



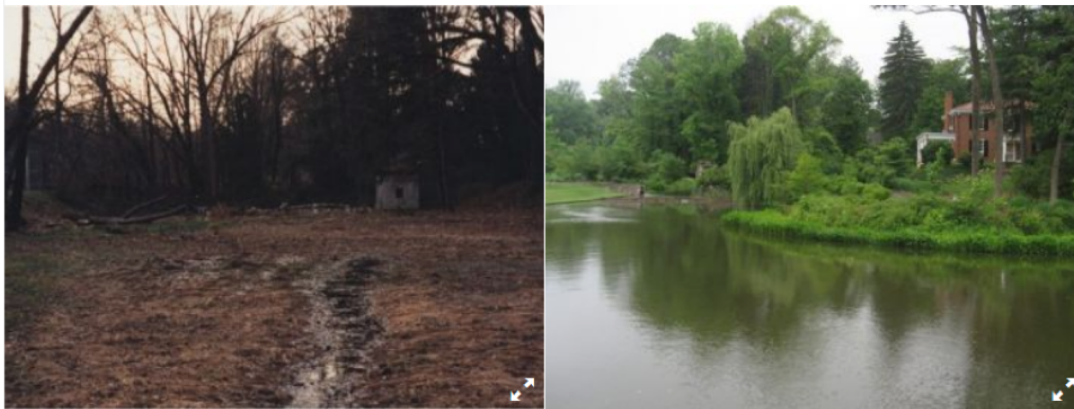
Community and Economic Development in North Carolina and Beyond Blog: The Benefits of Daylighting Streams

By CED Program Interns & Students

Article: <https://ced.sog.unc.edu/the-benefits-of-daylighting-streams/>

This entry was posted on March 22, 2018 and is filed under Natural Assets

There may be good reasons to culvert or pipe a stream. Culverts allow water to flow to the other sides of roads, buildings, or other obstructions. However, developers and city planners in the past have often installed culverts where they were not necessary, resulting in sub-optimal environmental and economic outcomes. For this reason, modern city planners and local governments have become interested in strategically removing underground pipes and restoring streams to a more natural state – a process known as daylighting.



Before and after the daylighting of a 1,200 linear foot section of piped stream located on the property of the University of Virginia

There are several environmental and economic benefits of appropriate daylighting. The driving motivation behind many of these projects is to alleviate persistent flooding. Culverts can be susceptible to flooding because they create choke points where water can back up during a storm. In contrast, a daylighted stream is open to the air and combined with a proper floodplain provides a much greater hydraulic storage capacity (i.e. more water can flow through it) than a culvert. A restored stream also flows slower than piped water, which reduces flooding risks downstream.

There are other reasons to daylight streams. Open streams do a better job of retaining and distributing nutrients for plants and wildlife than piped streams. Thus, daylighting streams can also help reduce the risk of algae blooms, which damage the local ecosystem. Culverts can also restrict the movement of fish, reducing their numbers and restricting their habitat. Case studies have shown that restored streams have seen an increase in the number of fish.

There are also financial reasons for local governments to consider daylighting. The flood mitigation benefits of daylighting often provide enough economic benefits to justify a project. Culverts also require constant maintenance, whereas daylighted streams have little to no recurring costs. Finally, open streams often improve the aesthetics of an area, increasing the value of adjacent land and providing an improved quality of life for residents. City planners and developers can think of these benefits as being similar to those offered by a greenway – they can have a large financial impact, but actual outcomes will vary significantly depending on the specific location and project.

Experts have outlined some resources and best practices for daylighting streams. First, it is critical to commission a good engineering feasibility study to understand the local situation and allow local governments to consider their options. The benefits of daylighting will vary considerably from project to project, so it's important to understand the challenges and



opportunities in a specific community.

Second, local governments need to get commitments from local businesses and land owners *before* daylighting work begins. Ideally, daylighting should be a transformative project for the area, but this requires stakeholders to buy into the idea of the project and consider how they can contribute. For example, in San Luis Obispo, CA the local government convinced local businesses to flip their storefronts to face a daylighted stream, which now provided the basis for a greenway that generates significant foot traffic.

For more information on the benefits of daylighting streams see detailed reports from the National Park Service, Virginia Water Resources Research Center, American Rivers, and Water and Environment Journal. For information on funding and managing daylighting projects see the Environmental Finance Center Network's website, which includes an annually updated list of funding resources by state (the 2017 list for North Carolina is linked to here).

Bradley Harris is a Masters student at Duke's Sanford School of Public Policy as well as an MBA Candidate at the UNC-Chapel Hill Kenan Flagler Business School. Bradley is also currently a Community Revitalization Fellow with the Development Finance Initiative.