

To: Mayor and City Council
From: Carl Thomas, Stormwater Utility Manager
Re: Funding Authorization for Nature Center Stream and Wetland Improvement Engineering Services
Date: May 8th, 2023

Action

Authorize the Mayor, City Manager, or designee to approve \$180,983 in funding for Nature Center Stream and Wetland Improvement Engineering Services.

Summary/Details

The 2016 Master Plan for the Dunwoody Nature Center (DNC) includes multiple stormwater management mitigation strategies at critical areas within the park. One of the projects consists of a wetland and stream enhancement project in an active floodplain area with multiple channels conveying high flows. In 2021, Brown and Caldwell prepared a Technical Memorandum for Parks and Public Works staff summarizing the recommended actions to complete approximately 400 feet of stream restoration, replace and expand the existing boardwalk, and enhance the health of the existing wetland located on the east side of Wildcat Creek. The proposed stabilization and restoration project begins at the Nature Center property line and ends at the historic stone masonry weir. The existing boardwalk is located within a delineated wetlands area east of the right stream bank of Wildcat Creek. Invasive species were present within the wetlands area, staff noted multiple flooding events with debris accumulation requiring repeated maintenance along the boardwalk. In June 2022, City Council approved a shortlist of pre-qualified firms to provide engineering and design support from the current term through the 2022-2027 stormwater permit duration. Over the past few months, a selection committee composed of Parks, Public Works, and Nature Center staff met with three of the City's on-call design firms (POND, Freese and Nichols, and TetraTech). They walked the proposed site and evaluated their plans for preparing a design for the watershed improvement and boardwalk project. After reviewing the qualifications of the project teams, the proposed scope of services, and overall cost, the selection committee chose the design firm with Freese and Nichols.

If approved by Council, this project will be funded from the American Rescue Plan Act (ARPA) budget allocated for stormwater improvement projects.

Recommendation

Staff recommends approving \$164,530, plus 10% contingency, for a total of \$180,983 in funding for the Dunwoody Nature Center Stream and Wetland Improvement Engineering Services.



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February 20, 2023

Carl B. Thomas Sr, CSM, CFM
Stormwater Utility Manager
City of Dunwoody
4800 Ashford Dunwoody Road
Dunwoody, GA 30338

Subject: Proposal for Engineering Services for Stream Restoration and Wetland Improvements at the Dunwoody Nature Center

Dear Carl,

It is our pleasure to submit this proposed scope of services to you to provide professional services to the City of Dunwoody ("City") related to the evaluation and design of park improvements at the Dunwoody Nature Center ("Nature Center"). These improvements include an extended boardwalk, outdoor classroom, and repair of stream and wetland issues at the Nature Center. FNI understands that the design approach for stream and wetland improvements will be for a construction document that is surgical in nature, which aims to solve areas of instability with minimal impacts on existing functional streambanks. This proposal describes the scope of professional engineering services to be completed under this contract.

Background

In 2021, Brown and Caldwell prepared a technical memorandum dated November 16, 2021 ("B&C Memo") for the City outlining observed issues and concepts for improvement of the area of the Nature Center adjacent to the Unnamed Tributary to Ball Mill Creek, which includes a small floodplain wetland and an existing wooden boardwalk. The B&C Memo identified discrete areas of bank erosion, sedimentation, invasive plant species in the wetland, as well as flood damage to the boardwalk. The B&C Memo provided several recommendations to address these issues, which included a stream restoration, a boardwalk extension, an outdoor classroom, and wetland enhancements.

Project Understanding

To help in the preparation of this proposal, FNI reviewed the B&C Memo and conducted a site visit to observe the areas of concern, assess project constraints, and evaluate permitting requirements. The following observations were made at the site visit.

As identified in the B&C Memo, FNI identified several discrete areas where bank repair and restoration work are needed, some of which appear to be the result of failing existing in-channel structures, pedestrian traffic, and continued erosion over time. Much of the stream is stable with mature vegetation, which should remain undisturbed as much as possible during construction to preserve the riparian ecosystem consistent with the educational and recreational purposes of the Nature Center.

The small floodplain wetland appeared to be typical of a Piedmont floodplain wetland. However, it was observed to be experiencing sedimentation due to the erosion of a small ephemeral stream and

proliferation of invasive plant species. An initial task of the design will be to evaluate the functions of this wetland and propose measures to enhance the wetland by removing observed stressors such as sediment input and invasive species. We recommend the stabilization of the eroding ephemeral stream as part of the work to enhance the wetland, which can prevent proposed wetland plantings from being buried by future sediment deposition.

During the site visit, FNI also observed several children playing in the stream at several locations, illustrating the value of the stream to the park's function. Thus, it will be important to provide several access points into the stream via a strategically placed boardwalk to minimize the disturbance and impacts to the streambanks. Additionally, we recommend placing educational signs near proposed wetland plantings to describe their ecological functions to maximize educational opportunities at the boardwalk.

The project area in the park is comprised of a mature floodplain forest, and a critical component of the design will be to minimize impacts on vegetation to perform the work. A focus will be placed on bank stabilization solutions that can be manually installed where possible to reduce the need for heavy equipment. Where heavy equipment is required, FNI will attempt to select access paths and approaches that minimizes environmental disturbance. We are currently using this approach on several stream restoration projects in city park settings in the Southeast, including in Brookhaven, GA, and in Roanoke, VA.

We propose having close coordination with the City Parks and Recreation Department, Nature Center Staff, and other key stakeholders throughout the design process through a series of design review meetings. This would include an initial design charrette to discuss initial concepts and to better understand the City's vision, project constraints, and sensitivities of this area of the park.

Scope of Services

These services include a geomorphic assessment, conceptual designs, cost estimating, detailed designs, permitting, bidding phase services, and construction phase services for park improvements and stream restoration within the Dunwoody Nature Center.

The scope includes the following tasks:

- Task 1 - Meetings and Status Reports
- Task 2 - Geomorphic Assessment, Project Site Visit and Conceptual Plans
- Task 3 - Design
- Task 4 - Permitting and Approvals
- Task 5 - Bidding Phase Services
- Task 6 - Construction Phase Services
- Task 7 - Public Outreach and Coordination

Task 1 – Kickoff Meeting and Status Reports

- A. **Project Kick Off Meeting:** FNI will conduct and attend a project kick-off meeting to discuss the scope of work, schedule, and coordination. As part of this subtask, FNI will prepare and distribute meeting agendas and minutes.
- B. **Monthly Status Reports:** FNI will prepare and distribute monthly status reports via email. The status report shall summarize work completed, percent completed to date for the schedule and budget, upcoming work, and any outstanding issues or decisions that must be resolved by City staff or the project team.

Task 2 – Geomorphic Assessment, Site Visit and & Conceptual Plans

- A. **Site Visit and Geomorphic Assessment:** FNI will perform a single site visit to map and document the geomorphic condition of the reaches of concern, assess the wetland for its current quality and function, and evaluate opportunities for enhancement. A FNI landscape architect will accompany the stream/wetland specialists on this visit to assess the potential layout of the boardwalk and outdoor classroom, examine potential constraints, and collect photos and location data to assist in laying out the general features of the park improvements. A survey grade GPS unit will be used to demarcate start and stop locations of work within the stream channel and other key features needed for the park improvements. This sets up the ability to assign specific solutions to exact locations of problems at the site. The geomorphic assessment will document the Bank Erosion Hazard Index (BEHI) condition of both banks, identify issues of streambank erosion and sediment transport, and provide the data necessary for detailed design.
- B. **Conceptual Design:** A technical memorandum will be completed along with geomorphic condition maps and conceptual design plans that will provide sufficient details for a construction cost estimate. Conceptual plans will include:
 - A preliminary alignment and stationing
 - Limits of the work
 - Identification of stage and stockpile areas
 - Potential phasing of the work
 - Proposed bank stabilization methods along the reach at a scale of approximately 20' detail of transitions.
 - Proposed in-channel structures, if relevant
 - Preliminary layout of outdoor classroom and boardwalk
 - Proposed improvements and enhancements to the floodplain wetland
 - Details with design elements sized for the proposed channel section
 - Proposed typical sections
 - Schematic of proposed vs existing bank cross sections.

FNI will initiate permitting discussion with the appropriate agencies at the conclusion of conceptual plan development.

- C. **Design Charette/Stakeholder Meeting:** Following conceptual plan submittal, FNI will meet with the City and key stakeholders to review the proposed design concepts and site constraints. The intent of this meeting is to present FNI's updated recommendations and discuss proposed design extents, budget constraints, timing of the work, and other key coordination topics with the City. We will also discuss the opportunities for incorporating the Nature Center's educational programs into the development of the project. The information gathered at this meeting will be used to prepare detailed design drawings as outlined in the following tasks.

Assumption: No H&H modeling is provided for this phase as that will be done in detailed design.

Task 3 – Detailed Design

- A. **60% Design:** FNI will prepare and submit a 60% design submittal which shall include:
- Construction plans with plan and profile sheets, typical cross sections, and details.
 - Outline of specifications to identify major components of the work. FNI will present an outline of proposed upfront sections of the project manual. The upfront sections will be licensed EJCDC documents.
 - Hydrologic/hydraulic (H&H) calculations required to support the design and no-rise conditions to the project floodplain.
 - Construction cost estimate based on quantity takeoffs and line items.
 - Permitting report identifying each permit along with the strategy and schedule to obtain each permit.
 - Updated project schedule from beginning to end of construction.

After the City has reviewed the submittal, FNI will coordinate a status meeting at the City offices to review City comments and to discuss the status of the project.

- B. **95% Design:** FNI will prepare and submit a 95% design submittal which shall include:
- Revised construction plans based on City comments. The construction plans will be checked and ready for PE seal and signature after final comments are addressed.
 - Project manual for final City review and bidding.
 - Final calculations, which will include H&H, anticipated sediment reduction volumes, stormwater quantity and quality, sediment transport calculations, and erosion and sediment control.
 - Finalized construction cost estimate based on quantity takeoffs and line items.
 - Permitting report that provides a brief status report of each permit application and anticipated schedule to obtain each permit.
 - Updated project schedule.

Once the City has reviewed the submittal, FNI will attend a status meeting at the City offices to review City comments and to discuss the project status.

- C. **Final Design:** FNI will finalize the plans and project manual based on City and agency comments and will prepare final documents for bidding. Deliverables will include sealed copies of the Construction Plans and Project Manual.

Assumptions: Based on discussions with the City, it is assumed that the boardwalk structural design will be completed by the selected Contractor as part of the construction contract, and not by FNI. FNI will finalize the layout and alignment of the boardwalk and outdoor classroom, working closely with the City and the Nature Center to select the optimal location. A performance-based specification will

be developed providing the design criteria for the boardwalk and outdoor classroom, and will be included in the project manual. It is also assumed that the park improvement work designed by FNI will be limited to the board walk and associated outdoor classroom, stream restoration/stabilization, and wetland enhancement.

Task 4 – Permitting and Approvals

FNI will prepare applications and coordinate with all appropriate agencies to obtain authorizations to perform the work. Listed below are the permits and approvals that are anticipated:

- A. **USACE Nationwide Permit:** FNI will prepare applications and coordinate with agencies to obtain authorizations needed to construct the project, as needed. It is anticipated that agencies to be coordinated with include the US Army Corps of Engineers (USACE), Georgia Environmental Protection Division (EPD), and the U.S. Fish and Wildlife Service (USFWS). FNI believes that the following Nationwide Permits (NWP) will be required for the project:

- NWP 13 (Bank Stabilization) for streambank restoration
- NWP 18 (Minor Discharges) for the boardwalk and wetland improvements
- NWP 3 (Maintenance) for maintenance of existing structures.

The specific permits needed will be confirmed with the USACE Savannah District during the permit coordination process.

- B. **Land Disturbance Permit:** FNI will prepare and submit a land disturbance permit from the City of Dunwoody.
- C. **No Rise Certification:** FNI will prepare and submit a no-rise certification, with technical back-up information to City of Dunwoody.

Assumptions: FNI assumes that the City will pay required permit fees.

Task 5 – Bidding Phase Services

- A. FNI will assist with preparation of the bid advertisement.
- B. FNI will help setup and attend a pre-bid meeting.
- C. FNI will assist with response to bidders' questions and preparation of Addenda.
- D. FNI will assist with evaluation of bidders' submissions.

Task 6 – Construction Phase Services

- A. **Field Inspections:** FNI will perform periodic field inspections at least 2 days a week during construction within the stream corridor to maintain tree protection areas and minimize pedestrian traffic. For the purposes of this scope of work, it is assumed that construction will last approximately 3 months.
- B. **Meetings:** FNI will hold a pre-construction kickoff meeting, periodic status meetings, substantial completion inspection, and final completion inspection.
- C. **Construction Management:** FNI will review construction submittals, including technical submittals, Contractor schedules, Contractor pay requests, Requests for Information, and Requests for Change Order. FNI will prepare supplemental information to support change orders and field orders and respond to requests for information as needed.
- D. **Recordkeeping:** FNI will maintain project records during construction and submit records to the City at the end of construction.

Task 7 – Public Outreach and Coordination

- A. **Public Outreach Meeting:** FNI will coordinate with the City Engineer and the Parks staff to conduct one public informational meeting. Kiosks or other informational materials will be prepared to be produced by the City for posting at the project site.

Project Team and Organization

FNI will provide a team of professionals to deliver the scope of services in this proposal. This team will consist of the following key staff:

- Project Manager – Charles Crowell, PE
- Technical Lead – Emily Brown, PE
- Senior Advisor – Bryan Dick, PE
- Ecology and Permitting – Jason Steele
- QC Review – Ian Jewell
- Engineering Support – Lydia Ward, PE
- Engineering Support – Nathan Shelp, EIT
- Engineering Support – Mayuko Mizutani, EIT

Project Schedule

FNI will complete the project per the estimated schedule outlined below, which is based on anticipated notice to proceed of March 6, 2023:

Project Component	Target Completion Date
Kickoff Meeting	March 15, 2023
Conceptual Plan and Design Charette	April 10, 2023
Project Design – Stream Restoration and Park Improvements	July 28, 2023
Project Construction Bid Package	August 18, 2023
Construction Contract Award	September 22, 2023
Construction Completion	January 22, 2024
Project Closeout	February 16, 2024

Estimated Budget

FNI proposes to perform the services listed above for a not-to-exceed amount of \$164,530. The summary of each task fee is based on the expected level of effort to complete the scope items outlined above.

Task	Description	Fee
1	Project Management and Meetings	\$16,356
2	Geomorphic Assessment, Project Site Visit and Conceptual Plans	\$34,806
3	Detailed Design	\$56,256
4	Permitting and Approvals	\$15,072
5	Bidding Phase Services	\$4,760
6	Construction Phase Services	\$33,840
7	Public Outreach	\$3,440
Project Total (Not to Exceed)		\$164,530

Our services will be billed on an hourly basis using rates that match our agreement with the City of Dunwoody, by staff classification. Invoices will be submitted no more than monthly throughout the duration of the project. The invoices will provide a cost breakdown by work order on each invoice.

All services will be performed in accordance with the Terms and Conditions of the Agreement between the City of Dunwoody and Freese and Nichols, Inc. dated October 27, 2022. You can indicate your approval by signing below. Thank you once again for the opportunity to serve the City of Dunwoody.

Sincerely,
FREESE AND NICHOLS, INC.

Charles E. Crowell, Jr., PE
Project Manager



Marc T. Miller, PE
Principal/Vice President

Authorized By:

Printed Name

Signature

Date



DRAFT Technical Memorandum

990 Hammond Dr, Suite 400
Atlanta, GA 30328

T: 770.394.2997

Prepared for: City of Dunwoody

Project Title: Dunwoody Nature Center Stream Bank Restoration Concept Plan

BC Project No.: 157291

Technical Memorandum 1

Subject: Dunwoody Nature Center Stream Bank Restoration Technical Memorandum


Date: November 16, 2021


To: Brent Walker, Director, Parks and Recreation

From: David Elliott, Project Manager

Copy to: Gabe Neps, Operations Manager, Parks and Recreation

Carl Thomas, Stormwater Utility Manager, Public Works

Prepared by: 
Christian Moseley, Senior Staff Engineer

Reviewed by: 
David Elliott, P.E., Senior Manager

Introduction

This Technical Memorandum (TM) summarizes the recommended actions to complete approximately 400 feet of stream restoration, replace and expand existing boardwalk, and enhance the health of the existing wetland located on the east side of Wildcat Creek. The Dunwoody Nature Center is located at 5343 Roberts Drive in Dunwoody, Georgia. The project extent is located east of the Nature Center along Wildcat Creek which is a tributary to Ball Mill Creek. The portion of Wildcat Creek that is proposed to be restored and stabilized begins at the Nature Center property line and ends at the existing historic stone masonry weir. The tributary continues to flow north past the weir and then discharges to an existing 60" culvert, intersecting a private road, located northeast of the Nature Center. Wildcat Creek is a tributary of Ball Mill Creek which is on the 303d list of impaired streams. The proposed restoration length is approximately 400 linear feet (LF). The existing boardwalk is located within the wetlands, east of the right stream bank of Wildcat Creek.

Existing Conditions

Brown and Caldwell (BC) performed a site reconnaissance of the project extents and delineated the wetlands adjacent to the stream on September 13th, 2021. The stream width varies from 8 to 15 feet within the project area, and active erosion along the streambanks was observed. An ephemeral stream, located in the southeast portion of the project extents, drains into the wetlands. Wetlands are located on the right and left streambank and extend east and upstream from the existing boardwalk. Invasive species were present within the wetlands. Evidence of creek flooding on the boardwalk has been noted by the City of Dunwoody and was also apparent from the debris on the boardwalk observed during the site visit. If the boardwalk experiences repetitive flooding, maintenance is expected to increase over time. The southern portion of the existing boardwalk ends at an existing trail that leads east, away from the stream, and adjacent to the south portion of the wetlands. This trail includes two existing sets of wooden stairs.

Proposed Conditions

The proposed concept plan, attached to this TM in Appendix A, illustrates the various recommended actions within the project extents. These actions include stream and wetland restoration as well as replacement of the existing boardwalk and outdoor classrooms.

1.1.1 Proposed Stream Restoration

Approximately 400 linear feet of the stream adjacent to the boardwalk and wetlands is proposed to be restored. Restoration efforts include stabilization of the eroded sections of the streambanks using natural channel stream design techniques, and the installation of instream structures to protect the streambanks and improve instream habitat. A priority 4 restoration is recommended, which includes stabilizing the existing streambanks in-place without creating a new stream pattern. Locations of the proposed stabilization measures are included in the concept plan in Appendix A. These proposed improvements are expected to decrease sediment loads and improve water quality within the stream.








Figure 1 – Active stream bank erosion in area proposed for Stream Restoration

It is also recommended to remove invasive tree species within the Nature Center property as part of the stream improvements. The vegetation and site stabilization plan must be prepared along with the design plans that includes a variety of native trees and shrubs.

1.1.2 Proposed Wetland Restoration

During the site reconnaissance conducted by BC, invasive species were noted within the delineated wetlands. As part of the proposed restoration, it is recommended that these invasive species be removed and replaced with native species that are expected to thrive in this environment. Table 1 includes the invasive species observed during the field survey.



Table 1. Observed Invasive Species	
Species	Image
Chinese Privet <i>Ligustrum sinense</i>	
English Ivy <i>Hedera helix</i>	
Liriope <i>Liriope spicata</i>	

During the field visit, it was also observed that the level of biodiversity among flora was low in general comparison to other wetlands. It is recommended that wetland seed mix be applied after the removal of invasive species.



Several eroding areas within the wetland and adjoining the wetland were also observed during the site visit. Pedestrian traffic is a primary cause for erosion in these areas. The proposed extension of the boardwalk and elevation of outdoor classroom areas are recommended to significantly reduce pedestrian traffic in these areas. Additionally, these areas should be revegetated with native species following construction of the expanded board walk and elevated outdoor classrooms.



Figure 2 – Active erosion due to pedestrian traffic and overland flow adjacent to wetland

To promote wetland health and minimize disturbance associated with this proposed project, it is also recommended that a tree survey be completed by a certified arborist during the design of the project. Impacts or removal of native species should be minimized.



1.1.3 Proposed Boardwalk Replacement

As mentioned in the Existing Conditions section of this TM, evidence of flooding along the existing boardwalk has been observed. As part of the proposed plan, BC recommends that the boardwalk be replaced with a new elevated boardwalk. This effort is expected to decrease the recurrence of flooding over the boardwalk, in turn decreasing maintenance costs.

The proposed boardwalk will include two 20'x20' outdoor classrooms. These areas will include educational signage highlighting the benefits of stream and wetland restoration. The new boardwalk will also extend east from the southern classroom to tie into the second set of existing wooden stairs located on the existing trail. The concept plan proposes that the first set of stairs be abandoned, and the second tie into the proposed boardwalk.

Conclusion

BC noted bank erosion and areas of poor wetland health during the site reconnaissance. Evidence of flooding on the boardwalk was also noted. The proposed improvements include stabilization of approximately 400 LF of stream banks with minimal channel realignment starting from the property line and ending at the historic stone masonry weir. This restoration will include several instream structures included in the Concept Plan in Appendix A. It is also recommended that invasive trees and other plant species be removed from within the project site. The boardwalk is proposed to be elevated to mitigate flooding, and 2 outdoor classrooms will be installed with educational signage illustrating the benefits of stream and wetland restoration.

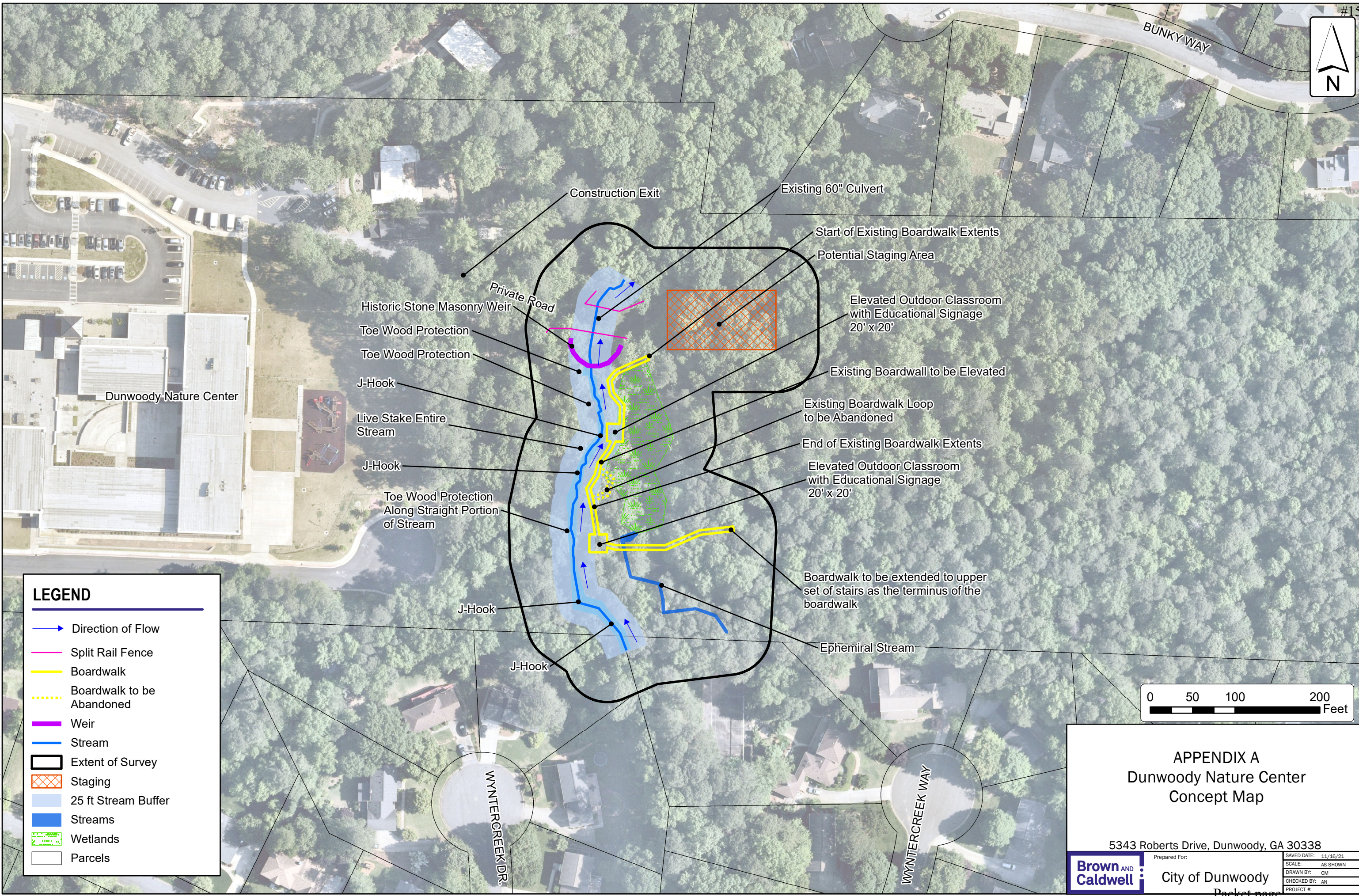
Recommended wetland health improvements and protection include removal of all nonnative species, stabilization of areas where active erosion is occurring, revegetation of any exposed soil, and completion of a tree survey prior to final design of boardwalk enhancements and stream restoration.

These efforts are expected to decrease sediment loads, improve water quality, increase habitat for flora and fauna, and provide education to the public regarding the importance of stream and wetland restoration.



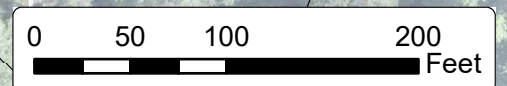
Appendix A: Concept Plan






LEGEND

-  Direction of Flow
-  Split Rail Fence
-  Boardwalk
-  Boardwalk to be Abandoned
-  Weir
-  Stream
-  Extent of Survey
-  Staging
-  25 ft Stream Buffer
-  Streams
-  Wetlands
-  Parcels



APPENDIX A
Dunwoody Nature Center
Concept Map

5343 Roberts Drive, Dunwoody, GA 30338

	Prepared For:	SAVED DATE: 11/16/21
	City of Dunwoody	SCALE: AS SHOWN
	Packet page....	DRAWN BY: CM
		CHECKED BY: AN
		PROJECT #: