

# Protecting shorelines in Weston, Virginia

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Erosion creeps up on everyone. In Reston, Virginia, this has been the experience of dozens of homeowners who once thought their smooth transition from turf to lake would last forever. What they may not have realized is that those contours pre-dated a shoreline and the action of waves on our artificial lakes.

Reston Association (RA) is a large community association in northern Virginia that serves over 22,000 member-households, 1,400 of which are lakefront across four lakes. Since its establishment in the early 1960s as a planned community, staff and community members at the Reston Homeowners Association, now Reston Association, have held environmental preservation as a core value. While all members may utilize the lakes for boating and fishing, they have limited impact on the resource they enjoy.

The relatively small number of lakefront owners, on the other hand, make up the majority of the lakes' shoreline areas, and therefore, have an outsized impact on lake health. As such, RA works closely with lakefront owners through various

rules and programs – no-wake and no-gas-motor requirements, boat inspections, riparian zoning education, and shoreline stabilization – the focus of this article. RA's shoreline stabilization program has been a long-running aspect of our protection of the lakes.

While understated, the program has been successful enough that the folksy portmanteau of "biolog" has been assigned to the type of shoreline project primarily implemented by this program. This article reviews the beginning of the program through its implementation via design

guidelines, technical assistance, and cost-sharing measures.

## Background and early observations

Reston Association's four lakes – Newport, Anne, Thoreau, and Audubon, were all established through the impoundment of small, headwaters streams in the Difficult Run watershed (Figure 1). These small lakes (ranging from 13 to 44 acres) have residential lots to the waterline, meaning that grass and loose soils are common sights along the shoreline. While some residents have protected their

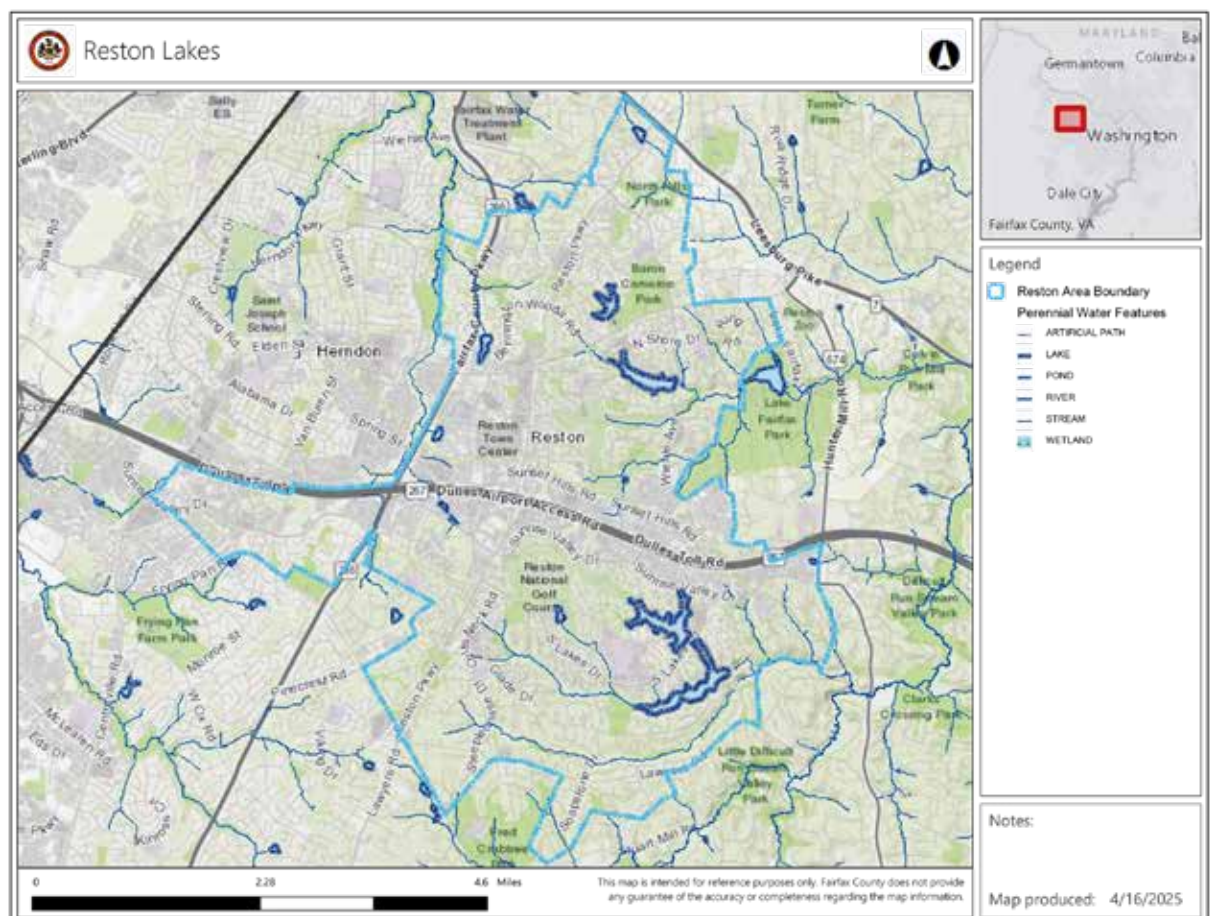


Figure 1. Map showing Reston area lakes and surrounding community.

shorelines from erosion, RA staff have observed over the years that bulkheaded shorelines caused down-shore erosion and riprap did not serve a function beyond erosion control (Figure 2). Additionally, those shorelines were devoid of habitat for the lakes' wildlife (Figure 3), a serious concern for the early environmental managers at RA hoping to encourage the artificial lakes' colonization by native flora and fauna.

Some early research led to the standardization by RA staff of a coir log living shoreline design for residents. The living shorelines RA and its residents typically implement use 12-16-inch in diameter, 10-foot-long coir logs – a dense log made of coconut fiber wrapped in jute netting – and a mix of native emergent, wetland, and upland plants planted in the shoreline, the lakebed, and the log itself (Figure 4). Nowadays, the implementation of coir log living shoreline practices is well-documented online. In brief – the coir log is laid in the water along the shoreline, staked into place into the lakebed, and planted. The coir material transforms into a thick soil-root mat in the best-case scenarios, and in the worst, provides shoreline protection until it biodegrades and needs to be replaced 5-10 years down



Figure 2. Bulkhead along Reston area lakes.

the road. Our local supplier has them available for \$60-\$90 per log, size dependent. In Reston, we have had a general landscaping contractor install many living shorelines, however, Boy Scout troops and residents themselves have also installed them (Figure 5).

#### Technical assistance

Situated in Northern Virginia, Reston is in an area with no naturally occurring lakes and relatively few large recreational reservoirs. With such a small market, there is a local knowledge gap surrounding shoreline erosion issues and stabilization practices. When a resident comes to RA with concerns about their shoreline, staff



Figure 3. Local flora and fauna in Reston Lakes (l: buttonbush; r: frog).





Figure 4. Established coir logs along shoreline of Reston area lakes.



Figure 5. Installation of coir logs.

have to be able to fill the gap by providing details about different shoreline stabilization methods. This gives RA a chance to guide a resident toward environmentally friendly options without being preempted by contractors who often install expensive alternatives. Typically, our wake-free, temperate lakes do not have much wave

action or ice so we can recommend the aforementioned DIY-friendly planted coir logs as an option for residents.

While shorelines may not be a common topic of conversation in the DC suburbs, the area is lucky to host numerous native plant and environmental advocacy groups that compile detailed plant lists for

residents, which RA staff can pass along when a resident wants to design a DIY living shoreline. Knowing the limits of these practices, RA has developed – and is working to improve – a shoreline stabilization guide for residents to better understand when to use each kind of shoreline stabilization technique on their property.

### Design guidelines

As a community association with covenants dictating design and maintenance of properties, RA has had the opportunity to encourage living shorelines through shoreline stabilization design guidelines. In RA design guidelines, design priorities are laid out, with the least-desirable, or most impactful, options requiring higher levels of community review. When it comes to shoreline stabilization, RA has deemed living shorelines of the highest priority, and as such, does not require any design oversight – should a homeowner decide to replace the lawn along their shoreline with a stabilization practice, they are encouraged to choose native plantings and biodegradable materials. Should that same homeowner decide to install bulkheading or stone, they would be required to submit an application to the community Design Review Board and acquire neighbor signatures. This gentle nudge from RA policy has helped many residents choose a living shoreline.

### Property issues and cost sharing

A tricky component of RA's shoreline protection program has been property lines. Unlike some lakes, RA's have a geostatic parcel boundary, meaning some lake parcels encroach upon the dry land of residents, and some resident parcels encroach into the waters of the lake. Because of this, bulkhead projects undertaken by residents often require surveying and a deed-recorded maintenance agreement if they encroach onto RA's lake-parcel. Living shorelines, with their minimal maintenance needs, are a great compromise in this regard. Because of the co-benefits of these projects, RA has long-undertaken cost share arrangements with residents for these shoreline projects. Considering the relatively low cost of coir logs, RA arranges to purchase the logs and plants for residents at commercial rates, as long as they can provide their own labor for installation and maintenance of the

shoreline. The arrangement eases the process for residents and lowers the barrier for entry, making a living shoreline option more enticing for residents.

### Challenges

As we have passed the 60th anniversary of Reston's founding, many of our lake shorelines are needing renewed stabilization efforts. Residents and staff are starting to see early bulkheads buckle and rot at around 40-50 years old and early living shorelines become shaded out or require maintenance at around 20-30 years old. Despite the aging of living shorelines, their overall success has been encouraging. In many instances they become invisible even to their owners, who ask about options for planting their shoreline when there are wooden stakes left from decades-old coir logs and lingering buttonbush or pickerelweed from the prior planting. In those cases, we have helped residents refresh plantings and monitor their shorelines.

Much more challenging are the aging bulkheads. In those cases, we are having

hard conversations with residents about the feasibility and cost of a more extensive living shoreline project than RA could assist with, the replacement of bulkheading, or other costly grading endeavors. Despite these challenges, it is clear residents see living, planted shorelines as the default over bulkheads or lawn. We hope that those residents will continue to ask hard questions about shoreline alternatives that promote wildlife habitat and protect our lakes.

**Ben Rhoades** is the watershed manager for the Reston Association, a large civic organization in northern Virginia, overseeing the monitoring and maintenance of four lakes and their earthen dams. In Reston, Ben works to educate residents about the importance of watershed management in protecting their lakes through citizen science monitoring programs, drainage and erosion site visits, and education programs. An early-career



professional, Ben received his B.A. in environmental and sustainability studies from George Mason University in 2020 where he got his start with watershed outreach interning for the local Northern Virginia Soil and Water Conservation District. Ben joined NALMS in 2022 on the Enhanced Clean Lakes Program/Clean Water Act Section 314 Working Group and has been an advocate for protection and restoration of lakes since! 🌱

A large advertisement for Aquarius Systems. At the top, the Aquarius Systems logo (a blue circle with white wavy lines) and the text "AQUARIUS SYSTEMS" are displayed. Below this, the words "SPRING CLEANING!" are written in large, bold, white, sans-serif font with a black outline. The background of the advertisement shows a person wearing a life vest and a hat, sitting on a motorized boat with a white canopy. The boat is on a body of water, and there is a large pile of green aquatic plants in the foreground. The sky is clear and blue. At the bottom of the advertisement, the website "www.aquarius-systems.com" and phone number "(262) 392-2162" are listed, along with the email "info@aquarius-systems.com".

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