

Booker Creek Stream Stabilization and Decentralized Stormwater Project Proposals

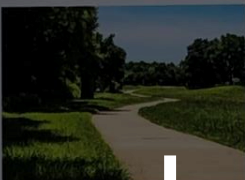


NEW HOPE
AUDUBON

Booker Creek Bird-Friendly Habitat Restoration Project



Volunteers from our neighborhood and surrounding area have been removing invasive plants from the areas along the Booker Creek trail and replacing them with native plants that provide food for pollinators and birds. This will help increase biodiversity along the creek and make the watershed healthier.



Why are native plants important?

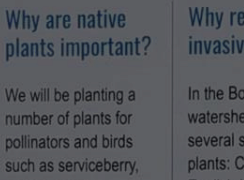
We will be planting a number of plants for pollinators and birds such as serviceberry, paw paw, red chokeberry, sourwood, milkweed and bottlebush.

Our native plants evolved with insects, birds, and other animals to create complex food webs.

Native plants, especially some tree species like oaks, tulip poplar, sycamore and hickory are also host to a large variety of insects, eaten by birds and other animals.

Young birds can only eat insects and caterpillars, and they must consume large numbers of both to grow into adult birds.

Wildlife consume fruits, nuts, and seeds for sustenance, while helping to propagate the regional vegetation.



Why remove invasive plants?

In the Booker Creek watershed, we have several serious invasive plants: Common privet, English Ivy, Thorny Olive, Japanese Honeysuckle, and Japanese stiltgrass.

Some non-native plants stay within the confines of our gardens and can be used as decorative species. However, they typically offer little value for wildlife since they do not host the insects essential for an intact and bird-friendly ecosystem.

Other non-native plants can aggressively spread outside their boundaries displacing native plants and becoming serious threats to the ecosystems and wetlands wildlife depend on.

Common plants like Bradford Pear trees, Chinese Privet, Japanese Honeysuckle, and



Ruby-throated Hummingbird



Zebra-tailed Swallowtail Butterfly



Eastern Bluebird



Stream stabilization pilot project on Booker Creek led by staff and completed with volunteers. A prototype of what can be done on private property with educational signage. Costs would be minimal with the work being done by volunteers .

Shifting Views on Flooding

	Traditional View	Emergent View
Where does flooding occur?	Most flooding occurs in low lying areas near water bodies officially called floodplains and mapped by FEMA	Significant flooding occurs outside of the floodplain and is influenced by area permeability and the built environment and is termed urban flooding.
Where should flooding solutions be located?	Stormwater and wastewater infrastructure services can best be handled on the publicly-owned right-of-way.	The majority of land within urban areas is privately owned property, and most precipitation occurs outside of the public right-of-way. Thus, an efficient system of distributed infrastructure would include privately-owned land.
What are flooding solutions?	Solutions approach stormwater management as a capacity problem, solved by building large, grey engineered systems (more pipes and larger holding tanks) to handle major storms	A more effective solution is through a distributed, decentralized system of green stormwater infrastructure (GSI), which prioritizes infiltration and temporary on-site retention.

- **“Partnering with private residents and businesses will be an important component of the Town’s Stormwater Program moving forward as it needs to comply with the Jordan Lake Rules and address impaired waters. “**
- **“Several neighborhoods have been identified for potential neighborhood green infrastructure retrofits. These can include modifications to the public ROW (rights of way) to promote the infiltration of stormwater runoff, as well as rain gardens and other practices on private property to treat rooftop drainage, prior to entering the conveyance system.”**
- **“Individually these projects provide a small benefit; however, as more property owners implement practices to reduce the volume of runoff and pollutant loads, the cumulative downstream impacts on water quality and quantity can be significant”**

Source: 2018-09-21_Volume-I_Lower-Booker-Creek-Report Section 3.5 Existing watershed analysis- impervious analysis

Data from the Dickson ‘s Lower Booker Creek Report supports the need to partner with private residents and businesses to address both water quality and quantity.

►Forty-nine (49) neighborhoods within the Booker Creek watershed were evaluated to identify neighborhoods that provide the greatest potential for green infrastructure projects

►26 neighborhoods were rated as either Very Good or Good for potential green infrastructure projects

SECTION 3: EXISTING WATERSHED ANALYSIS

Table 3-11: Neighborhood Analysis Results

Neighborhood	Subwatershed	Lot Size	Road Length	Road Slope	ROW Width	Road Width	Total Score	Ranking
Cedar Hills	Cedar Fork	7	5	3	7	5	27	Very Good
Ridgefield	Lower Booker Creek	3	7	5	5	7	27	Very Good
Lake Forest	Lower Booker Creek	7	5	3	5	7	27	Very Good
Northwood	Booker Headwaters	5	3	5	7	5	25	Very Good
Booker Creek	Lower Booker Creek	3	5	5	5	7	25	Very Good
Timberlyne	Cedar Fork	5	5	5	5	5	25	Very Good
Lake Forest	Cedar Fork	7	5	1	5	7	25	Very Good
Lake Forest	Eastwood Lake	7	7	1	5	5	25	Very Good
Northwood V	Booker Headwaters	1	7	5	3	7	23	Good
Parkside	Booker Headwaters	1	7	5	3	7	23	Good
Coker Woods West 2	Eastwood Lake	5	5	1	5	7	23	Good
North Forest Hills	Crow Branch	3	3	5	5	7	23	Good
Coker Hills	Eastwood Lake	5	5	1	5	7	23	Good
Steeple Chase	Cedar Fork	5	3	5	3	7	23	Good
Timberlyne	Booker Headwaters	5	3	7	3	5	23	Good
Argonne Hills	Cedar Fork	3	3	5	5	7	23	Good
Forest Creek	Crow Branch	5	1	5	5	7	23	Good
Forest Creek	Eastwood Lake	5	5	1	5	7	23	Good
Eastwood Rd Johnson Farm	Eastwood Lake	5	3	3	7	5	23	Good
Quail Run	Booker Headwaters	7	5	1	5	5	23	Good
Chesley	Lower Booker Creek	5	5	1	3	7	21	Good
Chandler's Green	Cedar Fork	3	3	5	3	7	21	Good
North Forest Hills	Booker Headwaters	3	5	3	5	5	21	Good
Clark Hills	Lower Booker Creek	5	3	1	7	5	21	Good
Countryside	Cedar Fork	5	5	1	3	7	21	Good
Brookview	Cedar Fork	7	3	1	5	5	21	Good
Coker Woods West 1	Eastwood Lake	5	3	3	3	5	19	Fair

A Decentralized Community Conservation Program to address water quality and quantity flowing from private property a major cause of urban flooding and pollution into Jordan Lake

- ▶ Rain Gardens
- ▶ Cisterns (ranging from 300 gallon to 10,000 gallon)
- ▶ Critical Area Plantings
- ▶ Impervious Surface Conversions
- ▶ Streambank Protection
- ▶ Riparian Buffer Installations
- ▶ Planted Swales
- ▶ Structural Stormwater Conveyances



Creating a Targeted Decentralized System of Green Stormwater Infrastructure in Chapel Hill

Proposal	Description	Estimate*
Green Infrastructure Cost Share Program on Private Property	Reimburse up to 75% of the cost to install one or more of approximately 24 different practices that will infiltrate and temporally hold stormwater on existing privately held land.	\$70,000
Environmental Justice Green Infrastructure Program	Reimburse 100% of the cost to remediate moisture issues and install one or more of approximately 24 different practices that will infiltrate and temporally hold stormwater on existing privately held land.	\$180,000
Youth Education and Jobs Program in Green Infrastructure Installation	School based E-STEM education and paid apprentice program for high school students that is led by public school teachers. Once trained students will be doing outreach and education as well as installation of selected green infrastructure projects for homeowners.	\$50,000

* Requires 1 employee to administer the three programs (Staff's role is to design projects , complete paperwork, and coordinate community efforts.)

Potential Funding Sources for Decentralized Green Infrastructure Projects on Private Property

Type of Funding	Grant	website
Existing CH Funding Sources	A portion of the \$3M collected in Stormwater Fees and/or Stormwater Bond Funds A portion of the \$10M received in ARPA Funding	
Grants for Jordan Clean Water Jordan Lake is an impaired reservoir with a TMDL so municipalities upstream have a high-ranking score when applying.	EPA 319 Grants NC Dept. of Justice Environmental Enhancement Grants NC Division of Water Resources	https://deq.nc.gov/about/divisions/water-resources/water-planning/nonpoint-source-planning/319-grant-program https://ncdoj.gov/protecting-the-environment/eeg/ https://deq.nc.gov/about/divisions/water-resources/water-resources-grants/water-resources-development-grant-program
Grants for Education The town can partner with local nonprofits to support the stormwater education programs.	Duke Energy Foundation Dominion Energy Foundation Triangle Community Foundation Orange County Grants for Climate Action	https://desitecoreprod-cd.azureedge.net/_media/pdfs/community/foundation-potential-grant-programs.pdf?la=en&rev=94b20d7967c74828b5977ae02f70a80e https://www.dominionenergy.com/our-company/customers-and-community/charitable-foundation/applying-for-a-grant https://trianglecf.org/nonprofits/grants https://www.orangecountync.gov/2534/Community-Climate-Action-Grant-Program