

Summary of Findings and Recommendations for the White Oak Local Watershed Plan

The two subwatersheds of the White Oak Local Watershed Plan (LWP) area are collectively 35.5 square miles and are located in Onslow and Carteret counties, including portions of the City of Jacksonville. The plan area is in the outer coastal plain, includes portions of two hydrologic units (03030001020010 and 03020106030040), and is a mix of both rural and urban landscapes. The receiving waters from these watersheds are classified SA waters.

Traditional mitigation opportunities are limited in these coastal watersheds because in-kind restoration opportunities are not available. This plan attempts to address this issue by proposing a mechanism to assign sufficient credits that would offset impacts due to coastal development and habitat degradation. Science and policy experts were brought together in this project to offer recommendations on how compensatory mitigation might offset damages due human activities. Priority restoration objectives have already been outlined for North Carolina in the Coastal Habitat Protection Plan (CHPP). East Carolina University (ECU), in partnership with the North Carolina Office of Environmental Defense (NCED), proposed to develop and implement a process that will demonstrate how compensatory mitigation requirements, and targeted sources of funding, can be integrated into a comprehensive approach to implement recommendations outlined in the CHPP, thereby improving conditions of coastal ecosystems. Two case studies were developed for the Newport River and Northeast Creek watersheds in the White Oak River Basin. The basin has multiple levels of development and a variety of estuarine resources and may be considered representative of coastal North Carolina. The plan made use of existing natural resource inventories and research on water quality that were readily available as background information.

ECU and NCED, with input from EEP, established two Advisory Committees that assisted with addressing the science and policy aspects of integrating CHPP objectives and recommendations with compensatory mitigation requirements for the purposes of long term coastal watershed protection and restoration. The two groups consisted of respected experts in relevant fields and were recruited from federal and state agencies, academia and non-profit natural resource organizations.

Proposed key stressors for streams in the White Oak watersheds and management strategies to address them are listed in the Table 1. These *draft* management strategies address known stressors for the Newport River and Northeast Creeks watersheds using a combination of stream and wetland restoration, best management practices (BMPs), and nontraditional projects that address separate watershed functions that, when combined, provide mitigation to meet the standard of no net *functional* loss. An array of stakeholders—State, County, and local governments, natural resource programs, land trusts, and local citizens—needs to participate in a coordinated effort to successfully restore these watersheds. Most of all, it is vital for the regulating community to recognize the validity of this and similar functional replacement models that provide a more realistic framework for mitigation in the coastal plain than currently exists.

The final chapter of this plan was completed in November 2009.

Table 1. Key watershed stressors and management strategies for the White Oak watersheds

| Ecosystem Component | Alterations | Restoration and Mitigation Opportunities |
|------------------------------|---|--|
| Hydrologic regime | Drainage system installation and maintenance | <ul style="list-style-type: none"> ➤ Improved stormwater management facilities on new development ➤ Watershed-based water and pollution management plans |
| | Water and material flows from dense drainages from forestry and agricultural operations | Implement practices to reduce sediments and nutrients in runoff |
| | Upstream ditching that alters salinity, water quality and flow regime | <ul style="list-style-type: none"> ➤ Water management (i.e., retrofitting of existing drainage systems, floodgates, flashboard systems, etc.) ➤ Delay or cease ditch maintenance ➤ Operations including “desnagging” |
| Materials fluxes / pollution | Hypoxia problems in blackwater tributaries of the Cape Fear estuary related to high densities of CAFOs | Reduction of nitrogen and phosphorous sources responsible for algal blooms such as animal wastes and land-disturbing activities |
| | Water pollution from marina operations (including waste management) and boat operations (human waste, oil and grease) | Watershed-based water and pollution management plans, including engineered solutions-marina/dock restrictions at the watershed scale-limitations on development and impervious surface densities-improved stormwater management facilities on new development-septic tanks rehabilitation and replacement programs |
| | Drainage and irrigation system installation and management | <ul style="list-style-type: none"> ➤ Improved stormwater management facilities on new development ➤ Watershed-based water and pollution management plans |
| | Closure of shellfish beds due to contamination indicated by fecal coliforms | <ul style="list-style-type: none"> ➤ Removal of sources and conduits of contamination ➤ Improved stormwater management facilities on new development ➤ Watershed-based water and pollution management plans-promote sustainable harvest practices |
| Habitat | Loss of SAV due to bottom-disturbing activities that prevent reestablishment (trawling for shrimp, crab and flounder) | Protect SAV and re-establish through plantings and seedlings |
| | Loss of oyster due to bottom-disturbing activities that prevent reef formation (trawling for shrimp, crab and flounder) | <ul style="list-style-type: none"> ➤ Creation of sanctuaries to eliminate bottom disturbance (oyster sanctuaries) ➤ Emplacement of hard substrates to jump-start reef development |
| | Riparian vegetation removal, desnagging and channel maintenance | Maintain large woody debris structure in channel except where it interferes with navigation-reestablish channel grade and bankfull cross section-maintain riparian forest |