

Bolin Creek Greenway Conceptual Master Plan

Goals Consistency Review

Orange County, North Carolina

Prepared For:

Save Bolin Creek Committee

Prepared by:



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1.0 INTRODUCTION

This document is submitted as an independent review of the Bolin Creek Conceptual Master Plan (BCMP) and provides the professional opinion of The Catena Group, Inc. (TCG) on the consistency of the BCMP with its stated goals. TCG is an environmental consulting firm with more than 40 years cumulative experience with natural resource issues surrounding transportation planning.

As stated in the BCMP, the primary goals of the Plan are to:

- 1) Protect and improve water quality along Bolin and Jones Creek
- 2) Protect, conserve, and preserve wildlife habitat
- 3) Connect surrounding land use in Carrboro by providing a non-motorized mode of transportation
- 4) Provide safe access to Bolin and Jones Creek
- 5) Enhance quality of life by providing a recreational facility for all citizens of Carrboro to enjoy

TCG reviewed the BCMP specifically with regards to effects on water quality, jurisdictional resources, and wildlife, and conducted selected site visits to review existing conditions in the proposed alignment and existing greenways built to the design standard proposed in the BCMP.

2.0 METHODOLOGY

Site visits were conducted by Michael Wood and Tom Dickinson of TCG on April 5, 2010, and by Tom Dickinson and Dickson Phillips (representing the Save Bolin Creek Committee) on February 21, 2010. Specific points or areas of interest were recorded via a hand-held global positioning system unit and digital photography. Prior to the site visits, the following published resource information was reviewed: The Bolin Creek Greenway Conceptual Master Plan (Greenways, Inc., 2009), Ecological Assessment Report of Carolina North (Biohabitats, 2007), US Geological Survey mapping, and National Wetland Inventory mapping.

3.0 BOLIN CREEK GREENWAY PLAN CONSIDERATIONS

3.1 Water Quality

The BCMP states that its first established goal is to “protect and improve water quality along Bolin and Jones Creek.” However, the project specific implementation of this goal is not adequately addressed and many of the proposed design elements can actually adversely impact, not protect, water quality. As proposed, the design standards of the greenway would include no materials “prone to washing” and would follow American Association of State Highway Transportation Officials (AASHTO) guidelines. This would consist of a graded, prepared subgrade, an aggregate base, and asphalt or concrete paved surface at least 10 feet wide with an additional minimum of 2 feet of aggregate shoulder on each side. If implemented, the BCMP would result in the introduction of at least 5.8 acres of additional impervious surface in an increasingly urbanized watershed.

The implementation of this design along the currently proposed corridor would require major excavation and grading along the riparian corridor, and in some locations within several feet of the stream banks of Bolin Creek. At locations along Bolin Creek within Phase 4, implementation of these design standards would require excavation into surrounding stream valley slopes, large rock outcroppings, and bedrock. The area in question falls within the geologic formation known as the Carolina slate belt. Near the confluence of Bolin and Booker Creeks, the Bolin watershed transitions from this 550-650 million year old formation of metavolcanics (mostly felsic, with mafic and intermediate volcanic components) to the 190-200 million year old Chatham group of the Triassic basin (conglomerates, sandstones, mudstones) as the system flows southeast. The composition and low erodibility of the rocks of the Carolina slate belt when compared to Triassic basin sedimentary rocks have greater surface persistence and topographical complexity that can make grading to a level construction surface significantly more difficult and disruptive to a site.

These grading activities would inevitably result in the loss of riparian trees and vegetation and cause root damage that could result in unstable stream banks. Unstable banks would in turn result in more riparian tree loss and further destabilize stream conditions. The loss of mature riparian trees would increase light penetration and raise stream temperatures which results in increased algal growth and decreased dissolved oxygen levels, all of which are detrimental to water quality and aquatic life.

Throughout the BCMP, the paved surface is suggested to result in more stable travel corridors that “will mitigate erosion” in the watershed through the reduction of trail braiding and stabilization of exposed soil surface. However, the fact that impervious surfaces reduce the infiltration of precipitation and increase sheet flow, stream flashiness, and flow velocities, is not fully considered. Another factor not fully considered is that the paved corridor could exacerbate erosion during heavy rainfall or high flow events through higher velocity hydraulic turbulence resulting from flows off the edges of the paved surfaces. Without the integration of well designed storm water attenuation structures into the design, which are not properly addressed, the paved greenway could increase erosion in numerous areas along the proposed corridor.

3.2 Jurisdictional Impacts

The recently adopted Jordan Lake buffer rules are intended to reduce the nutrient runoff and resulting harmful algal blooms currently affecting the water quality in the Jordan Lake watershed. The rules implement programs to protect a 50 foot vegetated buffer along intermittent and perennial streams within the watershed, of which Bolin Creek is part. The proposed paved greenway corridor would require an exemption from these rules and/or mitigation, and would undermine the vital pollutant filtering functions that the current forested buffers along Bolin Creek and its tributaries provide.

Additionally, streams and wetlands protected under the Clean Water Act are within the path of the proposed corridor, therefore impacts to these features would be inevitable. Such features provide a multitude of functions and values that benefit water quality as well as other natural resources. These features and the ecological function they provide would be permanently altered by the BCMP. Impacting these features requires permits, which first stipulate avoidance and

minimization of such impacts. As such, the jurisdictional features must first be located and then efforts made to avoid and minimize such impacts. Only after these efforts are documented can cause be made to request permits to impact the jurisdictional features and if deemed necessary, mitigate for these impacts. This analysis and associated costs are not fully accounted for in the BCMP.

3.3 Wildlife

The second stated goal of the BCMP is to “protect, conserve, and preserve wildlife habitat” along the corridor. The Bolin Creek valley currently supports a significant Piedmont community of flora and fauna that is unusual in its proximity to the developing municipalities of Carrboro and Chapel Hill. Paving the main artery of this section of the Bolin Creek valley would threaten the ecological integrity of this resource. Greenway construction would require the grubbing and grading of wetland seeps and ephemeral floodplain pools that provide habitat utilized by amphibians for breeding. Such clearing creates the opportunity for non-native plant species to invade and outcompete native flora without a strictly implemented invasive exotic control plan. Water quality impacts would degrade habitat for native aquatic species and the ecosystem services they provide would be lost.

The section of the Bolin Creek valley in question has been identified as a high priority for preservation by several state resource agencies and the towns of Carrboro and Chapel Hill. Much of the area, such as the recently acquired Adams Tract, is being managed for preservation and there are plans to include the portions of Bolin Creek valley in Phase 3 and 4 of BCMP as a larger preserve. The design elements proposed in the BCMP would threaten the integrity of the wildlife habitat currently present in the valley and construction could undermine its preservation value.

4.0 CONCLUSIONS

While the protection, preservation, conservation, and improvement of the natural environmental resources of the Bolin Creek valley are recurring themes in the BCMP, specific plans or budget line items for implementing these goals are not sufficiently addressed. Thus it can be assumed that if the BCMP is adopted as written, then these stated goals will largely be overlooked in order to implement the paved recreational corridor currently proposed.