

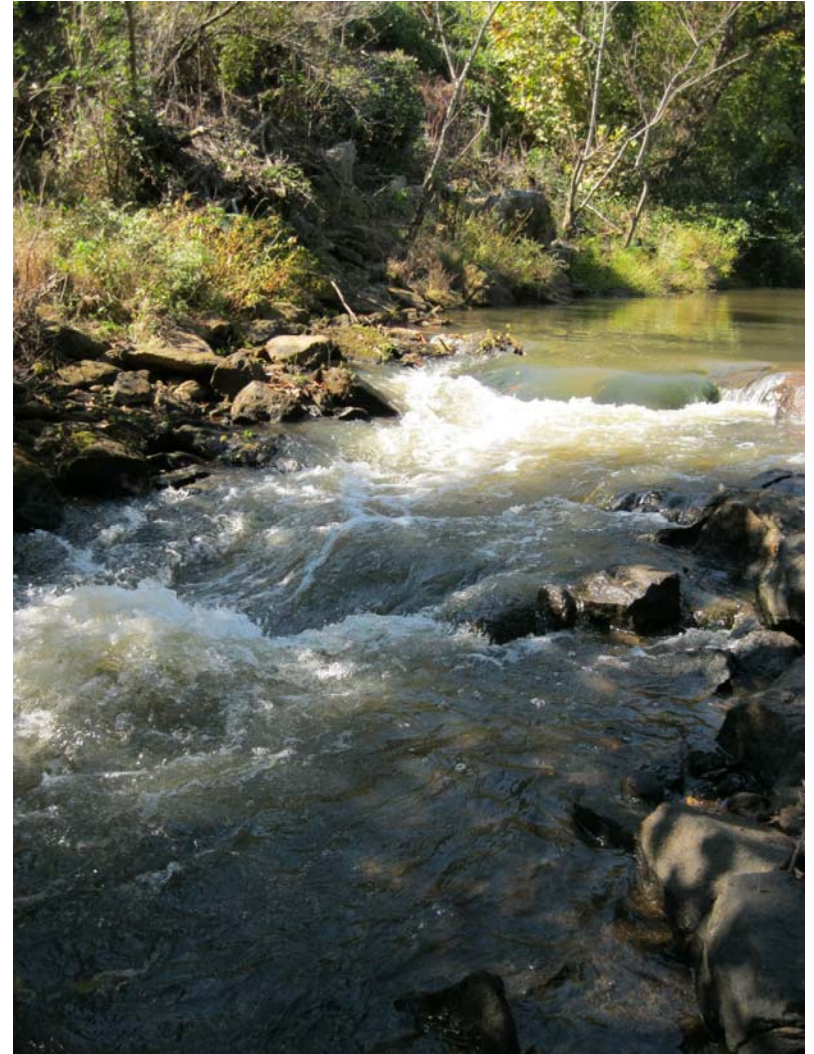
The North Oconee River Blueway Design Charrette

October 28-30, 2011



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Appendix A: Site specific assessments based on National Park Service (NPS) guidelines: *Logical Lasting Launches*, 2004

Appendix B: General Guidelines (*Logical Lasting Launches*, pp. 5-8, 2004)

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1.0 Introduction

On October 27-30th, 2011, a team of students and faculty from the College of Environment and Design partnered with Georgia River Network, local non-profits and community participants for a charrette to generate ideas for a water trail, or “Blueway” along the North Oconee River. River advocacy groups, Greenway Commissioners, local residents and paddlers were involved in the design from the beginning to hear people’s points of view and to pursue ideas that will increase the usability of and awareness about the Oconee River. The charrette team looked at best management practices and appropriate locations for boat launches/take-outs and a trailhead educational center that will lead the North Oconee River to be more accessible and enjoyable by the public. The recommendations and concepts developed during the design charrette are being taken into consideration by the Athens-Clarke County Greenway Commission and local non-profit river advocacy groups for future planning. This report presents the Guiding Principles, Design Briefs and site-specific solutions developed during the charrette.

The following local groups partnered on the project:

- **The University of Georgia’s (UGA) Center for Community Design and Preservation**, the Public Service and Outreach office for the College of Environment and Design that provides opportunities to engage in real-world projects for

- faculty and students while pursuing academic degrees;
- **Georgia River Network**, a non-profit organization working to ensure a clean water legacy by engaging and empowering Georgians to protect and restore our rivers;
- **Upper Oconee Watershed Network (UOWN)**, a group dedicated to protecting water resources and improving stream health in the Upper Oconee watershed through community based advocacy, monitoring, and education;
- **Athens-Clarke County (ACC) Greenway Commission**, an organization who works to identify, protect, and create a series of corridors that provide opportunities for conservation, preservation, education, transportation, and recreation;
- **Oconee River Project of the Altamaha Riverkeeper**, a grassroots organization dedicated to the protection, defense and restoration of Georgia’s biggest river – the Altamaha – including its tributaries the Ocmulgee, the Oconee and the Ohoopie
- **Students from the Paddle Georgia Summer Studio (2011)**, an intensive 8-week course at UGA which offered an interdisciplinary, experiential, and service-oriented opportunity to identify and address design challenges that contribute to a clean water legacy in Georgia. The students’ research and information from the summer studio created the basis for the design charrette’s work.



Design Charrette

2.0 Methodological Overview

The mission of the charrette was to determine how to better involve the public in the use, access and decision-making process related to the North Oconee River; how to better use the river by the public, the constituent landowners and the indigenous residents (nature); how to better protect the river from institutional, governmental, residential and industrial encroachment; and how to improve and enhance use of the river while decreasing or mitigating its abuse. The charrette methodology for the North Oconee can be viewed as 4 distinct processes:

Information Gathering

Conducted through Internet research, prepared information and pre-charrette exposure to the river, and then a North Oconee exploration canoe trip that took place October 22, 2011. Public input through emails, conversations and drop-in discussions was also included in the information gathering phase, as well as a Public Input and Charrette Overview Kick-off Meeting took place October 27, 2011, and included a core group of interested citizens.

Analysis (Charrette Day One)

Included group discussions of input process, ground-truthing to verify maps and aerial photos, and the development of

design briefs for different focus areas: Policy, Recreation, Connectivity, Conservation and Ecology, and Education and Interpretation.

Design Alternatives (Day Two)

Participants regrouped into small teams to develop design solutions for four potential boat launch/take-out sites: Easley Mill; Lilly Branch; Horseshoe Bend at Carriage Court, College Station Road, and Rivers Crossing; and Whitehall Mill. The Policy Group spearheaded the development of Guiding Principles for the project and proceeded to evaluate each of the teams throughout their design process, to make sure that solutions were not straying too far from the original design briefs previously produced. A mid-charrette critique took place with involvement by the public.

Final Design/Development Solutions (Day Three)

Design alternatives were team-approved and refined based on the critique, or discarded to produce new solutions. Then each team reorganized as necessary to begin final production. The charrette culminated in a public meeting where the team shared design concepts and solutions via PowerPoint at UGA's Interim Medical Partnership Building on October 30, 2011.

3.0 Guiding Principles – The Soul of the Project

The North Oconee River exists as a hidden treasure in the heart of Athens. It is a quiet ribbon within a corridor of green where visitors can truly feel they have gone someplace else—where one can “get out of the city.” The team envisions well-designed improvements to public access—a light touch that brings the community to the river while foremost preserving its ecology and its history. The blueway envisioned also will encourage ecological conservation, promote historic preservation, and inform future land use broadly in the green and historic corridor of the city through which the North Oconee River runs.

1) **Conservation:** In improving the community’s access to the North Oconee River, the blueway promotes increased public awareness of, and participation in, improving and maintaining the environmental quality of our river resource.

- Minimal-impact access points and boat launches
- Blueway educational programs that result in environmentally sustainable types and intensity of river use
- Community appreciation of the river and its natural experiences sets a tone for future land use decisions throughout the existing wide, green river corridor.

2) **Recreation:** An emphasis on education and stewardship guides the use of the blueway as an opportunity for residents safely to enjoy the unique, in-town, intimate experience of nature found along the river, and reinforces the intrinsic value of the resource.

- The blueway is designed for use by individuals and small groups.
- Public facilities are managed for low-intensity use of the blueway.
- Partnerships with non-profit organizations must be explored to bring new audiences to the river who might not otherwise be able to enjoy the blueway.

3) **Education:** Unique opportunities for education are accessible to blueway users which will:

- cultivate broad public awareness of natural history, river ecology and the impacts that our daily activities on land have on the river system;
- promote an understanding of water resources—of the connections between the river system’s environmental quality and quality of life in our communities; and
- tell the story of Athens’ deep historic ties to the river.

4.0 Design Briefs

To create the design briefs, each team was instructed to develop a specific problem statement and a design program with a mission statement for each focus area and a set of generalized objectives for their focused approach. Then they applied their mission and objectives to each of the four development sites. They were to specifically suggest physical design applications for each of the four development target areas. They were not, however, instructed to begin to provide an analysis beyond that point or to begin the production of specific site solutions. They also were asked to identify the unknown items that related to their focus areas or any of the sites that prevented them from fully developing the design brief. They also looked at case studies that would help better refine designs and place some of their suggestions into short and long-term timeframes.

The outcomes achieved through this process include:

- Team members more fully understood the river and the development sites
- Personal site preferences began to emerge among the team members
- An overarching set of prescriptive Guiding Principles became engrained in charrette participants.

Connectivity

Increase connectivity, encourage people to walk/bike for recreation and transportation, provide for security and safety along the path and on connections from outside community, and

provide needed services at best locations for launch sites. The objectives included determining the connection locations to the surrounding community, parking needs, outfitter use, personal use, passive access, gathering location for visual enjoyment, determining the desired user groups for each location, and developing a wayfinding system.

Conservation & Ecology

Conserve the existing ecological corridor by establishing standards for building within a buffer (reduce impervious surfaces and replace with pervious paving, establishing rain gardens, and use best management practices for storm water management, identify unique and/ or endemic habitat areas, reduce excessive access trails that may degrade stream banks, collaborate with existing goals of the ACC Greenway Commission and the Georgia Department of Natural Resources, and maintain linkages to other corridors (stream beds) outside the project focus area.

Identify use limits by determining the maximum number of people within a group allowed per site and per river section in order to reduce noise; identify more user-friendly sites for groups; and limit impact of usage areas on river that tend to lead to soil compaction and erosion from construction activity.

Establish dedicated zones to create larger no-build buffers on UGA properties along the riverbank. Establish agreements for no-build buffers with private and federal property.

Improve water quality within the North Oconee River by removing stormwater outlets to river, maintaining best management practices for storm water, and removing manmade litter flow. Promote education about “leave no trace” ethics, establish regular volunteer cleanups, allow garbage collection at launch sites, and build bathroom facilities to reduce user waste. Establish recommendations and suggestions for water quality and encourage best management policies for utility easement clearings.

Restore degraded sites by mitigating eroded stream banks; identifying missing habitat components; and identifying, removing, and educating the public about invasive plants – namely privet, Chinese elm, loosestrife, kudzu, honeysuckle, *Eleagnus*, English ivy, Japanese wisteria, Japanese knotweed, and bamboo.

Education & Interpretation

Provide interpretive signs, informational booklets, and a web-based site to inform the general public on issues of safety, conservation, historic resources, ecology and natural history, stormwater mitigation, fishing, and water quality. Waterproof booklets and smartphone applications are ideal. Signs are discouraged for the majority of the site as they tend to become

visual clutter when used excessively, however, some signs should be used to inform on fishing, general safety, historic areas, ecology, and wastewater treatment areas.

Recreation

Provide a variety of activities on the river that are regularly accessible and available to all members of the public, and develop these activity centers into revenue generators. Use the section from the Easley Mill site to College Station Road bridge as a demonstration area. With County and University cooperation, the parking lots at these sites could be used to provide boat rentals – either by Athens-Clarke County or UGA’s Georgia Outdoor Recreation Program (GORP) – and transit to and from launch/take-out points. A later development phase would include College Station bridge to Whitehall Road bridge. Facilities should be developed with ecologically-conscious and sensitively-designed buildings.

Policy

Develop policies to increase river accessibility for all with the least amount of impact on surrounding private and public habitats. Considerations include the homeless population’s river encampments, private land use/water ownership, general buffoonery associated with day paddlers, and safety legalities.

4.1 Logical Lasting Launches

The National Park Service publication *Logical Lasting Launches (2004)* offers guidance for the most accessible canoe and kayak launch designs for any given stream bank condition. These guidelines were used when determining launch designs for the proposed Blueway sites. (See Appendices for more details).

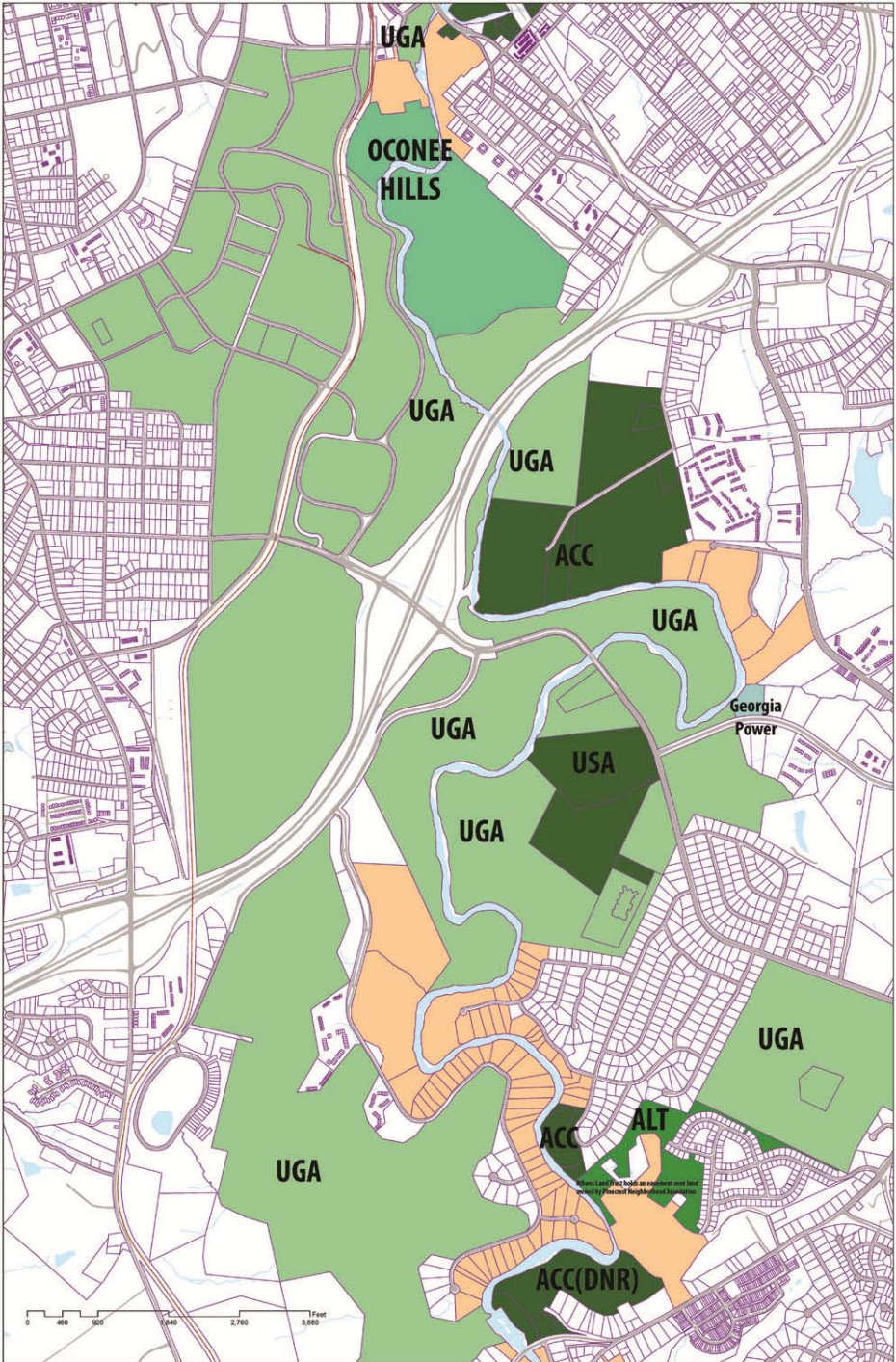
The boat launches and associated Greenway facilities (parking, restrooms, trails, etc.) are designed to be low impact, cost effective, and environmentally friendly and aesthetically pleasing. Public boat launch design goals accommodate all populations as provided for in the Americans with Disabilities Act (ADA).

Access is preferable in areas that have:

- Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
- No physical barriers, such as impassable sections, dams, or weirs
- Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas
- Water levels enabling year-round use, and good water quality
- Little lateral movement that could erode the riverbank
- Visibility from both river and shore, allowing paddlers to locate the launch site easily

The North Oconee River in Athens Georgia fits all of these criteria, and the proposed launches are all in ideal locations in relation to the nature of the river at each site. There are no dams, wiers, or other impassible barriers and there is no motorized boat traffic. The waters of the North Oconee are clean and floatable in normal conditions, generally year round. Each site can be very easily seen from shore.

Ownership along the North Oconee River



- UGA University of Georgia
- ACC Government
- USA Government
- ALT Government
- ACC(DNR) Government
- Oconee Hill Cemetery
- Private/Residential

5.0 Sites

The six-mile section of the North Oconee River explored during the charrette – from the Easley Mill site to Whitehall Road – represents a section of river with minimal private ownership and a majority of governmental/University ownership. (*Figure 1*) Thus, there is a ripe opportunity to provide public access with collaboration between the Athens-Clarke County Greenway program and the UGA Office of University Architects and their campus planners. Both entities were key participants during the charrette.

Of the sites discussed below (*Figure 2*), the Easley Mill and Whitehall Mill sites are on land already identified by the County for future Greenway use, and Lilly Branch has been identified by the University for stormwater mitigation and native plant restoration efforts. A fourth site at University-owned Horseshoe Bend is suggested to provide intermediate access at a midway point between the county-owned sites, either as an alternative to or in addition to a Lilly Branch site.

The following sections discuss design goals and concepts for each site, informed by the charrette’s Guiding Principles and the five focus groups’ missions and objectives.



1. Easley Mill

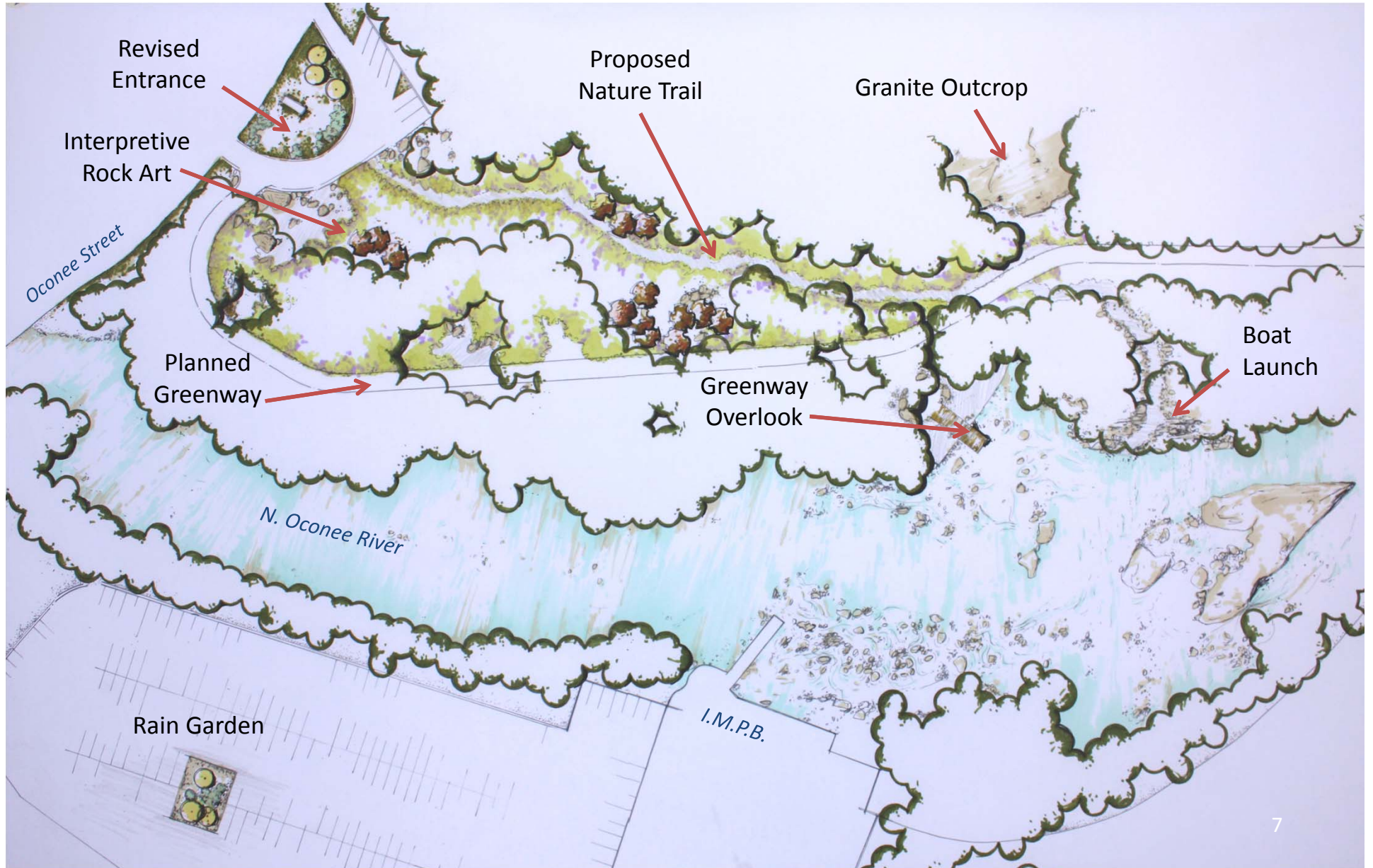
2. Lilly Branch

3. Horseshoe Bend

4. Whitehall

Project Sites

Easley Mill –Site Plan



5.1 Easley Mill

Easley Mill is the starting point of this 6-mile blueway. It is also the birthplace of Athens, and the granite outcrop is a unique resource in the Southern Piedmont. The site is located across the Middle Oconee River from the UGA Interim Medical Partnership Building and is accessible from Oconee Street. *(Figure 3)* The goal is to make the river accessible for passive recreation while promoting environmental best management practices. The team came up with strong ideas for the entrance, the path to the river, and the put-in site.

At the entrance, better define the site by placing an informational sign to mark the trailhead, provide a map, as well as safety and liability disclosure information. Using natural boulders, for example, to mark the entrance is a creative way to mark the beginning of the Blueway. Utilizing the existing pull-through loop and parking infrastructure keeps a “light touch” in this area and accommodates the majority of people being dropped off at this point. (Most users will leave their cars parked at a pullout spot to easily head home after paddling.) A planting design using boulders would deter parking on grass areas. Boulders could also serve as informational signage. No lighting is to be included in the plan, and the access would close at sunset.

A hard clay path and native Georgia wildflowers should incorporate granite boulders, and large openings should be filled

with native plantings to define the path.

The location of the proposed launch is on the slow inside bend of the river, composed of natural sediment and rock held in place by native and invasive plants. This area is naturally durable by composition and location. The site is not as subject to fluctuations in water level due to a wide streambed and shoals. The ruins of the dam, located just upstream, serve as a water control mechanism which regulates abrupt changes in water level to some extent. Launching boats will likely require wading and sliding in during different water levels. *(Figure 4)*

Keep a minimalist approach by working with existing topography to establish a sloping entrance and stairs. The material should be natural stone to blend its appearance with the surrounding. The proposed launch would be visible from the overlook on top of the Easley Mill dam ruins (scheduled to be constructed as part of the Greenway extension). *(Figure 5)*

Access by public or private users should be limited seasonally, hourly and daily. Retailing opportunities should be limited to protect the Greenway’s natural character. Users should be encouraged to head downtown for amenities (like food, shopping, etc.) Bike racks should be included and possibly on-site kayak/canoe storage.

History and Importance of the Easley Mill Site

In 1783, The University of Georgia was given a land charter to be a statewide “college or seminary for learning (Dyer, 2). After unsuccessfully searching for lands and not having the funding from the state to get the University started, the idea of creating a campus was put to rest for some time. In 1801, the *Senatus Academicus* – created to bring the government and educators together on a board in managing the university – consisted of Mr. Baldwin, Georgia Governor John Milledge, George Walton, John Twiggs, and Hugh Lawson (Gull, 15). They chose the current location for the University because “[the] land was hilly and the streams clear and swift. Here at the last tavern, on the edge of all white habitation, they began the intensive search for the inevitable hill from which knowledge should go out to the people. After debating various eminences, they agreed upon a small plateau high above the Oconee River where it swirled down over some rocks near a clump of cedar trees” (Dyer, 7).

The site the men chose was owned by Mr. Daniel Easley, with the habited area being along the Middle Oconee River. Easley was of the first settlers to come to the Oconee area and recognize its value. He purchased one thousand acres along the Oconee River when he came to the area and constructed a mill run by water to produce cornmeal, flour, and sawed wood (Dyer, 7). A great businessman, Easley convinced Governor John Milledge and the rest of these men that the land was “indispensable,” and to then buy 633 acres of his land to

create the campus. He believed the land to be of value because of the slope up and away from the Oconee River, and he envisioned the plateau at the top to be the university campus (Dyer, 7). Milledge purchased the acreage and he then donated to the state for the University of Georgia campus. Easley later sold off the rest of his property in the area from the river to Town Spring in various parcels but kept his mill site and his toll bridge (Gull, 17). During the years of 1803-1810, the town of Athens was flourishing (Gull, 20). Wood produced from Easley’s mill was being used to construct the buildings on campus and downtown, including the president’s house and the frame schoolroom (Gull, 37).

The history of the Easley Mill and its role in siting the University of Georgia is not commonly known or recognized at its location, as it should be. Unfortunately, private developers have purchased the land for constructing an apartment building and plan to build a parking lot on the large granite outcropping that provides one of the most scenic spots in Athens. It is our hope that the site will undergo minimal disturbance, and that recreational uses can bring a new appreciation for this site’s rich history and natural beauty.

Sources: Dyer, Thomas; College Life in the South; Gull, Henry; Annals of Athens; Hynds, Ernest; Antebellum Athens and Clarke County Georgia; Timeline History of Athens-Clarke County: <http://www.athensclarkecounty.com/index.aspx?NID=115>; accessed March 2012.

Easley Mill – On the river below the dam



Easley Mill

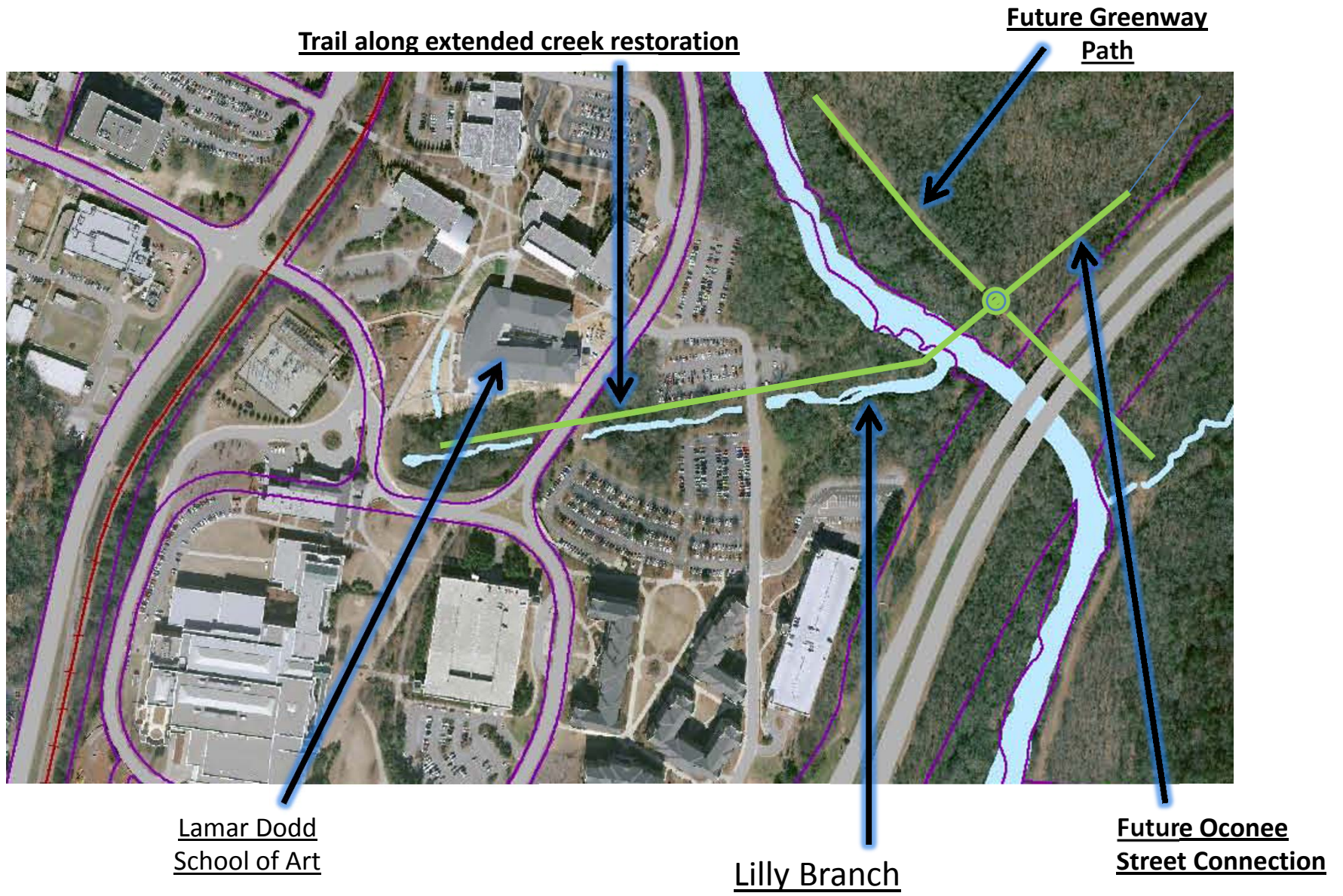


Example: inexpensive boat storage rack



Easy access boat launch

Lilly Branch – East Campus Connection to Greenway Network



5.2 Lilly Branch

Lilly Branch connects to the North Oconee River on UGA property, adjacent to a large parking lot near the Lamar Dodd School of Art on south campus. *(Figure 6)* Across the river is the easement for the extension of the Athens-Clarke County Greenway. This site was chosen for a boat launch for its proximity to the Greenway, existing logistical conveniences – a flat rock outcropping at the river’s edge, an existing path, and a large parking lot – and the ease of access for the UGA community. *(Figure 7)*

The section of the parking lot nearest the river is ideal for a canoe drop-off location because it provides close access to the river and is convenient to additional parking in the East Campus Deck. This would also be a good spot for the UGA Georgia Outdoor Recreation Program (GORP) to use as a launch, since it is close to the Ramsey Center. While this section of the parking lot is currently the UGA impound lot, this function could be relocated elsewhere.

On the opposite side of the Oconee River, the Greenway trail network will have a northern trail extension that converges with the trail that runs alongside the river, directly across from Lilly Branch. These routes could culminate in a traffic “roundabout” to ease the convergence of cyclists and pedestrians. *(Figure 8)* The center of the roundabout should be low enough for emergency vehicles to drive over it, but high enough to deter the average bike rider from riding overtop of it.

A bridge across the river would link the Greenway to the UGA campus and the boat launch. Its location poses a unique possibility to form a collaboration between the College of Environment and Design, the College of Engineering and the Lamar Dodd School of Art to design a bridge that supports traffic volumes but does not visually detract from the river. One example is the Liberty Bridge in Falls Park, along the Reedy River in Greenville, SC. *(Figure 9)* The route to the river and the bridge need to be at least 12 feet wide for emergency vehicles. To direct the flow of converging cyclists and joggers, the bridge should be striped – four feet per bike lane (two lanes: inbound and outbound) and then the remaining space is for runners and pedestrians.

Once on UGA property, the path should have minimal impact on the surrounding environment – protecting/restoring native plants, following the contour lines, using permeable surfaces for the paths. At the end of the bridge, a main pathway could be created from the bridge to a bike-parking shed, constructed to facilitate alternative transportation options. This area could also include bathroom facilities and space for a canoe drop off. Using fixed pavers on the path that allows plants to grow in between would make it useable for cyclists and pedestrians alike.

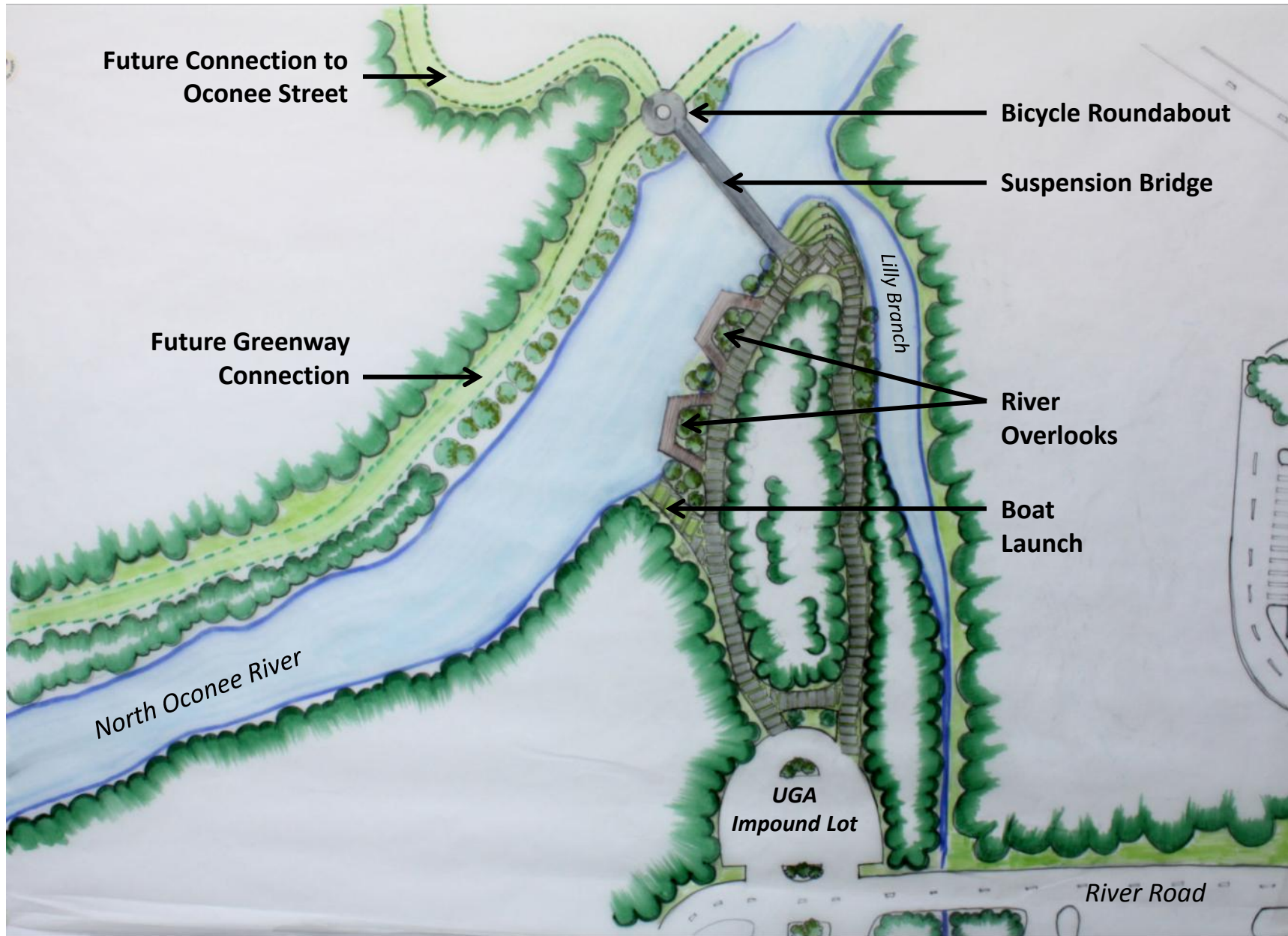
On the opposite side of the bridge from the boat launch, an art walk could be installed to provide an overlook at the river and a

connection to the nearby art department. Cantilevered decks made of steel grates give it a more permeable feel by providing unobstructed views of the river bank below. Cut-outs preserve some of the larger trees for shade in the summer and habitat for animals. Along with the cantilevered deck, a stairway down to the water – or perhaps another small, cantilevered deck – on the rounded part of the confluence between Lilly Branch and the Oconee River would provide an opportunity for people to stop and enjoy the view.

The future Greenway trail might be connected to a larger creek restoration trail – an extension of the one outside of the Lamar Dodd School of Art. If UGA would be willing to connect that path with the one coming off the trail across the river, the entire Lilly Branch could work as a unified landscape for travel.

Finally, in order to connect alternative commuters to the UGA campus, Campus Transit could initiate a bus line along River Road to pick up students at the intersection of the parking lot and River Road. This would help students get to North Campus and beyond. (On UGA football game days, the busses take a similar route, so there is a precedent for this.)

Lilly Branch – Site plan



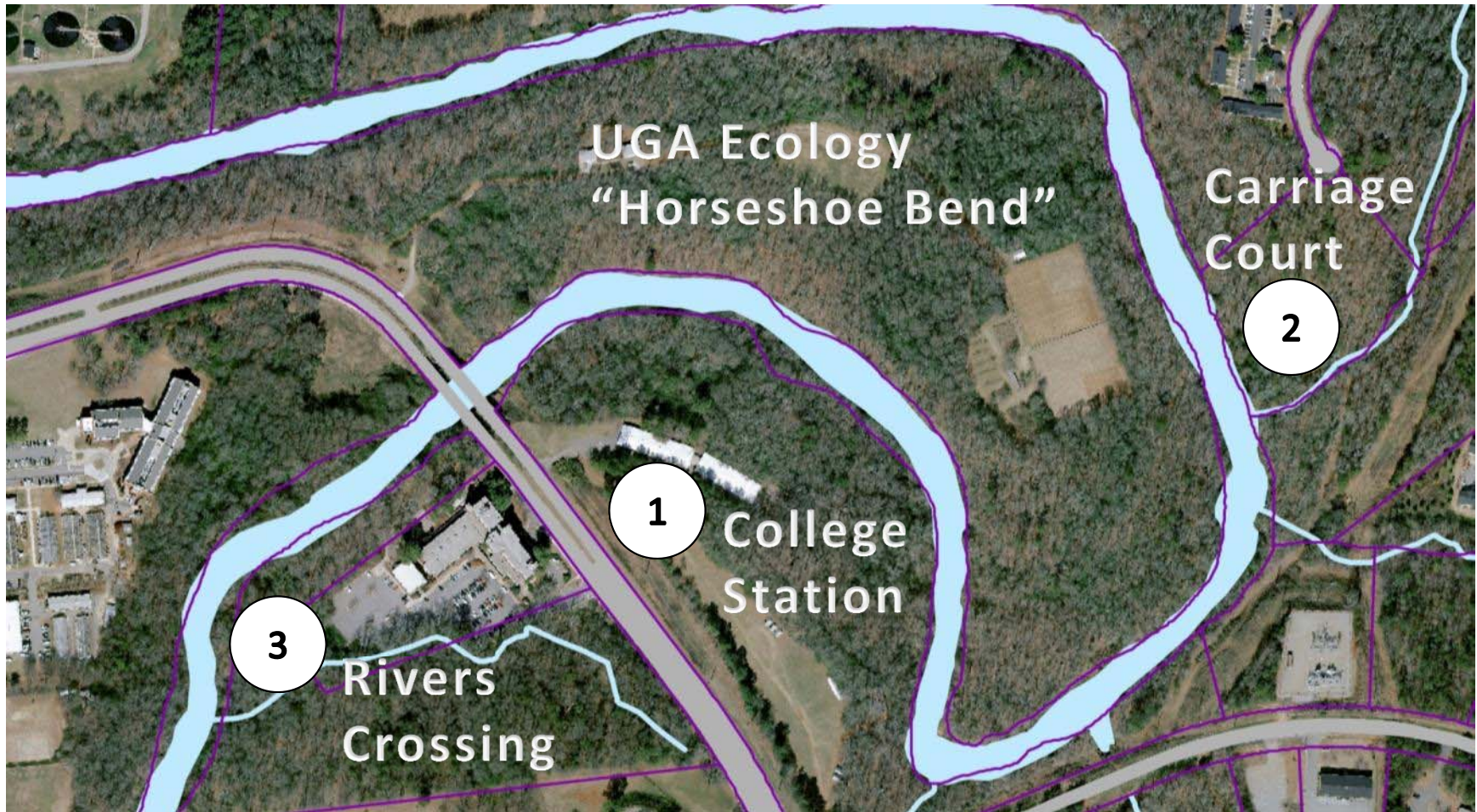


Example: Bicycle Roundabout

Example: Suspension Bridge
(Falls Park, Greenville SC)



Horseshoe Bend – Three site alternatives



5.3 Horseshoe Bend

The Horseshoe Bend area is a 35-acre section of land in a large, looped bend of the North Oconee River off College Station Road. This land is the UGA Odum School of Ecology's Horseshoe Bend Ecology Experimental Research Site. This section of the river presents an opportunity for a launch or a resting spot at the mid-point of the 6-mile Blueway, either in addition to or instead of the Lilly Branch access point.

With the exception of a small parking lot the site is currently completely undeveloped. The North Oconee River wraps the site on three sides, and College Station Road forms a barrier on the fourth side. (*Figure 10*) Although the University conducts research on soils and crops at this location, the site is primarily wildlife habitat. The topography profile allows for excellent views of Horseshoe Bend. Directly across College Station Road from the parcel is the University of Georgia's River's Crossing building. This building houses the Osher Lifelong Learning Institute, a childhood research area, and the Educational Technology Center.

Three sites were considered for their potential to accomplish the following objectives: provide a mid-Blueway boat launch/takeout-point/rest area for boaters; provide passive user access to the Blueway, including the potential for walking, picnicking, visual observation of the river, and education; and connect the Greenway and the Blueway. Each of the suggested three sites should be considered individually as alternatives – it is not

desirable to develop all three sites as proposed. For example, boat launches are considered for both the Carriage Court site and the River's Crossing site, but no more than one boat launch is needed within in the Horseshoe Bend section of the river.

Of the three sites within the Horseshoe Bend area, the College Station Road site has the most potential as a boat launch area. The boat launch and parking area aspect of the College Station Road site plan can be carried out independently of the other components if necessary. A boat launch and small parking area here would be compatible with potential future uses that the Physical Plant might have for the site. Passive user access within the site plan includes a walking trail, nature center, and bird observation tower. Educational opportunities at this site could focus on birds, for example. There is also the potential for collaboration with the UGA College of Veterinary Medicine to create an injured bird rehabilitation facility at the site. The current Greenway plan proposes a multi-use trail along Research Drive, ending at College Station Road. This plan proposes an extension of the Greenway trail into the College Station Road site, with a potential connection under College Station Road to the River's Crossing property.

Carriage Court is the least suitable site within the Horseshoe Bend area for a boat launch due to topography, accessibility, and context. No boat launch option is included in the proposal for this

site. Passive user access within the site plan includes a walking trail, stream observation platform, a tree platform, and a natural play area. The educational focus of this site is nature and low-impact development. There is high potential at this site for recreational opportunities for local residents and environmental stewardship. The current Greenway plans include a multi-use trail connection with Barnett Shoals Road that passes through or near the Carriage Court site, making the Blueway visible to Greenway users at this location.

The River's Crossing site is suitable for a boat launch; however, the rest of the site plan could be implemented independently of a possible boat launch. In other words, if the College Station Road

site is chosen as the boat launch location, the River's Crossing site could still be developed for passive Blueway visitors. An existing (but currently overgrown) trail at the River's Crossing site could be restored to provide pedestrian access along the river's edge. The River's Crossing plan includes the potential for interpretive signs. It also includes a sensory garden that would serve both visitors and the building's current users. Seating and observation platforms provide picnicking and stream observation opportunities. Composting toilets are included in the site design. The existing trail can be restored and connected to the Greenway by passing beneath College Station Road; however, this would be an unpaved pedestrian pathway only, not a multi-use trail.

5.3.1 College Station

A small parcel of land owned by UGA and adjacent to the College Station Road bridge could accomplish goals of both the Blueway and Greenway systems in Athens. The buildings on the site have been recently demolished, leaving empty paved foundations. The University Architect's office has no current plans for the site, and UGA Physical Plant's plans for the site are unknown. A power line easement runs through the site. With minimal development the site could function as a boat launch for the Blueway network. (Figures 11 and 12) However, with a more ambitious approach to development, the site could function as an important entrance to the Greenway network from the east side of Athens, providing a

serene natural environment in a highly urbanized area. This concept considers the development of the site in phases, starting with minimal development and leading into an ambitious and visionary long-term plan.

In Phase One (*Figure 13*), this site could easily function as a boat launch by using the current parking lot and creating a small path leading to the river. There is an informal trail already existing along a power easement leading to the river. The slope of the hill is gradual for easy pedestrian access. Some erosion has occurred on this path to the river, requiring environmental remediation

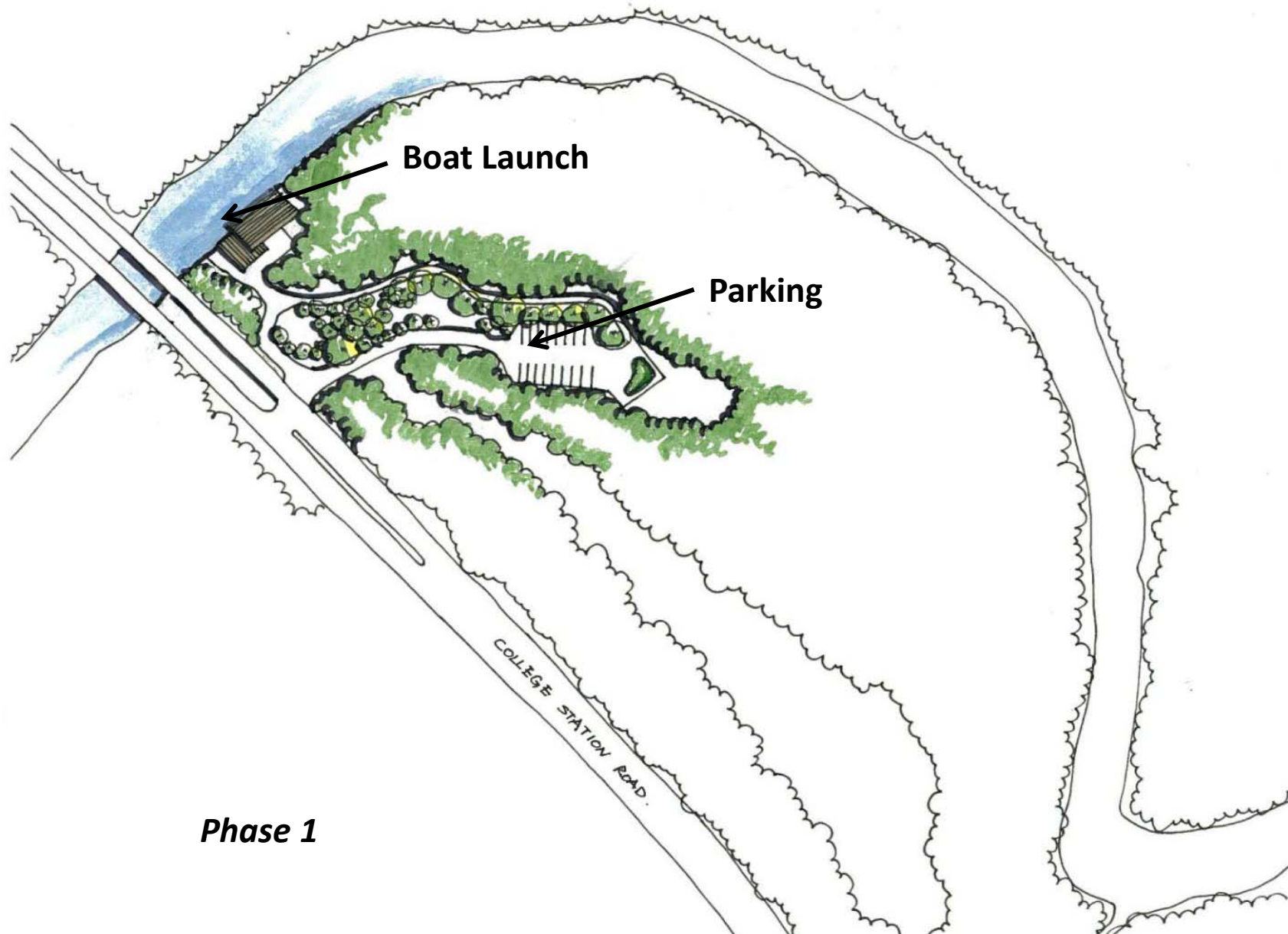
College Station Road, existing conditions



College Station Road, proposed conditions

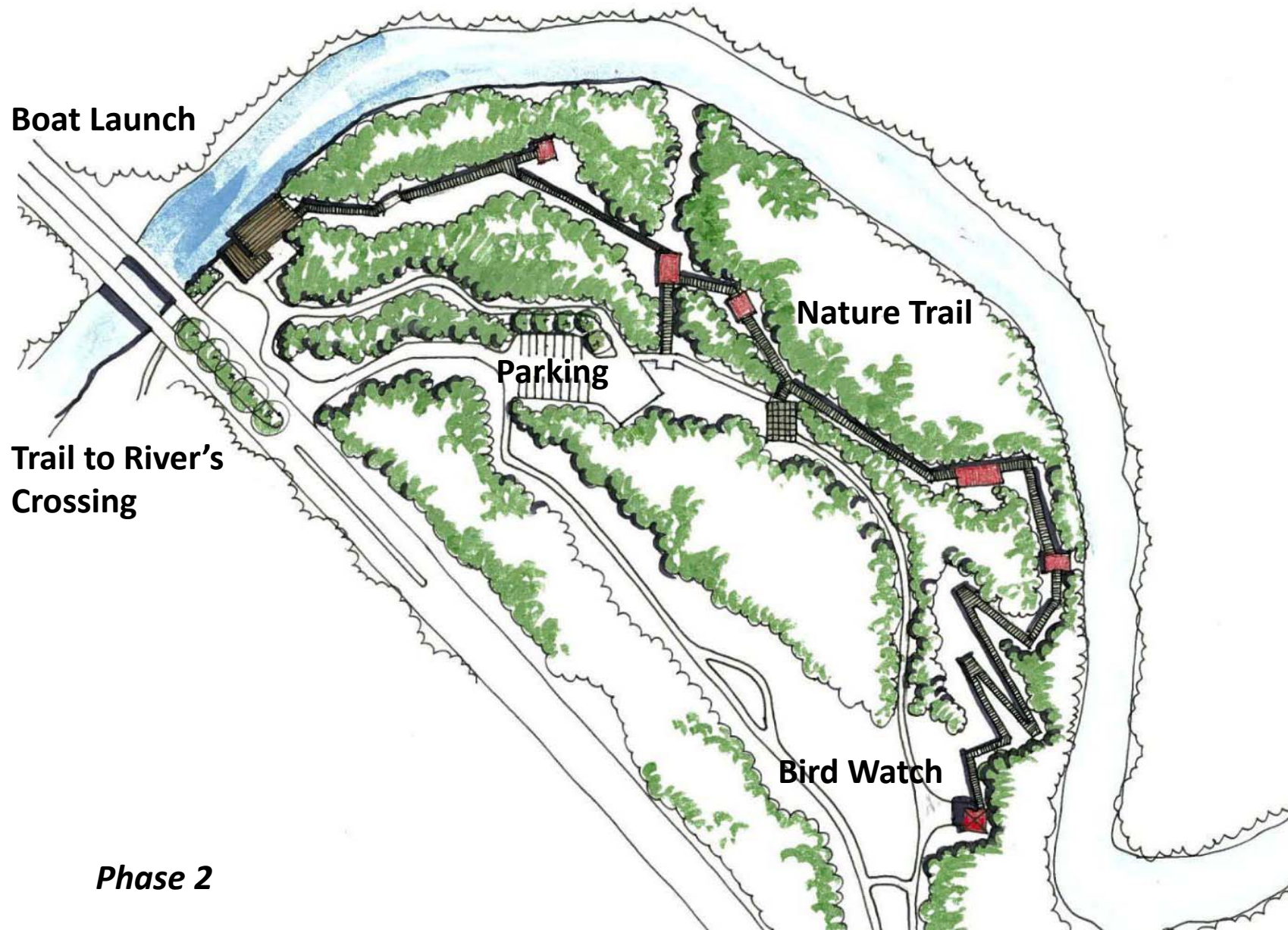


College Station Road – Phase 1

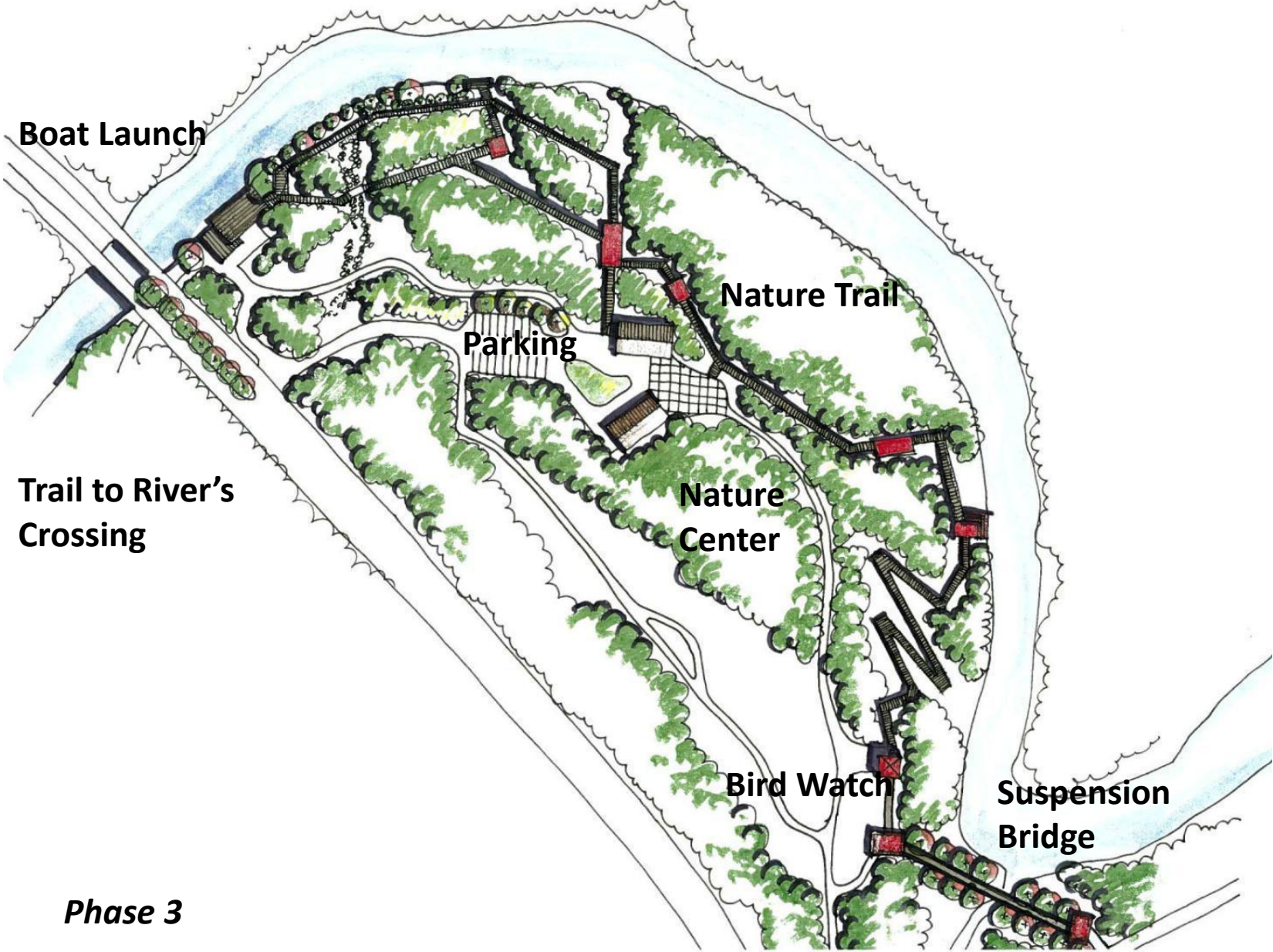


Phase 1

College Station Road – Phase 2



College Station Road – Phase 3



during the construction process.

Phase Two (*Figure 14*) could connect the site with the proposed Greenway network in three locations, and complement the Greenway Network with a stand-alone urban nature walk. The nature walk is a trail along the bend of the river that provides Athenians with an unparalleled view of the natural environment. The walk would follow the river, with the topography providing a natural buffer between the road noise and the sound of the river. Several small decks would provide visitors with a pleasant overlook of the North Oconee and the Ecology land across the river. The site could connect to the future Greenway in three locations: along College Station Road to the water treatment area greenway entrance; along Research Road to the Horseshoe Bend greenway location; and under the College Station Road bridge to

the Rivers Crossing Building and the future greenway continuing along the river.

Phase Three (*Figure 15*) could incorporate a Nature Center on the site and numerous trails. Several programs have been considered for a Nature Center: Avian Rehabilitation Center; an urban extension of Sandy Creek Nature Center; and a Clarke County historical and environmental education center. The additional trails could provide a walk directly along the bank of the river, and several small docks could provide places for visitors to interact directly with the water. A bird observation tower could also be included. There would also be a large suspension bridge on the southeast corner of the site bridging a large gap between the site and Research Road.

5.3.2 Carriage Court

The Carriage Court site is a privately-owned, wooded, undeveloped parcel adjacent to the intersection of Carr’s Creek and the North Oconee River. This site can serve as a demonstration of low-impact development. There are many possible connections to other Blueway/Greenway access locations at Horseshoe Bend. (*Figure 16*)

The Carriage Court parcel is currently vacant and close to private residences. The planned Greenway passes through this site along

the flood line and sewer right-of-way. The site is very littered. Left unattended and vacant as it is, this area detracts from the Greenway. Enhancing the site and including features that respond to community desires can promote good relations with the neighbors and reduce vagrants and litter.

As for the potential connections, the Carriage Court site is across the river from Horseshoe Bend where access to the site is heavily restricted. Because of its proximity and visual connection to this

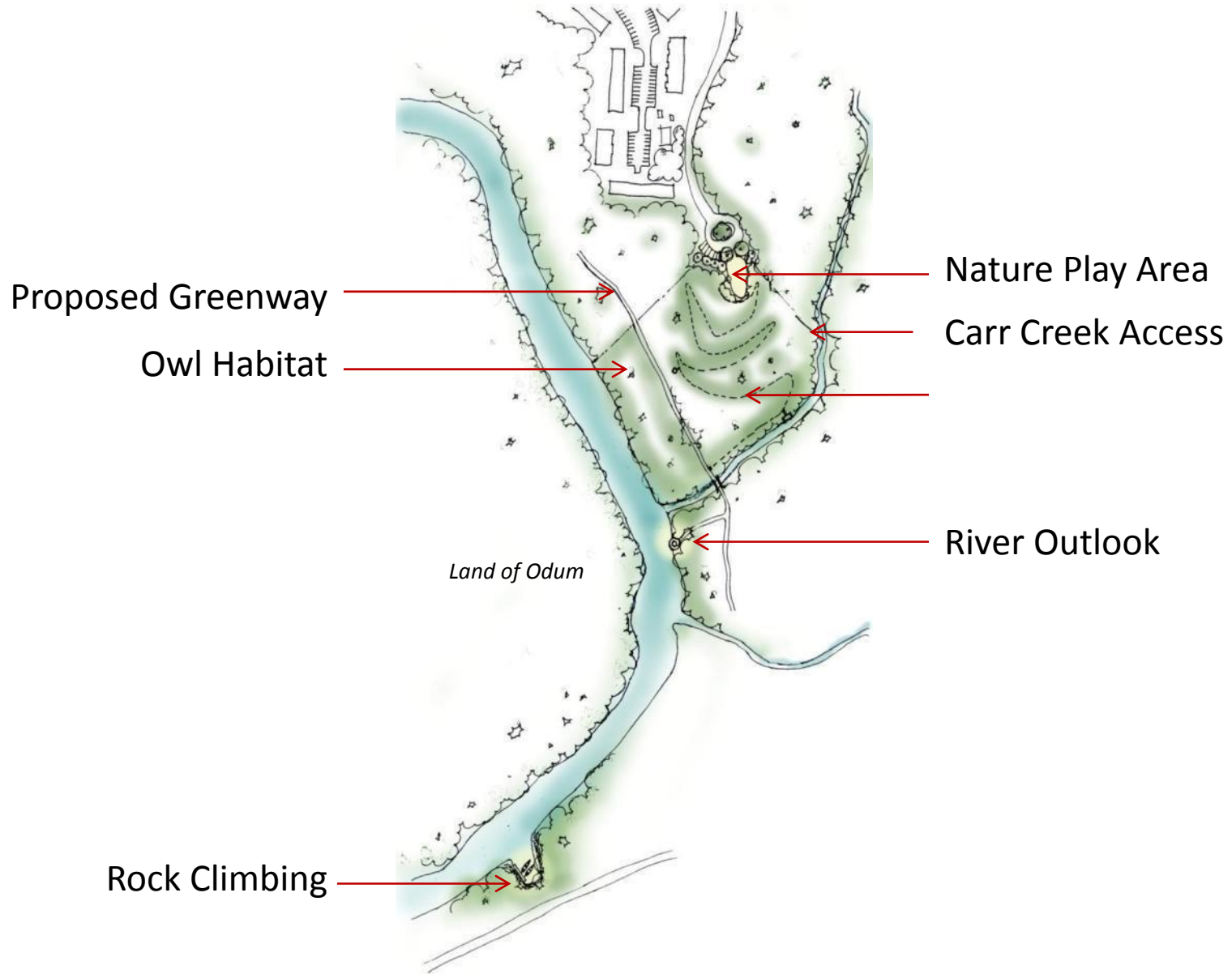
virtually undisturbed section of land, the Carriage Court site provides an opportunity to make the public more aware of the research that takes place there. Primary users of the site would be passive recreation visitors, Greenway users, and local residents. A children’s natural playground located adjacent to the existing cul-de-sac could provide creative recreational opportunities for local residents and visitors. *(Figure 17)*

Additional development might call for habitat for owls and other birds (nest boxes, etc.) is included on the strip between the Greenway and Blueway. A dirt-packed trail running from the nature play area to the woods to Carr’s Creek could connect with

the Greenway trail. A river outlook station is located on the curve of the river, accessible from the Greenway trail. An overlook platform encircling a tree could be constructed near the steep bank. *(Figure 18)*

Considering all of the potential Horseshoe Bend area Blueway connections, the Carriage Court site is less compatible with a boat launch than the other two sites, due to its slope and site accessibility; however, it promises a good connection between the Greenway and Blueway, as the existing Greenway plan includes the Carriage Court site.

Carriage Court - Plan



Carriage Court – Natural Play Equipment

Nature Play workshop at the Reedy Creek Nature Center in Charlotte, NC



Carriage Court - Overlook



5.3.3 River's Crossing

This site is adjacent to the bridge on College Station Road, and directly across from the College Station Road site presented in the previous section. Owned by UGA, the River's Crossing building on the site is part of the College of Education. Existing uses include a technology center, an adult learning center, and a small child care operation. The River's Crossing site could provide an opportunity for enhanced access to river views, with or without a boat launch. However, the functions of the existing River's Crossing facility and the safety and comfort of its current users require all proposed activities and structures at the River's Crossing site would need to be low impact and unobtrusive.

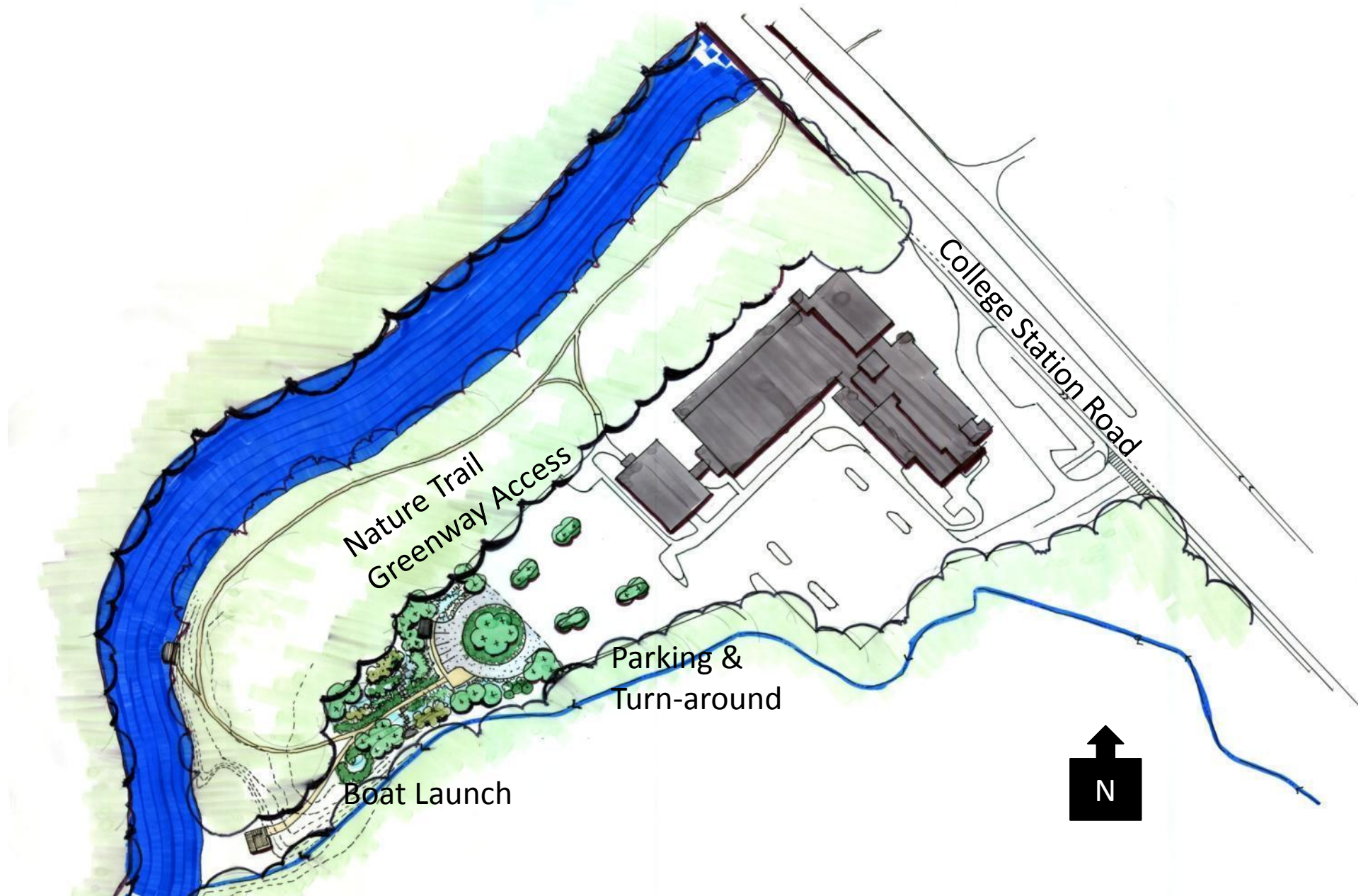
The river runs beside and behind the River's Crossing building but access is limited by a tall chain link fence. A small rear section allows people to pass through, and there is a well-worn path and seating. The bend in the river here highlights a particularly

picturesque section of the river that could accommodate visitors as well as people using the River's Crossing facility. *(Figure 19)*

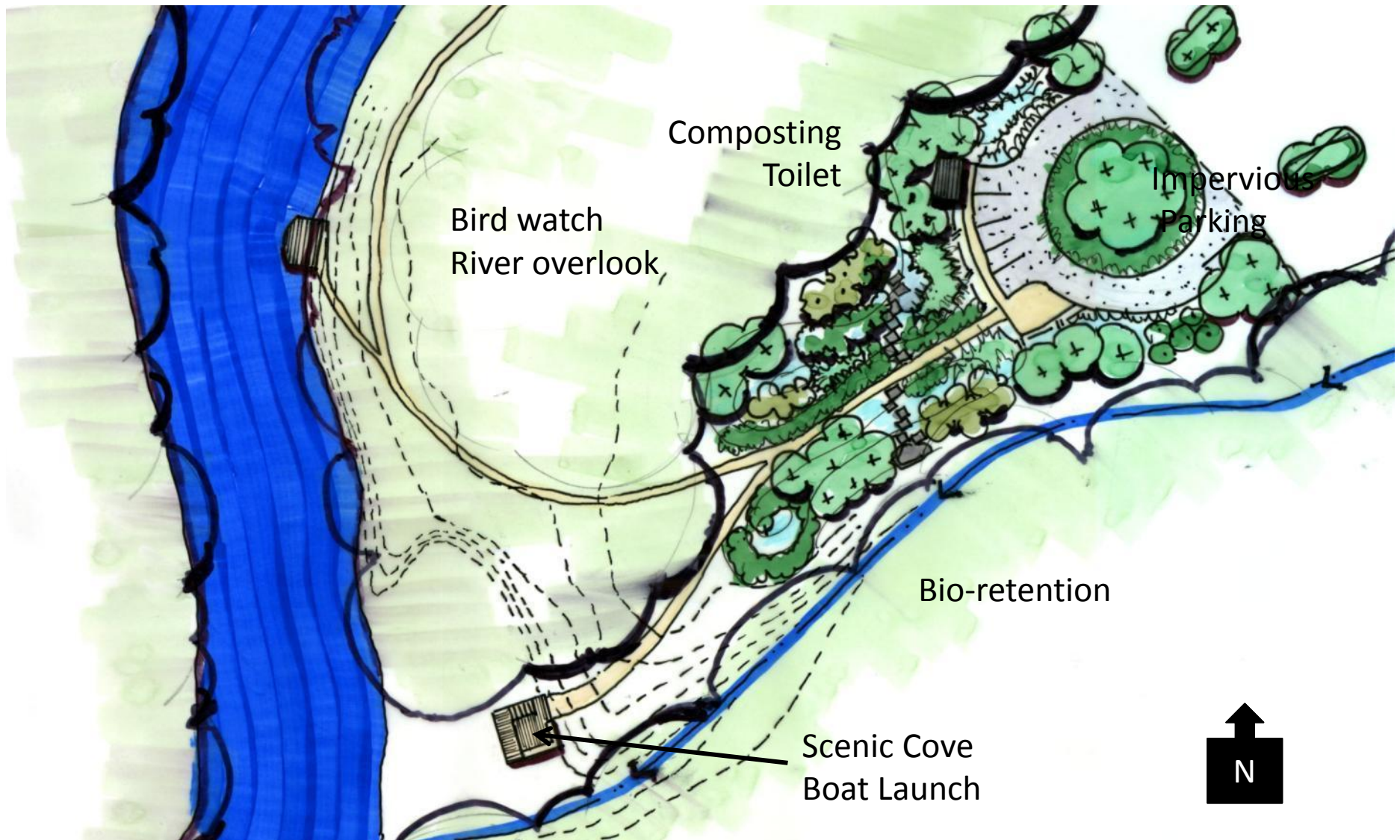
The site has a large parking lot that could accommodate boat trailer parking and a launch site. Special lanes and spaces could direct recreational users to the Blueway parking area without entering the main body of the parking lot. A turn-around space (30 ft turning radius) could be added to the lower end of parking lot. A small number of parking spaces at the back row of the parking lot could be designated for Blueway users. *(Figures 20 & 21)*

When new development occurs, an opportunity to add bioretention to accommodate runoff from new surfaces should always be considered.

River's Crossing - Plan



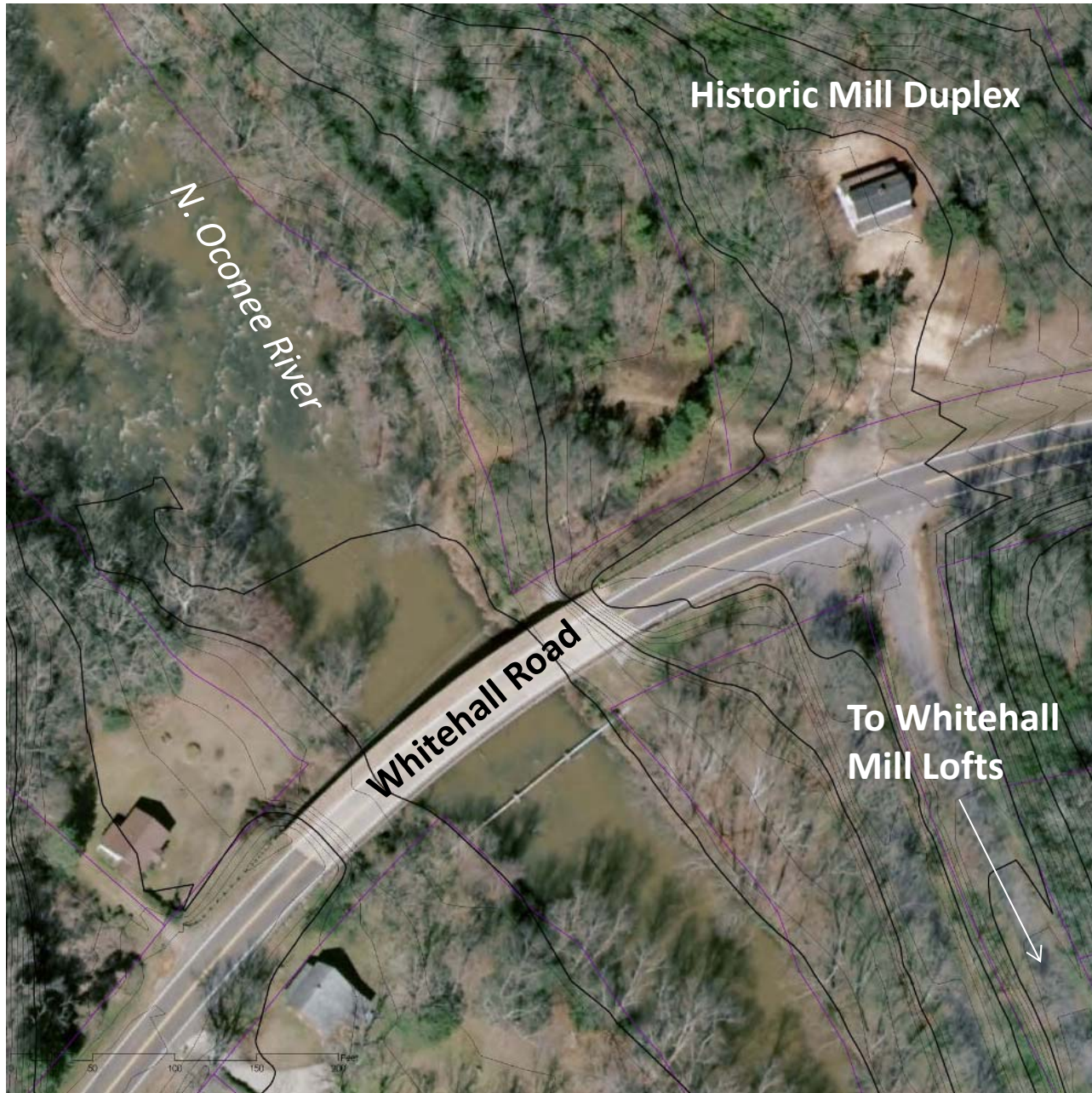
River's Crossing – Plan Detail



River's Crossing – Boat Launch



Whitehall – Site Aerial



5.4 Whitehall Mill

The terminus of the proposed Blueway is at the intersection of the North Oconee River and Whitehall Road, near the restored Whitehall Mill lofts. Across the road from the lofts sits a vacant, historic early 20th century duplex once associated with the mill village surrounding it. It is on a picturesque, flat section of the river that has been held by the County for future Greenway development. The large overgrown parcel along the river on which this house sits contains the ruins of the former mill's head- and tail-race, which directed the flow of water used for power. *(Figure 22)*

This site is ideal for a trail-end (and possible future trail-head) for the Greenway/Blueway. There are easily accessible areas for gathering, fishing, alternative trail routes, wildlife observation, and opportunities for education/interpretation. The historic house is in good condition and could be rehabilitated for a new use. The site is already used for fishing with well-worn walking trails. An enhanced of paths could accommodate recreational users. *(Figure 23)*

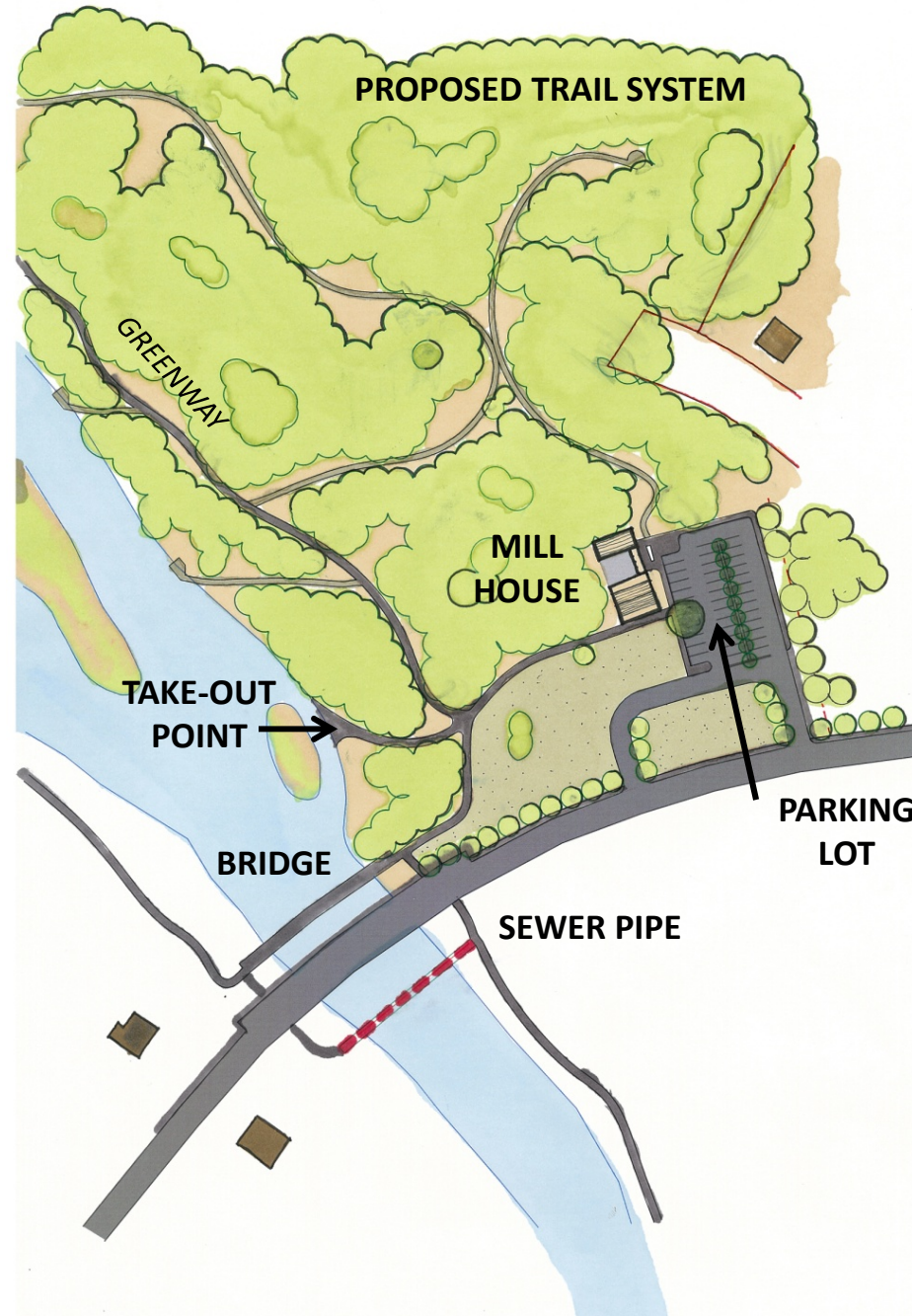
On the slow inside bend of the river, which is composed of natural sediment and rock held by native and invasive plants, the flat land provides an ideal take-out for paddlers. There is a wide

streambed and shoals where proposed launch is located. The takeout area is low, flat and easily accessible from the mill house with spaces for parking.

The existing structure likely provided housing for workers at Whitehall Mill. *(Figure 24)* It has been weatherproofed and regularly painted. It is a contextual, adaptable space that should be rehabilitated into functional space for Greenway purposes, such as offices, an informational and interpretive center, and/or event space. However, at only two rooms wide and one room deep with an identical floor plan upstairs, an addition is needed to accommodate more intensive uses. Constructing a smaller, contemporary-yet-compatible addition at the rear of the property, joined by a glass connection and open deck, could provide additional programming space as well as a second entrance and restroom facilities for visitors. *(Figure 25)*

This collection of mill-related historic resources provides an excellent educational opportunity to connect Athens-Clarke County to its industrial heritage. Interpretive programs connecting the Greenway from the Easley Mill site down to the Whitehall Mill area gives the entire North Oconee River Blueway a clearly defined, teachable context.

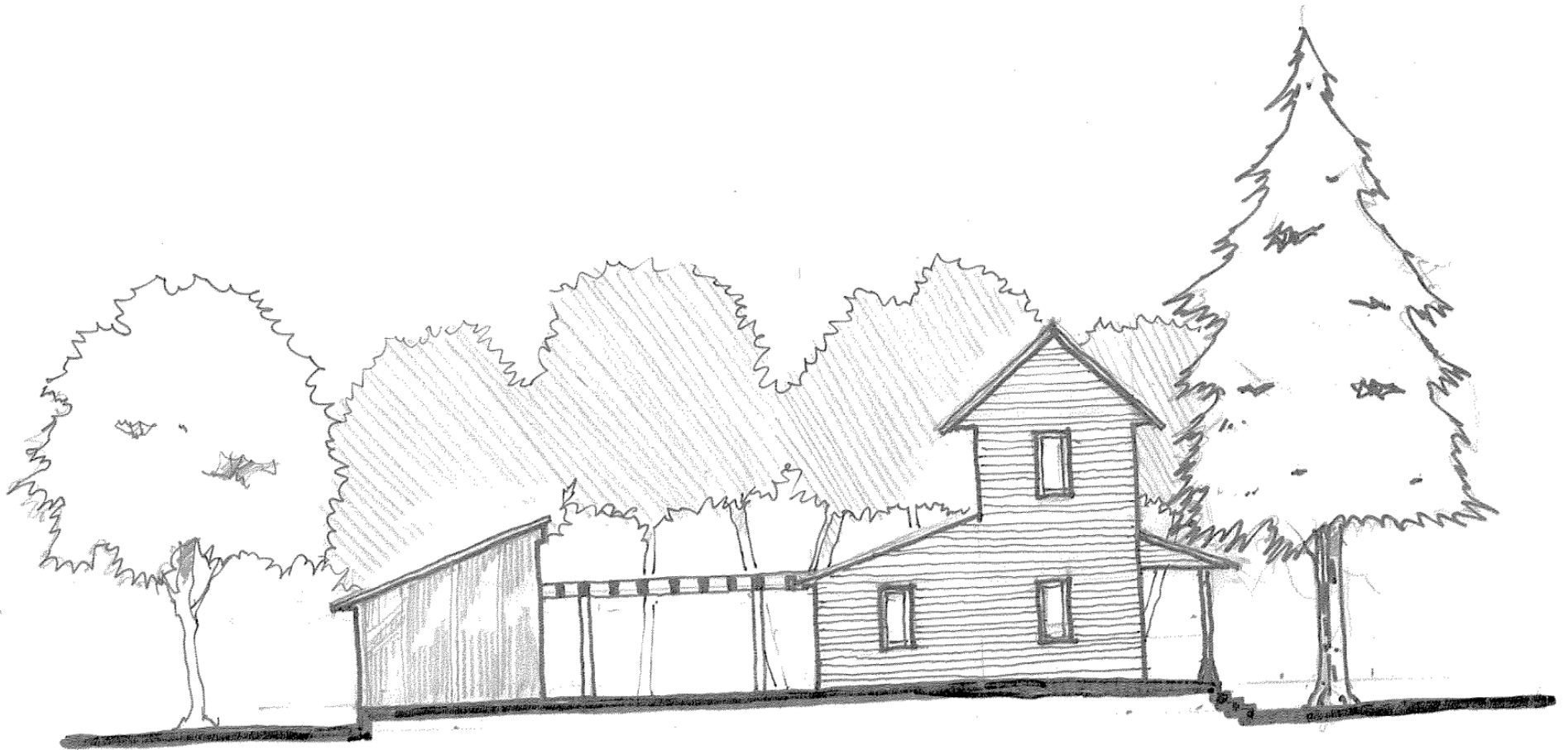
Whitehall – Site Plan



Whitehall – Historic mill house



Whitehall – Historic mill house with new rear addition



6.0 Conclusion

The North Oconee River Blueway vision encourages ecological conservation, promotes historic preservation, and informs future land use decisions in the green and historic corridor that runs through the city. By addressing conservation, recreation and education, the charrette process has offered concepts, direction and guidance for making the North Oconee River more accessible and enjoyable by the public, while also fostering responsibility for a valued natural resource.

Student participants had this to say about their experience:

“I just shared the experience with few of my friends and all of them were surprised to know about the river which is so beautiful and also very close to UGA.”

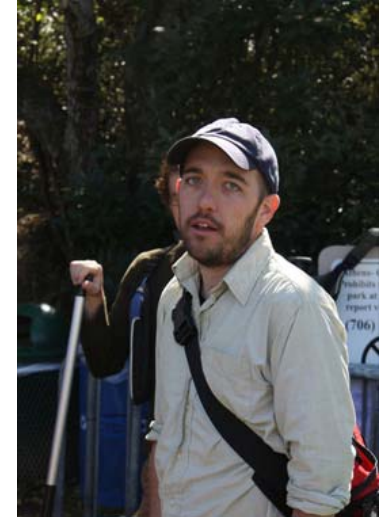
“I was able to see how the city connects, or, rather disconnects, to this river.”

“The river's condition was better than I thought. Since it runs through campus, I figured it would be dirtier. After the trip I feel that it has so much potential.”

“Now I have an actual experience with the river, and though I’m not a hard core paddler (yet!) the trip allowed me a front-row seat to the potential site development and the challenges that development might create.”

“Being out there on the water always changes the tint of conversations because you've got the actual place in front of you while you're talking. And in reality, by creating better public access, we'd be making better circumstances for those kinds of conversations to happen for anybody in the future.”

It is our hope that these sentiments and similar experiences are available to many more Athenians as paddling the Blueway becomes a more common experience.





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Appendix A: North Oconee River Blueway Planning: Proposed Canoe Trail Put-in

Site specific assessments based on National Park Service (NPS) guidelines: *Logical Lasting Launches*, National Park Service, 2004

Preface: The Bookends, Easley's Mill and Whitehall Mill

Per the North Oconee Greenway Charrette, there have been several sites identified as potential Athens North Oconee Greenway associated canoe and kayak launches. All potential sites in the proposal will be reviewed, though the most advantageous sites have been identified in order of priority therein. This examination acts as a mechanism to ethically fulfill the vision of the Charrette to establish an accessible and sensible canoe trail in Athens, Georgia, on the North Oconee River. Essentially, the start and finish points of the proposed canoe trail will be reviewed first, and some attention paid to the rest later.

The purpose of this assessment is to make an informed review of the ways in which these launch site specific designs were made using best-known practices and based on research and historical success of existing river access points (NPS), with low economic and ecological impacts in mind. The boat launches and associated Greenway facilities (parking, restrooms, trails) are designed to be low impact, cost effective, and environmentally friendly and aesthetically pleasing. With these goals in mind, the canoe launch design principals are as accommodating and as Americans with Disabilities Act (ADA) compliant as is possible for each site. Those launch site designs not immediately compliant or ideal

may be re-designed with accessibility in mind while following the principals of the original design, keeping all other factors in mind like ecological impacts, cost, etc.

Considerations for design, location, and type of water body, per the National Park Service (NPS). See Appendix B.

General recommendations from NPS: Access is preferable in areas that have:

- Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
- No physical barriers, such as impassable sections, dams, or weirs
- Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas
- Water levels enabling year-round use, good water quality
- Little lateral movement that could erode the riverbank
- Visibility from both river and shore, allowing paddlers to locate the launch site easily

The North Oconee River in Athens Georgia fits all of these criteria, and the proposed launches are all in ideal locations in relation to the nature of the river at each site. There are no dams, wiers, or other impassible barriers and there is no motorized boat traffic due to the small nature of the stream.

The waters of the Oconee are clean and floatable in normal conditions, which are generally year round. Each site could be very easily seen from shore.

NPS states that it is important to consider a variety of factors when developing a launch design and to consider the following goals:

- Accessible to all paddlers
 - ADAAG standards must be met [only] if the accessible route connects a fixed launch to the shore or if the accessible route connects a fixed launch to another fixed structure, unless modified by specific provisions outlined by the Access Board.

- Best Suited for the location
- Cost Effective and Durable in make and materials
- Environment-friendly
- (see appendix for complete descriptions)

What makes a launch logical and long-lasting?

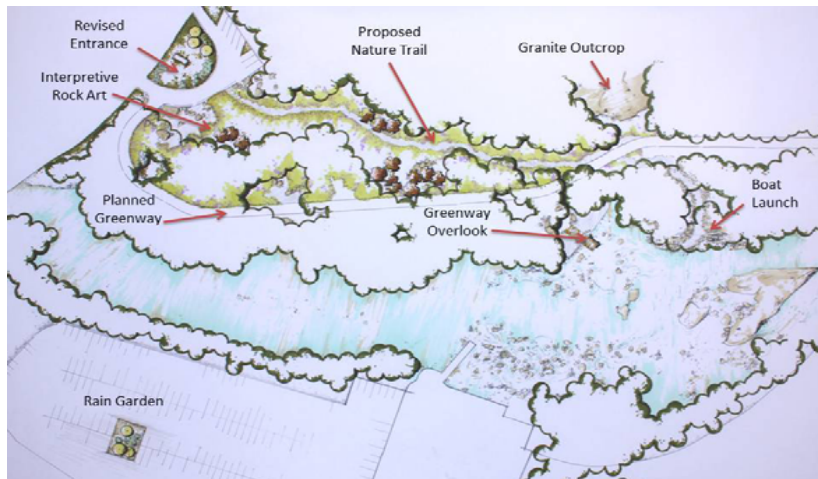
A logical, lasting launch provides safe and easy access for paddlers while accommodating the topographic, climatic, and ecological characteristics of its location. Ideally, its construction is cost-efficient and durable and has little impact on the environment and riparian ecology. (NPS, 2004).

Site#1: Easley's Mill

Easley's Mill design proposal fits the general guidelines of the NPS, which state that a launch site should have:

- Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
- No physical barriers, such as impassable sections, dams, or weirs
- Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas

- Water levels enabling year-round use
- Good water quality
- Little lateral movement that could erode the riverbank
- Visibility from both river and shore, allowing paddlers to locate the launch site easily.



Accessible

Easily compliant to Americans with Disabilities Act (ADA), though design specifics like downgrade, sideslope, and path/launch width are not included in the plans. This area lends itself to a path without steps leading into the streambed, which is composed of natural gravel and granite gneiss.

- Gentle downgrade on path leading to river is emphasized in plan
- Path to launch needs less than 8% downgrade with less than 2% side slope; ADA accessible if this is met

- Site design for boat launch path has both stairs and a fixed ramp: easily ADA compliant (design may need to include a handrail)
- Design for launch location accommodates high and low water levels
- Gentle grade path to river (8-15%) is achievable, <8% ideal
- May increase accessibility with stairs leading into streambed next to path and launch platform/surface
- Extremely high and low water levels the only impediment to accessibility for the disabled; low water levels takes water flow away from stream bank area on that side of the river and proposed launch site and high water is dangerous



View of the proposed launch (to right side) at Easley's Mill, looking upstream

Best Suited

- Location of proposed launch is on the slow inside bend of the river, composed of natural sediment and rock held by native and invasive plants. This area is naturally durable by composition and location.
- Site not as subject to fluctuations in water level due to wide streambed and shoals where proposed launch is located
- Water control mechanism located just upstream (dam ruins) regulates abrupt changes in water level to some extent
- Stream bed is wide, launch to be located on inside bend of river: main channel is on river right (right side looking downstream)



View looking across the river from proposed launch area: wide shoal and old mill dam to the right

Cost-effective and Durable

- Minimal Steps used in design; path is a low grade concrete or stone pathway leading to the launch; natural materials emphasized
- Natural, local materials (local rock, earth, recycle from dam rubble) used to re-contour the flood plain bank into sloping path into floodplain and streambed

- Design utilizes natural stream buffer mechanisms (location, plants, main river channel, direction of main flow and path of river considered)
- Utilizes durable, natural materials: uses rocks and earth; plant roots anchoring soils and sediment
- National Park Service (NPS) says “natural shoreline areas that can be easily and cheaply reinforced are typically the best option for launching. Level beaches, flat rock outcrops, and sturdy banks may be sufficient.” (NPS, 2004)



View looking downstream; proposed launch area on the left (note the naturally reinforced banks)



View from proposed lookout: put in is to the left

Durable and Environment Friendly:

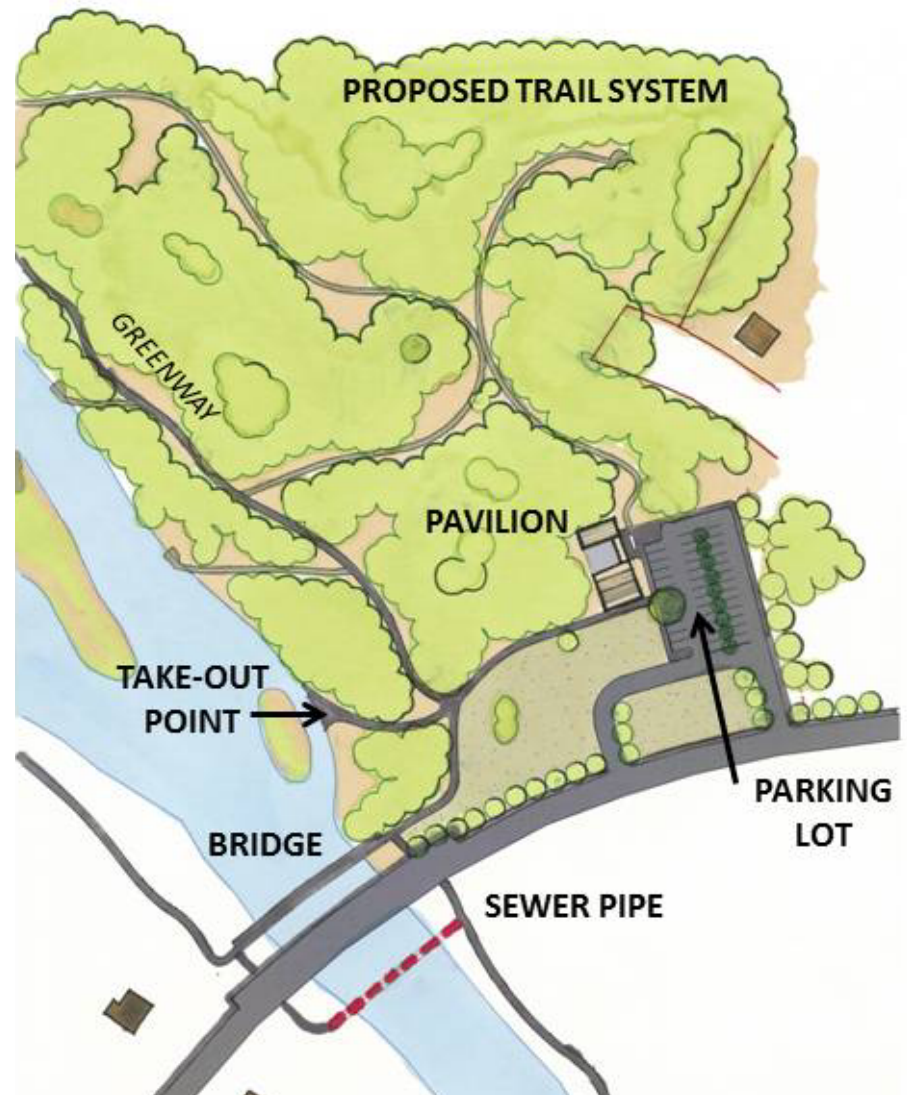
- Design utilizes existing native plants and riverside landscape; river floodplain and bank area is mostly flat and composed of sediment and rocks held by trees (Sycamore- *Platanus occidentalis*, River Birch- *Betula nigra*) and smaller vegetation.
- Design keeps as much existing native vegetation as possible, disturbs buffer vegetation as little as possible, vegetation is durable

- Design replaces invasive non-native species with hardy native vegetation like sycamore and river birch, which naturally thrive there and hold the banks by natural design; environmentally positive action
- Area is already heavily impacted; dam ruins and associated walls, stone rubble make a light touch possible
- Existing stream-edge changed with minimal impact to an already impacted area; most impacts will be to put path from greenway trail to the level of the river because of the existing dam-wall that presently creates accessibility difficulty
- Easily accessed through planned greenway expansion; easily linked to trail and existing parking area with minimal carry distance
 - Easily maintained area downstream of launch; easy to maintain clear path downstream of launch (branches, debris, logs easily reached and moved/broken up)

Site #2: Whitehall Mill

Whitehall Mill launch proposal site fits the general guidelines of the NPS, which state that a launch site should have:

- Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
- No physical barriers, such as impassable sections, dams, or weirs
- Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas
- Water levels enabling year-round use
- Good water quality
- Little lateral movement that could erode the riverbank
- Visibility from both river and shore, allowing paddlers to locate the launch site easily





Accessible

Easily compliant to Americans with Disabilities Act (ADA), though design specifics like downgrade, sideslope, and path/launch width are not included in the plans. This area lends itself to a path without steps leading to the streambed. The streambed and adjacent floodplain are on a gentle slope and composed of natural sediment (sand, gravel, and granite gneiss) with heavy vegetation. The river at the proposed launch site is on a wide natural shoal.

- Gentle downgrade on path leading to river in plan; natural slope

- Path to launch area needs less than 8% downgrade with less than 2% side slope; ADA accessible if this is met
- Site design for boat launch path could have both stairs and a fixed ramp: easily ADA compliant (design may need to include a handrail)
- Easy to put switchbacks from parking area and historic house on site, thus increasing accessibility; invasive plant removal
- River launch accessed through planned greenway expansion; easily linked to trail and existing parking area with minimal carry distance
- Design for take out location accommodates high and low water levels
- Gentle grade path to river (8-15%) is achievable, <8% ideal
- May increase accessibility with concrete or gravel ramp leading into streambed; the banks at the take out are a natural step and ramp.
- High and low water levels are the only impediment to accessibility for people of all physical abilities; low water levels make navigation from Easley's Mill to Whitehall strenuous, and high water is always dangerous



See the natural eddy formed by the inside bend of the river, which is created by a natural gravel bar upstream held by River Birch trees.

Best Suited

- Location of proposed launch is on the slow inside bend of the river, composed of natural sediment and rock held by native and invasive plants.
- Design utilizes existing native plants and riverside landscape; river floodplain and bank area is mostly flat and composed of sediment and rocks held by trees (Sycamore-

*Platanus occidentalis, River Birch- *Betula nigra*) and smaller vegetation.*

- Wide streambed and shoals where proposed launch is located
- Stream bed is wide, launch to be located on inside bend of river: main channel is on river right (right side looking downstream)
- Takeout area is low and flat, and already impacted



View of the flat gravel and cobblestone area that leads naturally into the stream bank, which is naturally low and flat.

Cost-effective and Durable

- Little alteration of already impacted area necessary to have a launch
- Existing path from proposed parking to launch is in a state requiring little alteration to fit the goals of the charrette
- Path will be a low downgrade concrete or natural materials pathway leading to the launch; area slopes gently already
- Natural, local materials (local rock, earth, recycled from dam rubble and sewer work) could be used when needed
- Design utilizes natural stream buffer mechanisms (location, plants, main river channel, direction of main flow and path of river considered)
- Utilizes durable, natural materials: uses rocks and earth; see tree and plant roots anchoring soils and sediment
- National Park Service (NPS) says “natural shoreline areas that can be easily and cheaply reinforced are typically the best option for launching. Level beaches, flat rock outcrops, and sturdy banks may be sufficient.” (NPS, 2004)



View from existing trail leading to existing area ideally suited for river access.

Environmentally Friendly:

- Area is highly impacted; Historic Mill and riverside community with sewer pipe running underground next to the river on this side
- Design utilizes existing native plants and riverside landscape; river floodplain and bank area is mostly flat and composed of sediment and rocks held by trees (Sycamore- *Platanus occidentalis*, River Birch- *Betula nigra*) and smaller vegetation.

- Design keeps as much existing native vegetation as possible, disturbs buffer vegetation as little as possible, vegetation is durable
- Greenway design removes and replaces invasive non-native species with hardy native vegetation like sycamore and river birch, which naturally thrive there and hold the banks by natural design; environmentally positive action
- Area is already heavily impacted; dam ruins and associated walls, stone rubble make a light touch possible
- Existing paths need little work to have an accessible grade
- Existing stream-edge changed with minimal impact to an already impacted area
- Easily accessed through planned greenway expansion; easily linked to trail and existing parking area with minimal carry distance



Large pool makes great take out.

A word on safety for all launches

Inviting people to use the river by providing access requires responsibility. The following are some actions to help the providers and users to reduce their risks. Steps need to be taken to make potential users aware of risks and responsible for their own safety. These suggested actions are also an effort to transfer the liability of inherent risks from the provider of access (Athens Clarke County United Government) to the participant. The following should be considered:

- Bridge and sewer pipe piers located downstream to be considered as serious hazards, especially during high flows: warning sign posted
- Establish safe water levels (too low for easy passage, too high to safely navigate bridge and pier hazards)
- Signage needed: Warning of pier hazards and other hazards (natural and man-made) posted at all put-ins, and rough water hazards indicated for high flows
- Warning signage on bridges; place flags or other visual warning mechanisms like stick figure depictions of people drowning in debris or of people and boats “pinned” to bridges... be creative
- Instructions and assumptions of risk in several languages, with pictures to help illustrate, should be posted at access points
- Establish river safety gauge; inform potential users with a visible river level measuring device (aka a metal pole with safe levels indicated) that is color coded or indicates at what level the river becomes dangerous or too low to float



Appendix B: General Guidelines (*Logical Lasting Launches*, National Park Service, pp.5-8, pp.17-20, 2004)

- **General recommendations from NPS:** Access is preferable in areas that have:
 - Minimal exposure to strong currents and winds, such as river eddies or in a cove or inlet
 - No physical barriers, such as impassable sections, dams, or weirs
 - Distance from other boat traffic, so that paddlers do not have to cross heavy traffic areas
 - Water levels enabling year-round use
 - Good water quality
 - Little lateral movement that could erode the riverbank
 - Visibility from both river and shore, allowing paddlers to locate the launch site easily

NPS says that canoe and kayak launches should be “Accessible, Best suited, Cost Effective, and Environment-friendly”(NPS, 2004)

- **Accessible:** Paddlers of all abilities want to launch and land smoothly without capsizing or damaging their boats. They need firm surfaces that support their movements and sufficient space to accommodate the length of their boats during put-in and take-out. Paddlers must be able to stabilize their boats during transition to and from the water. Climbing in and out of boats can be especially challenging when there is significant height difference between seat levels and shoreline. Additionally, federal law requires that all boating facilities provide access to paddlers with disabilities whenever possible (see Chapter III for details).
- **Height above water:** Between 9" and 2' from highest expected water level
- **Width:** At least 5' wide, preferably 6' to 12'
- **Length:** At least 25' to allow paddlers “dry” access to entire length of their boats
- **Slope:** ADA Accessibility Guidelines require that slopes not exceed 8.33% whenever possible; A slope exceeding 15% will make transition from land to water difficult for any paddler
- **Support:** Handrails or other support structures, including step-down designs or ropes, help paddlers balance their weight during put-in and take-out

- **Location:** Ideally in areas without heavy flow, erosion, exposure to elements, heavy boat traffic, or fragile riparian habitats
- **Best-suited:** The type of launch chosen should be suitable for a particular access location, meaning that it should be the most sensible choice considering the characteristics of the water body, as well as relevant climatic and ecological factors.
General recommendations: A launch that is “best-suited”:
 - Is constructed in accordance with any applicable regulations
 - Provides safe access, away from potential river hazards, especially at different flow level
 - Can withstand flow levels, currents, and exposure to elements at a particular site
 - Accommodates paddlers in varying water depths
 - Provides a firm surface for launching, despite changes in sedimentation levels
 - Will not be easily damaged due to climatic or seasonal conditions
 - Does not cause damage to riparian habitats or vegetation during its construction and is unlikely to have environmental impacts over time and through usage
 - Is not constructed in an area vulnerable to erosion
 - Is constructed with consideration to its intended uses and frequency of use.
- **Cost-effective and Durable:**
 - Existing natural sites (e.g., banks, rocks, beaches) are preferable, as they cost nothing to develop; however, they may not be durable and can require reinforcement over time. Minimal construction will keep costs low and help maintain a natural appearance along a shoreline. If construction is necessary, using durable materials reduces the need for later repairs or replacements, yet the speed at which materials weather will depend on climatic factors and level of exposure to currents and winds.
 - General recommendations:
 - Use construction only when absolutely necessary. In many cases, an actual launch structure may not be needed; firm or sandy banks, level rocks, and beaches can often provide sufficient access (see Chapter IV);

kayakers may only need a hardened bank for access.

- Choose access sites with minimal exposure to winds and heavy currents, preferably near calmer areas of water, such as near eddies; if this is not possible, consider creating a vegetative or other type of buffer to provide protection from the elements.
 - To reduce construction needs and costs, make modifications to existing boat docks or shoreline structures to make them more “paddler-friendly”.
 - Construct launches that serve multiple purposes, such as mitigating erosion or restoring wetland vegetation; simple ramps or implanted beaches may help to stabilize a fragile bank or provide “soft treatments” while also enabling access.
- **Environment-friendly**
 - Use of low-impact designs and non-toxic materials is essential to watershed health, from protecting water quality, vegetation, and riparian habitats to enabling sustainable recreation. In many states, environmental regulations must be considered prior to, and during, launch construction.

Appendix C: Americans with Disabilities Act Accessibility Guidelines for boat launches (*Logical Lasting Launches*, National Park Service, pp. 17-20)

- **ADAAG** (Americans with Disabilities Accessibility Guidelines) require that boat launches be equipped with at least one accessible route to boat launches that complies with ADAAG standards for: location, width, passing space, head room, surface slope, level changes, doors, egress, areas of rescue assistance
- **ADAAG** standards must be met [only] if the accessible route connects a fixed launch to the shore or if the accessible route connects a fixed launch to another fixed structure, unless modified by specific provisions outlined by the Access Board.
- **Access route**
 - Surface, grade, width, and cross slope need to be as accessible as a particular location will allow. Surface should be as even and level as possible (not exceeding 8.33% slope or 2% cross slope) and without gaps or interruptions. The route should be clearly marked.
- **Level and stable landing/loading area**
 - There should be an area adjacent to the loading area that is level, stable, and at least 60" x 60". This can be anywhere adjacent to the loading area, including in water up to 12" deep. An accessible back country canoe launch might incorporate a large, flat rock surface (provided that it is not slippery) that is 8" to 12" under the surface of the water and has a gradual access route made of native soil. The transfer from a wheelchair on that rock to a floating canoe could be nearly level.
- **Transfer assistance**
 - The greatest challenge to using a launch, once a paddler is beside the canoe, can be getting down into the seat of the boat. Whether it is on a highly developed launch or the bank of a lake, it is difficult to transfer to a moving boat. Making the transfer easier will help paddlers considerably.
- **Design variations/specifications**

- Graded banks are preferable, 12' wide at water line tapered to 9' wide at top by 15' long (length will depend on water levels and shoreline stability)
- Launch area should be at least 20' at sites that are used for both rafting and paddling
- Preferred slopes meet ADA accessibility standards of 8.33%; slopes should not exceed 15%
- Water level should be deep enough to enable launching without damaging boat (preferably at least 2')