

A Hidden History of Asheville: Investigating Subterranean Streams through Environmental Interpretation

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Abstract

Asheville is located within the greater French Broad River drainage basin and features many unique sub-watersheds. The River Arts District (RAD) watershed within Asheville possesses a rich cultural history connected to the river. The City of Asheville is collaborating with multiple local organizations to complete a public beautification project focused on creatively highlighting the history of the RAD along with the ecology of the French Broad River. This research will work within the beautification project to produce deliverable material to benefit the Asheville community. A review of subterranean stream management within the RAD watershed will aid in increasing public awareness regarding local hidden waterways and inform future restoration endeavors. This review will also inform the creation of a map of the watershed, which will be featured on multiple permanent interpretive signs along the new greenway to display the melding of creative design, ecological knowledge, and environmental education. The signs intend to demonstrate the overarching theme of the beautification project in promoting a sense of knowledge of and stewardship for natural resources within the French Broad River region.

Background

The French Broad River (FBR) is the largest waterway in western North Carolina. The FBR flows along the western portion of the City of Asheville, with numerous communities finding home near its banks, including the River Arts District (RAD). The RAD represents a prominent facet of the culture of Asheville, as there are over 200 artists occupying the area.

The RAD is a reclaimed industrial district. The industries previously operating in this area had a detrimental impact on the French Broad River.¹ In a prolonged restoration effort within the RAD, the City of Asheville is collaborating with multiple local organizations to implement a beautification project for the benefit of the community and ecosystem. Key components of the project include the construction of a multiple greenways along the RAD section of the river, functional art installations, and habitat restoration. Members of UNC Asheville have been involved with the project, and the city is interested in student assistance. A main element within the greater theme of the project, as voiced by multiple community focus groups, is broadening public understanding of the stream systems within the RAD watershed.

There are five major subterranean streams within the RAD watershed that historically flowed freely above ground. As the built environment encroached upon these waterways, it became common practice to route the streams through underground pipes. Recent research has revealed the importance of “daylighting” these waterways: the practice of removing pipes and allowing streams to be visible at surface level.² In other cities, daylighting has provided numerous positive contributions to associated communities and ecosystems. Many contributions are specifically pertinent to the southern Appalachian bioregion including the reduction of flash floods, erosion, and pollution transport.³ There is a need to bring community awareness to buried streams, as it is not common public knowledge.

An initial step towards educating community stakeholders includes the implementation of high visibility signage in public areas such as the new greenway. Interpretive signs provide an opportunity for leisurely self-education in a place-based context.⁴ Signs that I will help design will feature a map of the RAD watershed (including subterranean streams) and key historical elements of the site. These signs will

be provided to the City of Asheville and installed with their collaboration. I have begun participating in visioning workshops with the city, stakeholders, and local artists and have acquired support for my project from the City of Asheville. They have agreed to provide funding for a large watershed sign to be installed at their building located at 14 Riverside Drive.

Thus, I am proposing an innovative project that combines scientific research with creative design through environmental interpretation. My project will combine research on the ecology of the French Broad River with historical research on the RAD area of Asheville and apply this information to the design of 3 signs for the RAD beautification project. This research project provides an excellent opportunity for me to apply my individualized concentration in Environmental Design in the community. My Environmental Design major was created to pursue the combination of environmental studies and art to promote ecological understanding and sustainability solutions.

Methodology

Initial research concerning the daylighting method of stream restoration will consist of an extensive literature review and communications with local environmental organizations such as RiverLink. This will culminate in a report of the state of RAD streams and proposed methods of further restoration. Additionally, a digital GIS map of the RAD watershed will be created using research findings, indicating the path of water and which portions of streams are subterranean. Both will be shared with the City of Asheville and the report will be formatted for publication within the UNC Asheville Undergraduate Research Journal.

The watershed map will also serve as a key unifying feature on the greenway signs. Each sign location will feature the map with an indication of the visitor's current location in the watershed. Signs will also include information regarding cultural heritage and ecology. The process of prioritizing information to be featured on the designed signage will include a literature review regarding sign design and local ecology, as well as meetings with environmental organizations and key community members. This input will aid in understanding what aspects of the history and ecology of the FBR are perceived most valuable within the community. Specific features believed to be of high value to the region include endangered species such as the Appalachian Elktoe Mussel, the high biodiversity of salamanders, and the relationship between Cherokees and the river.

Results/Recommendations

During this research, I plan to design and produce 3 signs about the RAD watershed, to be used by the City of Asheville. The results of my literature review of best practices in interpretive sign design and location considerations will inform the installation of signs along the FBR greenway. Additional anticipated research results include the recommendation that multiple subterranean streams within the RAD watershed would benefit from the daylighting restoration technique, which would improve the watershed's overall water quality. Recommendations will include proposed management strategies for the sub-watershed streams to be shared with the City of Asheville and the local environmental organization RiverLink. The results of my project will be presented at the December Undergraduate Research Symposium on the UNCA campus.



Example of interpretive sign at natural area.

Conclusion

This research is of great value to the community in providing a synthesis overview of the RAD watershed and establishing educational signs to inform the public on the uniqueness of the watershed. Through the collaboration of diverse stakeholders, the RAD watershed improvement project aims to illustrate the rich narrative of southern Appalachian culture and ecology centering around the French Broad River. My proposed research project will pair the historical cultural narratives with an understanding of watershed restoration techniques and the importance of public place-based education through interpretive signage. Research methods used within my study may influence restoration actions of local organizations and act as a model for future daylighting projects in other municipalities of similar bioregions. The implementation of interpretive signs along the new FBR greenway will serve the public for many years to come and offer an opportunity for future undergraduate projects.

Budget

Item	Cost
Student stipend	\$1,500.00
Printing/materials for 3 signs	\$825.00
Installation	\$75.00
Gas	\$50.00
Total	\$2,450.00

Budget Justification

I am requesting a \$1,500 stipend to aid in covering the costs of living while completing the project. After being in contact with FastSigns of Asheville for the interpretive signs, fully printed and constructed, I am requesting \$825 to cover the cost of the signs at \$275 each. Installation costs are not included within the purchase of the signs, and will require an extra \$75 to cover instant-concrete and labor expenses. Additionally, I am requesting a modest transportation stipend of \$50 to cover gas expenses traveling to and from the RAD and UNCA approximately three times per week for 8 weeks from my residence. This was calculated based on the total mileage traveled, the gas mileage of my vehicle, and the current average price of gasoline.

Timeline

Month - 2018	Tasks
May-June	Develop GIS map of watershed to be used on signs. Literature review (stream daylighting and interpretive sign techniques).
July-August	Continue literature review. Meet with the city representatives and RiverLink to share draft signs.
September 1	3 sign designs completed.
October 1	First drafts of final paper/symposium presentation.
November 15	Final paper complete.
December 4	Present at Undergraduate Research Symposium.

Bibliography

1. Weiner, M.S., et al. (1982) "Water Quality of the French Broad River, North Carolina - An Analysis of Data Collected at Marshall." *USGS Water Supply Survey*.
2. http://americanrivers.org/wp-content/uploads/2016/05/AmericanRivers_daylighting-streams-report.pdf
3. United States EPA. (2011). "Uncovering a long-buried prize in downtown Yonkers: 'daylighting' the Saw Mill River" *U.S. Environmental Protection Agency, Solid Waste and Emergency Response Report*.
4. Davis, Shawn K.; Thompson, Jessica L. (2011) "Investigating the impact of interpretive signs at neighborhood natural areas." *The Free Library*.