With no pedestrian access to the three hotels down the road, the ¼ mile connection to this doctor's office is not relevant enough to include in the conceptual plan at this time. An emergency connection, well above 5% slope, was proposed along an

existing private gravel road up the Outpatient Center. This emergency access, recommended by the Chief of Police, will provide police, fire, and EMS another way to respond to emergencies on the trail.

There are three features proposed for the pedestrian bridge across the Guest River: a bench, suggested by all the teams; a water quality monitoring station, suggested by Teams 2 and 3; and an educational sign about water quality, suggested by Team 2. A fitness station for pullups, suggested by Team 2, is proposed right after the bridge.

Team 1 suggested edible landscaping along the trail, as did Southern Appalachian Mountain Stewards during my meeting with them. Fruit trees and berry bushes could all be a part of edible landscaping along the trail. One concern that arises with edible landscaping along the more linear part of the trail is maintenance. As suggested by Hopper, it is proposed here to have a 10’ wide asphalt multiuse path with 2’ mowed buffers on each side (Hopper, 2007). These buffers could be mowed using the side mowing attachment for tractors the designer saw used to maintain a buffer along the canal toe path at Cuyahoga Valley National Park. One way to address maintenance concerns would be to cluster berry bushes, apple trees, and other chosen edibles, like paw-paw, around bump-outs along the trail that already require extra maintenance attention.

Figure 33 - Perspective of the Guest River bridge crossing

Riverfront Design After the Railroad

Team 1 suggested that signs discussing trail etiquette should be all along the Riverwalk, for instance, how bikes should alert pedestrians when they are passing. This suggestion correlates with concerns raised to the designer about conflicts between pedestrian and bicycle traffic on the existing Safe Routes to School sidewalk.

All three teams suggested a fishing area near the railroad bridge on the Riverwalk. This design proposes a designated fishing area just after the railroad bridge. Teams 2 and 3 suggested an educational feature along with that fishing area, and this design combines their ideas by proposing educational signage at that location on birding and fish/fauna in the river. A crunches exercise station is proposed at the same location, as suggested by Team 3.

Teams 1 and 2 suggested a bench and artwork where the trail moves closer to the Teasley property, and this design proposes the same. Team 2 specifically described the art as a standing/hanging piece in the woods. A stretching station, suggested by Team 3, and a bench, suggested by team 2, are proposed as the Riverwalk begins uphill towards the Kentucy Avenue Trailhead.

Kentucky Avenue Trailhead

All three teams suggested bathrooms at the Kentucky Ave. trailhead and Police Chief Lane described the importance of bathrooms to provide a hygienic, convenient, and legal place for visitors to relieve themselves while enjoying the Riverwalk. Due to area constraints on the Kentucky Ave trailhead, this conceptual plan does not propose a bathroom at that location.

A kiosk with information about the Riverwalk and its amenities is proposed for the Kentucky Avenue trailhead, as suggested by Team 1. Two benches are located along the trail spur to the parking area, which is proposed to have 3 regular spaces and one ADA van space. A bear proof trash can is also located at the trailhead along with a doggy doo-doo bag dispenser, as suggested by team 1. Security fencing is recommended to go between the Riverwalk trail and the Teasley property near the Kentucky Avenue trailhead. This fencing is needed to prevent conflict between the heavy trucks that store materials on the industrially zoned site and the pedestrians and bicyclists on the Riverwalk. Signage at the trailhead should also specifically recommend that people who cannot find parking use the community center parking area. A weather station is proposed at this trailhead, as suggested by Mr. Browning as part of his ongoing microclimatology study.

Chapter 4: Reflection

Community Engagement

The community design process for the Norton Riverwalk engaged about 145 people in 11 informal interviews, two formal presentations, and one 30-person charrette. The community process also resulted in four front-page local and regional stories, increasing awareness of the proposed Riverwalks. While the positive response to the community engagement process exceeded the designer's expectations, some elements of the methods performed better than others. Please see below a reflection on successful and unsuccessful elements of the three community engagement techniques.

Sports | Page 7 | Burton Hall of Fame banquet tickets on sale. Homespun | Page 10 | Front Street Cruz

0% ON LONG TERM FINANCING Plus Rebate*
www.NothingLikeFreedom.com
FREEDOM FORD Lincoln, Inc.
151 Woodland Drive • Wise, Virginia
(276) 328-2686
*ON SELECT VEHICLES. WAC. SEE DEALER FOR DETAILS. THRU 9/30/16.

the Coalfield PROGRESS
A Progressive Newspaper Serving Our Mountain Area Since 1911

ALONG THE RIVER

JEFF LESTER PHOTO

This stretch of Norton's Tipple Hill area, looking southeast toward Kentucky Avenue, could one day include a major recreation and education site along a proposed riverwalk that would stretch to Ramsey.

City eyes walk plans

JEFF LESTER
NEWS EDITOR

NORTON — Imagine taking a slow, leisurely walk along the Guest River from near downtown to the Ramsey community amid greenery, shady pathways and a variety of features designed to educate, entertain and enhance the fun.

That's the concept city council, city administration and a landscape design graduate student have in mind for a big stretch on the east side of Norton.

During an August council meeting, University of Maryland master's degree candidate Dylan Reilly presented his concept for the project. Reilly chose the riverwalk idea as his master's thesis project, then came up with a design that costs the city nothing.

This artist's rendering shows a proposal for the Tipple Hill section including picnic, shelter and mining history features.

BACKGROUND

Reilly noted that Norton's acquisition of a sewer line easement created an opportunity about eight years ago to look at a riverwalk concept. Two years later, the city conducted a feasibility study, and in 2011 graduate student Nathan Brown completed a conceptual design for a park on the Tipple Hill property.

This year, Norton Industrial Development Authority received $35,000 from a lawsuit and used

RIVERWALK, PAGE 2

Figure 34 - Front page article in Coalfield Progress newspaper on the Riverwalk

Informal Interviews

⇒ Informal interviews enabled the designer to reach out to a diverse array of community members, meeting the goal of plural design.

⇒ The selection of who to interview in the limited time available for community engagement may tempt a designer to interview those community members who agree with them.

⇒ Interviews with local professionals, like the Chief of Police or Director of Parks and Recreation, can give local insight into issues like emergency access and required maintenance.

⇒ In future, the designer would include a standard survey question in each interview, to better understand the emic perspective of each individual.

Charrette

Positives:

⇒ By including the city council in the process and seeking their approval early on, the charrette carried greater legitimacy.

⇒ The geographic specificity of a map based charrette enables the designer to understand more accurately the recommendations of community members.

⇒ The team aspect enables community members to meet and work with new people on a project they all care about, meeting the goal of cross-linked participation.

⇒ Amenities were chosen for their likelihood of implementation and interviews with stakeholders.

⇒ The smaller scale of the Riverwalk compared to a neighborhood plan may make the shorter charrette more appropriate.

Negatives:

- ⇒ Lack of drawing in the charrette made it hard for community members to envision themselves in the space.
- ⇒ Peer pressure in the teams had the potential to stymie individual visions for a project. The flip side of that is equally challenging, when a team includes all their design concepts without a filter.
- ⇒ Setting the route and amenities before the charrette may have compromised the creativity and collaboration of participants. This breaks the blank slate rule from Condon's rules of good charrettes (Condon, 2008).
- ⇒ The 2-hour charrette did not provide enough time for entrenched viewpoints to reach compromise.

Formal Presentations

- ⇒ Formal presentations are excellent for communication of a specific message with limited time.
- ⇒ After both of the formal presentations to the Norton City Council, the designer solicited feedback, but in that context it is hard for the City Council or other community members to give their opinion.
- ⇒ Formal presentations are a good tool to create media buzz about a project, especially if a reporter who covers local government is present.
- ⇒ The scripted nature of these presentations, allows them to be vetted by project partners.

Community Engagement in Landscape Architecture

The opening statement describes how landscape architects are increasingly engaging with the communities they serve throughout the design process. While designers can and should exercise their professional skill and knowledge, that skill or knowledge will draw more ire than praise if it moves the community in a direction it does not want to go. However, who is defined as being in or out of a particular community is fluid and those who engage with a design process may not be representative of their peers. For instance, those who attend a charrette may be limited to those who value their City, have the time to commit to such an event, and were informed that the event was happening. Informal interviews can help reach out to people who may not meet all those criteria, but timeframe and network of the designer can create similar obstacles to entry for certain people. From the designer's experience in Norton it seems clear that a community engagement process that works well for one city may not work in another. Rigid community engagement processes from the literature, while an excellent jumping off point should be taken with some skepticism when being applied to dissimilar communities.

The comparative role of professional expertise and community engagement is hotly contested in landscape architecture. Some designers, like Randy Hester, work as activists to empower communities to design and create their own landscapes, while others, like Walter Hood, collect information from the community and then design with that information in mind. Hood views community engagement as part of the site analysis for a project, with the landscape architect still acting as the primary decision maker. Hester views community engagement as a tool to energize and provoke communities to

take ownership of their own landscapes. For Norton the best approach lays in between. People gave their time and ideas to the designer and the designer felt a responsibility to deliver a design that addressed community input, dealt with issues identified in the site analysis, and provided narrative and graphics to sell the project to residents and potential grant funders. Sometimes community input conflicted with the professional expertise of the designer or information from the site analysis. In those cases the designer looked more carefully at the proposal and then made a judgment call one way or the other.

Next Steps

While this thesis project is winding down, the Norton Riverwalk project is still moving on. To help leverage this thesis to push the Riverwalk towards funding and construction, the designer presented the final thesis to Norton City Council at an official public meeting on May 2nd, 2017. Once completed, this thesis document will be delivered to the City of Norton and Appalachian Voices for them to use to promote, design, and fund the Riverwalk. The designer intends to continue working with the City of Norton to adapt this thesis to upcoming grant applications and design challenges.

Appendix

The appendix includes detailed background notes from formal presentations, informal interviews, and the design charrette.

Formal Presentations

1st Presentation to the Norton City Council

On Tuesday, June 28, 2016 the designer presented to the Norton City Council about the Riverwalk project and my role in it. The presentation included information about the type of community engagement the designer had completed so far and what was planned for the rest of the summer with a focus on the July 7th Community Meeting. The City Council was supportive of the project and the designer was very appreciative for their support and how welcome they made him in their community. The designer looked forward to presenting to them again on August 16, 2016 with the resulting narrative and visuals from this project.

2nd Presentation to the Norton City Council

On August 16, during a Norton City Council meeting beginning at 6pm, the designer gave a presentation on the Riverwalk project including the community engagement process, results from the engagement process, and a draft conceptual plan. The draft conceptual plan included a siteplan and perspectives to give people an idea of how the space would look once completed. This meeting was also designed as an opportunity to get substantial feedback on the design from the council to be able make necessary changes before submitting the thesis document and presentation to the City Council in Spring 2017.

Meeting outreach was conducted simply with an email to everyone who was invited to the Riverwalk Design evening and Nathan Brown on Saturday, August 13, 2016 before the meeting.

3rd Presentation to the Norton City Council

On May 2nd, 2017 at their 6pm meeting, the designer presented the final outcome of his thesis project to the Norton City Council. The Council was appreciative of the work the designer had done and looked forward to making the Riverwalk a reality. One of the Councilmembers noted that the City would like the designer to work with them on phase 2 of the Riverwalk.

Informal Interviews

Teasley Trailhead

In a meeting on June 8, 2016 a key design element came up that needed to be addressed. The first phase of the Norton Riverwalk is planned to terminate at a property owned by Mr. Teasley, who had expressed interest in granting an easement through the property for the Riverwalk. To demonstrate how such an easement might look the designer was tasked with the alignment of the 10' paved path and layout of parking to minimize impact on the property. This site design element, once reviewed by Engineer Cody McElroy of Mattern & Craig and Norton City Manager Fred Ramey, is part of community engagement on a micro-scale. In this case, the designer created a draft site plan to meet the needs of one individual and the Riverwalk.

On August 18, 2016 Fred Ramey and the designer met with Mr. Glenn Teasley to discuss a potential easement through his property to accommodate the Norton Riverwalk

property. We proposed a Riverwalk along the edge of the slope down to the River. A security fence along his side of the property was proposed to ensure security. We also showed Mr. Teasley a perspective of the parking area proposed on his property from Kentucky Ave. Mr. Teasley's initial reaction was that a fence along the river edge of the property would impede the parking of trailer homes, that are often let to hang over the hillslope. We proposed running the easement on the opposite side of the property along the railroad, with a fence facing the railroad and no fence facing his property. While we did not make any final decisions, Mr. Teasley seemed interested in providing an easement to the city for the Riverwalk.

Kids and the Riverwalk

On July 27, 2016 the designer conducted a half an hour activity at Norton's Enviro-Camp to get design suggestions from children in the community. Over the course of a half hour the designer explained to 15 kids what a Riverwalk is, and how Norton was planning to have one. Then the designer showed them photos of different outdoor activities and asked them to draw out their favorite activity.

During the drawing activity there were 12 kids who drew a number of different favorite activities. For favorite activities, 2 kids drew swimming in pools, 1 drew playing Pokémon go, one drew hunting, one drew fishing, one drew a garden flower, one drew playing with a cat, one drew rock climbing, two drew playing in a stream, one drew running around a lake, and one drew camping.

Media

Media during the summer included an event announcement for the design evening in the Coalfield Progress, an article in the Coalfield Progress about the design evening, an

Appalachian Voices blog post online about the project, an Appalachian Voice spotlight piece on the project, and a Coalfield Progress article from the presentation to city council.

On September 9, 2016, the Coalfield Progress ran a front-page story on the Riverwalk project, including renderings from this project completed over the summer, narrative describing the history of the project, and potential new directions for the project going forward (Lester, Along the River, 2016).

Public Health and the Norton Riverwalk

Conversations with Fred Ramey, Norton City Manager, and Patty Bates, local ultra runner and children's health advocate, illuminated a number of local health programs that would be good to synergize with the Norton Riverwalk. These conversations also led to the idea of a health advocacy discussion, either in person, over the phone, or email, to collect ideas about how existing health programs could be woven into the Riverwalk conceptual design. Existing local health programs include the Morning Mile, where elementary school students are rewarded for running a mile before school each day, and training a group of teenagers to run a half marathon. Both of these programs are part of the City of Norton Get Fit initiative. In particular the teenagers training for the half marathon need to do community service and doing a design charrette for the Norton Riverwalk could fulfill that requirement, while providing a valuable insight into how to make the Riverwalk more attractive to teens. Misty Lee, Community Outreach Representative from Inova Health, offered to provide in kind assistance for a health related Norton Riverwalk this summer. Engaging children and adults through these existing health programs is not only efficient, it also helps to reach the groups that are not necessarily making it to the more traditional public meetings, like teens.

With a newfound focus on value over volume in the health services industry, hospitals are looking to encourage healthy lifestyles locally. When St. Luke's University Health Network in Eastern Pennsylvania conducted a health survey of their service area, as required by the Affordable Care Act to maintain non-profit status, they were shocked to learn that their diabetes rate was 5 points higher than the national average and that one third of their residents received no exercise each week (Plunkett, 2016). To address these public health issues, St. Luke's found a partner in the Delaware and Lehigh National Heritage Corridor, which oversees the historic Delaware and Lehigh Trail, stretching 165 miles from Wilkes-Barre to Philadelphia. Together they created the Get Your Tail on the Trail program, designed to encourage residents to exercise on the historic trail. "Now in its fourth year, more than 5,900 Get Your Tail participants have logged more than 1.8 million miles walking, running or biking along the corridor." The program also partners with local schools and businesses to host runs, walks, and paddling trips along the trail (St Luke's Health Network & Deleware and Lehigh National Heritage Corridor). The Norton Riverwalk and other Norton recreational facilities like High Knob could become a similar partner with one of the four health facilities that operate within city limits, including Norton Community Hospital and Mountain View Regional Medical Center.

As part of the effort to bring in diverse community perspectives on the Norton Riverwalk the designer hosted a "Public Health and the Norton Riverwalk" meeting at the Appalachian Voices office in Norton on Monday, June 13th, 9:30 am. Melissa Shortt, of the Get Fit initiative in Norton Public Schools, and Emily Wells, Wise County Virginia Cooperative Extension, were in attendance at the meeting. Patty Bates and the

designer followed up over email. This meeting is one of the "theme" meetings described earlier in the community engagement process section.

The meeting had the following agenda, which essentially consisted of a brief presentation of the Riverwalk and then transitioned to 1) Introduction of Project, 2) What are the pressing health issues of the City? 3) What are the current programs addressing those health issues? 4) How can the Riverwalk complement current or new programs addressing major local health issues? 5) What are some precedents of greenways/pedestrian walks that express these ideas well (provided some options with photographs)?

One of the first things that came up is how important the proximity to the Elementary School is. The fact that kids can get right on the trail from the Elementary School provides new opportunities to the before and after school Get Fit programs that Melissa Shortt works on. For instance, Melissa discussed how currently the distance running group in the afternoons runs the length of the new sidewalk and back, about 1.5 miles round trip. If kids want to run farther, and some do, then they have to do another lap of the same sidewalk due to concerns about running on the sidewalk in downtown Norton. Phase 1 of the Riverwalk, 1.25 miles, would allow kids to run 2.5 miles to the end of the trail and back through more natural surrounds. Phase two would add another .75 miles, making a round trip from the elementary to the end of the Riverwalk and back, 4 miles. The importance of the Riverwalk to the Get Fit program makes a safe pedestrian crossing from Norton Elementary School across Park Avenue NE all the more important.

During the meeting, Emily shared the 2016 Health Rankings from the LENOWISCO health district (Virginia Department of Health, 2016). Challenges to

public health in the City of Norton include 22% smoking rate, 28% adult obesity rate, and 24% physical inactivity rate (Virginia Department of Health, 2016). One theme the designer heard in the meeting is that changing adult behaviors is difficult, so to improve public health a focus on shaping children's exercise and eating habitats is critical. Essentially, teaching children how to be healthy is the best way to improve public health. There are significant obstacles for children and parents in Norton to make those healthy habits a reality. 33% of children in Norton live in poverty, 17% higher than the Virginia average; and 49% of children are in single-parent households, 19% higher than the Virginia average. The Get Fit initiative addresses some of these issues, by accepting children almost an hour before school begins for the Morning Mile, providing a safe afternoon activity for kids to run and exercise with instruction, and giving kids a healthy breakfast, lunch, and afternoon snack. Emily noted that including nutritional information along the trail, like a reminder to drink more water or options for healthy meals after exercising could help complement the nutrition education work that the Virginia Cooperative extension does.

One of Norton's strengths when it comes to public health is their park system. With 4 city parks including plenty of sports facilities and camping, hiking, and mountain biking on High Knob, Norton has many things to offer. 99% of Norton residents have access to exercise opportunities, 18 percent more than the Virginia average (Virginia Department of Health, 2016). The Riverwalk fits well into Norton's tradition of providing exceptional recreational opportunities to its residents and fills a missing void with its proximity to Norton Elementary.

On June 17, 2016 the designer interviewed Margaret Tomann, Director of the Health Applachia Institute (HAI) at UVA Wise. Margie began at HAI in 2014, before which there was no full time staff. the designer reached out to Director Tomann to discuss the Riverwalk project within the context of public health and because HAI is an important local player in public health advocacy. While HAI has worked on many projects, including regional plans and community health assessments, they are currently working on finalizing a *Blueprint for Health Improvement and Health – Enabled Prosperity.* Director Tomann shared an advance copy of the 2016 Blueprint. Director Tomann has worked with Buchanan County, VA on tobacco in schools, in the greater LENOWISCO Health District on oral health with a grant from Dentiquest, and with Dr. Sue Cantrell, Director of the LENOWISCO Health District, on increasing availability of recreational opportunities. The Riverwalk addresses increasing recreational opportunities, especially for those with limited mobility, such as the elderly and disabled and those who cannot drive, including children, those who cannot afford a car, and the elderly. LENOWISCO is an acronym that stands for Lee County, City of Norton, Wise County, and Scott County, meaning that all these jurisdictions are included in this health district. "Established in 1969, the LENOWISCO Planning District Commission is authorized under the Virginia Regional Cooperation Act to serve as one of the twenty-one planning district commissions in the Commonwealth of Virginia" (LENOWISCO Health District, 2016).

Director Tomann noted that sewer mains ROWs, like the one being taken advantage of for the Norton Riverwalk, provide an excellent opportunity for multiuse trails because of their width and inherently gentle slope. The HAI is involved in public

health research on campus, conducting local health research in the summers with students. They are currently working with UVA on a diabetes project and on cancer with a Survivorship grant from the UVA Cancer Center. These projects and others like it use the method of telehealth, allowing patients, doctors, and researchers to communicate over great distances. In the case of UVA and UVA Wise they are over 5 hours apart. David Gordon is the telehealth coordinator and was the HAI Director before Director Tomann. Telehealth also allows them to connect pre-med students at UVA Wise with medical professors at UVA.

The next question the designer asked Director Tomann was how initiatives that the HAI is working on could be integrated with the design of the Norton Riverwalk. One suggestion was to incorporate Quick Response Codes (QR Codes) in the educational opportunities on the Norton Riverwalk that connected to healthy decisions. She also recommended at this point that the designer go and investigate the Guest River Gorge Trail in St. Paul, VA because it is a similar sort of Riverwalk Project, except it was a rails to trails. Director Tomann also suggested making the Riverwalk a tobacco-free space and regularly spacing water fountains to encourage drinking water. Dr. Walter Smith, interviewed later, did some natural science research along the proposed Riverwalk Route. Perhaps QR Codes could be linked to some of this natural science information or general information/history about the region. The path should be ADA accessible to encourage exercise for those with limited mobility.

Next the designer asked Director Tomann about precedents for the Norton Riverwalk and she discussed a few. The Town of Cleveland, VA worked with Rally SW Virginia to put in a walking track and lighting in their public park to encourage exercise.

Robin Lee, who leads the Rally program, would be the contact to follow this project up at MySWVA Opportunity. Williamson, WV received a grant to implement evidence-based health practices for diet and exercise in their community. Sustainable Williamson Project WV organizes 5ks, diabetes walks, diabetes coalition, and coal runs. While Williamson does not have a Riverwalk, it may be a good example of how such a resource could be programmed using grant funding.

Director Tomann, Director at the Healthy Appalachia Institute, shared with me the *Blueprint for Health Improvement & Health- Enabled Prosperity,* approved January7, 2016 by the Southwest Virginia Health Authority. The Blueprint "reflects the collaborative work of community members and organizations in identifying priority goals and strategies for population health improvement in Southwest Virginia" (Southwest Virginia Health Authority, 2016). The target area for the Blueprint includes Lee, Scott, Wise, Dickenson, Buchanan, Tazewell, Russell, Washington, and Smyth counties, and the cities of Norton and Bristol. The Blueprint goals are described as "ambitious, achievable, measurable, and intended to be attained by 2020." The Safe Routes to School sidewalk project in Norton, and the proposed Riverwalk, directly address some of the health goals outlined in the Blueprint. By providing a safe environment for physical exercise and beginning a larger policy dialogue of walkability in the City, the Safe Routes to School sidewalk project addresses Goal 4.5 of the Blueprint, which states "Increase number of communities that adopt policies, environmental and systems changes (PES) to support health living" (Southwest Virginia Health Authority, 2016). Increasing access to a safe place to exercise also addresses Goal 3.4 of the Blueprint, "Decrease percent of adults who did not participate in any physical activity during the

last 30 days to no more than 20% across the region." City of Norton sees the Safe Routes to School Sidewalk and as part of a larger effort to improve walkability throughout the City, while simultaneous addressing the pressing health challenges facing Southwest Virginia.

On July 5, 2016 the designer met with Patty Bates, a local ultra runner and public health advocate who works at a local hospital. They discussed how the Riverwalk could provide amenities that would make it more attractive for exercise and how phase one of the Riverwalk could be use for a 5k Race. Accessibility was one element that Patty touched on, by having an ADA compliant Riverwalk families could exercise together, from the young ones, to the elders, to those with physical disabilities. The crossing of Park Avenue NE was also of concern, with a need for a robust crosswalk at that location and the need for a crossing guard during events. Dog bags and trash receptacles along the trail will encourage dog owners to pick up poop, providing a healthy and pleasant environment for their fellow park goers. Safety along the Riverwalk is another concern that Patty expressed, with light posts and regular bike patrols as two design interventions to make the Riverwalk safer. Water fountains on the trail would not only provide opportunities for kids to drink more water, it would also be convenient for runners.

Public Safety and the Riverwalk

On July 12, 2016 the designer met with City of Norton Police Chief Lane about the Norton Riverwalk. In particular the designer asked him three questions.

Do you have any questions for me about the project so far? We moved directly to the second question because Chief Lane had a solid understanding of the Riverwalk project scope and goals.

What are the implications for patrolling the Riverwalk (i.e. need for equipment and additional officers)? One of the first examples that Chief Lane gave is that of a fenced parking lot. A fenced parking has a physical barrier to keep criminals out, but it also makes it harder for police to patrol the parking lot in a cruiser. This same principle applies to the Riverwalk. While cyclists and pedestrians can access the trail at both ends, police cars will not be able to patrol the length of the Riverwalk and this seclusion raises legitimate security concerns. One solution is to have officers doing bike patrol through the Riverwalk. Norton Police have some of the equipment for bike patrols, though they would likely need car bike racks to be able to drive to the site and ride. One problem is that if officers are near the center of the trail and receive a call on the radio they need to be able to respond quickly. The inverse of that could also present a problem. When officers are responding to a call on the Riverwalk they need to be able to arrive quickly. More access points along the trail should help alleviate both these issues, but could be challenging from a property ownership perspective.

What are the needs on the site for safety (lighting, blue emergency lights, width of trail, material of the trail, implications for the amenities)? From a safety standpoint, the more lighting the better along the trail. The more lighting there is the less likelihood that a crime will be committed. Many crimes are the result of opportunity, so by lighting the area and making it more visible, you reduce the opportunity to rob someone or attack them. There is also the question of how late the Riverwalk should stay open. Having a closing time of 11pm, like other parks, may help the Riverwalk be a safer place. Bathrooms are needed in convenient locations on the trail because in such an urban place it is not acceptable to urinate publicly. By having bathrooms you make it easy for people

to be comfortable and to follow the law. If porta-potties are used, some type of anchoring system should be employed to prevent vandals from turning them over. For the tipple site park and amenities there, car access would be ideal. For people in poor health and the elderly, it gives them the opportunity to enjoy the park. A one-way road could be used to move traffic to the site, while not overloading the Seneca Lane road along the tracks. The bottom line is that people are not going to use the trail if they do not feel safe.

After my discussion with Police Chief Lane, the designer explored the concepts of Crime Prevention Through Environmental Design (CPTED) and will activitely incorporate those ideas into the conceptual plan. Meeting with Chief Lane was the first part of this dialogue that should continue into the next step in the design process. From the interview and readings on recreational trails it is clear that an emergency response protocol should be developed in tandem with the designing of the Riverwalk (Hopper, 2007).

Accessibility and The Riverwalk

To better understand the implications of accessibility needs on the Norton Riverwalk the designer interviewed Adam Malle on June 25, 2016. Adam Malle is a quadriplegic who is from the area and currently lives in Big Stone Gap. He gets around in a motorized wheelchair and drives an accessible van. Adam also enjoys the outdoors, so he has a unique perspective on how design can improve accessibility at public parks.

Transitions are critical, for instance between the asphalt of the parking area and the concrete sidewalk and between the bridge decking and the asphalt path. Intermediate threshold materials or small lips, like at the bottom of a ramp from ADA Van Parking, can cause big problems for disabled park visitors. Where benches are located, a flat pad

beside them should be included for disabled park goers to sit beside their able-bodied friends and family. Signage, both educational and way finding, should be at a height that is convenient for those in wheelchairs and able-bodied individuals walking. Sometimes wheelchairs are at different heights, so this can be complicated, but some attention to this issue will be useful. Picnic tables should include an extension at the end with no support underneath, to allow park goers in wheelchairs to use them. An accessible way for people in wheelchairs to reach the bank of the river, perhaps with a ramp and railing, could offer a unique experience for all park goers. The crosswalk at Park Avenue NE to Norton Elementary School should use the type of metal button that protrudes out, like those already in Norton, and can be reached from a wheelchair. Most crosswalk buttons are already at an acceptable height, but sometimes proximity to a curb or other obstacles can make it impossible for someone in a wheelchair to reach them. The sub 5% slope along the trail for accessibility is critical for the project and a preliminary grading plan is included in the appendix of this document.

Recreation in Norton: The Riverwalk in Context

To better understand the context of the Riverwalk in the Norton Park system, the designer interviewed Norton Parks and Recreation Direction Michelle Knox on June 28, 2016. We began with a brief discussion about the Riverwalk and transitioned to some questions about the recreational amenities in the City of Norton. The first question the designer asked Director Knox was "*What is the Character of Norton City Parks?"* She discussed a couple of different park types, Locust Ave Park (a pocket park), Legion Park, and Flag Rock Area all have a natural character. Clear Creek Park is natural, especially because of its proximity to the woods and its location along a stream, and more

developed because of all the built amenities. Norton City Park, just a couple blocks from the Norton Downtown, is much more urban, with gazebos, playground, and sports areas. Based on these park characteristics, Director Knox made some recommendations as to the character of the Riverwalk and the types of amenities it could include.

At Clear Creek Park they have an outdoor classroom, a track exhibit, a hummingbird garden, birdhouses, and access to the creek itself. Right now students from elementary school must be bused to Clear Creek Park to do outdoor lessons. The Riverwalk, if it included an amphitheater for 20-30, with a covered space, would allow the elementary school to walk to an outdoor classroom along the Guest River. This means that the expense and hassle of busing can be avoided, making it more likely that teachers will integrate outdoor activities into their lesson plans. Director Knox mentioned a number of things that could further improve the Riverwalk as an educational resource for students and the general public. One such idea was to label trees along the route, essentially creating an arboretum along the Riverwalk.

The next question the designer asked Director Knox was "*How do you see the Riverwalk fitting into Norton's Network of Parks?*" Director Knox mentioned that it would be great to have a loop that connects all the parks, so people could enjoy the different amenities at different parks without using their cars. The Community Center could be, and is beginning to be a central point by which all the Norton City Parks are connected. For instance if Phase 1 and 2 of the Riverwalk are completed, one could walk all the way from the Community Center to Clear Creek Park in the Community of Ramsey. Clear Creek Park is adjacent to an area of Forest Service Land known as Nettle Patch, where Shayne Fields, trail coordinator for the City of Norton, plans to build trails

connecting to Flag Rock Recreational Area on High Knob Mountain. Flag Rock Recreation Area, includes views, hiking, picnic shelters, and camping.

The next question the designer asked Director Knox was "*What are the maintenance concerns/needs for the Riverwalk?"* A Parks and Recreation Crew takes care of maintenance at all the City Parks, cemeteries, and the Safe Routes to School sidewalk. They are already stretched pretty thin and they focus mainly on mowing in the summertime. In terms of equipment, they have a small riding mower, push mowers, and trimmers. They try to mow/clean up an area at least every two weeks. The crew has three permanent employees and utilizes inmates to help with mowing tasks. The crew is so small and the area so large that there is rarely time to do more than mow an area, so taking care of trees and shrubs, i.e. pruning, mulching, weeding, is a real challenge. the designer suggested one option for the Riverwalk would be natural areas that are mowed biannually to preserve water views in select locations, while minimizing work, and providing habitat. Director Knox thought this could be an option to explore, though equipment and regular hours of maintenance would still need to be determined.

The final question the designer asked Director Knox was if there were "*any other key amenities that Norton City Parks and Recreation would like to see on the Riverwalk not previously mentioned?*" A panorama view of the downtown from the tipple site with a map would be a wonderful opportunity.

"Kaine Connect" Meeting

On July 12, 2016 the designer met with Ms. Blevins, a representation of Senator Kaine in SW Virginia. With the permission of City Manager Ramey, but not as a surrogate, the designer spoke briefly with her at a "Kaine Connect" event at the City of

Norton Council Chambers about the Norton Riverwalk and its importance to the City. Ms. Blevins was interested in the project and suggested that City of Norton request a letter of support from Senator Kaine for the next grant application. The city did not have time to go for Senator Kaine's letter of endorsement for the DCR application submitted July 21, 2016. For the upcoming Brownfield grant next fall this may make sense. Just like for Union Point Park, engaging legislators can help put a project on the fast track (Hou & Rios, 2003).

Meeting with SAMS

As part of the plural design process, the designer reached out to Southern Appalachian Mountain Stewards (SAMS), which has an office about 14 miles down the road from Norton in Appalachia, VA. SAMS is one of the most robust local, membership based environmental groups and has focused in large part on ending mountaintop removal coal mining. After giving a 5-minute presentation to a SAMS membership meeting on June 21, the designer asked members what they felt the Riverwalk needed to complement their organizational programs and mission.

One popular idea that emerged from the meeting was to create an interpretive experience, either through signage, programs, and potentially even some sort of educational center that discusses the history of the site including the tipple, coke ovens, and underground mines. The interpretive experience would then transition to discussing some of the impacts of these industries on water and air and the process that created the park, including the ideation, groups that applied for grants or directed lawsuit money towards the park, and how the history influenced the design. Congaree National Park outside of Columbia, South Carolina was suggested as an excellent precedent for how to

inclusively interpret a public park's history. The key would be to tell a non-judgmental, and engaging narrative of the site for visitors.

Focusing some plantings towards pollinators was a popular suggestion that works well with a current federal push on increasing pollinator habitat on public land. One suggestion that has been discussed before was to include an outdoor classroom, and perhaps an indoor one as well, which could be used by local public school students or even be an annex complex for UVA-Wise. Labeling of plants, which also fits in the educational theme, was a suggestion and it was recommended to examine the Estanoa center in St. Paul, VA as a precedent. Another suggestion was to work with Appalachian Sustainable Development on how non-timber forest products can be incorporated into the Riverwalk.

Presenting to the Master Naturalists

On August 1, 2016 the designer gave a presentation to the Master Naturalists. There were 15 people in attendance.

The Master Naturalists could help establish/maintain a butterfly garden, pollinator garden on the Riverwalk. A butterfly garden can also concentrate pests, so carefully consider their plantings. An educational kiosk could be included on the site like the Eagle Scout created kiosk at High Knob tower. "Kids in the Creek" has done really well, so perhaps that program could extend to the Riverwalk. Signage near the river on the Riverwalk could discuss critters that visitors might see in the water. Save our streams training could take place along the Riverwalk. The AML wetlands needed to treat AMD at the tipple could take design cues from the treatment wetlands at the UVA Wise campus. Norton has a rich natural history and climatology is part of that. It is the wettest

city in VA. In Pennington gap, Carol Doss, Executive Director of the Upper Tennessee River Roundtable did a nature park called Stone Creek on a former tipple site.

Presenting to the Norton Tourism Committee

I planned to present to a meeting of the Norton Tourism Committee on July 13, 2016, but unfortunately the monthly meeting was canceled due to the understandable need to focus on the High Knob Music Festival occurring two weekends later. There is the possibility that this meeting will be rescheduled as a special meeting.

Wayne Browning - UVA Wise Biologist and Climate Researcher

The designer met briefly with Wayne Browning from UVA Wise at the Farmer's Market on July 25. He would like to find a place where the air pools on the floor of the valley for a climate station and somewhere along the Riverwalk may work. The old water treatment plant at the end of the second phase of the Riverwalk could be a good site. This climate station at the valley floor along the Riverwalk would acts as a control against stations located higher on High Knob. The long-term goal of the project is to understand the relationship between microclimatology and biological diversity in the area.

OSM Presentation

On June 29, the designer presented to the Office of Surface Mining, Applicant Violator System Team that was in town doing field training. We met at Flag Rock Recreational Area and the designer gave them the same presentation the designer gave to the City of Norton the previous day.

Presenting to Kiwanis

On July 5, the designer presented to the Kiwanis Club, Norton, VA Chapter, on the Riverwalk project in general and my role in it. In particular the designer described the community engagement process so far, the conceptual design, and the route of the Riverwalk. The designer also took the opportunity to answer questions about the project. The main questions asked were clarifying the route of the Riverwalk and how far along the Riverwalk process was.

Interviewing Dr. Wally Smith

On June 30th the designer had the opportunity to sit down and interview Dr. Wally Smith, a Professor of Biology at UVA Wise. His specialty is herpetology and he was part of a science team that completed ecological surveys along the route of the proposed Riverwalk (Southwest Virginia Outdoor Classroom, 2016). Those ecological surveys were conducted from 2011-2013, received funding from Dominion Energy, and are part of a larger partnership between City of Norton and UVA. Students from the college learned how to conduct a general environmental survey, including fish, herpetology, birds, mammals, plants, and water quality. In addition to teaching students, one goal of the project was to springboard into a longer-term outdoor classroom partnership between UVA Wise and City of Norton on the Riverwalk site. The project also involved an ecological comparison between the Guest River and the Guest River Gorge sites.

After completing research on the site Dr. Smith brought students into local classrooms to teach 6th grade school students about local ecology. About six college students were involved in the one-day education project, which engaged 100 to 200 6th graders. Many of the 6th graders knew little about local wildlife and biology, so the

program helped to open their eyes. When asked about what kind of design interventions would help support future research and education on the site, Dr. Smith discussed a number of possible design interventions. Bathrooms are a critical infrastructure for the site, especially if you bring young students. A covered area with seating would be ideal to process data onsite, this could be as simple as a pavilion. School bus parking would be ideal on the site, though the Community Center may be the best place to meet that need. The UVA Wise normally uses twelve passenger vans for science field trips, so two spaces at least at each trailhead would be ideal. Interpretative signage can be a great way to kick off informal discussion. The bridge could be a water sampling station and could also be an ideal location for a station to study river hydrology, including water quality, flow, and weather. Wayne Browning, in a separate conversation described in this report, is planning weather stations to measure microclimate in the City of Norton at different elevations, and a weather station along the Riverwalk may be ideal for a bottom valley location.

Outreach to the Farmer's Market

Katie Hummel, one of the Farmer's Market Organizers, found a spot for me to table on the Riverwalk for three Farmer's Market's from 4-6pm, June 21, June 28, and July 5. After those first few visits, I decided to keep tabling at the Farmer's Market until August 9th. During the first Farmer's Market on June 21, 5 adults and 2 kids stopped at the table to learn more about the project and the July 7 public meeting at the community center. The table was set up with "Norton Riverwalk" in big letters across the top, with a 1" = 500' scale map of the Riverwalk route and flyers for the July 7 public meeting. One common question from the first tabling was "how far off is the project?" or "are they

building it now?" In this situation the designer had to be careful to communicate that while officials were hopeful and actively pursuing the project, that opening was years away at best. The designer tried to make the point that even though the project was far off, the designer wanted people to come share their ideas at the July 7 meeting, because now is the best time to offer input, before paid design work is completed. One of the property owners along phase two came by the table to talk for a little while.

The farmer's market quieted down around 5 pm and many of the people at the farmer's market were children who received food vouchers as part of a local program called "kids' Bucks." Kids' Bucks are vouchers given out to kids at the beginning of the farmer's market on a first come first serve basis. The kids can use the Kids Bucks' to buy produce at the farmer's market and then the farmer's cash them in at the organizers' table when they leave. Other non-farmer tables, like the local master naturalist chapter, used children's crafts to communicate their message about frog lifecycles and species. For the next two Farmer's markets it may make much more sense to do a children's craft activity related to the Riverwalk. On August 2nd, 2016, five people came to the table and on August 9, 10 people came to the table. Assuming an average of 7 people for all the 8 farmers' market tabling days, a total of 56 people were engaged with the process.

Results from the July 7 Design Evening

The process for understanding the results from the event began with informally reading the maps followed by a more thorough analysis and write-up of the results that happened concurrently with the creation of the feasible, conceptual plan.

Team 1

Team 1's approach to the design process was markedly different than the other two. The facilitator for team one worked actively to encourage input from the team and write their ideas down on the board. This was one factor that led to Team 1 focusing much more on the post-its than the icons. The designer would like to make it clear that this is not a value judgment, merely an observation that is important to understand when examining the resulting designs.

Figure 35 - Team 1 after completing the charrette (Fred Ramey)

The following is a written description of the design decisions made by Team 1 on the Coal Tipple. For the Coal Tipple, Team 1 included: 1 Art icon, 2 Educational Signage icons, 1 Fitness Station icon, 1 Restroom icon, 1 Amphitheater icon, 1 Science Feature icon, and 1 Water Fountain icon. At the entrance to the site Team 1 suggests an art

feature, maybe an arch that is in a traditional Appalachian style with a pretty name for the park. Restrooms at the entrance are also indicated and could be tied into the sewer main. An educational sign at the entrance could tell the story of the park, including what is here and the reclamation story. The entrance needs to be ADA accessible. A boat launch is indicated near the entrance and could be located near Roundtown bridge. Near the existing buildings on the Tipple site Team 1 clustered exercise spaces with exercise classes (yoga, spinning, tai chi), and space for sports like volleyball and soccer (i.e. an open field). Wetland AMD cleaning features are suggested with educational interpretation. Walkable grasses could be used on the site, which don't need to be mowed. On the flat area where the largest coal mound on the site was located, an amphitheater could provide event space, Wi-Fi, and an outdoor classroom. A restroom is located next to the amphitheater and should be attractive, not just a yucky brown box, with unisex changing room. A bike rack at this location would be great for folks coming from the downtown or from Flag Rock through the planned bike trail to Clear Creek Park from Lost Creek. Any trashcans along the route need to be bear proof. An education sign, science feature, and water fountain are also proposed at the amphitheater. Another design suggestion has to do with details along the trail, indicating that they matter. In particular stones, attractive lights, and pedestrian traffic circles are good details for this park. A dog park is suggested at the Tipple site with doggie doo-doo bags along the trail. There should be solar powered lights and mileage markers along the path. Blackberries, raspberries, and blueberries could be used for property buffers, especially along the highway. Another key element is maintenance, which needs to be low.

The following is a written description of the design decisions made by Team 1 on Sewer Main 1. For Sewer Main 1, Team 1 included: 2 Bench icons, 1 Fishing icon, 1 Educational Signage icon, 1 Art icon, 1 Science Feature icon, 1 Fitness Station icon, and 1 Water Fountain icon. Team 1 indicated that the trail surface should be crush and run (not clear exactly what that means here). At the beginning of this section, a designated graffiti wall is proposed on existing, abandoned school buses. All along this section of the trail fruit trees and bushes could make an edible and native landscape. Signage is suggested that could be seen from passing cars on U.S. Route 23. A bench on a hill overlooking the Guest River and an armored section of stream for fishing are proposed immediately after the U.S. Route 23 overpass. Adjacent to the bench a sensory garden is proposed along with tree identification here and along the entire trail. For people visiting the doctor's office adjacent to the trail here a connecting trail is proposed with switchbacks and natural steps. At about one half mile in a cluster of amenities is proposed including art, a science feature, fitness station, and a water fountain. Also at that location educational signage about the history of trains and coal in Norton is suggested. Immediately before the first crossing, a bench is located. For the bridge itself, a number of design ideas are indicated including: an arch, a swinging bridge, on that would raise and lower with floods, a girded bridge to help with floods, covering to keep people from jumping off, a memorial to some nice person, a donation plaque, and painting it to make it less ugly.

The following is a written description of the design decisions made by Team 1 on Sewer Main 2. For Sewer Main 2, Team 1 included: 1 Fishing icon, 1 Fitness Station icon, and 1 Bench icon. There are a few items that Team 1 wrote on the map that are

general to the Riverwalk. The first is a post-it noting that they are “team dream.” This has to do with their approach to the Riverwalk design, which was all about pushing ideas outside the box of icons and the set path of the trail. They also suggest that the next meeting on the Riverwalk begin with a field trip to the Riverwalk site. Signage is also proposed along the entire trail that will describe trail etiquette, telling people and bicycles how to interact. Team 1 suggested providing signage and access for people staying in the hotels along U.S. 58-Alt, which includes the Days Inn, Super 8, and Atria Inn. At the bend in the river after the railroad bridge a fishing spot is located. At that location, sensory and community gardens are also proposed with the concept of “adopt a garden” by community members. As the trail moves into an area with woods on both sides, a picnic table and walking circle are proposed with a walking circle. There is a cluster of features at the Teasley property trailhead including a boat launch with a kiosk about the river and boating safety, a welcome kiosk that describes the features of the trail, and trash/recycling cans that are bear proof with doggy doo-doo bags. A series of educational signs about wild animals are also proposed for this location including how to treat them, their scat, and identifying their tracks. Water fountains at this location should also include a water bottle spigot.

Team 2

Figure 36 - Team 2 after completing the charrette (Fred Ramey)

The following is a written description of the design decisions made by Team 2 on the Coal Tipple. Team 2 located: 2 Fitness Station icons, 1 Water Fountain icon, 1 Restroom icon, 1 Educational Sign icon, 1 Amphitheater icon, and 1 Art icon in the Coal Tipple section. They started the trail with a Fitness Station where the Riverwalk begins to cross over to the Tipple property from Seneca Lane, specifying a stretching type activity. The team also indicated that a welcome sign with a map of the trail should go at that first fitness station. Next on the trail, the team designed in an ADA accessible boardwalk for fishing and for launching kayaks and canoes into the river. While the River is not currently accessible for small craft, that is one dream for the project. Clustered around the old machinery trailer bed on the Tipple site, the team laid out an activity center that includes a water fountain a restroom, an educational sign, and an amphitheater. This will

allow people to have all the necessary amenities in a potential congregating location. At this location the team also suggested a two-lane road into the Tipple site that terminated at a small parking area near the amphitheater to allow better access to events. The educational sign at this little center would include information about the history of the site, including cleanup, minerals, and land use. The amphitheater could host local artists for weekly jam sessions and educational events. Another exercise station towards the middle of the Tipple site allows for quarter mile spacing. Trash receptacles should also be located at this fitness station. The existing coal equipment could be incorporated in art. The team also suggests mile markers every quarter mile and solar lights along the trail.

The following is a written description of the design decisions made by Team 2 on Sewer Main 1. For Sewer Main 1, Team 2 included: 2 Bench icons, 1 Fishing icon, 1 Science Feature icon, 1 Educational sign icon, and one Fitness Station icon. Right after the U.S. Route 23 overpass, Team 2 used a Bench icon and a post-it note to indicate that a river view with a little bench to rest should be located every quarter of a mile. Almost halfway through this section they suggest river access and fishing with a bench to rest. Immediately before the first river crossing Team 2 included an educational sign on water quality and a science feature for water testing and marine life. At the bridge they included a bench and right after the bridge is a fitness station for pull-ups.

The following is a written description of the design decisions made by Team 2 on Sewer Main 2. For Sewer Main 2, Team 2 included: 1 Fishing icon, 1 Science Feature icon, 1 Bench icon, 1 Educational Sign icon, 1 Art icon, 1 Water Fountain icon, 1 Fitness Station icon, 1 Restroom icon, and 1 Picnic Shelter icon. Immediately before the railroad bridge Team 2 located a wildlife viewing and fishing spot. After the bridge they

suggested a science feature for birding and an educational sign for plant life and reptiles mentioning the UVA Wise study. A bench facing the river is located at the bend with a hanging/standing art feature shortly after that in the woods. Immediately before the Teasley property there is a bench for viewing the river and woods. At the Teasley property the team indicated a water fountain, fitness station for stretching, restrooms, and a picnic table in a flatter location.

Team 3

Figure 37 - Team 3 after completing the charrette (Fred Ramey)

The following is a written description of the design decisions made by Team 3 on the Coal Tipple. For the Coal Tipple, Team 3 included: 1 Bench icon, 2 Educational Sign icons, 1 Amphitheater icon, 1 Picnic Shelter icon, 1 Water Fountain icon, 1 Restroom icon, 1 Fitness Station icon, and 1 Art icon. Team 3 located a trailhead at the entrance to

the Tipple site including a bench to change shoes at and an informational kiosk with information on what is on the trail. Near the existing structures on the Tipple site, Team 3 suggested a cluster of educational signage, picnic shelter, water fountain, and bathroom right by the trailhead for easy access and school use. Next on the trail the team included a fitness station for stretching. The team apparently did not agree with the idea of one member, but included a post-it identifying an opportunity to create a school bus shaped playground with living art graffiti at the location of an existing school bus on the property. As the trail begins to descend to the sewer easement a coal related sculpture and an educational sign about the tipple site and coal history are proposed.

The following is a written description of the design decisions made by Team 3 on Sewer Main 1. For Sewer Main 1, Team 3 included: 2 Bench icons, 1 Fitness Station icon, 1 Science Feature icon, and 1 Fishing icon. The team located a bench just after the U.S. Route 23 overpass and indicated that benches should be evenly spaced along the trail. Before the first river crossing a pull ups, monkey bars, and strength training fitness station, a stream sampling location, and a bench with a view are suggested. After the crossing a fishing spot along the wooded part of the stream is indicated.

The following is a written description of the design decisions made by Team 3 on Sewer Main 2. For Sewer Main 2, Team 3 included: 2 Fitness Station icons, 1 Bench icon, 1 Fishing icon, 1 Educational Sign icon, 1 Art icon, 1 Science Feature icon, 1 Restroom icon, and 1 Water Fountain icon. Before the railroad bridge Team 3 included a fitness station for crunches and a bench on top of the hill with a view of the river and trail. After the railroad bridge there is a fishing location and an educational sign on the fish types and other fauna in the river. Before reaching the Teasley property, a fitness

station for stretching is located along the river. At the Teasley property Team 3 located restrooms and a drinking fountain to be near the trailhead at the site. A biology field classroom and a sculpture were also clustered at the trailhead.

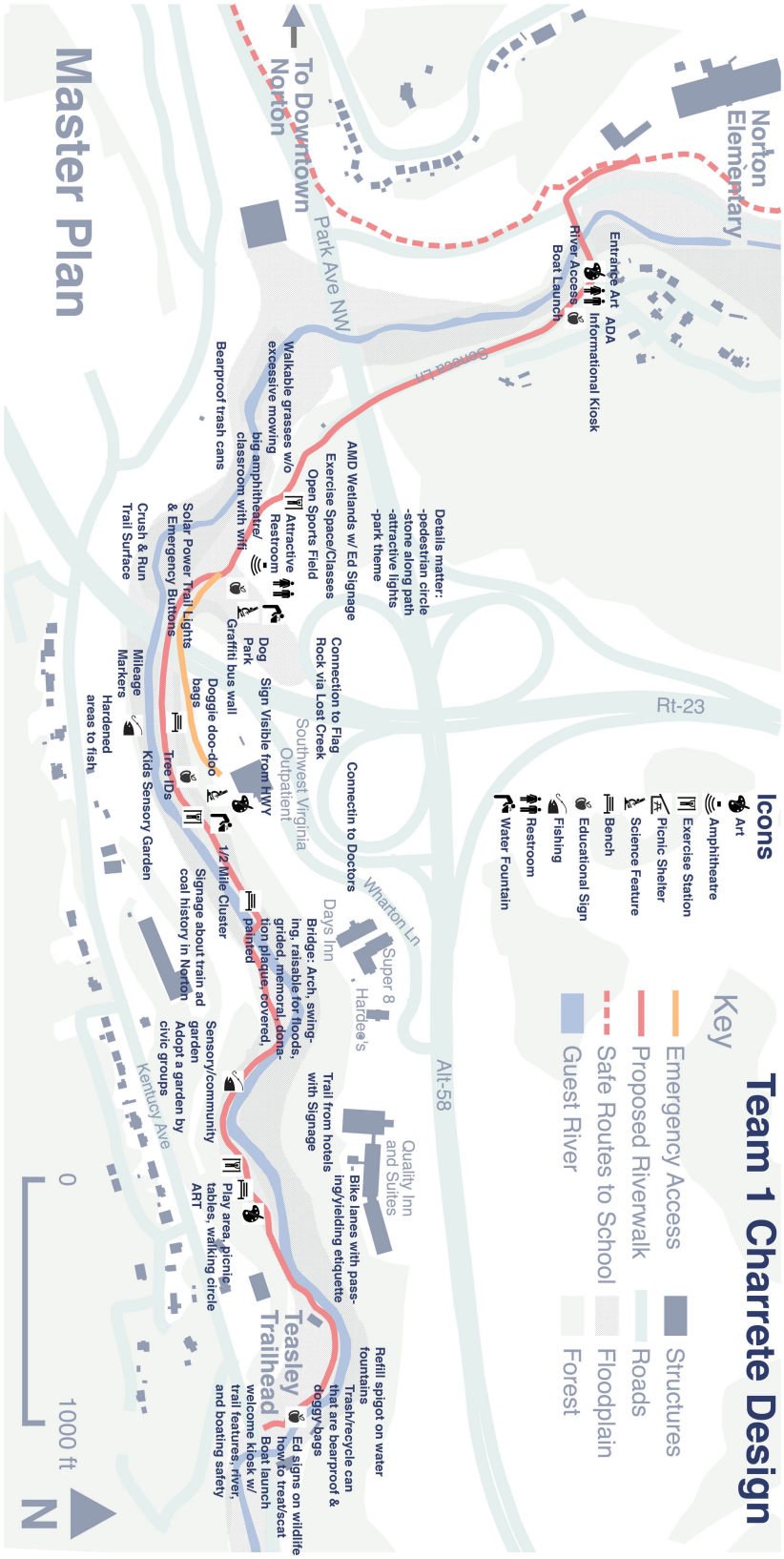


Figure 38 - Team 1 digitized charrette design

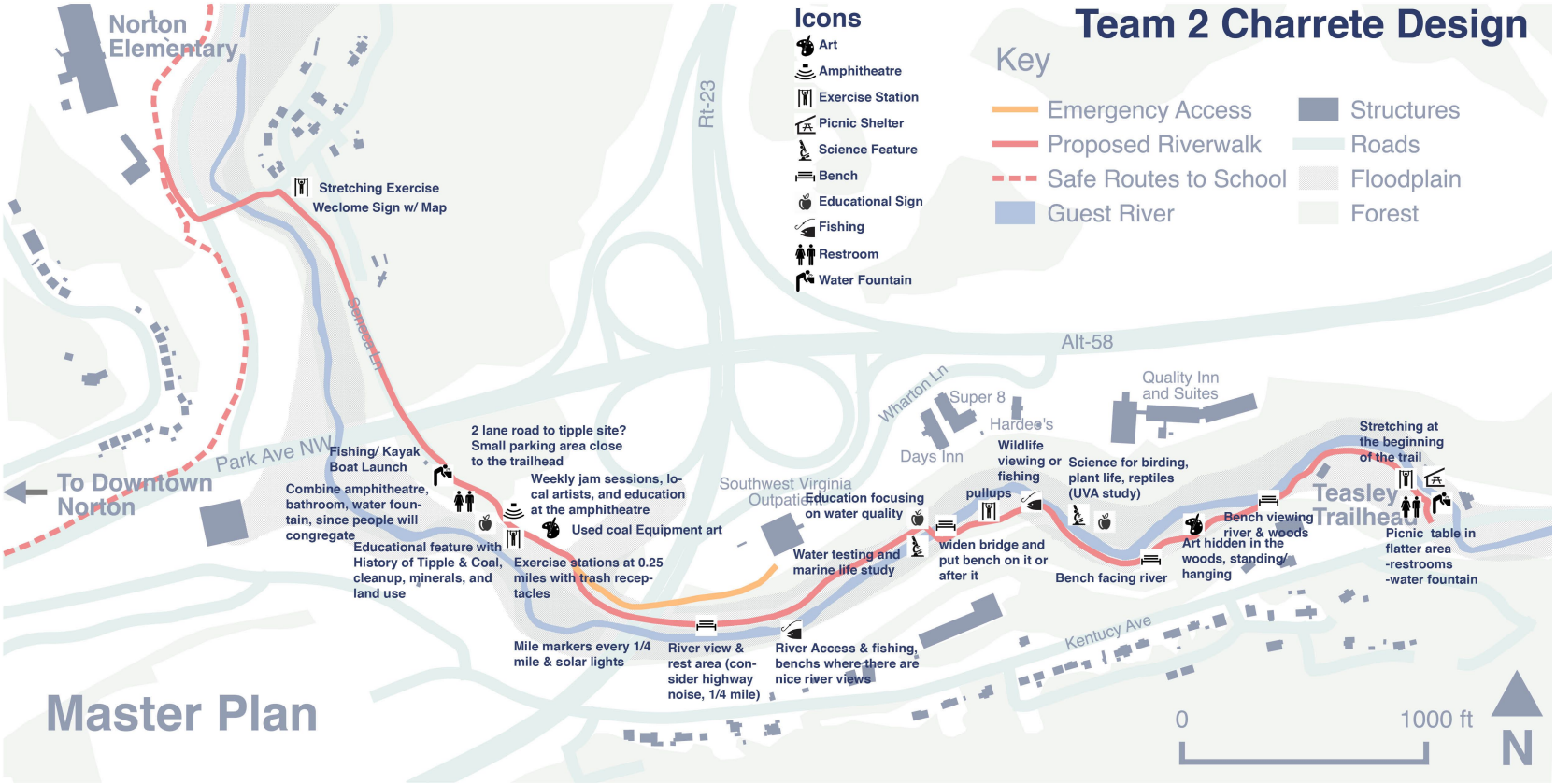


Figure 39 - Team 2 digitized charrette design

Figure 40 - Team 3 digitized charrette design

Works Cited

Ahern, J. (2002). *Greenways as Strategic Landscape Planning: Theory and Application.* Dissertation, Wageningen University, Wageningen, Netherlands.

Appalachian Trail Conservancy. (2012). *Reference Materials.* Retrieved from Appalachian Trail Conservancy: https://www.appalachiantrail.org/docs/default-document-library/trailhead-kiosks-2012-update-to-th-bulletinboards.pdf?sfvrsn=0

Biebighauser, T. R. (2007). *Wetland Drainage, Restoration, and Repair.* Lexington, KY: University Press of Kentucy.

Bohannon, C. L. (2016, March 24). Community Design Engagement Panel. Salt Lake City, Utah.

Brown, N. (2011). *P.O.S.T Palimpset of Stories Told.* B.L.A. Capstone, Virginia Tech, Landscape Architecture, Blacksburg, VA.

City of Norton. (2015, June 16). *City of Norton 2015-2016 Approved Budget.* Retrieved May 2, 2016, from City of Norton: http://www.nortonva.gov/ArchiveCenter/ViewFile/Item/2144

City of Norton Virginia. (n.d.). *GIS Map*. Retrieved 2016, from City of Norton Virginia: http://norton.mapsdirect.net/

City of Norton. (n.d.). *Weather*. Retrieved January 9, 2017, from City of Norton: http://www.nortonva.gov/index.aspx?NID=113

City of Norton, Virginia. (2016). *Tipple Hill Brownfields Assessment Grant Application.*

Condon, P. M. (2008). *Design Charettes for Sustainable Communities.* Washington, D.C.: Island Press.

Consent Decree, CIVIL ACTION NO. 2:14cv0004. SOUTHERN APPALACHIAN MOUNTAIN STEWARDS, SIERRA CLUB, and APPALACHIAN VOICES, v. PENN VIRGINIA OPERATING CO., LLC,(Defendant/Third-Party Plaintiff,) v. A&G COAL CORPORATION,(Third-Party Defendant.) (IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF VIRGINIA BIG STONE GAP DIVISION March 9, 2016).

Crewe, K., & Forsyth, A. (2003). LandSCAPES: A Typology of Approaches to Landscape Architecture. *Landscape Journal , 22* (1), 37-53.

Deming, M. E., & Swaffield, S. (2011). *Landscape Architecture Research: Inquiry, Strategy, Design.* Hoboken, NJ: John Wiley & Sons Inc.

DMME. (2014). *Coal*. Retrieved 10 5, 2016, from Virginia Department of Mines, Minerals, and Energy: https://www.dmme.virginia.gov/dgmr/coal.shtml

Environmental Laboratory. (1987). *Corps of Engineers Wetlands Delineation Manual.* US Army Corps of Engineers.

EPA. (2016, November 29). *Ecoregions*. Retrieved January 9, 2017, from Environmental Protection Agency: https://www.epa.gov/eco-research/ecoregions

Federal Highway Administration. (2016). *Small Town and Rural Multimodal Networks.* Washington, DC: Federal Highway Administration.

Fetterman, D. M. (1998). *Ethnography: Step-by-Step.* Thousand Oaks, CA, USA: Sage Publications.

Graham Landscape Architecture; Mattern and Craig Engineers. (2010). *Riverwalk: A Feasibility Study.* Norton, VA: City of Norton.

Hooper, V. H., Endter-Wada, V., & Johnson, C. (2008). Theory and practice related to native plants: A case study of Utah landscape professionals. *Landscape Journal , 27* (1), 127-41.

Hopper, L. (2007). *Landscape Architectural Graphic Standards.* Hoboken, NJ: John Wiley & Sons, Inc.

Hou, J., & Rios, M. (2003). Community Driven Place Making: The Social Practice of Participatory Design in the Making of Union Point Park. *Journal of Architectural Education* , 19-27.

https://www.youtube.com/watch?v=DzVb9oTHYYc. (2007, March). *Level III Ecoregions of the Continental United States.* Retrieved January 9, 2017, from Bureau of Land Management: https://www.blm.gov/style/medialib/blm/wo/Planning_and_Renewable_Resources/fish__wildlife_and/plants/sos0.Par.7581.File.dat/SOS%20Omernik%20Level%20III.pdf

James A. LaGro, J. (2008). *Site Analysis: A Contextual Approach to Sustainable Land Planning and Site Design.* Hoboken, New Jersey: John Wiley & Sons, Inc.

Lennertz, B., & Lutzenhiser, A. (2014). *The Charrette Handbook: The Essential Guide to Design-Based Public Involvement.* Washington, D.C.: American Planning Association.

LENOWISCO Health District. (2016). *Home*. Retrieved July 15, 2016, from LENOWISCO: http://www.lenowisco.org

Lester, J. (2016, September 9). Along the River. *Coalfield Progress* , pp. 1,2.

Lester, J. (2015, April 7). Routes. *Coalfield Progress* , p. 8.

MacLeod, N., & Hayes, D. (2013). Understanding Self-Guided Trails: Two Explorative Typologies. *Managing Leisure , 18* (4), 257-272.

Mordock, K., & Krasny, M. E. (2001). Participatory Action Research: A Theoretical and Practical Framework for EE. *The Journal of Environmental Education , 32* (3), 15-20.

National Health and Environmental Effects Research Laboratory. (2013, April). *Level III Ecoregions of the Continental United States.* Retrieved January 2017, from Environmental Protection Agency: ftp://newftp.epa.gov/EPADataCommons/ORD/Ecoregions/us/Eco_Level_III_US.pdf

Plunkett, M. M. (2016, June 6). How a hospital used a historic trail to help its community. *Washington Post* . Washington, D.C.

Ramey, F., Reilly, D., & Fields, S. (2016, 4 8). Guided Site Visit to the Norton Riverwalk. Norton, VA.

Randolph T. Hester, J. (1999). A Refrain with a View. *Places , 12* (2), 12-25.

Randolph T. Hester, J. (1990). *Community Design Primer.* Mendocino, CA: Ridge Times Press.

Randolph T. Hester, J. (2006). *Design for Ecological Democracy.* Cambridge, MA: MIT Press.

Smith, W. H., & Fulton, J. N. (2015). *HERPETOFAUNAL INVENTORY OF THE GUEST RIVER GORGE, JEFFERSON NATIONAL FOREST, CLINCH RANGER DISTRICT, VIRGINIA* . The University of Virginia's College at Wise , Department of Natural Sciences, Wise.

Southwest Virginia Health Authority. (2016). *Blueprint for Health Improvement & Health- Enabled Prosperity.*

Southwest Virginia Outdoor Classroom. (2016). *Southwest Virginia Outdoor Classroom*. Retrieved July 20, 2016, from Southwest Virginia Outdoor Classroom: swvaoc.uvawise.edu

St Luke's Health Network & Deleware and Lehigh National Heritage Corridor. (n.d.). *Get Your Tail on the Trail*. Retrieved 6 10, 2016, from Get Your Tail on the Trail: http://www.tailonthetrail.org

U.S. Census Bureau. (2010). *Profile of General Population and Housing Characteristics: 2010*. Retrieved 44 24, 2016, from American Fact Finder: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

United States Census Bureau. (2010). *INCOME IN THE PAST 12 MONTHS (IN 2014 INFLATION-ADJUSTED DOLLARS): 2010-2014 American Community Survey 5-Year Estimates for Norton, VA* . Retrieved May 2, 2016, from American Fact Finder: http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF

USDA. (n.d.). *Interactive Plant Hardiness Map*. Retrieved 1 10, 2017, from United States Deparment of Agriculture: http://planthardiness.ars.usda.gov/phzmweb/interactivemap.aspx

USDA. (2016, August 10). *Web Soil Survey*. Retrieved December 30, 2016, from Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

Virginia Department of Health. (2016). *LENOWISCO Health District: 2016 County Health Rankings.*

Walker, E. (2014). *EXPLORING SOCIO-CULTURAL DIMENSIONS OF SUSTAINABILITY. HOW CULTURAL AND SOCIAL FACTORS INFORM A SUSTAINABLE REDESIGN OF WHITMORE PARK (ANNAPOLIS, MD).* Thesis, University of Maryland, Landscape Architecture, College Park, MD.

Whitlock, W. W., Lovett, J. A., & Diffenbach, J. N. (1988). *Geology of the Wise Quadrangle and the Coal-Bearing Portion of the Fort Blackmore Quadrangle, Virginia.* Retrieved January 9, 2017, from National Geologic Map Database: https://ngmdb.usgs.gov/Prodesc/proddesc_39830.htm