UNC Battle Grove Regenerative Stormwater Conveyance

Chapel Hill, NC

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For more than 75 years, Battle Branch creek flowed invisibly through the Chapel Hill campus of the University of North Carolina. Piped and buried in the 1940s, the stream conveyed stormwater beneath Battle Grove, a two-acre field that frequently flooded during heavy rains. Stormwater traveling through the piped stream flowed into a stone-lined channel and ultimately on to Jordan Lake, a local water supply reservoir. The lawn beneath which Battle Branch was buried was located next to a residence hall and included several large specimen trees.

A previously completed campus master plan, which included concepts for improving stormwater management, had recommended daylighting Battle Branch to improve water quality, reduce flooding, enhance local ecology, and improve campus life. Biohabitats, who developed the daylighting concept during the master planning phase, led the design and construction oversight of the restoration. The Biohabitats team applied a "Regenerative Stormwater Conveyance" approach, which reconnects a stream to its floodplain and restores its ability to naturally slow down and filter polluted water and provide habitat.





The design, which daylighted 280 feet of channel and added 118 feet of additional natural channel, featured a network of sand seepage berms, pools, and cobble weirs. These modifications establish the sand seepage hydrology and create a series of vegetated stilling pools, sand seepage beds replete with above and below-ground biomass, and associated flow paths through the sand/mulch filter media.

The physical effect of the pools and the vegetation planted on the lateral sides of the channel reduce water velocity and facilitate removal of suspended solid particles and associated nutrients and contaminants. Uptake of dissolved nutrients and adsorption of oils and greases by the plant stems in the pools yields additional benefits. The project also involved removing a stone-lined channel on the downstream end of the project. Stream daylighting using Regenerative Stormwater Conveyance reduces nutrient and sediment loading while enhancing campus ecology, beauty, and quality of life.



Vegetated stilling pools filtering polluted water



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