



Ocklawaha River and the Rodman Reservoir



**Projects Concepts for
Improving The Outdoor Economy + Sustaining Natural Resources**

INTRODUCING THE GREAT FLORIDA RIVERWAY

The Ocklawaha River was once a home to many paleo animals, refuge for Native Americans, Florida's first tourist attraction, a magnet for travel writers and explorers, and a steamboat transportation corridor for people and products.

Part of what is now referred to as the Great Florida Riverway, the 217-mile system begins at Lake Apopka and flows north through the Harris Chain of Lakes along the Ocklawaha River, intersecting with Silver Springs, and continuing to the St. Johns River, ending at the Atlantic Ocean near Jacksonville.

Over 52 years ago, this system was dramatically altered. The construction of the Rodman Dam, part of the failed Cross Florida Barge Canal, severed the Ocklawaha River, damaging the ecology of the magnificent Ocklawaha River, cherished Silver Springs, and the highly productive St. Johns River estuary. Like the Everglades to the south, restoring the Great Florida Riverway is vital to improving the overall ecological and economic health of north and central Florida.

A necessary component to this restoration is breaching the Rodman/Kirkpatrick dam to restore the natural flow of the impounded Ocklawaha River. This one project could help restore three rivers and 50 springs.

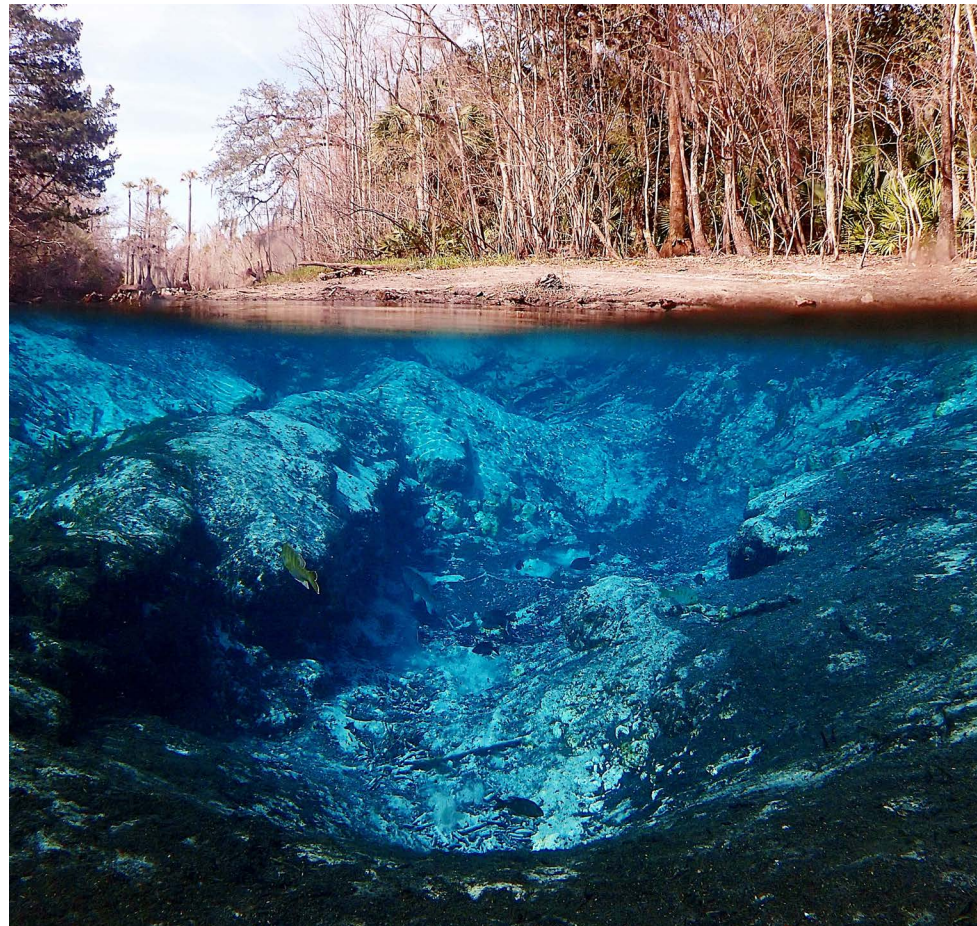
The continued decline of water quality, spring flow, wetland forests, fish, wildlife, and recreation caused by the dam led American Rivers to designate the Ocklawaha River as one of America's Most Endangered Rivers® of 2020. Restoring this river is the key to unlocking economic, ecological, and social benefits for all Floridians and visitors from around the world.





The Business Case for Investment in Recreation Infrastructure

- Establish Putnam and Marion Counties as an outdoor recreation epicenter for the state further developing the areas' outdoor recreation economy
- Protect the valuable sports fishing and commercial shell fishing industries in the lower St. Johns River Estuary
- Provide continued infrastructure to meet angler needs and sustain Putnam and Marion Counties fishing economy
- Develop recreational opportunities that complement the plans of Bass Pro
- Increase regional visitation by an estimated 28% due to diversifying the outdoor recreation offerings
- Develop strategic recreation plans and infrastructure to offset potential economic impacts during first few years of restoration
- Invest in strategies to help low-income communities in Putnam and Marion Counties benefit from restoration economically and environmentally
- Implement two manatee viewings areas at uncovered Ocklawaha River springs resulting in a projected 30,000 new visitors a year and \$3 million in annual economic impact
- Achieve a projected ten-year return on investment for Ocklawaha restoration of 7.6% or \$1.76 return for every dollar invested



Uncovered Cannon Springs during drawdown. Photo by Joe Cruz.



The Ocklawaha River blocked due to invasive aquatic plants. Photo by Doug Engle.



Manatees currently in Silver Springs. Photo by Reinier Munguia

How Ocklawaha River Restoration Fuels the Outdoor Economy

Without sustainable and productive fisheries, clean and accessible ramps and waterways, food for fish and wildlife and springs for enjoyment, the outdoor recreation economy in Putnam and Marion counties will not continue to thrive. Restoration provides these benefits for years to come for people and wildlife by:

- Helping restore the Ocklawaha and St. Johns Rivers and Silver Springs
- Uncovering 20 submerged springs adding 150 MGD of natural water flow to the St. Johns River improving water quality, eelgrass and habitat for fish and manatees
- Restoring the historic fish and wildlife migration path from the Atlantic to Silver Springs bringing back species of interest to anglers such as the striped bass and American shad
- Reducing clogged and herbicide sprayed waterways that block boat ramps and waterways by adding clearer, cooler freshwater flow
- Improving wildlife viewing through the strengthening of a major linkage in The Florida Wildlife Corridor
- Transforming Silver Springs to one of the largest manatee viewing areas in the state

Developing a Shared Vision for Transforming the Rodman Recreation Area

In 2020, fourteen University of Florida students from the College of Design, Construction and Planning, Department of Landscape Architecture created nine recreation and restoration designs for a restored Ocklawaha River. Led by faculty member Tom Hctor and national recreational planner David Barth, those concepts were remarkable in vision and quality of design.

This year, UF student Kathryn Stenberg chose as her UF capstone project a detailed design plan for repurposing the Rodman Recreation Area post restoration. She began with maps depicting what partial restoration of the river would look like. Then Kathryn created not one but three concepts for the design of this very important and highly used recreation area.

To make sure that residents had input on her designs, she led a listening session with community leaders on the three concepts and asked participants what they most liked, what concerned them and what could make them even better. In the crowd was a mayor, former school superintendent, power company representative, agriculture spokesperson, anglers, paddlers, and other community leaders.

Student designs have helped leaders and residents of all backgrounds to visualize what they could gain in the river restoration process, not just what they will lose. The work has been the door opener to healthy conversations and has inspired people to work together on a shared vision for one of the centerpieces of Putnam County's recreational facilities. Much more work needs to be done to obtain further public input over the next year.

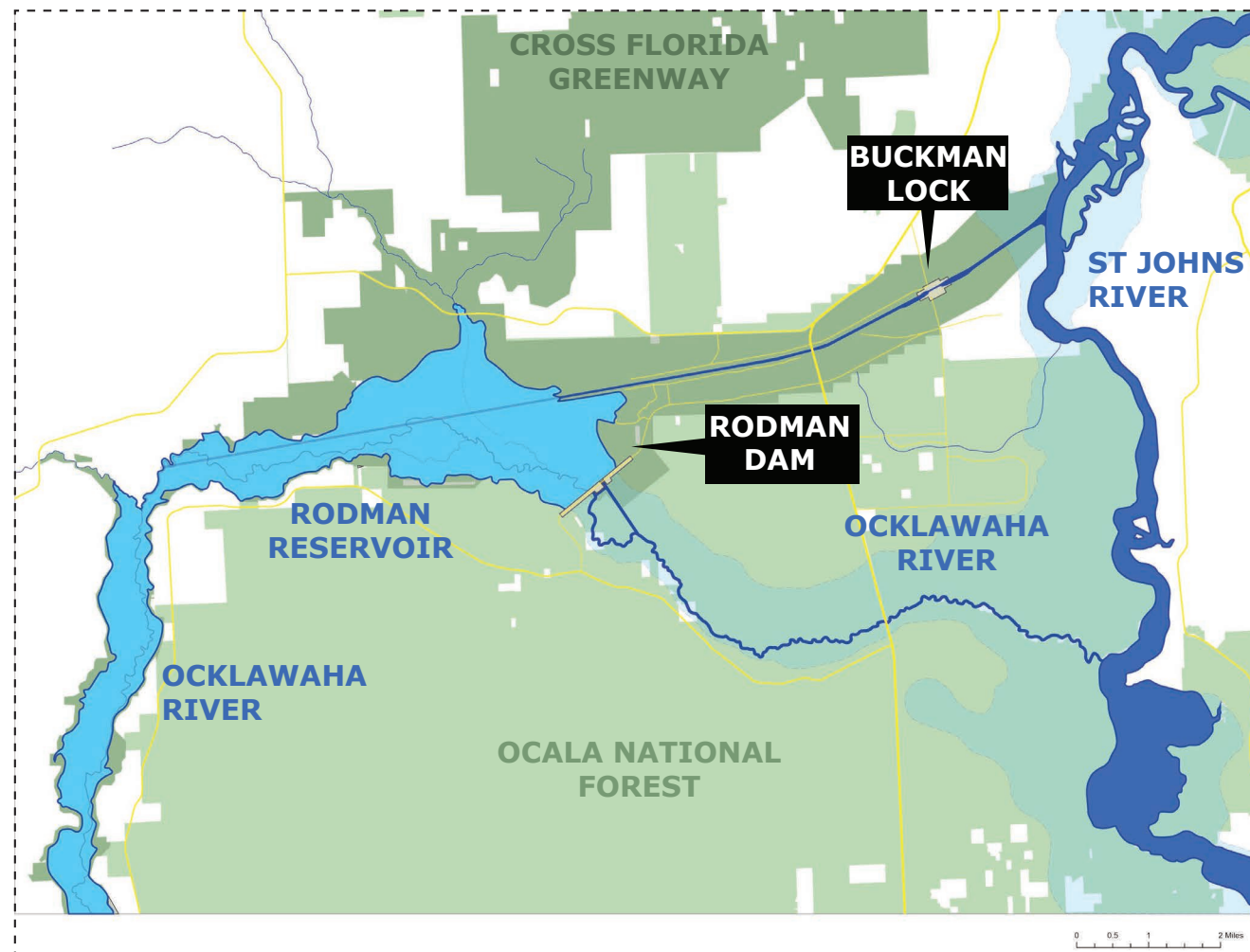


OCKLAWAHA RIVER: STEPS TOWARD PARTIAL RESTORATION

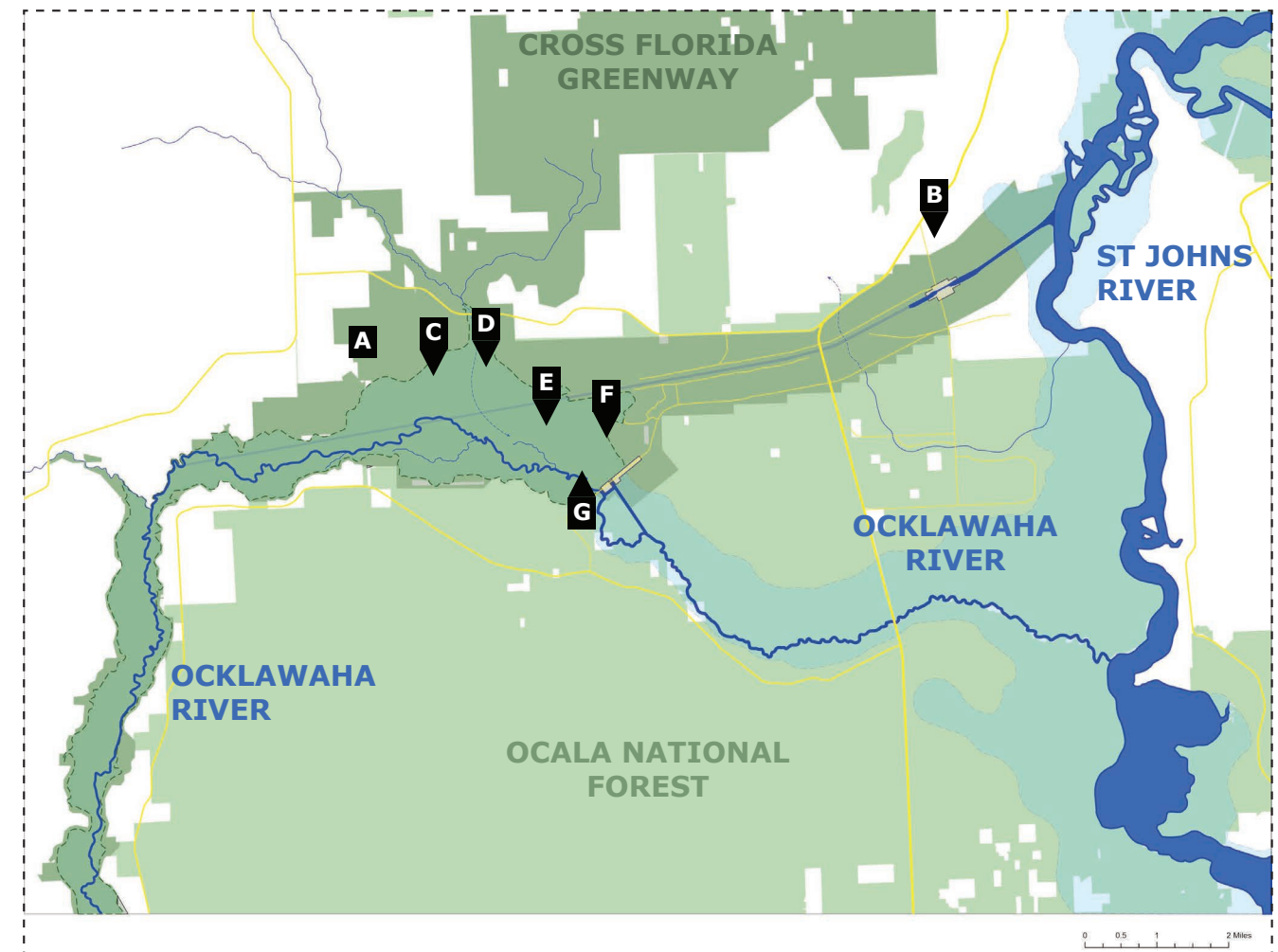
FROM 2001 USFS ENVIRONMENTAL IMPACT STATEMENT

- A. Reduce elevation of the surface water** from 18.2' to natural river grade during three phased drawdowns of the reservoir.
- B. Close and secure the Buckman Lock**, including partial leveling of barge canal side-cast spoil berms. Fill west side of the canal and leave the east side open to the St. Johns River.
- C. Restore the historic Ocklawaha River channel low** by filling the barge canal where it intersects with the river channel.
- D. Restore the historic Deep Creek channel low** by filling the barge canal where it intersects with the creek channel.
- E. Dredge and stabilize the historic river channel** with erosion control structures and native plantings.
- F. Repurpose Kirkpatrick Dam** by removing mechanical elements and restoring the spillway tailrace to natural grade.
- G. Excavate 2,000' of existing 7,500' earthen berm** to restore historic river channel.

EXISTING



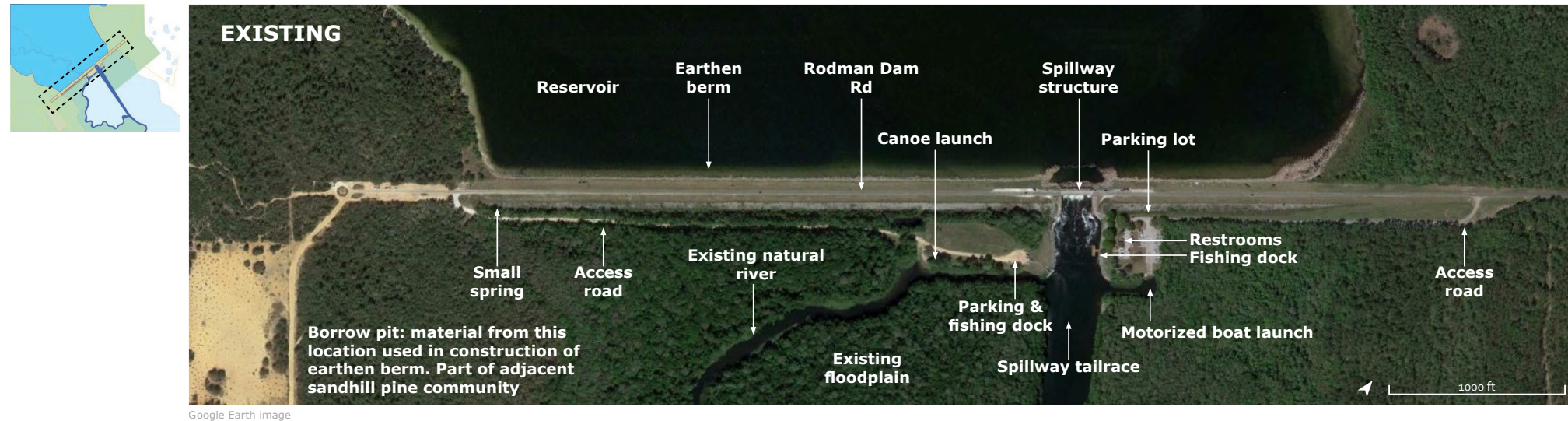
RESTORED



OCKLAWAHA RIVER RESTORATION: THE DAM SITE

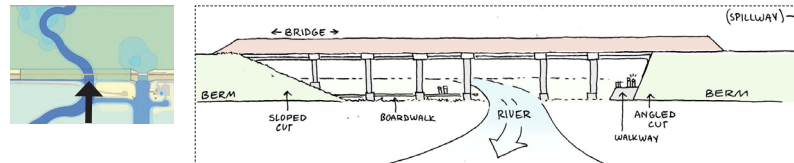
EXISTING CHARACTER AND CONTEXT WITHIN LANDSCAPE-SCALE RESTORATION

EXISTING SITE FEATURES

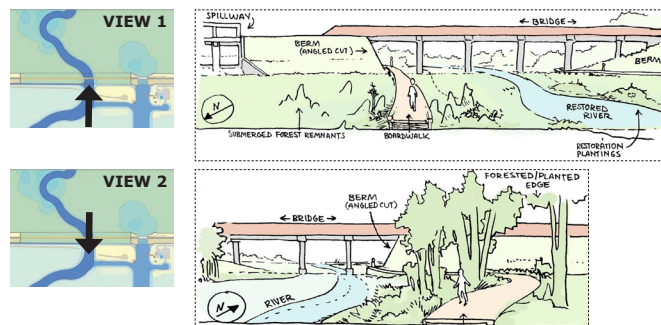


BERM EXCAVATION: NEW BRIDGE AND PEDESTRIAN UNDERPASS

ASYMMETRICAL EXCAVATION
(Not to scale)
Earth removed from berm to leave asymmetrical 'cuts' on either side. This treatment highlights the size of the berm through an angled cut, and provides for additional uses on the side with a more gentle slope.



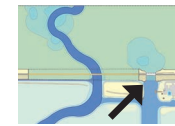
CONTRASTING VIEWS
Layout of the boardwalk/trail system includes passing under the proposed bridge. The treatment of the views of the berm/bridge highlights the contrast between the two sides of the landscape. Approaching from the south side of the dam, the view is screened by native plantings. From the north side, the view is open and displays the scale of the breached dam. Treatment of the reservoir area includes restoration planting, but incorporates open views of the dam as an element of interest.



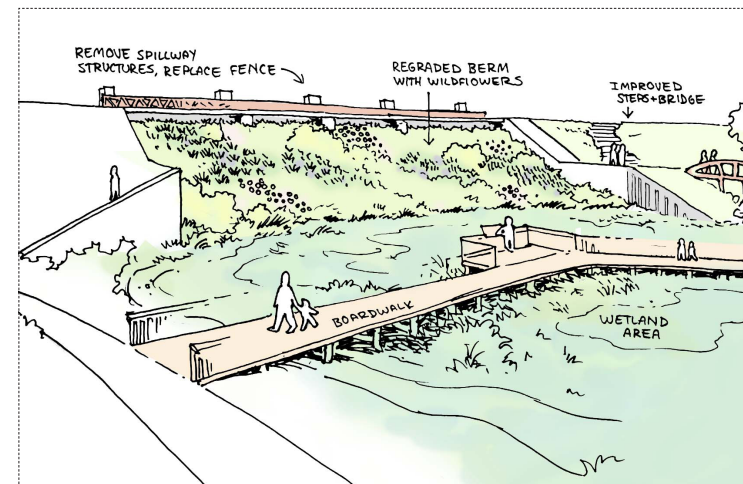
BRIDGE DESIGN: LOCALLY INSPIRED
Bridge design follows local, old-florida style. Examples include bridges existing along Cross Florida Greenway and other rivers. The design includes two vehicular lanes and a physically-separated pedestrian lane.



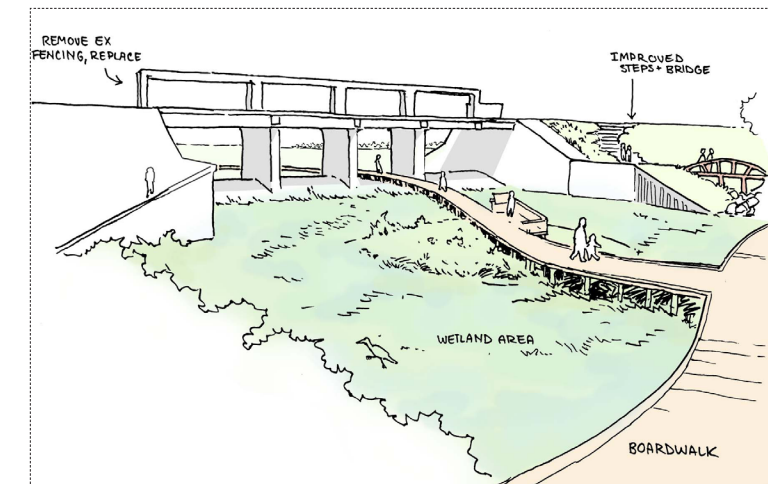
EXISTING DAM and SPILLWAY TREATMENT: FILLED BERM OR INTERPRETIVE PASSAGE



OPTION 1
Following the 2001 EIS, the spillway structure and its mechanical elements will be deconstructed. The berm will be filled and the existing area will be regraded to form a shallow pool adjacent to the former spillway.



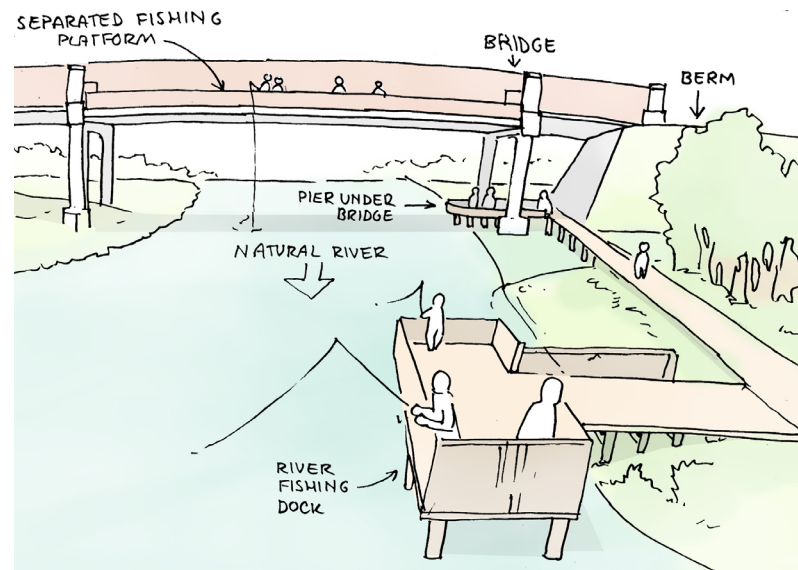
OPTION 2
The mechanical elements will be removed from the spillway and the remaining structure will be refurbished as a lookout point. Removal of the gates will create a view through the dam and allow for pedestrian passage via boardwalk.



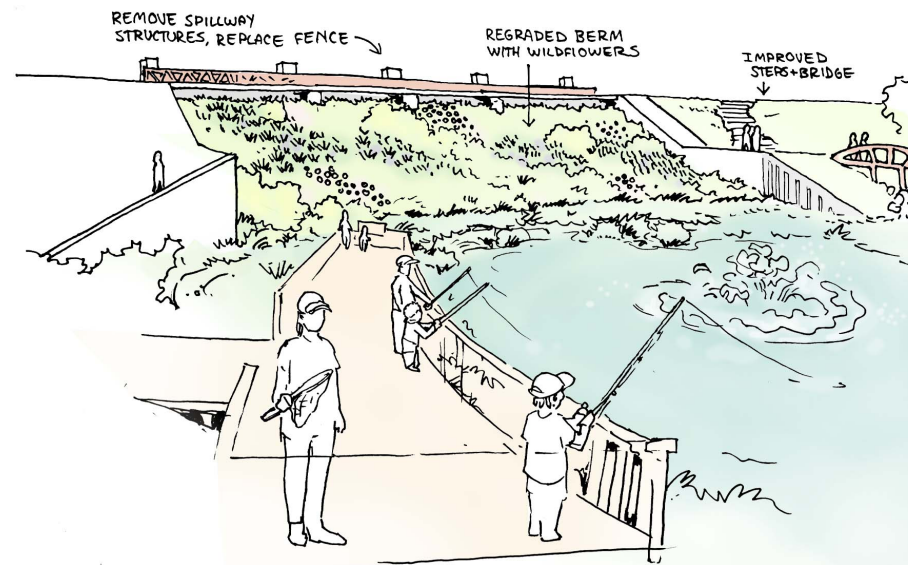
ONE THEMATIC PROGRAMMING DESIGN: RIVER FISHING

EXPANDED SHORE FISHING ON THE RESTORED OCKLAWAHA RIVER

FISHING OPPORTUNITIES AT NEW BRIDGE



CHILDREN'S FISHING AREA AND FOUNTAIN AT REPURPOSED DAM & SPILLWAY



SHORELINE FISHING PLATFORM & PICNIC AREA

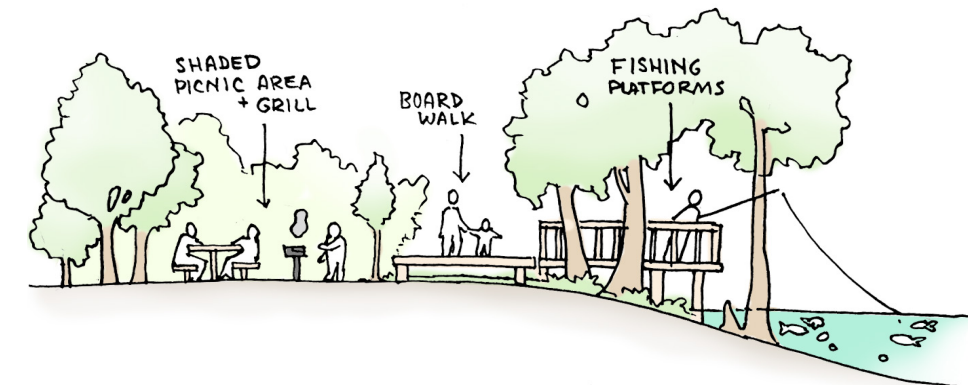
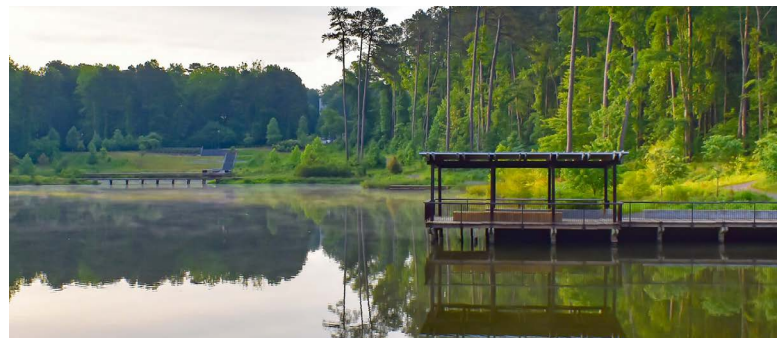


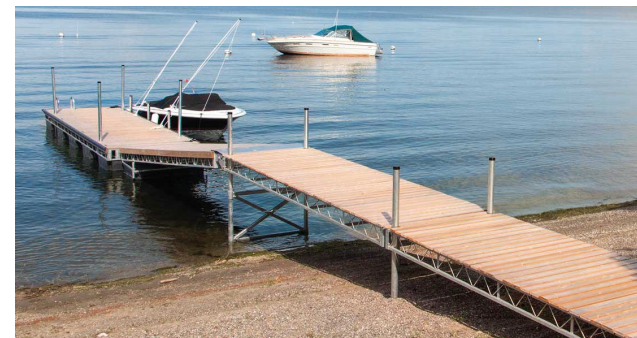
IMAGE BOARD

BOARDWALK AND RIVER PAVILION



Duke University water reclamation pond by Nelson Byrd Woltz

FLOATING DOCK



Floating boat dock photo by The Dock Doctors

BOARDWALK AND SHORE FISHING

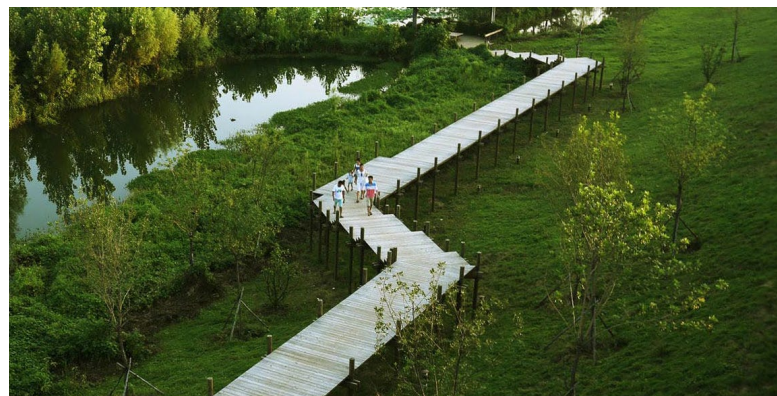


Lettuce Lake Fishing photo by Visit Florida

SEPARATED FISHING LANE



Atlantic Road fishing lane photo by Visit Norway



Weishan Wetland Park



Veterans Memorial Fishing Pier photo by ShrimpNFishFlorida



River shore fishing photo by National Park Service

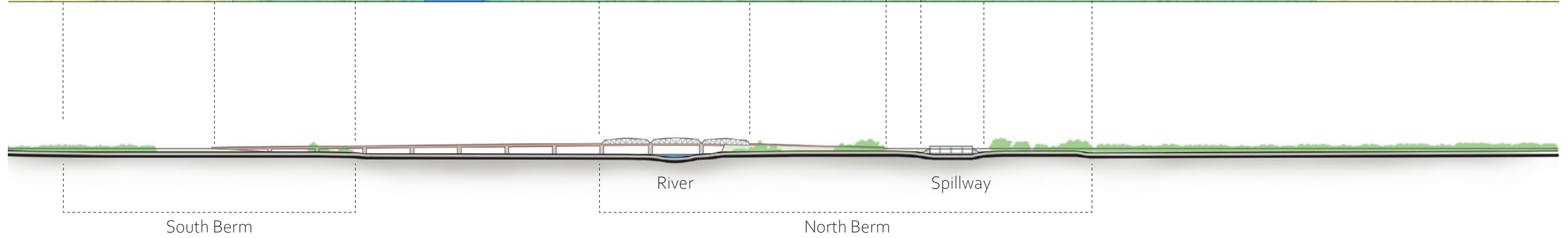
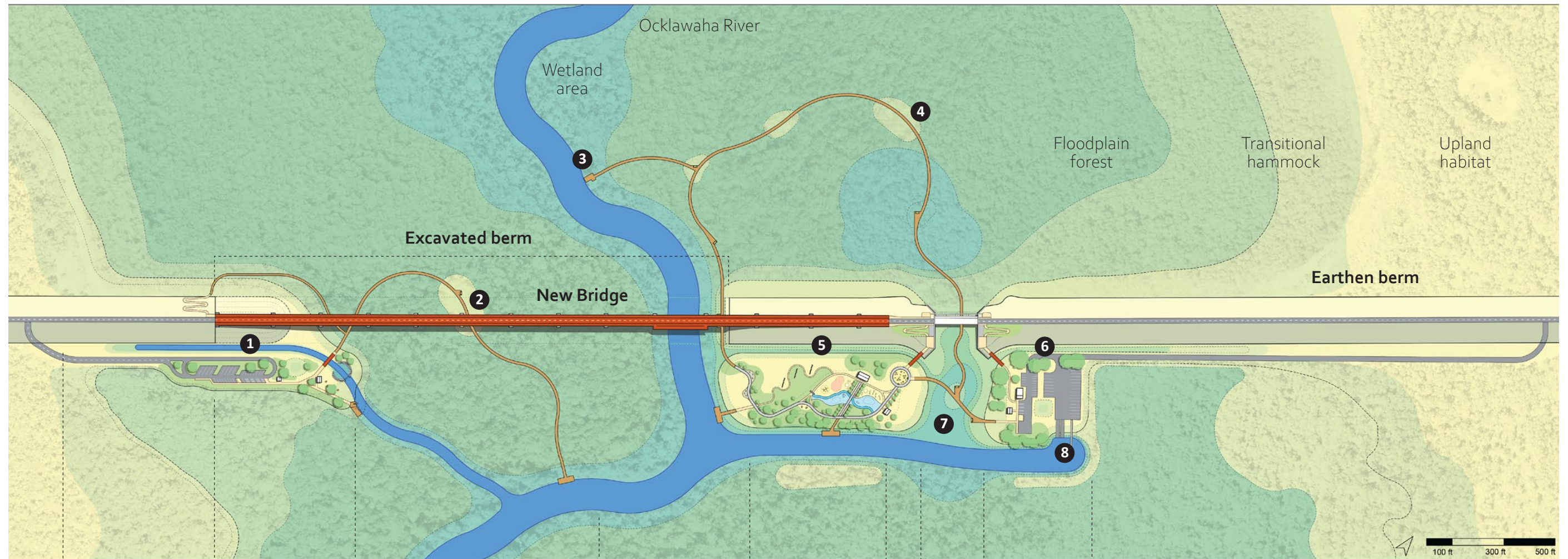


Kids fishing photo by San Antonio Report

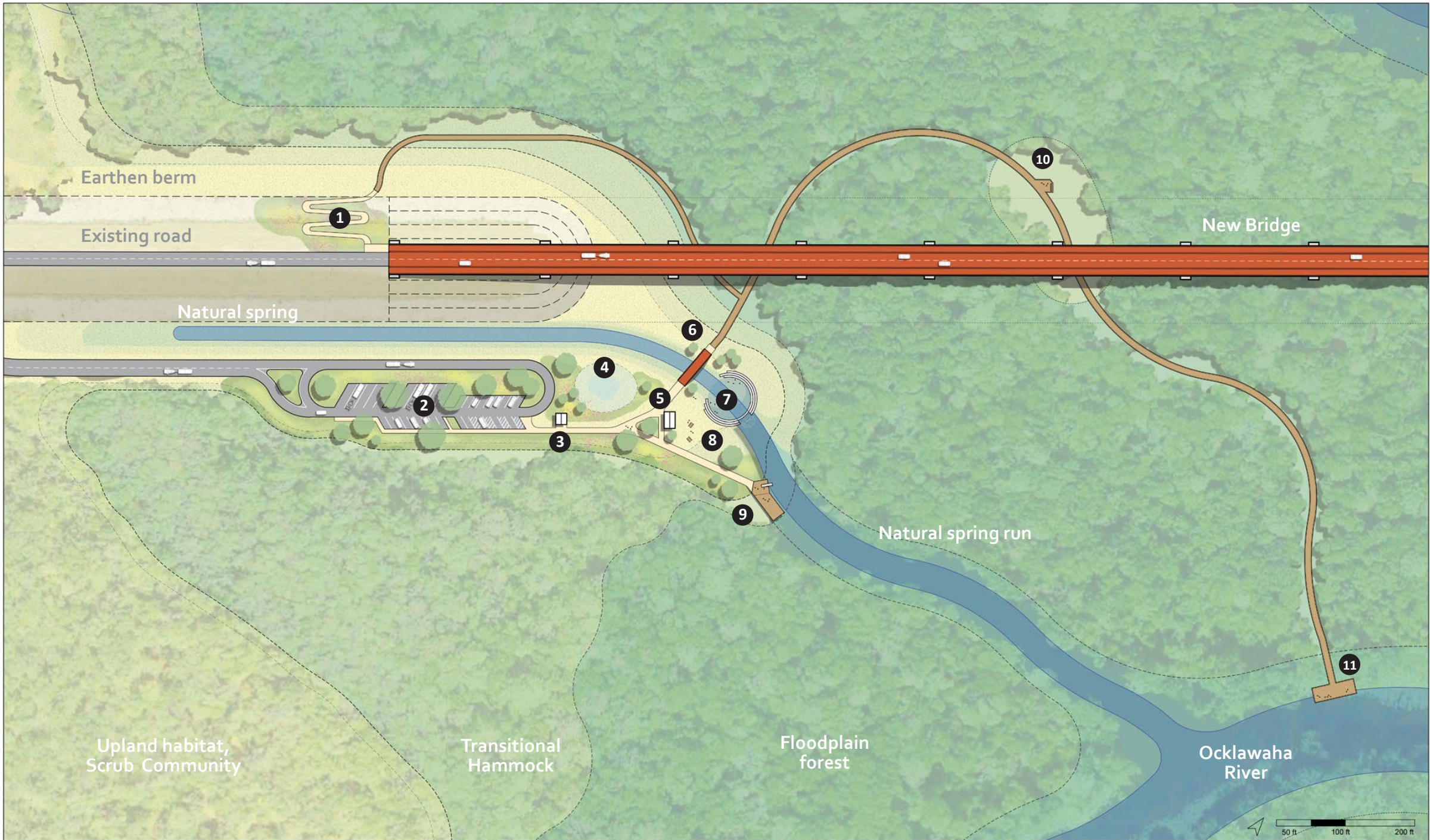
DESIGN PROPOSAL OVERALL MASTER PLAN

Overview

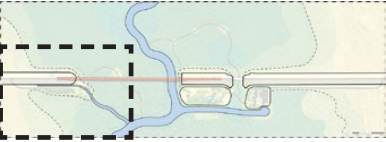
- | | |
|--------------------------------|-------------------------------|
| 1 South Berm recreational area | 5 North Berm Island |
| 2 South Boardwalk | 6 North Berm |
| 3 Wilderness camping platform | 7 Spillway marsh cross over |
| 4 North Boardwalk | 8 Motorized boat river access |



DESIGN PROPOSAL SOUTH BERM SITE DETAIL Featuring New Bridge and Uncovered Spring Run At Natural River

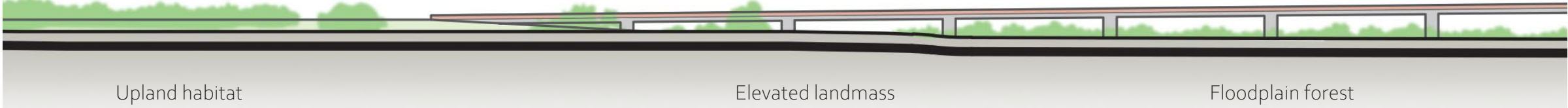


Location

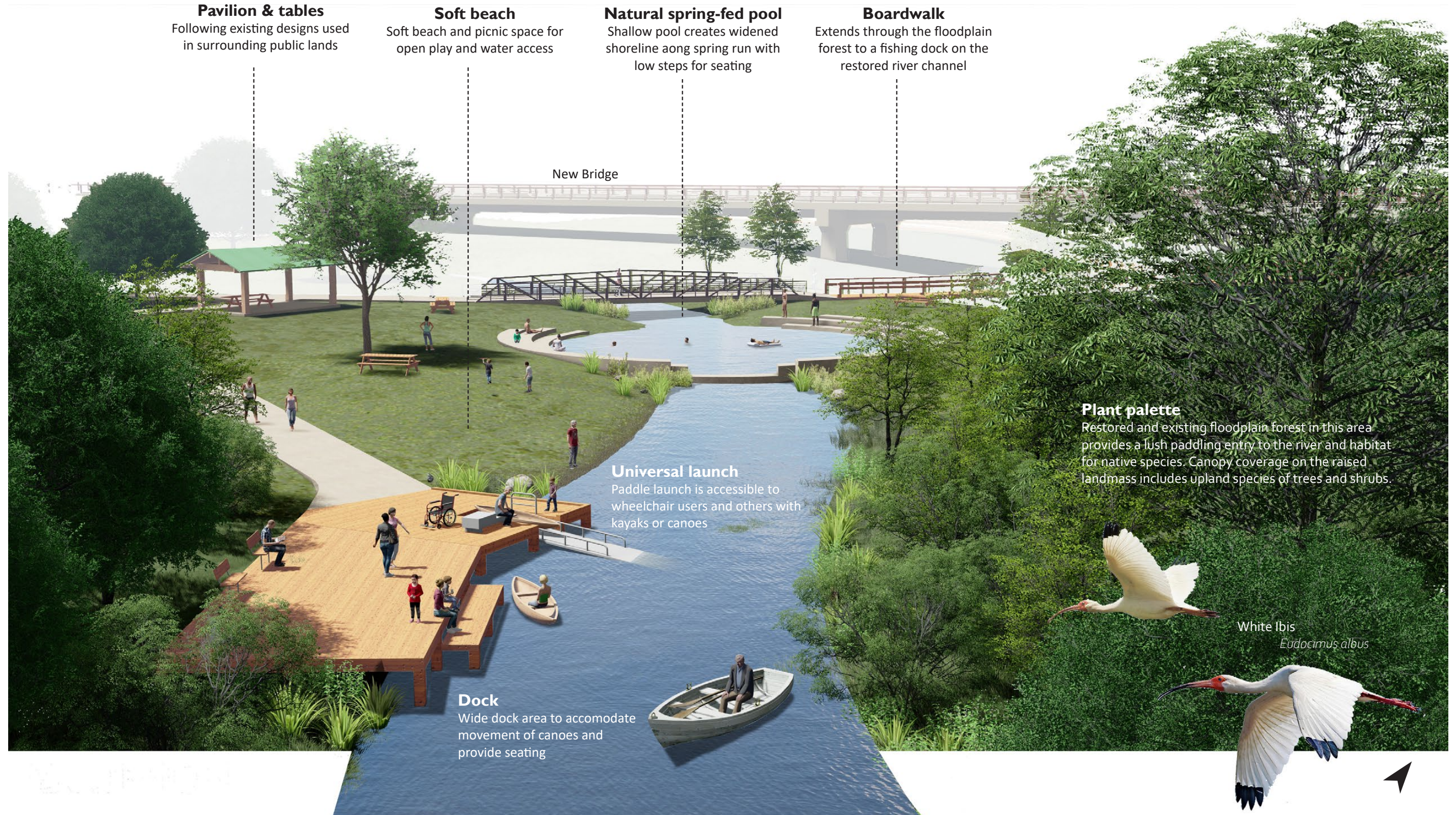
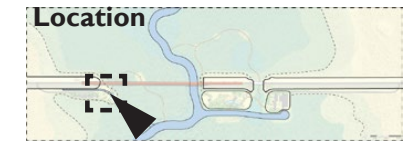


South Berm

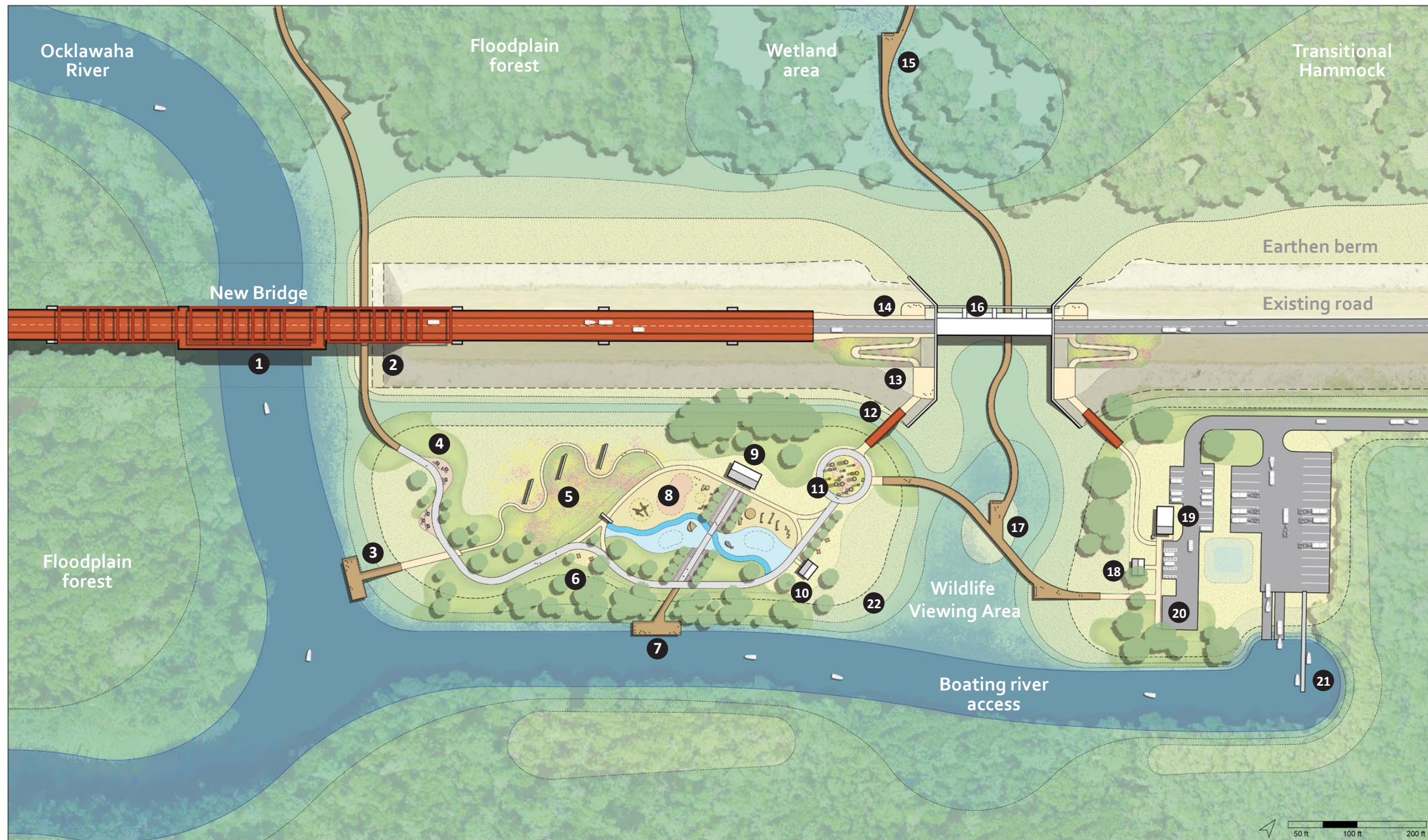
- 1 Berm slope path
- 2 Car & trailer parking
- 3 Restrooms & water
- 4 Stormwater wetland
- 5 Pavilion & tables
- 6 Foot bridge
- 7 Natural spring-fed pool
- 8 Soft beach picnic space
- 9 Universal paddle launch
- 10 Boardwalk signage
- 11 River fishing dock



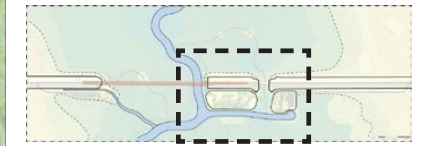
DETAILED DESIGN PROPOSAL SPRING RUN



DESIGN PROPOSAL NORTH BERM SITE DETAIL Featuring Re-purposed Dam and Spillway And Improved Park

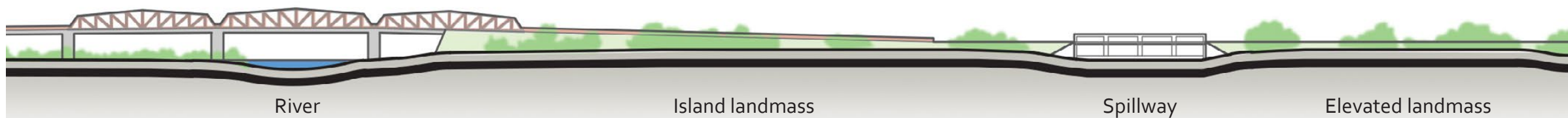


Location



North Berm

- 1 Bridge fishing lane
- 2 Berm cut underpass
- 3 River fishing dock
- 4 Species sculptures
- 5 Gates meadow
- 6 Picnic space
- 7 Channel fishing dock
- 8 Natural play space
- 9 Pavilion & kitchen
- 10 Pavilion & open lawn
- 11 Drowned forest art
- 12 Foot bridge
- 13 Berm slope path
- 14 Panoramic view
- 15 Boardwalk signage
- 16 Spillway underpass
- 17 Wetland boardwalk
- 18 Existing pavilion
- 19 Existing restrooms
- 20 Food truck pad
- 21 Accessible floating dock
- 22 Wetland shore fishing



DESIGN PROPOSAL LANDSCAPE INSTALLATIONS

Highlighting the Canal, Reservoir and River's History



ARCH At points along the planned path of the Cross Florida Barge Canal, construction was halted at various stages. In one location near Ocala, massive bridge supports were made and abandoned.



DROWNED FOREST During drawdowns of the reservoir, remnants of the floodplain forest that were drowned by the construction of the dam become visible. After river restoration, the floodplain forest will regrow. This installation uses cypress wood from the site to represent the experience of traveling through the remnants of the drowned forest.

PANORAMIC LOOKOUT Extending from the edge of the spillway, this viewpoint captures the broad horizon over the regrowing floodplain forest

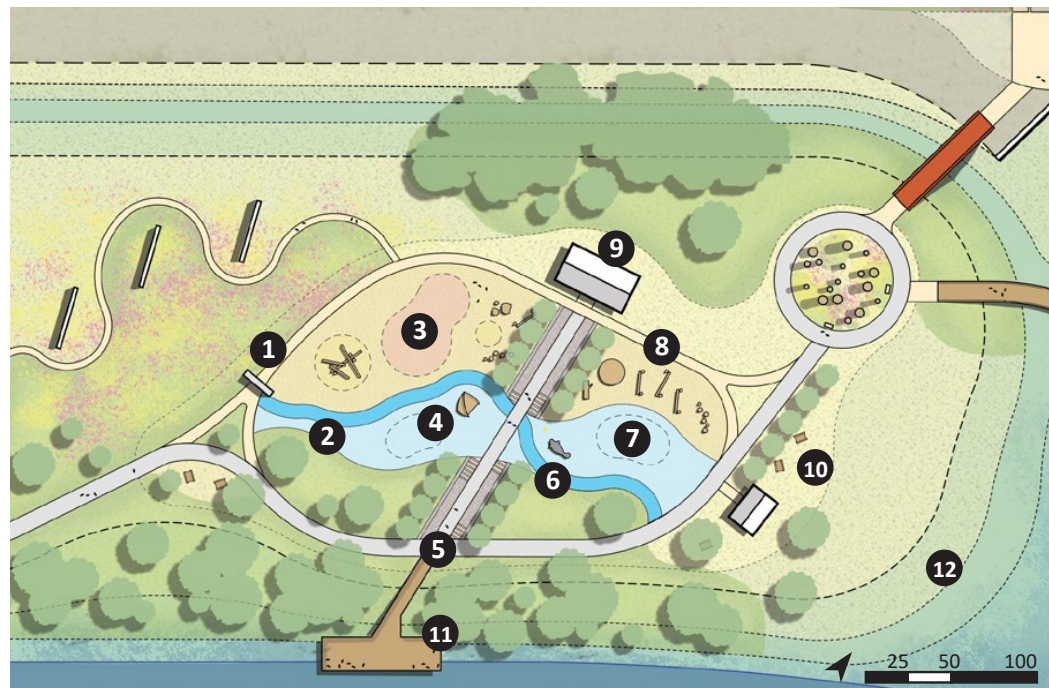
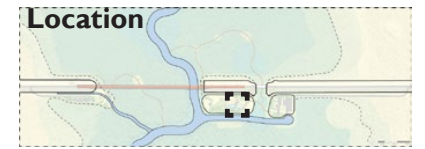


GATES As part of restoration, the mechanical elements of the spillway will be removed. The large gates that are used to regulate the levels of the reservoir are repurposed as a sculptural element. A footpath and native meadow flow through passages between the gates on the way to the river.



SPECIES WALK Sculptures in collaboration with local artists reflect the restored diversity of the river's ecosystem through interactive installations. These fish species benefit from restoration and provide greater diversity for fishing.

DESIGN PROPOSAL PLAYGROUND



Natural play space

- 1 Arch installation
- 2 Ocklawaha River pattern play surfacing
- 3 Older children's play space
- 4 Old river steamship play sculpture
- 5 Crusher Crawler path- paved with seating and adjacent trees
- 6 Manatee and aquatic species climbing sculptures
- 7 Younger children's play space
- 8 Wood climbing natural play items
- 9 Large pavilion with outdoor kitchen
- 10 Smaller pavilion with picnic spaces and grill
- 11 Channel fishing dock - Children's fishing
- 12 Children's wetland shoreline fishing

Creative exploration

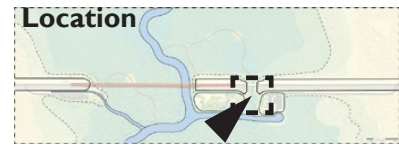
This playground, located in a car-free zone of the site, includes natural play equipment that tells the story of the river. Adjacent pavilions and picnic tables provide a space for individual families and for group events.

Younger children's play space

Older children's play space



DESIGN PROPOSAL SPILLWAY TREATMENT



Drone photography by Reinier Munguia

Existing spillway conditions

- 1 Rodman Reservoir
- 2 Steep informal footpaths
- 3 Uneven paved surface
- 4 Pedestrian and vehicular crossing
- 5 Mechanical spillway elements intact
- 6 Spillway tailrace deep, fast moving water
- 7 Large existing canopy trees
- 8 Fishing dock
- 9 Island not accessible by foot
- 10 Low topography and flooding



Post-restoration conditions

- 1 Floodplain forest regrowth
- 2 Accessible sloped paths with plantings
- 3 Improved surfaces
- 4 Pedestrian crossings by boardwalk
- 5 Spillway structure cleaned & repurposed
- 6 Wetland area with birdwatching
- 7 Large existing canopy trees remain
- 8 Fishing moved to natural river
- 9 Foot bridge connections across site
- 10 Regraded to lessen flooding
- 11 Artistic Interpretive installation
- 12 Panoramic lookout over forest
- 13 New boardwalk trails and signage
- 14 Children's wetland shoreline fishing

DESIGN PROPOSAL DAM & SPILLWAY TREATMENT



Panoramic lookout
Views of restoration across the reservoir looking out from the spillway structure

Foot bridge
Connects the island to the berm while reflecting the design of the larger bridge across the river

Spillway structure
Mechanical elements are removed and structure is restored as a passage through the site

Wetland habitat
Marsh area remaining after regrading spillway becomes a wetland birdwatching space

Berm slopes
Steep slopes made navigable through accessible paths through wildflower plantings

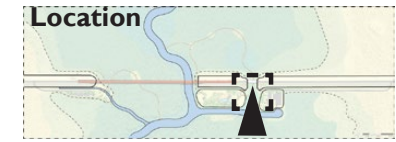
Boardwalk
Connects the elevated portions of the North Berm site and floodplain forest trails



Educational signage
Throughout the site, site signage tells the story of the river. The color and metal material of the signs alludes to the history of the site as an altered landscape

Drowned Forest Installation
This installation is located at a connective point within the site's circulation. Cypress wood collected from the reservoir represent the experience of traveling through the remnants of the drowned forest. A native wildflower understory adds shifting color throughout the year.

DESIGN PROPOSAL DAM & SPILLWAY TREATMENT



Foot bridge

Berm slopes

Panoramic lookout

Site Signage

Illustrative site signage reveals the history of the river and importance of the dam site

Spillway structure

The open gate structures frame the restoration of the floodplain forest and allow for wildlife crossing.

Boardwalk



DESIGN PROPOSAL NEW BRIDGE OVER NATURAL RIVER TREATMENT



River fishing platform
Physically separated lane over the river with seating and room for movement

New Bridge
Old-Florida inspired truss design with vehicular and pedestrian lanes

Underpass
Boardwalk with river access and mural work along the wall of the berm cut

Species sculptures
Sculptures along the path follow the upriver migration of several species

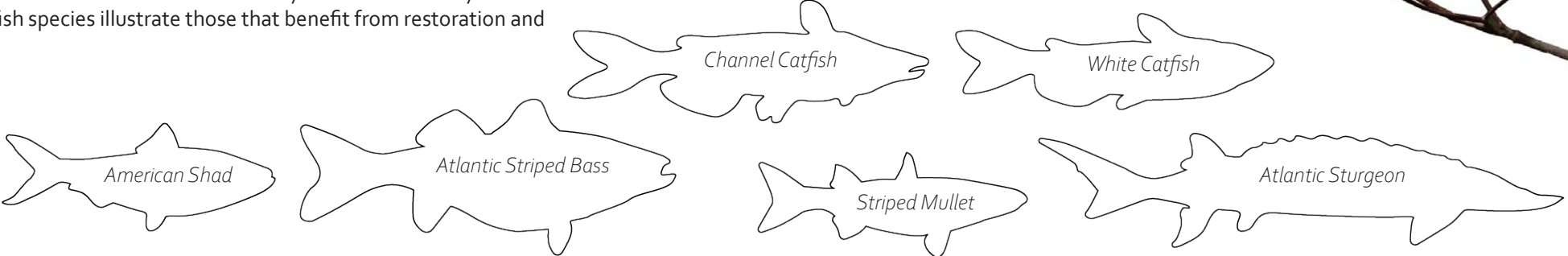
Restored natural river channel

American Redstart
Setophaga ruticilla

Flowering Dogwood
Cornus florida

Plant palette
Regraded landmass areas provide the foundation for upland hardwood forest plantings, including both native canopy and understory flora.

Restored fish species to the riverway
Sculptures in collaboration with local artists reflect the restored diversity of the river's ecosystem through interactive installations. These fish species illustrate those that benefit from restoration and provide greater diversity for fishing.



A DAM REDEFINED A RIVER RESTORED AND FLORIDA WILDLIFE CORRIDOR STRENGTHENED

The dam site offers a unique opportunity to watch the regrowth of an entire landscape. While remaining as a signifier of the past, the repurposed dam and spillway integrate with the restored landscape as it develops.

+ 1 YEAR

Drowned forest exposed & early growth of existing seedbank

+ 10 YEARS

Hardwood trees greater than 14 feet in height

+ 30-40 YEARS

Canopy development



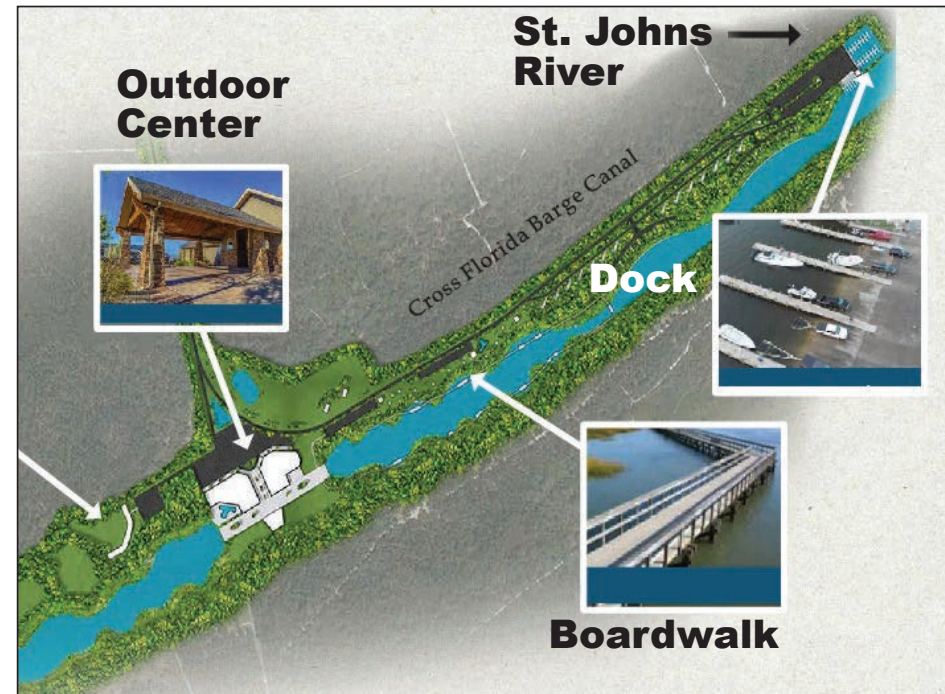
Eight 2020 UF Concepts for Outdoor Recreation

Concepts were designed based on partial restoration of the Ocklawaha River.



Rodman Recreation Center and New Gateway Bridge Underpass Park—Clayton Ford and Kristen Currington

The area surrounding the dam gets a facelift with expanded boat ramps, kayak landing, children's playground, restaurant and food truck court. Fishing is still hot along the loop park southwest of the dam, where diverse varieties of fish are migrating upstream and downstream.



The Kirkpatrick Outdoor Center at Buckman Lock—Christian Brewer, Juan Garcia, Anthony Paparella

Through the help of a public-private partnership, the east side of the Buckman Lock has been repurposed into a state-of-the-art angler and hunter center with an outfitter store, small marina and tournament center for the St. Johns River. The westside of the Buckman Lock was filled in to complete a significant link of the Florida Wildlife Corridor. It contains shallow ponds for teaching fishing and seasonal duck hunting. A day picnic area is heavily used.



Expanded Shore Fishing Platforms and Infrastructure – Kristen Currington

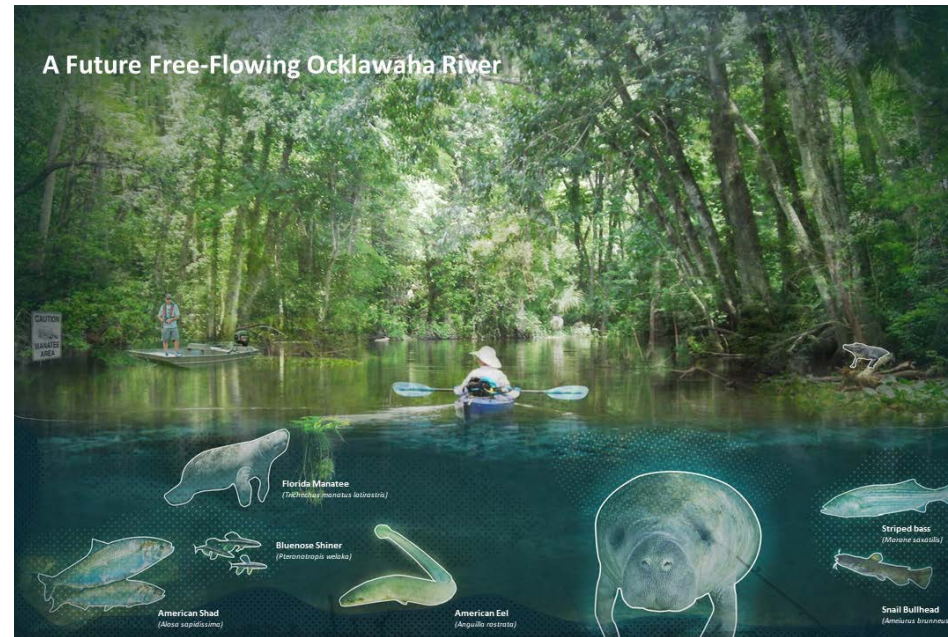
As the reservoir transforms to a natural river, additional banks emerge, such as those at drawdown at Orange Creek and Kenwood Ramps. The restored 16 miles of now reservoir riverbank provide natural areas for expanded river fishing. A new fishing platform near the breach in the dam offers a good spot for capturing striped and largemouth bass, striped mullet, white or channel catfish, sunfish or possibly an American shad migrating up and down the river. Better road access and restroom facilities improve the fishing experience.

Eight 2020 UF Concepts for Outdoor Recreation



Osceola to Ocala Wildlife Corridor—Andrew S. Davidson

A forest is recreated, restoring 7,500 acres of forested wetlands for hiking, hunting and primitive camping. Beginning as a marsh filled with fish and waterfowl, the forest grows over time into a cypress wonderland. Birding is a top visitor attraction. Black bears, Florida panther, white-tailed deer and wild turkeys are some of the species enjoying the continuous corridor. This project helps enhance the important Florida Wildlife Corridor.



Manatee and Fish Conservation and Viewing Areas—Uma Blandon, Angelina Cabrera, Kate Noel and Xiaoyu Zheng

Twenty submerged springs appear once the river is restored and the weight of the dam waters is removed. Several of the larger springs could provide warm water winter habitat for up to 100 manatees each. With added restrooms and viewing platforms, two of these refuge areas could attract 30,000 new visitors a year and bring in \$3 million annually. Spring hopping is a favorite summertime sport. Silver Springs can become one of the state's largest inland manatee viewing areas.

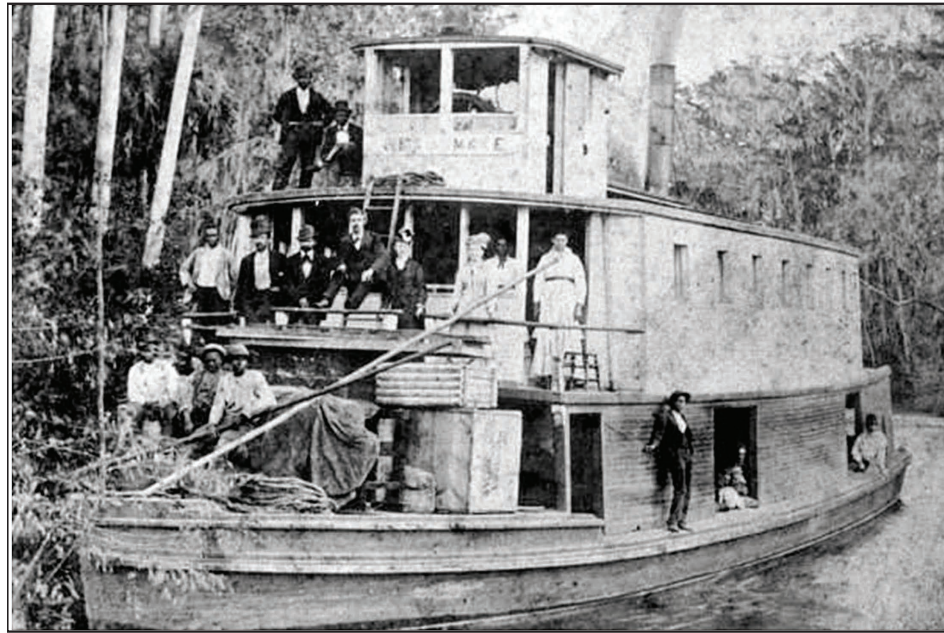
Breaching the Rodman/Kirkpatrick Dam would allow safe, natural passage for more manatees. With adequate protections, Silver Springs becomes a center for manatee viewing. Imagine viewing cameras in the springs with large monitors for everyone to see from the glass-bottomed boat docks.



The Ocklawaha River Trail Paddling Experience — Frank Kravchuk

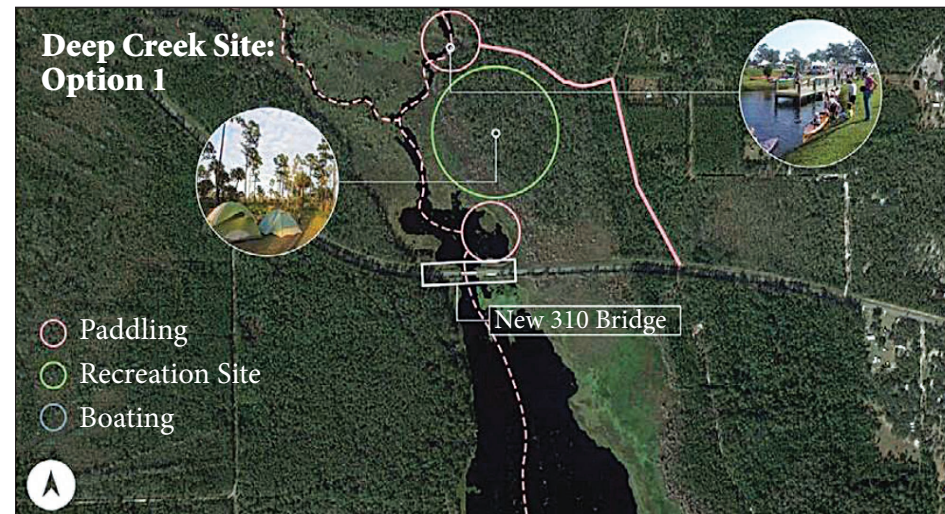
Like the popular Suwannee River Wilderness Trail, the restored river opens 20 drowned springs, a continuous natural paddling trail, banks open for stopovers and platform camping, more visible cypress forests and bountiful fish and wildlife. The current open waters of the reservoir and flooded riverbanks do not provide the ideal paddling experience.

Eight 2020 UF Concepts for Outdoor Recreation



8. The Historic Steamboat Trail— Corey Reinchenberg

Unique driving tours originate from the St. Johns River Center in downtown Palatka and Silver Springs State Park focusing on significant historical, environmental and recreational assets of the region. Themed steamboat landings provide an anchor for the popular tours.



Deep Creek William Bartram Trail Site at State Road 310 Bridge—Thomas Maingot

The Deep Creek Trail Site is one of the known locations where naturalist William Bartram's travels touched the Ocklawaha River. Accessible by land and water, the site would feature a picnic area, motorboat ramp, paddle launch and camping area.

Restoration of this historic environmental treasure could bring back an estimated 3,000 acres of significant habitat and a beautiful boating trail.

Online Student Project Showcase

See the full student presentations at Student Showcase—The Great Florida Riverway:

<https://greatfloridariverway.com/student-showcase/>

The UF student concepts of what recreation could look like on the Ocklawaha River in a restored river environment.

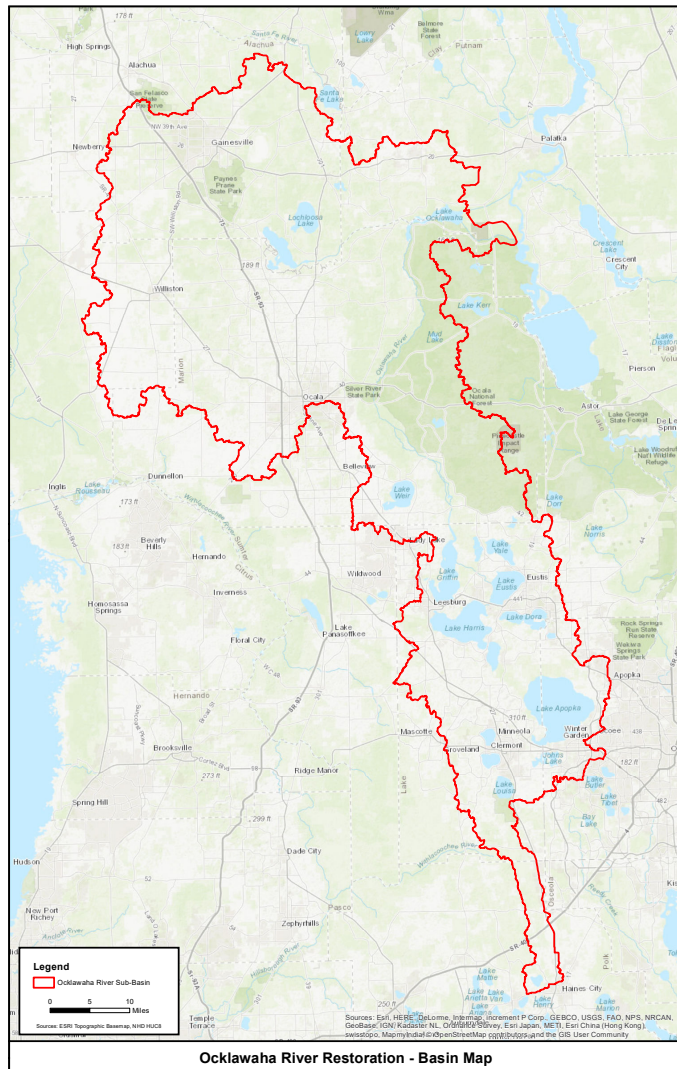
Benefits of Creating a Multi-county Master Plan



The University of Florida recreation projects were designed with the goal of providing local leaders and citizens with inspiring visions of what this region could become. They were done to use as a tool for discussion and inspiration.

These concepts could be a springboard for the creation of a regional multi-county recreation and restoration master plan. By creating a regional multi-county master plan, the region can attract more grants, raise private funds, coordinate continuous trail designs, and market as a regional designation. As importantly, it can be used to leverage wetland or other priority habitat for restoration credits for recreation amenities and local, state, or regional public infrastructure projects.

A tool to help with execution of this plan could be the designation of a regional offsite mitigation area (ROMA) used only for public projects. By focusing on public sector projects, it eliminates competition with private mitigation companies. Many FDOT projects and other big local government projects have already identified sources of mitigation credits for the next five years. That is why a ten-year plan is suggested. Projects that come to mind that may not already have identified sources for mitigation credits include the Putnam inland port, the SR310 bridge and recreation infrastructure and bridges that would be part of Ocklawaha restoration.



OCKLAWAHA REGIONAL PLAN	Suitability Analysis:	Data Sources:	Potential Deliverables:
<p>Program:</p> <ul style="list-style-type: none"> Overall corridor concept plan incorporating all restoration, recreation, and related public works projects in the project area Potential partners including Putnam County, Marion County, Silver Springs CRA (County), Palatka, City of Ocala, SJRWMD, DOT, Welaka, USFS, FDEP, others 	<p>Establish boundary map for project area and identify all local governments – city and county, WMD, DOT districts, etc.</p> <p>Detailed maps of new and existing recreation sites – updating those in the 1992 recreation plan</p> <p>High level point data for potential projects that could require wetlands mitigation in 5-10 years could include...</p> <ul style="list-style-type: none"> Shands Bridge Elevation Putnam Inland Port SR40 Bridge CR316 Eureka Bridge SR19 Bridge CR310 Bridge Possible bridge for Rodman Restoration Recreational amenities for Marion and Putnam Counties Recreational amenities for USFS, FDEP, FWC 	<p>Project area map</p> <p>County and municipality boundary maps</p> <p>DOT District Plans</p> <p>Local gov. recreation plans and infrastructure plans</p> <p>State and federal agency recreation plans</p> <p>Updated mitigation marketing plan (consultant)</p> <p>Model projects from Lee County Land Acquisition and Hillsborough County Land Acquisition</p> <p>Resources: Kae Hovater, EcoCredit Marketing Vivienne Handy, Quest Ecology</p>	<p>10 Year Conceptual Master Plan all projects including GIS map, mitigation credits, values and allocation, partnership agreement</p> <ul style="list-style-type: none"> Develop a multi-agency, multi-county partnership including local governments, DOT, conservation, and tourism leaders to develop a regional project Plan could be used to go after federal, state and private funding including funds from wetland credits. Wetlands restored by the project would mitigate recreational improvements and associated road and bridge work within the project area. This could provide incentives of value to the local governments, a cost savings to local governments. DOT project credits where existing bank credits are not available and could generate funding for recreational amenities or restoration Work with Marion and Putnam Counties and state and federal agencies to identify recreation and public works projects within the project area. Make it local government/community driven – focused on Marion and Putnam Counties. Include all the projects into permit or legislation, even if they will take some years to complete. SJRWMD would review as one permit. Additional credits could be generated in partnership with a mitigation banking marketer for projects outside the plan boundary or mitigation type not available elsewhere. <p>Products needed:</p> <ul style="list-style-type: none"> High level restoration and recreation master plan showing giving and receiving credit areas with estimated credits in each (could potentially look at upland and water quantity and quality credits)