

**Restoration and Bank Stabilization Project at Poe Springs
Alachua County Florida
DEP Agreement No. S0202
Final Summary Report**



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Prepared for

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Restoration and Bank Stabilization Project at Poe Springs Poe Springs Park Spring Run Staircase Installation and Spring Head Staircase Extension

Acknowledgements

The Alachua County Environmental Protection Department (ACEPD) wishes to acknowledge and express its appreciation to the Florida Department of Environmental Protection (FDEP) Groundwater Protection Section for funding the Restoration and Bank Stabilization Project at Poe Springs, DEP Agreement No. S0202. This effort stabilizes and protects the bank along the spring run and provides improved public access to the main spring and spring run. ACEPD wishes to thank Laura Morse and Gary Maddox with the FDEP, who supported the project and made it possible. ACEPD wishes to thank Rob Avery, Parks Superintendent; Chris Bird, Department Director; and Kathy Fanning, Natural Resources Program Manager for their support of the project. ACEPD acknowledges the excellent work completed by Patton Construction. James Myles, ACEPD, managed all project field activities and prepared the summary report.

Project Summary and Objectives

The Alachua County Environmental Protection Department (ACEPD) in an effort to make citizens aware to the consequences of shoreline habitat destruction and the resulting erosion and sedimentation are planning to install a staircase to access the spring run. This is a part of the current restoration project in which the riparian buffer has been replanted and other various bank stabilization techniques employed. Access to the spring is now provided by a concrete amphitheater and staircase located at the main spring boil (Photograph 1). The current access is to the deeper part of the spring and is not conducive for young children. For this reason visitors of the park have already created their own access to the shallower spring run by trampling up and down a now highly eroded portion of the bank (Photograph 2). The purpose of the project is to provide an appealing access point to the shallower spring run therefore reducing the foot traffic up and down the bank and the resulting bank instability and erosion.

Project Description and Need

Poe Springs Park is a county owned park along the Santa Fe River, which is operated by the North Central Florida YMCA (Figure 1). This much used area near the spring and river was the focus of a recent restoration and bank stabilization project coordinated by the ACEPD. The scope, resources and funding were not available during the first restoration project, but now as the summer season approaches the need for the staircase is essential to prevent further erosion and to protect the efforts of the previous project. If this staircase to access the spring run is not provided the park visitors will continue to climb up and down the bank increasing erosion and trampling the recently planted vegetation intended to stabilize the banks.

This addition would complete the already outstanding example of shoreline management and riparian buffer restoration. The many visitors (over 26,000 last year) would also learn of the value of healthy, riparian ecosystems from the signage and brochures provided about the restoration and its benefits. This project, although small, is a critical part of several larger efforts. An issue of great importance to the state of Florida is the protection of its springs. The completed restoration and education aspects of this Poe Springs project will contribute to the Florida Springs Initiative.

Final Product

The final project is a fan shaped staircase on the spring run at Poe Springs Park to facilitate the visitors' access to the water (Figure 2). The staircase is secured to the bank using concrete filled PVC pilings with ACQ treated structural beams with the landings made of a plastic decking (i.e. TREX™). This structure will prevent further erosion of the bank and concentrate the foot traffic to one location instead of being dispersed throughout the riparian buffer as it has been historically.

Construction Activities

- Friday, June 10 - Decorator Mulch installed several Filtrexx socks to stabilize the toe of the slope and prevent further erosion and sedimentation into the spring run. A Filtrexx sock is a plastic mesh tube in which a mixture of composted tree debris and sand is sprayed. The compost has been lab tested to ensure that there will be no germination of unwanted plants or trees. The rest of the slope in the work area was covered in a jute fiber mat to prevent any further erosion of the bank (Photograph 3).
- Monday, June 13 - Patton Construction installed the turbidity curtain and began the layout of the staircase (Photograph 4).
- Tuesday, June 14 - the PVC pilings were installed and the structural framing was begun (Photograph 5). Structural framing was begun using ACQ treated wood.
- Wednesday, June 15 - the framing was attached to the PVC pilings (Photograph 6). Photograph 7 shows the functioning turbidity curtain and photograph 8 shows the silt fencing that was installed to prevent offsite runoff from eroding the bank during construction.
- Thursday, June 16 - majority of the stairway framing was completed (Photograph 9).
- Friday, June 17 - the framing was completed and the decking installation was begun.
- Monday, June 20 - the decking was installed and the pilings were filled with concrete.
- Tuesday, June 21 - continued work on the deck and built cantilever steps for the lower two steps (Photograph 10).

- Wednesday, June 22 - continued work on the deck and attached cantilever steps for the lower two steps
- Thursday, June 23 - the decking installation was finished, aluminum handrails were installed, the adjacent bank was covered with jute fiber matting and herbaceous plants were installed (Photograph 11).
- Tuesday, June 28 - the turbid water contained by the turbidity curtain was treated with a Floc-Log which contains a soil specific polymer that causes silt and clay to flocculate and prevents the colloidal solution from re-suspending. The Floc-Log is a registered product of Applied Polymer Systems, Inc. This product passes EPA/600/4-90/027F 48 Hr acute static toxicity test (*Daphnia magna*) and is listed under NSF Standard 60 Drinking Water Chemicals.

The turbidity behind the curtain was 93.4 NTU and the turbidity of the spring run was 0.25 NTU (Photograph 12). After the initial treatment the turbidity dropped to 32.8 NTU, an additional treatment was necessary to reduce the turbidity to 15.5 NTU, which is an acceptable level for the removal of the turbidity curtain. The turbidity curtain was re-installed at the spring boil for the installation of the additional stairs (Photograph 13). Two large cypress trees were planted on either side of the spring run staircase (Photographs 14 and 15). Photograph 16 shows the completed staircase.

- Tuesday, June 28 - work on the existing stairways (2) at the main spring began. The existing stairs were undermined and had shifted away from the existing sheet piling wall. They were moved back into place and braced before completion of the new stairs. The forms for the concrete stairs were installed by the end of the day.
- Wednesday, June 29 - the concrete steps were installed and allowed to set overnight (Photograph 17).
- Monday, July 4 - visitors enjoy the newly completed stairway (Photograph 18).

Restoration Educational Efforts

- Tuesday, June 14 - the Santa Fe River Springs Working Group participants visited the site to observe construction/restoration activities. James Myles, ACEPD gave the participants a tour of the project area.
- Throughout the project visitors to Poe Springs Park have inquired about the restoration activities. James Myles has explained the project and discussed the restoration and importance of natural shoreline buffers with many citizens.
- This site is located in an area that has undergone other restoration and replanting activities. There is new signage and brochures informing visitors about shoreline restoration (Figure 3).

Future Projects

ACEPD has identified additional projects to enhance water quality at Poe Springs Park.

These projects include:

- Stabilization of the existing sheet piling wall at the main spring.
- Upgrade of on-site sewage treatment and disposal systems (OSTDS or septic tank systems) at the park gatehouse, lodge and concession area.
- Continued shoreline restoration (bank stabilization and revegetation efforts) along the main spring run, Watermelon Spring run, and the Santa Fe River.

Photograph 1. Existing concrete staircase and retaining wall



Photograph 2. Proposed location of staircase



Photograph 3. June 10, Filtrexx socks and jute fiber mat



Photograph 4. June 13, Turbidity curtain



Photograph 5. June 14, Framing



Photograph 6. June 15, Framing



Photograph 7. June 15, Turbidity curtain



Photograph 8. June 15, Silt fence



Photograph 9. June 16, Framing almost completed



Photograph 10. June 21, Decking and cantilever steps



Photograph 11. June 23, Decking finished, handrails begun, jute fiber mat installed



Photograph 12. June 28, Turbidity inside and outside the turbidity curtain



Photograph 13. June 28, Turbidity curtain for staircase installation



Photographs 14 and 15. June 28, Bald Cypress planted next to spring run staircase



Photograph 16. June 30, Completed Staircase



Photograph 17. Completed concrete stairs



Photograph 18. July 4, Staircase in use



Figure 1. Locational map of Poe Springs

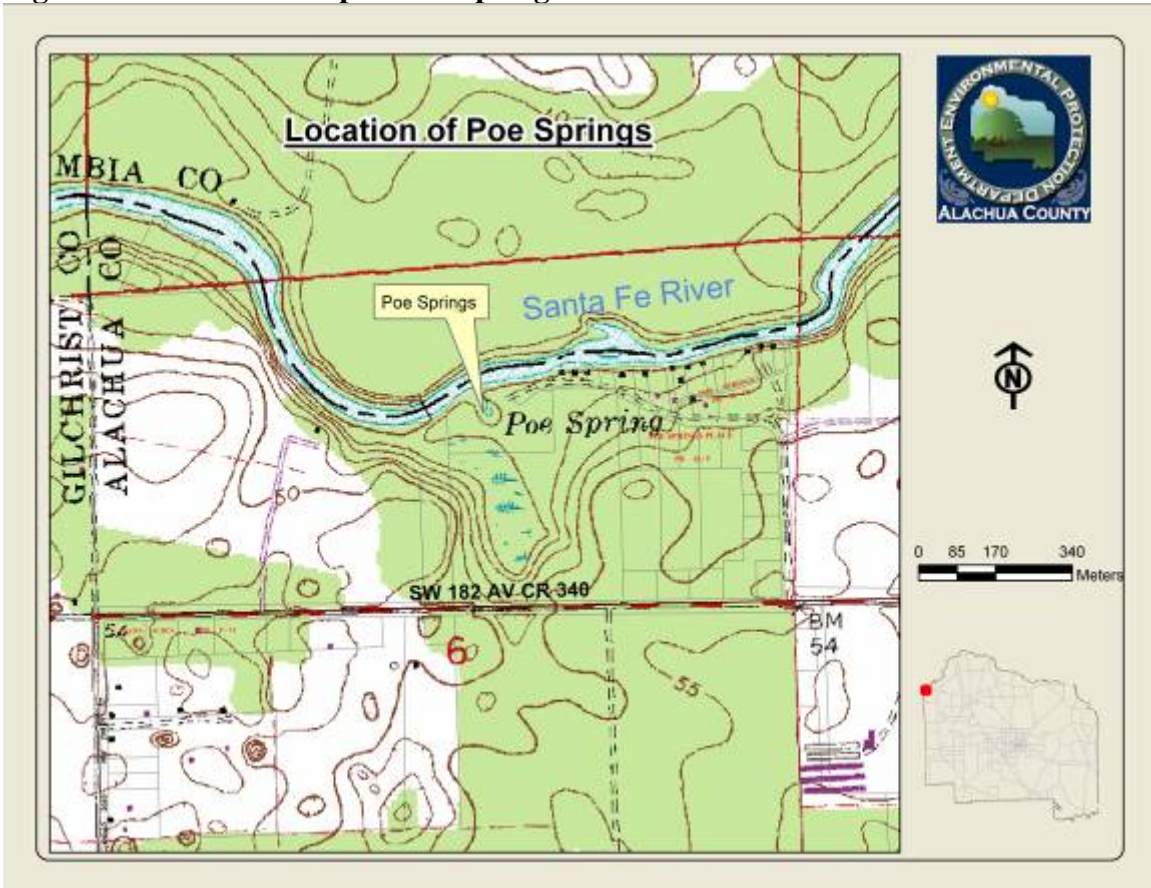


Figure 2. Location of staircase in relation to spring



Figure 3. Shoreline Restoration Sign

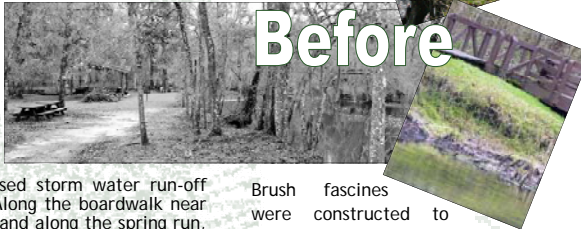
The Main Spring: Site III

The location of the main spring, site 3 had been heavily impacted by human use. A number of places along the river bank were severely eroded by people coming ashore or climbing up and down the bank.

Vehicle traffic along the river bank compacted the soil which contributed to increased storm water run-off and erosion. Along the boardwalk near the spring boil and along the spring run, foot traffic had badly degraded the banks. Run-off from a pavilion was causing soil erosion and sedimentation in the spring run.

Mowing was halted within approximately 20 feet of the river, and a fire

pit was also moved back. 190 trees and shrubby species were planted along the entire stretch, cypress being planted right at the toe of the bank in spots where significant erosion had already taken place.



Brush fascines were constructed to protect the toe of the slope and prevent further erosion. In another spot a "bio-log" was used to protect the toe of the slope and prevent further erosion.

A Shoring-up the Shoreline

Dwarf palmettos, cypress trees, black gum trees and many others were planted along the spring run with the exception of one small area set aside as access for tubers and small children playing in the shallow water of the run.



Anchoring Bio-logs

Along the boardwalk near the spring boil, dwarf palmettos were planted and the wood fence extended to deter traffic. Bio-logs were anchored in the water at the toe of the slope to prevent further erosion, trap sediments and provide a medium in which to plant littoral species.

New Habitat

Habitat for fish, macroinvertebrates, turtles, alligators, otters, and many species of birds have been improved by providing by providing food sources, hiding and resting spots, nesting places, cleaner water and shade to cool water temperatures.



Riparian zones

