

**On-site Mitigation Plan for the Proposed Replacement of
Bridge No. 04 on SR 1207 over Rocky Hock Creek in
Chowan County, North Carolina.**

TIP No. B-3435

June 27, 2002

Overview:

The NCDOT will replace the existing 160.0-foot long bridge over Rocky Hock Creek with a new bridge approximately 799.0 feet in length. The additional bridge length will allow for the removal of 639.0 linear feet of causeway in previously filled wetlands. The existing causeway will be removed and returned to an elevation resembling that of the adjacent wetlands.

Causeway Removal:

The removal of the old causeway will mean that approximately 0.6 acres of fill will be removed from wetlands associated with Rocky Hock Creek and the Chowan River. Approximately 639.0 feet of existing causeway will be lifted, restoring the riverine wetland underneath. It is anticipated that after the causeway is removed, the same wind tides that presented a flooding problem for SR 1207 will now represent a return to the natural hydrologic cycle for the surrounding wetlands. The water will be able to flow unimpeded beneath the new structure, allowing the natural wetland hydrology to return. Therefore, in addition to the 0.60 acres of restoration, the NCDOT proposes riverine wetland enhancement extending outward from the lifted causeway. The area of enhancement will be calculated

as a $\frac{1}{4}$ circle, the radius of which is the length of the causeway removed. The total enhancement area will equal 7.36 acres.

Over the years, there has been a significant amount of compaction and settlement of the existing causeway. As a result of this settlement and the constant maintenance needed for continued operation of SR 1207, the NCDOT anticipates there may be some areas where the current depth of fill material within the causeway, including asphalt, may be 8.0 feet deep or greater below the natural wetland elevation. The NCDOT intends to ensure the removal of this material to prevent potential contamination of the adjacent Chowan River and Rocky Hock Creek. Due to the amount of fill material to be removed, there is the potential for a void to be left in place of the removed causeway. As has been the case in the past with similar projects, the NCDOT proposes to fill these voids with clean, unconsolidated sand. The voids will be filled to within 6.0 to 12.0 inches of the elevation of the surrounding wetlands.

The reason for a range of 6.0 to 12.0 inches is twofold. The filling of the anticipated void with clean sand was recommended by the USACE and is intended to provide a base substrate while allowing the natural hydrologic processes to move organic material and sediment into the top 6.0 to 12.0 inches, thereby providing a natural organic surface over time. By leaving the area that has been filled with loose sand slightly lower than the adjacent wetlands, it is anticipated that organic materials carried by the wind tides and/or brought in and out by the flushing of the adjacent wetlands will settle into the void. This will create the desired upper layer of natural material. It will also create small areas of micro-habitat for fish, amphibians, and small mammals.

The second reason for not attempting to match the exact elevation of the adjacent wetlands is that it is difficult to hit target elevations without mechanized grading activity. Allowing there to be a range of 6.0 to 12.0 inches avoids the possibility of unwanted consolidation of the material.

Vegetation:

The NCDOT does not propose any vegetation planting or monitoring. The area to be restored is underneath the new bridge and would be virtually impossible to plant and equally difficult to monitor. The NCDOT fully expects natural colonization of native flora to occur around and under the removed causeway.

The proposed enhancement area is currently a standing Cypress-Gum Swamp community. The canopy of this area is dominated by bald cypress (*Taxodium distichum*) and swamp tupelo (*Nyssa aquatica*). The NCDOT does not propose any vegetative manipulation in this area as it is expected that the greatest benefit to the system will be realized through the return of the natural hydrologic processes.

Hydrology:

The proximity of the enhancement and restoration areas to the Chowan River and Rocky Hock Creek ensure that both areas will be saturated and/or inundated for extended periods of time. However, as requested by the North Carolina Division of Coastal Management, the NCDOT will install a single surface water monitoring gauge and a corresponding rainfall gauge within the proposed enhancement area. The NCDOT will maintain and monitor the gauges for one year.

While it is difficult to quantify success criteria for the proposed enhancement, the NCDOT will consider both the restoration and enhancement areas a success if the areas exhibit periodic fluctuations of the water level that do not correspond to local rain events or that correspond disproportionately to local rain events. The intent here is to be able to identify fluctuations that can be attributed to wind tides versus those that may be due to precipitation.