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Cattail Creek Stream Restoration and Living Shoreline

The Cattail Creek Stream Restoration and Living Shoreline project aims to improve water quality, reconnect the floodplain, restore habitat for native flora and fauna, and provide fish passage for Yellow Perch. As the creek is spawning ground for Yellow Perch (*Perca flavescens*), fish passage and enhancement of habitat for Yellow Perch is a primary goal of restoration efforts. A beaver dam sits directly above the restored area, and coarse woody material is placed strategically throughout the stream complex in order to create a surface for reproducing fish to lay their eggs, provide habitat for fish and microorganisms, and support the positive bio-feedback loop inherent to a healthy, connected stream, wetland, and shoreline system.

Located in Severna Park, MD, Cattail Creek drains approximately 500 acres of impervious surface and is a primary tributary to the Magothy River. The project also sits within the Berrywood Community recreational area, which includes a ball field, basketball court, boat ramp and parking area. The design incorporates all of these recreational elements into the project, which is crucial to community buy-in of the project, without compromising ecological restoration potential.

Prior to restoration, stormwater flowed from the paved recreational surfaces directly into the creek, without any sort of treatment. A bulkhead provided minimal structure to the shoreline but no water quality benefits or habitat. The creek was characterized by incised banks and sediment-laden waters, capturing stormwater runoff from a highly impervious surrounding area. Historically, a globally significant ecosystem of Magnolia Bog dominated the area.



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Through the project,

- 675 feet of Regenerative Stream Channel (RSC) was created
- 19,060 square feet of wetland was created
- Fish passage was enhanced to 1.5 acres of wetland upstream
- 250 feet of Step Pool Stormwater Conveyance (SPSC) was created
- 145 feet of bulkhead was removed and replaced with 7870 feet of tidal marsh

Nutrient reduction achieved by the restoration efforts includes:

- Total Nitrogen: 641.66
- Total Phosphorus: 99.05
- Total Suspended Solids: 13,413.63

Coarse woody material was reused from removed trees on site and carefully placed in the stream channel to mimic the structure of a beaver dam and the natural accretion of organic material. Carbon contained in woody material is a necessary component of the microbial processes that clean water. It provides an energy source for microbes that return nitrogen to the atmosphere. Microscopic algae that grow on the surface of the wood, called periphyton, provide a food source for aquatic insect larvae and macro invertebrates that are important in the food chain of a healthy stream, and thereby to nutrient processing. Without coarse woody material, a stream cannot reach its full ecological potential, and thus, no water resource restoration effort is complete without it.